

Title

Primary Ankle Joint Arthrodesis via Minimally Invasive Retrograde Intramedullary Nail Fixation for Acute Ankle Fractures in Immunocompromised Populations

Submit Date

08/30/2023

Correspondent

Last Name: Sohail
Full Name: Asad Sohail, MPH, DPM
Practice/Company/Residency Program:
Email: asadsohail360@gmail.com
University Hospitals

Authors

Author 1: Asad Sohail, DPM
Author 2: Brandon Kitchens, DPM
Author 3: Parmvir Deo, BS
Author 4: Mark Mendeszoon, DPM
Author 5:
Author 6:
Author 7:
Author 8:

Purpose

Ankle fractures in immunocompromised populations pose a distinct and challenging problem due to factors, including compromised bone quality and reduced wound healing capabilities. Conventional open reduction and internal fixation (ORIF) for ankle fractures in individuals with significant comorbidities such as diabetes mellitus, peripheral neuropathy, and peripheral vascular disease have yielded unfavorable results. This case series highlights the efficacy of utilizing primary ankle arthrodesis through retrograde Tibiotalocalcaneal nailing as the primary fixation approach for ankle fractures in immunocompromised populations.

Methodology

Procedures

5 patients undergoing minimally invasive primary ankle arthrodesis through retrograde Tibiotalocalcaneal intramedullary nailing for ankle fractures were included in this case series. Primary success outcomes were determined by bony union via radiographic analysis, ambulatory status, and infection rates.

Results

All 5 immunocompromised patients undergoing minimally invasive primary ankle joint arthrodesis after acute ankle fracture via retrograde tibiotalocalcaneal arthrodesis were able to achieve bony union via radiographic analysis and were able to return to pre-surgical ambulatory status 12 months post-operatively. There were 0 cases of either superficial or deep infection and all hardware was retained 12 months postoperatively.

Discussions

Managing ankle fractures in immunocompromised patients presents a multifaceted set of difficulties. The conventional approach of open reduction, ORIF for these patients can result in unexpected complications, raising the risk of morbidity and potential future major amputation. This innovative technique of primary ankle arthrodesis through the hindfoot offers a stable and less invasive alternative to traditional ORIF, enabling earlier weight-bearing and reducing the likelihood of hardware failure and the need for major amputation later in life.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, and Disclosed Organisation(s). Rows include Asad Sohail, Brandon Kitchens, Parmvir Deo, and Mark Mendeszoon.

Title

Utilization of Constrained External Fixation for Gradual Correction of Post-Traumatic Fixed Equinus Contracture: A Case Study

Submit Date 08/27/2023

Correspondent

Last Name: Brown
 Full Name: Joseph R Brown, DPM Email: joey.brown2@ohiohealth.com
 Practice/Company/Residency Program: OhioHealth Grant Medical Center

Authors

Author 1: Joseph R Brown, DPM Author 2: Sara Yancovitz, DPM
 Author 3: Sara Judickas, DPM Author 4: Robert Mendicino, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Post-traumatic fixed equinus contracture deformities can be debilitating for patients and present a challenge to foot and ankle surgeons. Constrained external fixation constructs can be utilized to assist in gradual correction by manipulating the device to rotate around the ankle joint axis. Scant literature is currently available on this topic. We present a case and describe the technique for utilizing a constrained external fixator to correct post-traumatic equinus.

Methodology

Procedures

A 30-year-old female sustained an open calcaneal fracture, talar neck fracture, and medial malleolus fracture following a motor vehicle accident. She underwent urgent open reduction internal fixation, as well as tarsal tunnel release. She subsequently underwent a peroneal artery perforator flap for soft tissue coverage to the lateral calcaneus. She presented 1 year postoperatively to our facility with a severe residual equinus contracture. At the time of presentation, she had a 20-degree plantarflexory contracture at the ankle joint. She underwent gradual equinus correction with a constrained external fixator frame. Postoperative radiographs and clinical photographs reveal resolution of the equinus deformity with a neutral ankle.

Results

Patient obtained a plantigrade foot with adequate ankle joint range of motion.

Discussions

Fixed post-traumatic lower extremity deformities present a challenge to clinicians. Severe equinus deformities result in the loss of a plantigrade foot and difficulty with ambulation. Consideration should be taken for utilization of a hinged constrained external fixator device in patients with fixed post-traumatic equinus deformities, with congruent ankle joints and a uniplanar deformity.

Format Case Study

Case Rpt Followup 15

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joseph R Brown, DPM	joey.brown2@ohiohealth.com	I/We have nothing to disclose	
Sara Yancovitz, DPM	SaraYancovitz@gmail.com	I/We have nothing to disclose	
Sara Judickas, DPM	sarajudickas@gmail.com	I/We have nothing to disclose	
Robert Mendicino, DPM, FACFAS	rmendicino@faiwp.com	I/We have nothing to disclose	

Title **Total Talonavicular Replacement with Subtalar Arthrodesis for Idiopathic Talar Necrosis**

Submit Date 08/29/2023

Correspondent

Last Name: Lowe
 Full Name: Daniel Lowe, DPM Email: Daniel.lowe@dmu.edu
 Practice/Company/Residency Program: St. Mary's Livonia

Authors

Author 1: Daniel, D, Lowe, DPM Author 2: Joshua, S, Faley , DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to present the 1-year outcomes for a total talonavicular replacement with subtalar arthrodesis for idiopathic talar necrosis, due to the limited amount of published research on the topic.

Methodology

Procedures

Harnrongroj and Vanadurognwan first reported talar implants using first generation implants for talar AVN. Goal was to maintain motion through the tibiotalar joint and restore ankle height. Design was a talar body prosthesis with a peg in the talar neck. Results were promising, but issues with loosening arose. Second-generation implants lacked the peg and weren't anchored to the talar head, these demonstrated talar head collapse. Currently third-generation implants replace the entire talus. In this report, we describe the one-year outcome of a custom-made talonavicular implant with subtalar arthrodesis. The implant was designed for a 36-year-old female with idiopathic talar necrosis.

Results

Patient's results: Follow-up of 12 months. Pre-operative AOFAS score of 42, post-operative 65, post-operative ankle ROM with dorsiflexion 12 degrees and plantarflexion 40 degrees. Radiograph's demonstrated pre-operative talocalcaneal height of 64.6 mm and post-operative 63.8 mm, and a pre-operative talar declination of 23.66 degrees versus post-operative 15.9 degrees. VAS scores improved from 8 to 3 following surgery.

Discussions

During gait, ankle ROM averages 5 degrees of plantarflexion during the loading response phase and 12 degrees of dorsiflexion at the terminal stance. Our patient demonstrates adequate motion for walking. From the results of this case report and prior publications, a total talonavicular implant with subtalar arthrodesis is a viable option for talar AVN.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Daniel, D, Lowe, DPM	Daniel.lowe@dmu.edu	I/We have nothing to disclose	
Joshua, S, Faley , DPM, FACFAS	drjoshua@michiganfoot.com	I/We have nothing to disclose	

Title **Pancreatitis, Panniculitis, and Polyarthritits in Podiatry: An Unusual presentation of Foot Pain**

Submit Date 08/28/2023

Correspondent

Last Name: Miggantz
 Full Name: Sydney H Miggantz DPM Email: smiggant@kent.edu
 Practice/Company/Residency Program: Mercy Health

Authors

Author 1: Sydney H Miggantz DPM Author 2: Shane Jones
 Author 3: Angelika Sheiman DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Our purpose is to show that any clinical findings not resolving with traditional treatments may require an extensive workup and a broader diagnosis considered.

Methodology

Procedures

This case depicts that systemic disease can have Podiatric manifestations. The patient in this case was admitted for recurrent acute pancreatitis with elevated WBC, now endorsing polyarthralgia of an unclear origin with symptoms such as swelling, redness, and severe pain of multiple joints in his lesser pedal digits. Podiatry was consulted for evaluation. When Colchicine did not improve his painful erythematous dactylitis and synovial fluid aspiration came back negative for gouty crystals, MRI was indicated to rule out underlying infection. Possible abscess was shown on MRI, thus an I&D with cultures and biopsies was executed. Wound culture and bone biopsy returned negative for any bacterial infection. The pathology report is what led to a final diagnosis.

Results A diagnosis of PPP (Pancreatitis, Panniculitis, and Polyarthritits) Syndrome, a rare extra-pancreatic manifestation of pancreatitis, was made after physical exam findings and an elevated Lipase lab was coupled with surgical biopsies positive for fat necrosis of the pedal soft tissue.

Discussions When a patient presents with painful erythematous dactylitis, Podiatrists formulate a list of common differential diagnoses. If routine treatments for these suspected diagnoses do not improve symptoms, advanced imaging and further laboratory workup is indicated. If advanced imaging indicates potential infection, surgical intervention is warranted with comprehensive cultures and biopsies obtained. If samples are negative for infectious process, podiatrists must be suspicious of other etiologies.

Format Case Study

Case Rpt Followup 13

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sydney H Miggantz DPM	smiggant@kent.edu	I/We have nothing to disclose	
Shane Jones	sjone172@kent.edu	I/We have nothing to disclose	
Angelika Sheiman DPM	asheiman@kent.edu	I/We have nothing to disclose	

Title **A case report: Bilateral Hypertrophied Peroneal Tubercle in a Pediatric Patient**

Submit Date 08/30/2023

Correspondent Last Name: Patel
Full Name: Maitri K Patel
Practice/Company/Residency Program:

Email: mpatel44@kent.edu
Mercy Health Lorain

Authors Author 1: Maitri K Patel, DPM Author 2: Denis N Agbor, DPM
Author 3: Bhakti Moradia, DPM Author 4: April Nelson, DPM
Author 5: Author 6:
Author 7: Author 8:

Purpose This is a case study of a 16 year old patient demonstrating that in a thorough work up of bilateral lateral heel pain in the pediatric population, a painful hypertrophied peroneal tubercle should be considered in the differential diagnosis.

Methodology

Procedures A 16 year old male presented with bilateral lateral ankle pain. Patient endorsed minimal to no relief with custom inserts and diagnostic sinus tarsi block, therefore advanced imaging, including CT scan and MRI, were obtained. Imaging demonstrated hypertrophied peroneal tubercle with impingement of peroneal tendons. After failing 6-7 months of conservative treatment, surgical resection of the peroneal tubercle and synovectomy of peroneal tendons of one lower extremity at a time. Significant pain relief after his first surgery and underwent contralateral limb with similar operative and post operative treatment.

Results Complete resolution of his lateral heel pain.

Discussions Lateral heel pain in the pediatric population can be due to multiple etiologies such as flatfoot deformity, peroneal tendon pathology, enlarged peroneal tubercle, and or trauma to the heel. There have been a handful of case reports presented in literature that show enlarged peroneal tubercles can contribute to tenosynovitis of peroneal tendons. A study done by Dutton et al. showed that peroneal tubercle is present in 57 % of patients <19 years old and can be an infrequent source of pain in conjunction with pes planus and or tarsal coalition. Operative management of painful peroneal tubercle showed good results in resolution of pain and return to activity in the past. This case study demonstrated a similar outcome.

Format Case Study

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Maitri K Patel, DPM	mpatel44@kent.edu	I/We have nothing to disclose	
Denis N Agbor, DPM	dagbor@kent.edu	I/We have nothing to disclose	
Bhakti Moradia, DPM	bmoradia@kent.edu	I/We have nothing to disclose	
April Nelson, DPM	ainelson86@icloud.com	I/We have nothing to disclose	

Title Radiographic and Clinical Outcomes Following Tibiocalcaneal Arthrodesis

Submit Date 08/28/2023

Correspondent Last Name: LeSavage
Full Name: Lindsay, K, LeSavage, DPM
Practice/Company/Residency Program: Wake Forest Baptist Health
Email: llesavag@wakehealth.edu

Authors Author 1: Lindsay, K, LeSavage, DPM
Author 2: Brennan, K, Reardon, DPM
Author 3: Nicholas, S, Powers, DPM FACFAS
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose Tibiocalcaneal (TC) arthrodesis is performed for patients with severe hindfoot disease and deformity, including post-traumatic arthritis, Charcot, and avascular necrosis. The surgical procedure involves removing the talus and fusing the tibia to the calcaneus, in effort to preserve or restore a plantigrade foot. Our study assesses the clinical and radiographic outcomes of patients undergoing tibiocalcaneal arthrodesis.

Methodology

Procedures Five patients who underwent tibiocalcaneal arthrodesis as a single or staged procedure were included in this case series. Indications for surgery were post-traumatic arthritis and Charcot deformity. Retrograde intramedullary nail was used for each fixation construct. Two authors (L.L. and B.R.) used weight bearing radiographs to measure pre and post-operative calcaneal inclination angle. Plantarflexion and dorsiflexion radiographs were used to measure Chopart's joint excursion. Time to weightbearing and post-operative complications were also recorded.

Results Three patients experienced post-operative complications: pseudomonas bacteremia, post-operative hypotension, and dorsal foot wound breakdown. There were no re-operations or proximal limb amputation after 12 months follow up. Calcaneal inclination angle and Chopart's joint excursion were recorded in Table 3. All five patients who underwent tibiocalcaneal arthrodesis were able to weightbear with a double upright brace over a range of 3.7 to 5.2 months.

Discussions To our knowledge, there are no previous studies analyzing change in radiographic alignment or Chopart's range of motion following TC arthrodesis. Although we tend not to perform a talectomy unless absolutely necessary, it does have the unintended benefit of allowing for more motion through Chopart's joint with weightbearing.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Lindsay, K, LeSavage, DPM; Brennan, K, Reardon, DPM; and Nicholas, S, Powers, DPM FACFAS.

Title A Rare Case Study of Pleomorphic Rhabdomyosarcoma of the Foot**Submit Date** 08/28/2023**Correspondent**

Last Name: Madulapally
 Full Name: Lahari, DPM, MA Email: laharimadulapally@gmail.com
 Practice/Company/Residency Program: Medstar Health Residency

Authors

Author 1: Lahari Madulapally, DPM, MA Author 2: Tiffany K Hoh, DPM, FACFAS
 Author 3: Jocelyn Guillen, DPM, AACFAS Author 4: Albert J Aboulafia, MD, MBA, FACS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose This case study highlights a rare and aggressive type of cancer identified in the foot as pleomorphic rhabdomyosarcoma, which was initially thought to be a benign soft tissue mass**Methodology****Procedures**

72-year-old female presented with a painful left plantar foot mass. An MRI revealed a septate cystic lesion in the subcutaneous layer plantar to the fourth and fifth metatarsals. Possible differentials included ganglion cyst versus infected fluid collection. After surgical soft tissue excision, pathology identified the mass as a grade 3 pleomorphic rhabdomyosarcoma with lymphovascular invasion. The patient was immediately referred to orthopedic oncology. She underwent partial resections of metatarsals 3-5 with the application of a wound vac and margins were negative for tumor cells. A PET scan was performed due to the highly metastatic nature of this cancer, which was negative. The patient was placed on a surveillance protocol which included chest x-rays and CTs every 3 months per orthopedic oncology.

Results

The patient continued with NPWT for 8 weeks, then local wound care to achieve secondary closure. She continues care with the orthopedic oncology team for her cancer protocol and close monitoring.

Discussions

Rhabdomyosarcoma occurs in pediatric patients and is rarely found in adults. However, when identified in adults, it is most commonly the pleomorphic variant, which has a poor prognosis. This case study highlights a patient with this rare form of cancer and the importance of prompt identification and communication with the orthopedic oncology team.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lahari Madulapally, DPM, MA	laharimadulapally@gmail.com	I/We have nothing to disclose	
Tiffany K Hoh, DPM, FACFAS	hohtiffany@gmail.com	I/We have nothing to disclose	
Jocelyn Guillen, DPM, AACFAS	jocelynguillen01@gmail.com	I/We have nothing to disclose	
Albert J Aboulafia, MD, MBA, FACS	albert.j.aboulafia@medstar.net	I/We have nothing to disclose	

Title

Description and concordance of intra-operative sesamoid axial fluoroscopic imaging: a case report and proof of concept investigation.

Submit Date

08/28/2023

Correspondent

Last Name: Meyr
 Full Name: Andrew J. Meyr, DPM FACFAS Email: ajmeyr@gmail.com
 Practice/Company/Residency Program: Temple University

Authors

Author 1: Salvatore Fazio, DPM Author 2: Austin Solomon, DPM
 Author 3: Andrew J. Meyr, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

There has been contemporary emphasis on frontal plane evaluation and correction of the hallux valgus deformity. This might be evaluated pre- and post-operatively directly with the sesamoid axial radiographic projection, but intra-operatively only indirectly with reduction of the tibial sesamoid position in the transverse plane. The objective of this investigation was to describe a reproducible technique to generate intra-operative sesamoid axial fluoroscopic imaging.

Methodology

Procedures

Intra-operative technique: First, center and position the C-arm by obtaining an AP view of the ankle. The operative foot should be in the center of the tubehead (if utilizing a mini-C-arm) or in the center of the image (if utilizing a large C-arm). Next manipulate the subtalar joint into neutral position and translate the tube head inferiorly until the metatarsal heads are at the center of the image (specifically centered on the second metatarsal head). Finally dorsiflex the digits to clearly visualize the sesamoids and crista of the first metatarsal head.

Results

A case is presented of a patient undergoing hallux valgus surgery. Pre- and post-operative sesamoid axial radiographic projections were obtained. Intra-operative sesamoid axial images were obtained utilizing the described technique prior to and following performance of a metatarsal osteotomy. Good concordance of the tibial sesamoid grade was observed between perioperative and intra-operative imaging both before and after the surgical procedure.

Discussions

Results of this investigation demonstrate the feasibility of performing sesamoid axial intra-operative imaging with fluoroscopy. Further investigations will confirm the reliability of this technique.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Salvatore Fazio, DPM	salvatore.fazio@tuhs.temple.edu	I/We have nothing to disclose	
Austin Solomon, DPM	austin.solomon@tuhs.temple.edu	I/We have nothing to disclose	
		Intellectual Property rights owned	UptoDate, PodArt, Barnes&Noble
Andrew J. Meyr, DPM	ajmeyr@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ACFAS, ABFAS, AACPM, APMA, COTH, CPME
		Member of a medical publication or editorial governing board	JFAS

Title

A Case Report: Mid-Term Results in Total Ankle Replacement in a Patient With Tibio-talar Osteomyelitis Secondary to Periprosthetic Total Knee Arthroplasty Infection

Submit Date

08/29/2023

Correspondent

Last Name: Sheckler
 Full Name: Robert Sheckler, DPM Email: robert.l.sheckler@gmail.com
 Practice/Company/Residency Program: Associates in Medicine and Surgery

Authors

Author 1: Robert Sheckler, DPM Author 2: Jonathan Furmanek, DPM, AACFAS
 Author 3: Eugene Batelli, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this case study is to report early positive results in treating septic arthritis of the ankle joint with a total joint prosthetic

Methodology

Procedures

64 year old female, with history of triple arthrodesis left foot, presented to the emergency room with bacteremia following a left total knee arthroplasty (TKA) with concomitant left septic knee joint in October, 2013. She was started on daptomycin and underwent surgical removal of left knee implant with implantation of antibiotic impregnated cement. Eventually she had a revision in April, 2014. She continued the daptomycin through June, 2014, 7 weeks after finishing the daptomycin, the patient presented with symptoms consistent with a septic joint of the left ankle joint and concerns for osteomyelitis of distal tibia and talus based on in-office x-rays. She underwent incision and drainage of the left ankle in August, 2014, with eventual total ankle arthroplasty with implant in November, 2014. Patient was then seen in office per the surgeons total ankle arthroplasty protocol for 44 months post-operatively.

Results

Patient with septic left ankle joint and osteomyelitis of distal tibia and talus who underwent left total ankle arthroplasty. At the last appointment (44 months post-op), patient was ambulating without pain and had no evidence of wearing or loosening of the hardware.

Discussions

Infection of a total knee arthroplasty is a rare complication seen in 1%-2% patients with few incidence of infection spreading to other area. This case provided several unique scenarios that may provide insight into expanded use of total ankle arthroplasty and treatment protocol for infected total ankle arthroplasty.

Format

Case Study

Case Rpt Followup

44

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Robert Sheckler, DPM	robert.l.sheckler@gmail.com	I/We have nothing to disclose	
Jonathan Furmanek, DPM, AACFAS	jfurm123@gmail.com	I/We have nothing to disclose	
Eugene Batelli, DPM, FACFAS	eabdpm@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	In2Bone

Title

A Rare Case of Hemosiderotic Synovial Inflammation Formation Following Repetitive Traumatic ankle injury

Submit Date

08/28/2023

Correspondent

Last Name: Tian
 Full Name: Weiyuan, Tian, DPM Email: TianW@mlhs.org
 Practice/Company/Residency Program: Main Line Health Podiatric Medicine and Surgery

Authors

Author 1: Weiyuan Tian, DPM Author 2: Justin Garvin, DPM
 Author 3: Mark Capuzzi, DPM AACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Repetitive hemarthrosis can lead to the rare occurrence of hemosiderotic synovial inflammation and early-onset osteoarthritis. This case report reviews a rare nonhemophilic hemosideric synovial inflammation with manifestation in a large anterior ankle joint soft tissue mass.

Methodology

Procedures

A 23-year-old female presents with history of right ankle impingement pain secondary to active sports playing. MRI revealed a large joint effusion present, large joint body noted in the anterior part of the ankle joint measuring 14 mm. Attending surgeon elected an anterior ankle approach. After anatomically dissection, an approximately 3.5 cm x 3 cm compressible, oval-shaped mass is noted encapsulated through adipose tissue with a peduncle at the anterior ankle joint. 15 blade was used to transect the pedicle, synovial fluid is noted immediately. After removal of the mass, we also noted there is a hard mass within the soft tissue mass.

Results

Reading radiologist, expressed that they had never encountered such a finding on the MRI with anatomy and layers displayed by this mass before. Operative pathology specimen #1 Soft tissue mass right ankle; was read as Granulation tissue with ulceration, hemosiderin deposition, focal infarction, and hemorrhage, fibropurulent debris, chronically inflamed synovium, and benign fibroadipose tissue. "

Discussions

This case report reviews and documents a rare nonhemophilic hemosideric synovial inflammation with a 14mm large anterior ankle soft tissue mass. Remains unclear when the hemorrhagic joint initiates the degenerative process and at what point it becomes irreversible. Further research is needed, and need for surgical intervention depends on the extent of joint damage.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Weiyuan Tian, DPM	TianW@mlhs.org	I/We have nothing to disclose	
Justin Garvin, DPM	garvinj@mlhs.org	I/We have nothing to disclose	
Mark Capuzzi, DPM AACFAS	mjc5527@gmail.com	I/We have nothing to disclose	

Title

Cerebrotendinous Xanthomatosis in the Achilles Tendon: A Case Study

Submit Date

08/30/2023

Correspondent

Last Name: Marcoux

Full Name: John T. Marcoux, DPM, FACFAS

Practice/Company/Residency Program:

Email: jmarcou2@bidmc.harvard.edu

Beth Israel Deaconess Medical Center

Authors

Author 1: Rahul Mishra, DPM

Author 3:

Author 5:

Author 7:

Author 2: John T Marcoux, DPM, FACFAS

Author 4:

Author 6:

Author 8:

Purpose

The purpose of the case report is to describe and document the clinical presentation, diagnostic workup, and management of Cerebrotendinous xanthomatosis (CTX).

Methodology

Procedures

Literature Review: Cerebrotendinous xanthomatosis (CTX) is a rare autosomal recessive disorder that is caused by mutations in the CYP27A1 gene. CTX results from a deficiency in this enzyme, which leads to the accumulation of cholestanol, a toxic cholesterol derivative, in various tissues of the body, particularly in the brain, tendons, and lenses of the eyes. Common symptoms include tendon xanthomas, which are yellowish nodules that form on the tendons, and cataracts, which can cause vision impairment. Case Study: A 31-year-old male on the autism spectrum was noted to have tendon swelling and pain at the ankles. He was subsequently diagnosed with bilateral achilles tendinopathy. However, MRI revealed concerns for xanthogranulomatous achilles tendinopathy. Furthermore, it was revealed that there is a familial history of hypercholesterolemia in both the father and patient's brother; CTX is often associated with elevated levels of cholesterol and cholestanol. He was then referred to a neurogenetics specialist for further workup and treatment.

Results

MRI, genetic testing, and lab-work confirmed the diagnosis of CTX, and the patient was started on chenodeoxycholic acid (CDCA).

Discussions

CTX is a rare and often misdiagnosed disease. Early diagnosis and awareness is essential to prevent irreversible neurological damage. Treatment with CDCA has been shown to improve symptoms and prevent disease progression.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rahul Mishra, DPM	rmishra@bidmc.harvard.edu	I/We have nothing to disclose	
John T Marcoux, DPM, FACFAS	jmarcou2@bidmc.harvard.edu	I/We have nothing to disclose	

Title

A Rare Cause of Progressive Hallux Valgus Attributed to Supernumerary Metatarsal

Submit Date

08/28/2023

Correspondent

Last Name: Kaur
 Full Name: Kirin Kaur Email: kkaur3@hfhs.org
 Practice/Company/Residency Program: Henry Ford Macomb

Authors

Author 1: Kirin Kaur Author 2: Brian Loder
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The os intermetatarseum is a rare accessory bone seen in approximately 4% of the population. It is typically located between the bases of the 1st and 2nd metatarsals. Although uncommon when present, the os intermetatarseum can present with painful forefoot pathology that often necessitates surgical removal. Even more rare is when these accessory bones are large enough to be named a supernumerary metatarsal. The aim of this study is to highlight the rare occurrence of two supernumerary metatarsals large enough to cause a progressive hallux valgus deformity in two young adults. The authors present two distinct cases where a supernumerary metatarsal was the cause of a painful rigid hallux valgus deformity.

Methodology

Procedures

Two patients presented with complaints of painful bunion deformities. Each patient's radiographs revealed a rudimentary metatarsal of the first intermetatarsal space, which abutted the first metatarsal and increased the 1st intermetatarsal angle. Given each patient's clinical and radiographic presentations, surgical intervention was planned.

Results

Case 1: Excision of supernumerary metatarsal, Lapidus bunionectomy, Reverdin osteotomy, and Akin osteotomy. Case 2: Excision of supernumerary metatarsal, Austin bunionectomy, first metatarsal to second metatarsal stabilization.

Discussions

Os intermetatarseum is typically presented as an asymptomatic ossicle, however some cases in literature have reported a symptomatic presentation. In both patients the accessory metatarsal arose from the second metatarsal, occupying the first intermetatarsal space and resulting in a non-reducible increased 1st intermetatarsal angle. This necessitated surgical intervention, which is recommended in cases of symptomatic supernumerary metatarsal

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kirin Kaur	kkaur3@hfhs.org	I/We have nothing to disclose	
Brian Loder	bloder1@hfhs.org	I/We have nothing to disclose	

Title

Management of fungal osteomyelitis in setting of deep hardware infection status post ankle ORIF

Submit Date

08/28/2023

Correspondent

Last Name: Diora
 Full Name: Isha Email: ishadiora21@gmail.com
 Practice/Company/Residency Program: Englewood Health and Medical Center

Authors

Author 1: Eduardo Glass, DPM Author 2: Isha Diora, DPM
 Author 3: Jonathan Richards, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The presence of fungal osteomyelitis is uncommon and underreported in literature. This case report documents the incidence and overall treatment of candida infection in the setting of wound dehiscence and deep hardware infection status post open reduction internal fixation of a trimalleolar ankle fracture.

Methodology

Procedures

A 67 year old otherwise healthy woman, non-diabetic and non-immuno compromised presented with wound dehiscence and deep hardware infection status post right ankle ORIF done in a foreign country. A 14 month follow up of treatment of sequelae with discussion is included in this study. Serial clinical images, cultures and radiographs were done to confirm progress and healing of injuries. Patient underwent serial removal of hardware, application of external fixator, angiogram with angioplasty, serial wound debridements, removal of external fixator, and subsequently ankle fusion.

Results

Full epithelialization of the dehiscence occurred following the culture of candida parapsilosis with treatments and vascular optimization; with ankle fusion occurring at the 12 month follow up.

Discussions

Bone fungal infection is very rare, occurring in the immuno-compromised patient population. Candida infection develops as a manifestation of systemic candidemia in most cases. Direct implantation of Candida is a very rare cause. The most common pathogen in the setting of fungal infection is candida albicans, in this incidence, candida parapsilosis was cultured. A focused multi-disciplinary approach was necessary for an excellent outcome in this patient's sequelae. Although rare, a fungal panel should be a component in culturing deep hardware infections.

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Eduardo Glass, DPM	eduardoglass94@gmail.com	I/We have nothing to disclose	
Isha Diora, DPM	ishadiora21@gmail.com	I/We have nothing to disclose	
Jonathan Richards, DPM	drjonrichards@gmail.com	I/We have nothing to disclose	

Title

Revision Total Talus Arthroplasty with a Constrained Implant: A Case Series

Submit Date

08/28/2023

Correspondent

Last Name: Sakkab
Full Name: Ramez S. Sakkab, DPM, FACFAS
Practice/Company/Residency Program: Phoenix Foot & Ankle Institute
Email: rasakkab@gmail.com

Authors

Author 1: Ramez S. Sakkab, DPM, AACFAS
Author 2: Jeffrey E. McAlister, DPM, FACFAS
Author 3:
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose

Severe talar osteonecrosis is a challenging entity to treat. Total talus replacement (TTR) represents newer technology and an alternative to tibiotalar canal arthrodesis. As TTR becomes more widely utilized, revision options will be needed. The authors present their experience of failed TTR which were revised to a second total talus implant. Surgical technique is described.

Methodology

Procedures

Three patients who underwent revision TTR after complications following index TTR. All patients obtained at least a 12 month follow up from revision procedure.

Results

Failure of 3 primary TTR was secondary to chronic pain, implant subsidence, and tibial plafond wear, respectively. Three custom cobalt chrome constrained total talar implants were used in combination with a fixed bearing tibial prosthesis. One required polyethylene spacer exchange. One patient had a previous tibial tray which was not exchanged. Improvement from pre-operative function and post-operative maintenance of radiographic alignment occurred in all 3 patients at average 18 months postoperatively. No subsidence or major complications were noted. Ankle joint ROM improved from an average of 12.5 degrees preoperatively to 26.5 degrees at latest post-operative visit.

Discussions

The popularity of total talus implants for treatment of talar bone loss or osteonecrosis is increasing. Techniques for revising TTR will be needed. Three patients in the present cohort had improvement in clinical and radiographic outcomes after total talus revision with a constrained implant. Further studies are warranted to compare revision total talus replacement to tibiotalar canal arthrodesis.

Format

Case Study

Case Rpt Followup

18

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Ramez S. Sakkab, DPM, AACFAS and Jeffrey E. McAlister, DPM, FACFAS.

Title A Veteran’s Limb Salvage Outcome Following a Chopart’s Amputation

Submit Date 08/28/2023

Correspondent Last Name: JAPPAR Full Name: asma Email: ajappar@gmail.com Practice/Company/Residency Program: Baltimore Veterans Affairs Medical Center/Sinai Hospital of Baltimore

Authors Author 1: Asma, Jappar, DPM Author 2: Trent, Kiana, DPM, DABPM, FACPM, FASPS Author 3: Hiba, Mohiuddin, DPM Author 4: Hummira, H, Abawi, DPM, FACFAS, DABPM Author 5: Author 6: Author 7: Author 8:

Purpose We present a successful outcome of a modified Chopart’s amputation with multidisciplinary approach to preserve greater limb length. Optimization of the residual limb length is important as the level of amputation has functional and quality-of-life implications for the patient.

Methodology

Procedures 74-year-old Vietnam War Veteran presented with a chronic diabetic ulcer following a midfoot amputation. Midfoot amputation was converted to a Chopart’s amputation with tibiototalcalcaneal arthrodesis and tendo-achilles lengthening. Surgical dehiscence was successfully treated in the setting of internal fixation by utilizing secondary wound closure techniques, antibiotics, and offloading.

Results At one year follow up, patient is fully weight bearing with length preservation and free of ulcerations.

Discussions Studies show reduced complication rates with modifications to Chopart’s amputation such as tendon balancing and hindfoot fusion, consequently the need to raise the amputation level. However, stump breakdown after modified techniques can still occur and pose a risk for limb loss. Our multidisciplinary approach involves obtaining alignment through surgical reconstruction, protection of soft tissue envelope from shear forces with long term custom AFO and forefoot fillers.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, and Disclosed Organisation(s). Rows include Asma, Jappar, DPM; Trent, Kiana, DPM, DABPM, FACPM, FASPS; Hiba, Mohiuddin, DPM; and Hummira, H, Abawi, DPM, FACFAS, DABPM.

Title **Hemi-Talus Metallic Implant for Severe Recalcitrant Osteochondral Defects of the Talus in the Young Patient**

Submit Date 08/31/2023

Correspondent

Last Name: Bischoff
 Full Name: Alex, J, Bischoff, DPM AACFAS Email: bischoff91@gmail.com
 Practice/Company/Residency Program: Balance Foot and Ankle

Authors

Author 1: Alex, J, Bischoff, DPM AACFAS Author 2: Joseph, Saxon, DPM AACFAS
 Author 3: Jonathan, J, Sharpe, DPM AACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Arthroscopic and open approaches to osteochondral lesions of the talus are well studied. When severe, total ankle arthroplasty, total talus implants, or ankle arthrodesis are frequently performed. However, these procedures may not be suitable for all patients. The purpose of this study is to review two patients who underwent hemi-talar implants for severe, recalcitrant talar lesions.

Methodology

Procedures

In this case series we present two young patients, ages 17 and 25 years, with recalcitrant osteochondral defects of the talus. Both underwent conservative measures followed by repeated surgical attempts to heal these lesions. Due to age, functional demands, and possible morbidity associated with each procedure a total ankle arthroplasty, ankle arthrodesis, and bulk allograft with medial malleolus takedown were not pursued. Each underwent hemi-talus resection and insertion of a 3-D printed hemi-talus metallic implant.

Results

Postoperatively, one patient did require an additional operation for tibial exostectomy but neither patient has had complication with or need for revisional surgery of the implant. Each of these patients are now 24 months and 17 months post-operative at the time of this conference. They have each reported overall satisfaction and improvement of pain with the procedure.

Discussions

Overall, there is a paucity of literature regarding treatment options for large, recalcitrant osteochondral defects of the talus. There is even less available on the topic of hemi-talar implants. We present this case series of two young patients who underwent 3-D printed hemi-talus metallic implant to educate providers of this surgical consideration.

Format

Case Study

Case Rpt Followup

16

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alex, J, Bischoff, DPM AACFAS	bischoff91@gmail.com	I/We have nothing to disclose	
Joseph, Saxon, DPM AACFAS	saxon@balancecle.com	I/We have nothing to disclose	
Jonathan, J, Sharpe, DPM AACFAS	jsharpe@balancecle.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker

Title

TRANSVERSE BONE TRANSPORT FOR THE TREATMENT OF DYSVASCULAR COMPLEX WOUNDS OF THE FOOT: A CASE SERIES

Submit Date

08/28/2023

Correspondent

Last Name: Hronek
 Full Name: Anna Hronek, DPM, FACFAS, CWSP Email: ahronekdpm@gmail.com
 Practice/Company/Residency Program: Intermountain Medical Group

Authors

Author 1: Lisa Grant-McDonald, DPM AACFAS Author 2: Adrienne Estes, DPM FACFAS, FAPWHe
 Author 3: Anna Hronek, DPM FACFAS, CWSP Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Surgical treatment of dysvascular foot wounds are the ire of Foot and Ankle Surgeons. Recent publications have correlated transverse distraction of the tibial cortex with improved clinical outcomes theoretically due to neovascularization. The purpose of this series is to catalog a small cohort of patients, in a multi-center and multi - surgeon retrospective series, who have undergone transverse bone transport for the treatment of ischemic foot wounds. We aim to identify if 1.) Transverse osteogenesis improves wound healing 2.) If neovascularization or circulation is improved following surgery and 3.) To evaluate advantages / disadvantages of bone transport in the setting of limb preservation.

Methodology

Procedures

6 patients who underwent transverse bone transport (TBT) for the treatment of recalcitrant dysvascular wounds were included in this study. Retrospective data was collected from patients' charts to include pre and post-operative vascular studies, duration of pre-operative wounds, markers of clinical improvement, previous vascular interventions, length of previous interventions, and post-operative complications related to the TBT procedure.

Results

Primary endpoints included skin closure and limb preservation.

Discussions

Tibial bone transport is an innovative method for the treatment of ischemic foot ulcers based on transosseous osteosynthesis described by Ilizarov. Short term outcomes following transverse bone transports demonstrate both wound healing and improvement in peripheral circulation. Wound healing was found to be independent of inline blood flow which further highlights potential use of this procedure in even the most compromised patients. Transverse bone transport appears to be a safe and effective treatment for complex wounds, despite its limited use in the United States.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lisa Grant-McDonald, DPM AACFAS	lisa.m.grantmcDonald@gmail.com	I/We have nothing to disclose	
Adrienne Estes, DPM FACFAS, FAPWHe	adriennemestes@gmail.com	I/We have nothing to disclose	
Anna Hronek, DPM FACFAS, CWSP	ahronekdpm@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	UPMA board member
		Member of a medical publication or editorial governing board	Editor - Wound Management and Prevention

Title

Limb Salvage with Antibiotic Bone Void Filler to Bone Secondary to Chronic Osteomyelitis

Submit Date 08/29/2023

Correspondent

Last Name: Dube
 Full Name: Ayanda Dube, DPM, MHA Email: Ayanda_dube@yahoo.com
 Practice/Company/Residency Program: Emory University School of Medicine

Authors

Author 1: Ayanda Dube DPM, MHA Author 2: Madeline Boyle, DPM
 Author 3: Gifferd Ko, DPM, MS Author 4: Steven Hogan, DPM
 Author 5: Neil Upadhyay, DPM Author 6: Joshua Mann, DPM, FACFAS
 Author 7: Author 8:

Purpose Diabetic foot infections have been managed with a variety of treatment therapies ranging from wound care to surgical interventions. Limb salvage remains a staple of podiatric care in patients with diabetic foot infections. Here, we provide a guide to treat chronic osteomyelitis in diabetic foot disease patients with a local antibiotic bone void filler.

Methodology

Procedures

Two individuals with chronic diabetic foot ulcers as well as chronic osteomyelitis were included. One individual had chronic osteomyelitis of the hallux and 1st metatarsal, while the other had chronic osteomyelitis to the tibia with previous intramedullary nail with TaloTibial-Calcaneal Fusion performed within the last year. The decision was made to surgically amputate the hallux and treat the metatarsal head with an antibiotic impregnated bone void filler in the forefoot patient. The rearfoot patient had the Intramedullary nail removed and the Tibia was back filled with antibiotic impregnated bone void filler.

Results One year follow up with evaluation of both patients' outcome, assessing wound progression, and future possible amputation. To assess an alternative method of treatment of chronic osteomyelitis

Discussions

Diabetic foot wounds with chronic osteomyelitis have been treated with several treatment modalities, with long term care and IV antibiotics being the most common. These cases often lead to amputations. Limb salvage with the utilization of antibiotic impregnated bone void filler has been indicated as a viable path with promising success rates. This case study will evaluate outcomes such as post operative pain, future amputations, further complications and overall healing and progression.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ayanda Dube DPM, MHA	ayanda_dube@yahoo.com	I/We have nothing to disclose	
Madeline Boyle, DPM	madeline.boyle@emory.edu	I/We have nothing to disclose	
Gifferd Ko, DPM, MS	Gifferd.ko@emory.edu	I/We have nothing to disclose	
Steven Hogan, DPM	Steven.Hogan@emory.edu	I/We have nothing to disclose	
Neil Upadhyay, DPM	Neil.Upadhyay@emory.edu	I/We have nothing to disclose	
Joshua Mann, DPM, FACFAS	Joshua.Mann@emory.edu	I/We have nothing to disclose	

Title Immediate Weight Bearing after AITFL Reconstruction in Ankle Fractures

Submit Date 08/28/2023

Correspondent Last Name: Baum
Full Name: Andrew Dale Baum DPM
Practice/Company/Residency Program:
Email: abaum779@gmail.com
Adventist Health White Memorial

Authors Author 1: Yixi Lu DPM
Author 2: Alexander Kramer DPM PGY2
Author 3: Andrew Baum DPM PGY2
Author 4: Savannah Santiago MS4
Author 5:
Author 6:
Author 7:
Author 8:

Purpose To report immediate weightbearing in a trimalleolar-equivalent Weber C fracture with AITFL repair in an obese, 18 year old noncompliant patient.

Methodology

Procedures ORIF of a Weber C trimalleolar-equivalent ankle fracture, augmented with AITFL repair with bone anchors and suture tape. Preoperative physiotherapy revealed the patient was incapable of NWB restrictions due to body habitus. AITFL was restored and augmented to provide the patient enhanced stability to protect from anticipated postoperative nonweightbearing noncompliance. Posterior malleolus and deltoid ligament were not addressed.

Results Patient ambulated in sugar tong posterior splint without DME POD3 due to minimal pain . Radiographs revealed no hardware failure or syndesmosis or medial gutter diastasis at 2 and 5 weeks, and at 3 years.

Discussions The AITFL resists external rotation and posterolateral translation of the fibula and is under-appreciated distal syndesmosis stability. Directly restoring the AITFL in ankle fractures with grossly unstable syndesmosis may allow immediate weightbearing in high risk patients. In our case, postoperative SNF placement and compliance was not felt to be predictable, and a circular frame was not practical given the patient was without health insurance. This case is pivotal in managing ankle fractures in noncompliant patients.

Format Case Study

Case Rpt Followup 36

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Yixi Lu DPM, Alexander Kramer DPM PGY2, Andrew Baum DPM PGY2, and Savannah Santiago MS4.

Title

Linear Wound Healing Rates of Foot Ulcers After floating metatarsal osteotomies measured with a modified Gilman's equation

Submit Date 08/30/2023

Correspondent

Last Name: Prasad
 Full Name: Shalvi Prasad, DPM, PGY II Email: sprasad@ucdavis.edu
 Practice/Company/Residency Program: DVA New Mexico Veterans Affairs Health Care System & Kaiser Foundation Hospital

Authors

Author 1: Shalvi Prasad, DPM, PGY II Author 2: Kyle Parker, DPM, PGY I
 Author 3: Rachel Beckman, DPM, PGY I Author 4: Atish Anit Kumar, OMS II
 Author 5: Gabor Szalai, MS, PhD Author 6: Sarah Mele, DPM
 Author 7: Haywan Chiu, DPM, FACFAS Author 8:

Purpose

Wound healing is typically measured by surface area divided by time elapsed between visits, but these variables are difficult to obtain in clinical practice. There are studies by Dr. Gilman that quantify wound healing at a linear rate utilizing the maximum diameter of a wound and divided by time. This is an easier measurement to obtain as it only requires a ruler which all clinics have access to. Linear wound healing rates (LWHR) vary based on patient demographics. In this paper, we attempt to define the LWHR in a small and specific subset of patients who have undergone floating metatarsal head osteotomies (FMHO) for plantar metatarsal head ulcerations (PMHU) recalcitrant to conservative wound care. This could serve as a reference used to predict recovery time after FMHO surgeries.

Methodology

Procedures

12 individuals from 2 facilities and 3 surgeons were followed for at least 1 year. Inclusion criteria were subjects with PMHU, treated with FMHO. Healed ulcers were defined as newly epithelialized skin over ulceration sites. Exclusion criteria included subjects with no pre-operative wound measurements.

Results

12 patients with PMHU underwent FMHO with an average LWHR of 0.2 cm/week, standard deviation of 0.14 cm/week and median of 0.15 cm/week.

Discussions

PMHU make up 22% of all foot ulcers. With higher HbA1Cs, patients with diabetes become infected, septic and need proximal amputations. This case series offers a reference for LWHR after FMHO for PMHU in patients with diabetic neuropathy. This result highlights the ability for FMHO to heal PMHU at a rate of 0.2 cm/week.

Format

Case Study

Case Rpt Followup

20

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Shalvi Prasad, DPM, PGY II	sprasad@ucdavis.edu	I/We have nothing to disclose	
Kyle Parker, DPM, PGY I	kyleparker1515@gmail.com	I/We have nothing to disclose	
Rachel Beckman, DPM, PGY I	beckmanrachel17@yahoo.com	I/We have nothing to disclose	
Atish Anit Kumar, OMS II	atish.a.kumar29@gmail.com	I/We have nothing to disclose	
Gabor Szalai, MS, PhD	szalai@burrell.edu	I/We have nothing to disclose	
Sarah Mele, DPM	sarah.mele@va.gov	I/We have nothing to disclose	
Haywan Chiu, DPM, FACFAS	haywanchiu@gmail.com	I/We have nothing to disclose	

Title

Ratio of soft tissue to bone on lateral radiographs may predict complications in total ankle arthroplasty

Submit Date

08/31/2023

Correspondent

Last Name: Humrick
 Full Name: Hans C Humrick, DPM, AACFAS Email: hans.humrick@outlook.com
 Practice/Company/Residency Program: Kentucky/Indiana Foot and Ankle Specialists

Authors

Author 1: Hans C Humrick, DPM, AACFAS Author 2: Ali Ahmed, DPM, AACFAS
 Author 3: Paul Klutts, DPM, FACFAS Author 4: Amanda Denzik, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Total ankle arthroplasty (TAA) has gained popularity in recent years in treating end-stage arthritis partly due to more reliable constructs and better patient selection. A case series is presented to evaluate a preoperative radiographic method in assessing risk of complications postoperatively.

Methodology

Procedures

8 patients underwent 9 primary TAA in the study. Preoperative weight bearing lateral radiographs were used to measure tibia versus soft tissue width. Patients included 3 diabetics, 4 former smokers, and 2 healthy patients with no past medical history, BMI ranged from 28-42 kg/m².

Results

Tibial bone versus soft tissue widths were measured on lateral radiographs. Ratios and demographics were compared. Soft tissue width averaged 10.7cm (9.2 - 12.2cm), tibia averaged 4.7cm (3.8 - 5.6cm), ratios ranged from 2.0-2.6. 2/8 patients had delayed healing and superficial infections, one a former smoker with multiple procedures in addition to TAA, the other obese but healthy (ratios 2.5 and 2, p=.67). Other complication ratios (subtalar joint pain, tibial component revision, syndesmosis attenuation) were compared but not significant (p=.28).

Discussions

The use of TAA for end stage arthritis has inherent risks. Current literature suggests diabetes, PVD, and smoking are higher risk for healing and complications in TAA. Although the current data set has not identified specific correlations between preoperative lateral radiograph measurements and postoperative complications, results suggest a larger data set may uncover significant relationships in regard to both ratio sizes and associated demographics. A multi-year study is currently being performed to assess these possibilities. This data set may be useful in optimizing patient selection and reducing complication risks in TAA.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hans C Humrick, DPM, AACFAS	hans.humrick@outlook.com	I/We have nothing to disclose	
Ali Ahmed, DPM, AACFAS	dkaliahmed@gmail.com	I/We have nothing to disclose	
Paul Klutts, DPM, FACFAS	pklutts@kyinfas.com	I/We have nothing to disclose	
Amanda Denzik, DPM, FACFAS	adenzik@kyinfas.com	I/We have nothing to disclose	

Title

Surgical Management of an Open, Comminuted, Intra-articular Crush Injury to the First Metatarsal Head: A Unique Case Study

Submit Date

08/30/2023

Correspondent

Last Name: Grama
 Full Name: Nikita Grama, DPM, AACFAS Email: nikitagrama@gmail.com
 Practice/Company/Residency Program: Illinois Bone and Joint Institute

Authors

Author 1: Nikita Grama, DPM, AACFAS Author 2: Amber Kavanagh, DPM, AACFAS
 Author 3: Brian J Burgess, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The primary aim of this study was to present a case of the surgical treatment of an open, intra-articular crush injury to the first metatarsal head in a young patient. To our knowledge, there are no reported case reports of this in the literature.

Methodology

Procedures

A 17 year-old male sustained an open comminuted fracture of the first metatarsal head with severe intra-articular extension after dropping a 50 lb dumbbell on his foot while working out. He underwent initial wound debridement and closure by an outside provider. We then performed a second procedure consisting of hematoma evacuation, open reduction of the first metatarsal head fractures and placement of a mini rail external fixator along with multiple percutaneous k wires for additional stabilization.

Results

The patient remained non weight bearing and the external fixator was removed 9 weeks postoperatively. Serial radiographs were performed and he went on to complete bony union of the fracture 27 weeks after the reconstructive surgery. The patient went on to complete physical therapy and was able to return to full activity. At the most recent follow up, the patient had returned to play baseball with minimal subjective complaints.

Discussions

We present our results for the treatment of this open crush injury to the first metatarsal head. Since the patient was young and active, we did not feel a first metatarsophalangeal joint fusion was an appropriate management option. The surgery was successful in giving him a pain free and functional foot.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Nikita Grama, DPM, AACFAS	nikitagrama@gmail.com	I/We have nothing to disclose	
Amber Kavanagh, DPM, AACFAS	amberkavanagh93@gmail.com	I/We have nothing to disclose	
Brian J Burgess, DPM, FACFAS	burgess.brian.j@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Fusion Orthopedics, Arthrex

Title

A Case Series: Unconventional Flaps for Challenging Lower Extremity Defects

Submit Date

08/29/2023

Correspondent

Last Name: Peter
Full Name: Matthew
Practice/Company/Residency Program:
Email: maapeter@challiance.org
Cambridge Health Alliance

Authors

Author 1: Matthew Andrew Peter
Author 2: Shane Sato
Author 3: Dylan Hemstead
Author 4: Michael H. Theodoulou
Author 5:
Author 6:
Author 7:
Author 8:

Purpose

This case series aims to showcase the efficacy and outcomes of three distinct lower extremity flap techniques—reverse sural fasciocutaneous, medial hemisoleus muscle, and peroneus brevis muscle flaps—in addressing complex lower extremity defects that remained refractory to conventional treatments. The study underscores the utility and potential of these innovative flap options.

Methodology

Procedures

A total of three cases are presented, each involving a unique lower extremity defect resistant to standard interventions. Detailed surgical procedures for each flap type were performed, tailored to the specific anatomical requirements of the defect and patient. Emphasis is placed on flap viability, wound healing, and functional recovery.

Results

The outcomes demonstrate successful wound closure and tissue viability in all cases, with improved patient quality of life. Long-term follow-up revealed sustained benefits, highlighting the durability of these unconventional options.

Discussions

The analysis delves into the advantages and limitations of the three flaps. Comparisons are drawn to established flap options, showcasing their unique attributes in managing lower extremity defects. This case series illuminates the potential of unconventional flap choices as a last resort in treating challenging lower extremity defects.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Matthew Andrew Peter, Shane Sato, Dylan Hemstead, and Michael H. Theodoulou.

Title **Arthrodesis to Maximize the Functionality of the Vertical Contour Calcanectomy: A Novel Consideration**

Submit Date 08/29/2023

Correspondent
 Last Name: Liu
 Full Name: Tiffanie Liu, DPM Email: tiffanie.liu@medstar.net
 Practice/Company/Residency Program: Medstar Georgetown University Hospital

Authors
 Author 1: Tiffanie Liu, DPM Author 2: Craig Verdin, DPM, AACFAS
 Author 3: Christopher Ply, BS Author 4: Ali Fadel, DPM
 Author 5: Jayson Atves, DPM, FACFAS Author 6:
 Author 7: Author 8:

Purpose
 Heel ulcerations with bony exposure may require surgical treatment such as partial calcanectomy. At our institution, we perform a vertical contour calcanectomy (VCC) which is a modification to the partial calcanectomy, allowing for soft tissue preservation and primary closure, but the achilles tendon is resected at its insertion. For an ambulatory patient, losing part of the calcaneus and the work of the achilles results in instability of the rearfoot, causing gait abnormalities. To maintain a stable, functional limb, tibiototalcalcaneal (TTC) arthrodesis was performed after VCC. The primary aim of this study is to consider TTC fusion after partial calcanectomy to maintain stability for ambulation. The secondary aim is to compare gait parameters.

Methodology

Procedures
 54M with calcaneal gait after achilles lengthening. He underwent VCC for calcaneal osteomyelitis secondary to recalcitrant heel wound. The incision healed but instability of ankle/subtalar joints and decreased plantarflexory muscle strength made ambulation difficult. We performed a TTC arthrodesis using plate/screws. Gait evaluated using gait sensors.

Results
 12 months - fusion achieved radiographically and clinically. Patient ambulates unassisted. Gait parameters compared with normative values show decreased cadence/speed but no significant difference in stride length/sway.

Discussions
 5-year mortality rate after lower extremity amputation is increased in non-ambulatory patients. Patients requiring partial calcanectomy may never walk again. For ambulatory patients, this is not a satisfactory outcome. Procedures for stability should be considered. Our patient returned to activity 6 months after TTC and VCC; he continues to ambulate unassisted. Gait evaluation shows decreased walking speed but no difference in other parameters.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tiffanie Liu, DPM	tiffanie.liu@medstar.net	I/We have nothing to disclose	
Craig Verdin, DPM, AACFAS	cverdin@kent.edu	I/We have nothing to disclose	
Christopher Ply, BS	cmp334@georgetown.edu	I/We have nothing to disclose	
Ali Fadel, DPM	ali.fadel@medstar.net	I/We have nothing to disclose	
Jayson Atves, DPM, FACFAS	jayson.atves@medstar.net	I/We have nothing to disclose	

Title Total Ankle Arthroplasty Wound Dehiscence Revision with Fragmented Acellular Fish Skin Graft: A Case Study

Submit Date 08/29/2023

Correspondent Last Name: Corley
Full Name: Corley, Kristina, DPM Email: kristina.corley@weil4feet.com
Practice/Company/Residency Program: Weil Foot & Ankle Institute

Authors Author 1: Kristina Corley, DPM Author 2: Jonathan Hook, DPM, MHA, FACFAS
Author 3: Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose Review the use of a fragmented acellular fish skin graft (FAFSG) in its ability to rapidly progress a surgical dehiscence to closure.

Methodology

Procedures One patient who was s/p left total ankle arthroplasty secondary to end-stage ankle arthritis developed wound post-operatively. Patient underwent gutter debridement and replacement of polyethylene spacer with Achilles tendon lengthening followed by debridement with application of fragmented acellular fish skin graft.

Results Full wound closure at 6 weeks without removal of hardware

Discussions Acellular fish skin grafts contain omega-3 polyunsaturated fatty acids which enable wounds to transition from chronic into acute stages of healing. The fragmented form of this graft can mold into wound beds which demonstrate efficacy when applied to complex wounds. Patient achieved full wound closure at 6 weeks after debridement with application of fragmented acellular fish skin graft

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kristina Corley, DPM	corley.kristina@gmail.com	I/We have nothing to disclose	
Jonathan Hook, DPM, MHA, FACFAS	jhookdpm@gmail.com	I/We have nothing to disclose	

Title Traumatic Open Fibular Fracture Treatment with Fragmented Acellular Fish Skin Grafts

Submit Date 08/29/2023

Correspondent
Last Name: Corley
Full Name: Kristina Corley, DPM
Practice/Company/Residency Program:

Email: kristina.corley@weil4feet.com
Weil Foot & Ankle Institute

Authors
Author 1: Kristina Corley, DPM
Author 2: Jonathan Hook, DPM, MHA, FACFAS
Author 3:
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose Determine the use of a fragmented acellular fish skin graft in a traumatic open fibular fracture.

Methodology

Procedures One patient who sustained traumatic open fibular fracture was treated with immediate IV antibiotics followed by operative intervention. A washout with primary fracture fixation was performed with a combination of 3cc of demineralized bone matrix mixed with acellular fish skin graft and applied into the bony void.

Results Patients was fully healed without complications.

Discussions Acellular fish skin grafts contain omega-3 polyunsaturated fatty acids. The product itself acts as a bacterial barrier and promotes three-dimensional cellular ingrowth in comparison to human amnion grafts. Wound fish skin graft allow for incorporation and the ability to granulate over deep structures including bone and tendon which is beneficial in open traumatic fractures.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kristina Corley, DPM	corley.kristina@gmail.com	I/We have nothing to disclose	
Jonathan Hook, DPM, MHA, FACFAS	jhookdpm@gmail.com	I/We have nothing to disclose	

Title

Wound Management Following Surgical Dehiscence of 1st MPJ Arthrodesis with associated Osteomyelitis

Submit Date

08/29/2023

Correspondent

Last Name: Corley

Full Name: Kristina Corley, DPM

Email: kristina.corley@weil4feet.com

Practice/Company/Residency Program:

Weil Foot & Ankle Institute

Authors

Author 1: Kristina Corley, DPM

Author 2: Jonathan L. Hook, DPMH MHA

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Show an alternative way to manage complications after a first metatarsal phalangeal joint arthrodesis with associated osteomyelitis.

Methodology

Procedures

61 year old male with past medical history of peripheral neuropathy, hypertension, human immunodeficiency virus on HAART, hepatitis C virus, chronic hepatitis B virus, and and chronic wounds of left foot who underwent 1st metatarsal phalangeal joint arthrodesis and panmetatarsal head resection of the left foot. Patient presented to the emergency department with fever, WBC 7.7, neutrophils 80.3, CRP 19.5, ESR 121, A1c 7.3. Patient had wound dehiscence with exposed hardware and associated osteomyelitis.

Results

Following long term IV antibiotics and acellular skin graft coverage, wound underwent full closure.

Discussions

Acellular fish skin grafts contain omega-3 polyunsaturated fatty acids which enable wounds to transition from chronic into acute stages of healing. The fragmented form of this graft can mold into wound beds which demonstrate efficacy when applied to chronic/complex wounds in patients with medical comorbidities and exposed hardware. Wound fish skin graft allow for incorporation and the ability to granulate over deep structures including bone and tendon.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kristina Corley, DPM	corley.kristina@gmail.com	I/We have nothing to disclose	
Jonathan L. Hook, DPMH MHA	jhookdpm@gmail.com	I/We have nothing to disclose	

Title Case Study – Diffuse Large B-Cell Lymphoma of the Calcaneus**Submit Date** 08/29/2023**Correspondent**

Last Name: Huynh
 Full Name: Vannhi, Ngoc, Huynh, DPM Email: huynhv@mlhs.org
 Practice/Company/Residency Program: main line health

Authors

Author 1: Vannhi, Ngoc, Huynh, DPM Author 2: Ifeoma, Nwaedozie, DPM
 Author 3: Celine, Guerrero, DPM Author 4: David, Tachna, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This case study presents diffuse large B-cell lymphoma of the left calcaneus

Methodology**Procedures**

Secondary bone lymphoma is more common than primary bone lymphoma and is seen in 16-20% of patients with lymphoma. A 94-year-old male developed a pathologic fracture of his left thumb in 2019. He underwent surgical intervention and a bone biopsy. Based on pathology results, he was diagnosed with diffuse large B-cell lymphoma. A PET scan reveals increased signal uptake at the left thumb and a parotid gland lymph node. Due to the pandemic, the patient opted to be followed expectantly. He developed heel pain in 2021 and received injections into the heel with minimal improvement in symptoms. In September 2021, he underwent an MRI which reveals a 4.5x3cm lesion at the calcaneus. A PET scan shows increased uptake in the parotid gland, the chest wall, right external iliac node, and left calcaneus. No bone biopsy of the calcaneus was performed, as the calcaneal lesion likely reflects his history of lymphoma.

Results

Patient subsequently underwent many rounds of chemotherapy and monoclonal therapy. In May 2022, he underwent a PET scan with decreased uptake in his lymph nodes and resolution of the foci in the left calcaneal region. He endorses resolution of pain to the left calcaneus.

Discussions

Lymphoma of the bone is a clinically uncommon disease with devastating consequences. With an overall 5-year survival rate is 41.9% and progression-free 5-year survival rate is 22%, it is imperative that clinicians identify this condition in a timely manner and provide appropriate workup and referrals.

Format

Case Study

Case Rpt Followup

26

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Vannhi, Ngoc, Huynh, DPM	huynhv@mlhs.org	I/We have nothing to disclose	
Ifeoma, Nwaedozie, DPM	nwaedoziei@mlhs.org	I/We have nothing to disclose	
Celine, Guerrero, DPM	guerrero@mlhs.org	I/We have nothing to disclose	
David, Tachna, DPM	tachnad@mlhs.org	I/We have nothing to disclose	

Title **Revisional Tibial Osteotomy to Correct Tibiototalcaneal Arthrodesis Equinovarus: A Case Study**

Submit Date 08/29/2023

Correspondent
 Last Name: Kerns
 Full Name: Makenzie L Kerns, DPM Email: kernsmakenzie94@gmail.com
 Practice/Company/Residency Program: Denver Health Podiatric Medicine and Surgery Residency

Authors
 Author 1: Makenzie Kerns Author 2: Matthew Gorski, DPM
 Author 3: Kristine Hoffman, DPM, FACFAS Author 4: Morgan Jerabek, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose
 A well known complication of ankle arthrodesis is transfer pain due to malalignment. Typically, conservative care is the initial treatment of choice however surgical intervention may be necessary for long term pain control. In non-union, the original arthrodesis site may be utilized in revision. In well fused patients, an osteotomy must be performed addressing the appropriate planes of deformity. The case presented is one in which a bi-planar correctional osteotomy was performed to address equinovarus deformity.

Methodology

Procedures
 This is a 56 year old female patient with history of polio disease who underwent multiple surgeries including ankle fusion in Mexico approximately 20 years prior. The patient was intentionally placed in a plantarflexed position to allow for high heel use, though presents with radiographic evidence of equinovarus deformity. She now presents with worsening forefoot pain and feels as though she is "tip-toeing". We performed a tibial osteotomy with 3 screw configuration in tripod configuration for fixation.

Results
 The patient underwent bi-planar tibial osteotomy to correct her deformity with 3 screw fixation. She is now able to ambulate in regular shoe gear with improved pain control. Radiographic evidence of improved alignment.

Discussions
 It is appropriate to consider a single revisional tibial osteotomy for patients who present with malaligned tibiototalcaneal arthrodesis, including those with multiple planar deformities.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Makenzie Kerns	kernsmakenzie94@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Round Rock, TX
Matthew Gorski, DPM	matthew.gorski@dhha.org	I/We have nothing to disclose	
Kristine Hoffman, DPM, FACFAS	kristine.hoffman@dhha.org	I/We have nothing to disclose	
Morgan Jerabek, DPM	morgan.jerabek@dhha.org	I/We have nothing to disclose	

Title

Surgical Treatment of Pediatric Subungual Osteochondroma with Complete Excision and Secondary Closure; A 1 Year Follow-Up

Submit Date 08/30/2023

Correspondent

Last Name: Boyle
 Full Name: Madeline J Boyle, DPM Email: madelinejboyle@gmail.com
 Practice/Company/Residency Program: Emory University School of Medicine Podiatric Medicine and Surgery Residency

Authors

Author 1: Madeline J Boyle, DPM Author 2: Ayanda Dube, DPM
 Author 3: Steven Hogan, DPM Author 4: Gifferd Ko, DPM
 Author 5: Neil Upadhyay, DPM Author 6: Anthony Cutsuries DPM, FAFAS
 Author 7: Author 8:

Purpose

Bone tumors are rare in the foot and ankle with subungual osteochondromas being benign bone tumors of the distal phalanx. These infrequent tumors are prominent within the pediatric population, commonly at the level of the nail bed. Current standard treatment consists of excision with primary closure of the incision site. The purpose of this case study is to follow-up with a pediatric patient over 1 year after excision of a subungual osteochondroma with planned secondary closure of the incision site with the goal of preserving the nail bed and emphasizing nail regrowth.

Methodology

Procedures

16 year old pediatric male with no significant PMH presents with a subungual osteochondroma to the distal left 2nd phalanx. The tumor violated the nail bed; however, the matrix remained viable. Surgical intervention included complete excision of the tumor with preservation of the nail matrix and secondary closure of incision site to promote nail regrowth. Follow up focused on secondary healing of incision site and course of nail regrowth.

Results

1 year follow-up with evaluation of the patient outcome and nail regrowth.

Discussions

Subungual osteochondromas are benign bone tumors frequently located to digital distal phalanges. These commonly cause pain and damage the nail bed. Studies suggest that complete excision lead to very low recurrence rates; however, discussion surrounding closure techniques is limited. Primary closure over a nail bed may affect nail regrowth. Tumors that violate the nail bed should be completely excised to preserve the native anatomical architecture of the foot and secondary closure may promote regrowth of the nail.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Biomechanics and Anatomy

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Madeline J Boyle, DPM	madelinejboyle@gmail.com	I/We have nothing to disclose	
Ayanda Dube, DPM	ayanda_dube@yahoo.com	I/We have nothing to disclose	
Steven Hogan, DPM	steven.michael.hogan@gmail.com	I/We have nothing to disclose	
Gifferd Ko, DPM	gifferdko@gmail.com	I/We have nothing to disclose	
Neil Upadhyay, DPM	neilupadhyay1834@gmail.com	I/We have nothing to disclose	
Anthony Cutsuries DPM, FAFAS	mlukasz@emory.edu	I/We have nothing to disclose	

Title

Traumatic Degloving Injury in a Pediatric Patient, the Use of Amniotic Tissue to Help with Healing: A Case Report

Submit Date

08/29/2023

Correspondent

Last Name: Korrapati

Full Name: Akhil, Korrapati

Email: akhil.korrapati@hmn.org

Practice/Company/Residency Program:

Jersey Shore University Medical Center

Authors

Author 1: James, P, Sullivan, DPM, Residency Director Author 2:

Author 3: Author 4:

Author 5: Author 6:

Author 7: Author 8:

Purpose

To present a case report on a 3-year-old male that sustained a traumatic degloving injury with subsequent necrotic, dry gangrenous changes in the right third toe.

Methodology

Procedures

We present a 3-year-old male who sustained a traumatic degloving injury to his right third toe eleven days before presenting to the ED. Repair at another hospital was attempted. Suture sites became necrotic with dry gangrenous changes to the distal toe. To salvage the toe, he underwent an I&D of the traumatic subungual hematoma, full thickness debridement, application of amniotic graft in parachute fashion, and Indocyanine green dye - SPY Elite Fluorescence Imaging use afterward confirming vascularity to the site.

Results

Patient was seen in the office two weeks later with graft incorporating well. At three-month follow-up, traumatic wound site healed with healthy epithelialized skin with no postoperative complications.

Discussions

We present a traumatic pediatric degloving injury to the right third toe that displayed necrotic, dry gangrenous changes. Decision was made to remove previous sutures and utilize SpyCam to assess vascularity showing no blood flow to the distal toe. We performed an I&D of the traumatic subungual hematoma followed by full-thickness debridement down to subcutaneous tissue followed by applying amniotic graft in a parachute fashion to the distal end of the toe. Afterward, SpyCam showed patent vascularity to the toe. On follow-up, toe had epithelization with no cosmetic abnormalities and return of the nail. This technique can be used in pediatric degloving toe injuries with necrotic, dry gangrenous changes.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
James, P, Sullivan, DPM, Residency Director	james.sullivan@hmn.org	I/We have nothing to disclose	

Title

Osteochondral Defect of the Talus: VAS Score Evaluation Following Arthroscopic Assisted and Open OCD Repair of Talus

Submit Date

08/29/2023

Correspondent

Last Name: Onyenma

Full Name: David C Onyenma, DPM

Email: david.onyenma@rochesterregional.org

Practice/Company/Residency Program:

Rochester General Hospital

Authors

Author 1: David C Onyenma, DPM

Author 2: Brady M Webb, DPM

Author 3: Paul A Stasko, DPM, AACFAS

Author 4: Peter M Stasko, DPM, AACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Osteochondral defect (OCD) describes the morphological changes associated with a localized gap in the articular cartilage and are commonly found in the femoral condyle, humeral head and talus. Medial OCD of the talus commonly occurs due to an inversion and plantarflexion injury. Lateral OCD of the talus commonly occurs due to an inversion and dorsiflexion injury.

Methodology

Procedures

Fourteen patients undergoing Arthroscopic Assisted OCD repair of the talus are included in this study. Preoperative standard x-rays revealed lateral or medial focal areas of talar dome articular damage with variable involvement of the subchondral bone or cartilage. Osteochondral defect was visually confirmed intraoperatively. This case series documents 11 cases of arthroscopic assisted OCD repairs and three cases that were converted into an open procedure, with the goal of cartilaginous repair and evaluating patient postoperative satisfaction.

Results

Patients who underwent arthroscopic assisted procedure had a mean preoperative Visual Analog and Numeric Rating (VAS) scores of 3.8 (n=11) and mean one year postoperative VAS score of 0.91 (n=11). Patients whose procedures were converted into an open procedure had mean preoperative VAS scores of 4.7 (n=3) and mean one year postoperative VAS scores of 0.

Discussions

Arthroscopic treatment of OCDs has previously been associated with positive outcomes. Our study confirms this as the majority of cohorts were found to have improved VAS scores post operatively. Patients who were intraoperatively converted to open OCD repair, showed the greatest improvement in symptoms.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Arthroscopy

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
David C Onyenma, DPM	david.onyenma@rochesterregional.org	I/We have nothing to disclose	
Brady M Webb, DPM	bradymwebb71@yahoo.com	I/We have nothing to disclose	
Paul A Stasko, DPM, AACFAS	paul.a.stasko@gmail.com	I/We have nothing to disclose	
Peter M Stasko, DPM, AACFAS	pmstasko25@gmail.com	I/We have nothing to disclose	

Title

Achilles Bone-Tendon Allograft Replacement for Treatment of Chronic Insertional Tendon Rupture in the Setting of Chronic Tendinosis: A Small Case Series to Demonstrate Procedure Selection Criteria and Surgical Technique Pearls

Submit Date 08/29/2023

Correspondent

Last Name: Nack
 Full Name: Danielle, L, Nack, DPM
 Practice/Company/Residency Program: HealthPartners Institute/Regions Hospital
 Email: Danielle.L.Nack@HealthPartners.Com

Authors

Author 1: Danielle L. Nack, DPM
 Author 2: Kyle W. Abben, DPM, FACFAS
 Author 3:
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

The Achilles tendon is one of the most frequently ruptured tendons despite its inherent strength. Achilles ruptures with a delay in diagnosis or treatment greater than 6 weeks are considered chronic and can be difficult to surgically address. Even more so, patients presenting with chronic insertional ruptures with or without calcaneal tendon insertion site bone loss and concomitant Haglund's deformity or retrocalcaneal exostosis can exponentially complicate surgical treatment. Currently there is a paucity in the medical literature of surgical treatment options for chronic insertional Achilles tendon ruptures and even less has been reported on patient selection criteria and surgical technique pearls for Achilles bone-tendon allograft reconstruction for this challenging patient cohort.

Methodology

Procedures

Two cases are presented of patients suffering from chronic insertional Achilles tendon rupture with concomitant Haglund's deformity and avulsion fracture of the posterior calcaneus. Reconstructive surgery consisted of distal Achilles tendon replacement via the use of an Achilles bone-tendon allograft with flexor hallucis longus transfer and remodeling of the posterior calcaneus.

Results

At the time of each patient's final 12-month follow-up, they were ambulatory in normal footwear without the need for a lower extremity brace, statistically significant improvement in VAS scores, and were able to return to pre-injury activities. Neither had any postoperative complications and achieved full osseous incorporation radiographically of the bone allograft.

Discussions

This report will focus on patient selection criteria including expanded indications and surgical pearls, as well as postoperative care.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Danielle L. Nack, DPM	danielle.l.nack@healthpartners.com	I/We have nothing to disclose	
Kyle W. Abben, DPM, FACFAS	kyle.abben@parknicollet.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker consultant

Title

Managing Post-Fasciotomy Drop Foot Through Bridle Procedure Following Non-traumatic compartment syndrome secondary to deep vein thrombosis

Submit Date

08/31/2023

Correspondent

Last Name: TAKROORI

Full Name: QOSSAY TAKROORI, DPM PGY3

Email: QTAKROORI@BARRY.EDU

Practice/Company/Residency Program:

BARRY UNIVERSITY FOOT AND ANKLE INSTITUTE
AND MERCY HOSPITAL

Authors

Author 1: Yohandy Fuentes, DPM

Author 2: QOSSAY TAKROORI, DPM

Author 3: Sharang Penumetsa, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

There have been rare incidents reported in the medical literature of non-traumatic compartment syndrome secondary to deep vein thrombosis. In addition, recent literature showed that the COVID-19 pandemic has been associated with a high incidence of venous thrombosis in hospitalized patients. The treatment of the compartment syndrome is through a fasciotomy procedure in the leg. In this case study, we report a case of a drop foot following a fasciotomy procedure due to a DVT in a hospitalized patient being treated for COVID-19. We utilized the Bridle procedure as a pathway in an integrated approach to restore foot mobility after peroneal nerve injury

Methodology

Procedures

One (1) patient with drop due to peroneal nerve injury after a fasciotomy underwent peroneal nerve decompression, Bridle procedure, and aggressive physical therapy and rehabilitation to restore ankle dorsiflexion during the gait cycle.

Results

Increased active foot dorsiflexion. Normal gait without an AFO

Discussions

There have been rare cases of drop foot following treatment of deep venous thrombosis through fasciotomy. Our case involved an instance of non-traumatic peroneal nerve damage subsequent to a fasciotomy performed for DVT treatment. The peroneal nerve decompression resulted in a modest to moderate recovery of active dorsiflexion. On the other hand, the Bridle procedure notably enhanced dorsiflexion throughout the patient's gait cycle and restored their gait to a normal state without the use of ankle foot orthosis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Neurological/Peripheral Nerve Disorders

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Yohandy Fuentes, DPM	qtakroori@barry.edu	I/We have nothing to disclose	
QOSSAY TAKROORI, DPM	qtakroori@barry.edu	I/We have nothing to disclose	
Sharang Penumetsa, DPM	qtakroori@barry.edu	I/We have nothing to disclose	

Title Long Term Outcomes of Choparts Amputations: A Case Series

Submit Date 08/29/2023

Correspondent Last Name: Bier Full Name: Kelly Email: bier.kelly2@gmail.com Practice/Company/Residency Program: Hennepin Healthcare Residency

Authors Author 1: Kelly Bier Author 2: Kimberly Bobbitt Author 3: Author 4: Author 5: Author 6: Author 7: Author 8:

Purpose A Chopart amputation is removal of the mid- and fore-foot leaving only the hindfoot, performed usually for non-healing wounds and infection. There is no current research that reports long-term outcomes, except a few individual case studies. The medium-term outcomes show at an average of 2.8 years follow up, nearly 40% of patients required further amputation and 45% died. This case series aims to provide more insight into long-term outcomes of Choparts amputations including comorbidities, healing time, re-ulcerations rates, and proximal amputation rates.

Methodology

Procedures Patient charts were retrospectively reviewed who underwent a Choparts amputation from January 2007-June 2018 and data recorded included comorbidities, date of amputation, healing time, rates of re-ulceration and proximal amputation, and death.

Results 11 patients were included, average time to heal was 206 days. All patients were diabetic, 7 had peripheral vascular disease, 4 with end stage renal disease. At final follow up, 1 survived with amputation, 4 died with their amputation (unrelated causes, average 49 months), 6 had more proximal amputations (average 14.8 months).

Discussions Choparts amputations are performed as limb preservation procedures to allow for transfers, bracing, and ambulation, particularly in patients with a contralateral limb proximal amputation. However, these amputations have a high rate of re-ulceration, never healing, more proximal amputation, and high rate of morbidity. The high rate of proximal amputation, long healing times, and re-ulcerations rates within this cohort can help provide guidance and information as clinicians discuss this amputation with patients going forward.

Format Case Study

Case Rpt Followup 60

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows for Kelly Bier and Kimberly Bobbitt.

Title**Lactobacillus Necrotizing Soft Tissue Infection in the Lower Extremity****Submit Date**

08/29/2023

Correspondent

Last Name: Yamat
 Full Name: Bryce Yamat, DPM Email: yamatbryce@gmail.com
 Practice/Company/Residency Program: University of Cincinnati

Authors

Author 1: Michael D. Liette DPM Author 2: Christopher M. Goddard CNP
 Author 3: Bryce R. Yamat DPM Author 4: Adena A. Mahadai DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

To present a rare case of Lactobacillus-induced necrotizing fasciitis, previously unreported in the lower extremity.

Methodology**Procedures**

A 52-year-old male with uncontrolled type II diabetes mellitus (A1C 16.6 presenting with sepsis and high suspicion of necrotizing soft tissue infection (LRINEC 10) after minor trauma to the extremity.

Results

Necrotizing soft tissue infection with cultures of heavy growth of Lactobacillus species and Candida Glabrata in dirty cultures. Successful salvage of the foot.

Discussions

Necrotizing fasciitis/soft tissue infections are rapidly progressive infections characterized by extensive necrosis of fascial and subcutaneous tissues. Traditionally, this severe condition has been predominantly associated with well-established pathogens and only rare case reports of lactobacillus as the pathogen have been identified in severely immunocompromised patients. Diagnosis of opportunistic infections like Lactobacillus can be challenging due to the rarity of this organism as a pathogen. Many Lactobacilli case reports lack comprehensive identification methods, leading to common conclusion at the genus level "Lactobacillus spp." The management typically involves antimicrobial therapy and, in the present case, sequential debridements. Regardless of causative organism, early identification and wide debridement is critical for successful outcomes.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michael D. Liette DPM	lietteml@ucmail.uc.edu	I/We have nothing to disclose	
Christopher M. Goddard CNP	goddardcm@ucmail.uc.edu	I/We have nothing to disclose	
Bryce R. Yamat DPM	yamatbryce@gmail.com	I/We have nothing to disclose	
Adena A. Mahadai DPM	mahadaaa@ucmail.uc.edu	I/We have nothing to disclose	

Title

Distraction STJ Arthrodesis with Delta Configuration Fixation to Reduce Compression Across Graft: A Case Series

Submit Date

08/29/2023

Correspondent

Last Name: Breitenbach

Full Name: Tori L Breitenbach, DPM, AACFAS

Email: tori.breitenbach@outlook.com

Practice/Company/Residency Program:

Certified Foot and Ankle Specialist

Authors

Author 1: Tori L. Breitenbach, DPM, AACFAS

Author 2: Ashley L. Bowles, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Subtalar distraction arthrodesis (SDA) has been well documented as an acceptable procedure for deformity correction with rearfoot arthritis. There has been minimal published on different techniques for fixation of SDA and the benefits to the different configurations. There has been adequate literature on the different fixation constructs for a primary subtalar arthrodesis and there is literature to support the “delta” configuration as a biomechanically sound construct for arthrodesis. The purpose of this case series is to show results of taking the biomechanical principles of the “delta” configuration and extrapolating them to usage in SDA.

Methodology

Procedures

This is a case series of 5 patients who underwent a STJ distraction arthrodesis with allograft bone wedge and fixation in the “delta” configuration. This configuration allowed for a fully threaded positional screw across the graft to minimize compression across the graft and then a compression and anti-rotation screw across the anterior STJ.

Results

All 5 patients were noted to have union of the arthrodesis sites without any graft incorporation complications or hardware complications.

Discussions

The literature on SDA focuses on the type of graft used and complications/outcomes but there is minimal on different fixation options. In the most recent systematic review, the most common complication of SDA is hardware prominence requiring removal and nonunions. In this small case series neither of these complications were seen. This case series shows the use of the “delta” configuration as a good construct option for SDA.

Format

Case Study

Case Rpt Followup

15

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tori L. Breitenbach, DPM, AACFAS	tori.breitenbach@outlook.com	I/We have nothing to disclose	
Ashley L. Bowles, DPM, FACFAS	abowles@certifiedfoot.com	I/We have nothing to disclose	

Title

Single Stage Calcaneonavicular and Talocalcaneal Coalition Resection with Flatfoot Reconstruction: A Case Report

Submit Date 08/29/2023

Correspondent

Last Name: Wachuku
 Full Name: Chinenye D Wachuku, DPM Email: chichiwachuku@gmail.com
 Practice/Company/Residency Program: Hoboken University Medical Center

Authors

Author 1: Amanda Borrelli, MPH, DPM Author 2: Nader Ghobrial, DPM
 Author 3: Vrunda Dalal, DPM Author 4: Jason Hymowitz, MS DPM
 Author 5: Disha Shah, DPM Author 6: Chinenye Wachuku, DPM MBA MEng
 Author 7: Jini Philip, DPM Author 8: Shital Sharma DPM, FACFAS

Purpose

Tarsal coalitions are rare pedal conditions that contribute to anatomic and biomechanical changes. Controversy exists between two main surgical treatment options, but recent literature encourages correction of the accompanying flatfoot deformity whilst addressing the coalition. This case study presents a patient diagnosed tarsal coalitions accompanied by a pes planus deformity. Included is a detailed surgical technique with 12-month follow up that addresses the coalitions and pes planus deformity simultaneously with favorable clinical and radiographic outcomes.

Methodology

Procedures

We present a 42-year-old male who presented to our clinic with a calcaneonavicular and subtalar joint middle facet coalition accompanied by a pes planus deformity. The tarsal coalitions were addressed with resection of the calcaneonavicular bar, resection of the middle facet, along with a triple arthrodesis.

Results

During the 12-month follow-up, complete osseous consolidation of the surgical site was noted with pain 6 out of 10 on the visual analog scale along the Flexor Hallucis Longus tendon.

Discussions

Tarsal coalition restricts motion in joints between the tarsal bone causing with ambulation and passive motion. Patients often have concomitant conditions including rigidity, arthrosis, and Peroneal muscle spasms. A thorough history and physical along with advanced imaging is necessary to create a surgical plan that parallels the needs of the patient. This case report discusses a 42 year old patient who presents with a mild case of pes planus and exhibited symptoms of a tarsal coalition in his early forties. We believe treatment via a triple arthrodesis will have better overall results, increased function, and reduced pain.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Amanda Borrelli, MPH, DPM	humepod@gmail.com	I/We have nothing to disclose	
Nader Ghobrial, DPM	humepod@gmail.com	I/We have nothing to disclose	
Vrunda Dalal, DPM	humepod@gmail.com	I/We have nothing to disclose	
Jason Hymowitz, MS DPM	humepod@gmail.com	I/We have nothing to disclose	
Disha Shah, DPM	humepod@gmail.com	I/We have nothing to disclose	
Chinenye Wachuku, DPM MBA MEng	humepod@gmail.com	I/We have nothing to disclose	
Jini Philip, DPM	humepod@gmail.com	I/We have nothing to disclose	
Shital Sharma DPM, FACFAS	humepod@gmail.com	I/We have nothing to disclose	

Title

Osteochondral Lesion of the Talus and Incidence of Concomitant Malalignment Requiring Surgical Intervention: A Case Series

Submit Date 08/29/2023

Correspondent

Last Name: Breitenbach
 Full Name: Tori L Breitenbach, DPM, AACFAS Email: tori.breitenbach@outlook.com
 Practice/Company/Residency Program: Certified Foot And Ankle Specialists

Authors

Author 1: Tori L. Breitenbach, DPM, AACFAS Author 2: Ashley L. Bowles, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Osteochondral lesions of the talus (OLT) are a common pathology with many surgical treatment options. Recurrence of OLTs are typically due to malalignment typically in the rearfoot. This is malalignment typically due to flatfoot deformity especially with medial talar lesions. There is minimal literature published on the incidence and effects of malalignment on OLT surgical correction and minimal literature on the outcomes with concomitant correction of malalignment at time of OLT repair. Therefore the purpose of this series is to show outcomes when realignment occurs at the time of OLT repair.

Methodology

Procedures This is a case series of 11 patients that all underwent OLT repair with concomitant procedures to address malalignment to reduce the risk of recurrence and improve overall outcomes.

Results Patients underwent concomitant procedures ranging from gastrocnemius recession to complete flatfoot reconstruction. For the treatment of the OLT the procedures ranged from microfracture, microfracture with biocartilage, and OATS procedure. Of these patients at a year follow-up there was no recurrence and reported improvement in pain and return to activity.

Discussions Reviewing this case series helps demonstrate the incidence of concomitant deformities seen with osteochondral lesions. Malalignment has been shown to be the most common cause of recurrence or failure of OLT repairs. Therefore, in the initial OLT repair evaluation of deforming forces on the lesion should occur and plan to correct the deforming cause at time of OLT repair. This case series shows good outcomes following OLT repair with addressing concomitant deformities.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tori L. Breitenbach, DPM, AACFAS	tori.breitenbach@outlook.com	I/We have nothing to disclose	
Ashley L. Bowles, DPM, FACFAS	abowles@certifiedfoot.com	I/We have nothing to disclose	

Title**Testosterone Supplementation to Potentiate Healing in the Diabetic Foot: A Case Study****Submit Date**

08/29/2023

Correspondent

Last Name: Breitenbach
 Full Name: Tori L Breitenbach, DPM, AACFAS Email: tori.breitenbach@outlook.com
 Practice/Company/Residency Program: Certified Foot and Ankle Specialists

Authors

Author 1: Tori L. Breitenbach, DPM, AACFAS Author 2: Laura B. Adler, DPM, AACFAS
 Author 3: Ashley L. Bowles, DPM, FACFAS, CWSP Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Testosterone levels and wound healing have been shown to have a correlation in recent animal studies due to it being an anabolic steroid. Studies have shown that men with diabetes have lower serum testosterone and supplementation aids in reversal of aspects of metabolic syndrome. The purpose of this case study is to present two patients with Charcot and associated diabetic foot ulcers found to have low testosterone who after supplementation healed their chronic wounds and reconstructions.

Methodology**Procedures**

Two diabetic males with multiple comorbidities, were suffering from chronic, non-healing lower extremity wounds. Patients received local wound care with no resolution. Testosterone levels were checked and found to be low. Both patients received supplementation of testosterone to reach normal testosterone levels with the help of their endocrinologist. Testosterone levels were re-evaluated every 3 months for maintenance.

Results

After testosterone supplementation, there was noted improvement in wound size and appearance. Both patients were able to heal their chronic lower extremity wounds and noted improvement in bony union of Charcot reconstructions.

Discussions

Wound healing is a complex process that requires multiple factors and phases to achieve 100% healing. Testosterone may improve wound healing through a variety of physiologic pathways as decreased levels can impede healing. 30-50% of men with diabetes have been recognized as testosterone deficient. Testosterone is an anabolic hormone and has been shown to have positive effects on vascular function, wound healing, inflammation through improved protein synthesis. This case study demonstrates the use of obtaining testosterone levels in the diabetic foot patient to optimize healing potential.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tori L. Breitenbach, DPM, AACFAS	tori.breitenbach@outlook.com	I/We have nothing to disclose	
Laura B. Adler, DPM, AACFAS	laura.adler24@gmail.com	I/We have nothing to disclose	
Ashley L. Bowles, DPM, FACFAS, CWSP	abowles@certifiedfoot.com	I/We have nothing to disclose	

Title **An analysis of long-term post-operative outcomes following flexor to extensor tendon transfer for curly toe deformity in a pediatric population**

Submit Date 08/29/2023

Correspondent

Last Name: Wood
 Full Name: Meaghan C Wood, DPM Email: mwood2327@gmail.com
 Practice/Company/Residency Program: Loyola University Medical Center

Authors

Author 1: Meaghan C Wood, DPM Author 2: Bryn J Laubacher, DPM FACFAS
 Author 3: Edwin J Harris, DPM FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Curly-toe deformity is a common congenital condition seen within the pediatric population characterized by flexion, varus rotation, and underlapping of the lesser toes due to deforming forces of the flexor tendons. Surgical treatment is considered for moderate to severe deformities following the age of six. Currently, there is not a large volume of literature on surgical correction for this condition and therefore the purpose of our research was to evaluate the long-term outcomes of this procedure on a pediatric population.

Methodology

Procedures This was a retrospective investigation of pediatric patients who had undergone elective flexor to extensor tendon transfers for curly toe deformities by a single surgeon at a single facility that were identified a 15-year period with a minimum of 4 months of follow-up. Baseline demographics and clinical findings were examined as well as postoperative objective findings and complications.

Results There were 35 patients total identified. A significant majority of patients were pain-free through course of follow-up of at least four months. There was one patient who underwent wound dehiscence, two patients requiring additional corrective procedures, six patients with concern of post-operative stiffness.

Discussions Our study demonstrates favorable results in the correction of curly toe deformity via flexor to extensor tendon transfer in the pediatric population with good long-term outcomes and minimal complications. Flexor to extensor tendon transfer should be considered a good surgical option for correction of the moderate to severe forms of this congenital deformity.

Format Case Study

Case Rpt Followup 54

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Meaghan C Wood, DPM	mwood2327@gmail.com	I/We have nothing to disclose	
Bryn J Laubacher, DPM FACFAS	bryn.laubacher@lumc.edu	I/We have nothing to disclose	
Edwin J Harris, DPM FACFAS	eharri1@lumc.edu	I/We have nothing to disclose	

Title

Saddle Pulmonary Embolism and Deep Vein Thrombosis Following Foot and Ankle Surgery While On Prophylactic Lovenox, A Case Report

Submit Date 08/29/2023

Correspondent

Last Name: Judickas
 Full Name: Sara
 Practice/Company/Residency Program: OhioHealth Grant Medical Center

Email: sara.judickas@ohiohealth.com

Authors

Author 1: Sara Judickas, DPM
 Author 2: Joseph Brown, DPM
 Author 3: Robert Mendicino, DPM, ACFAS
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

Venothromboembolic (VTE) events are considered rare in foot and ankle surgery. The purpose of this case report is to highlight the importance of VTE prophylaxis postoperatively in certain patient populations, specifically those on hormone modulating medications. Additionally, this report emphasizes the importance of promptly working up a VTE, even if the patient is currently on prophylactic anticoagulation.

Methodology

Procedures

A 40-year-old male on testosterone replacement therapy underwent open reduction internal fixation (ORIF) of Lisfranc ligament disruption. He subsequently developed an acute deep vein thrombosis (DVT) and pulmonary embolism (PE) one month postoperatively despite having early ROM at 1 week postoperatively, lack of DVT symptoms, antiembolic stockings, and still on prophylactic Lovenox. Duplex venous ultrasound revealed multiple venous thrombi to the left lower extremity. CT imaging revealed large saddle PE. Emergent thrombectomy was performed. Clinical photographs demonstrate large gross saddle pulmonary thrombus specimen.

Results

Patient remains full weight bearing with no recurrence of DVT or PE.

Discussions

Patients undergoing foot and ankle surgery are at lower risk for development of VTE. However, patients should be screened for independent risk factors, such as the use of hormone replacement therapy, when determining appropriate VTE prophylaxis. Clinicians should have a low threshold to work up patients if there is suspicion for VTE. Chemical prophylaxis does not preclude VTE, as it is physiologically possible to develop VTE while on concurrent anticoagulation.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sara Judickas, DPM	sara.judickas@ohiohealth.com	I/We have nothing to disclose	
Joseph Brown, DPM	joey.brown2@ohiohealth.com	I/We have nothing to disclose	
Robert Mendicino, DPM, ACFAS	rmendicino@faiwp.com	I/We have nothing to disclose	

Title A Case Report: Bilateral Achilles tendon partial tear treated surgically with tendon lengthening and application of graft leading to unilateral pain secondary to graft size and style placement

Submit Date 08/29/2023

Correspondent

Last Name: Srinivas
Full Name: Sindhu Email: sind.srinivas@gmail.com
Practice/Company/Residency Program: Atlanta VA Medical Center

Authors

Author 1: Sindhu Srinivas, DPM, MS Author 2: Kristin Rizzo, DPM. FACFAS
Author 3: Jaclyn, D. Wessinger, DPM Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose

Achilles ruptures remain controversial regarding treatment modalities. This report details a unique presentation of postoperative pain following bilateral Achilles tears receiving debridement, lengthening and graft application. A smaller graft was placed in segmental fashion to the right Achilles tendon which may have prompted continual postoperative discomfort. Current literature does not cite incidence of increased pain following dissimilar graft size and application technique.

Methodology

Procedures

A 64 year old male patient presented with worsening discomfort to the bilateral posterior ankles. Following confirmation on advanced imaging, the patient opted for debridement, repair, lengthening and application of graft to the Achilles tendon with the left to be performed first.

Results

Magnetic resonance imaging (MRI) revealed a partial tear to the left Achilles approximately 5 cm from the insertion. The right Achilles tendon incurred a partial tear 4 cm from its insertion. Bilateral intraoperative examination yielded bulging with no appreciable tears. Bilateral tendons were lengthened utilizing the Hoke procedure. To the left, 6x6 cm graft was placed to enhance gliding and mitigate adhesions. To the right, a 1.6 cm disc of graft was placed in segments. The patient continues to have discomfort to the right Achilles postoperatively and cannot tolerate transition to regular shoe gear.

Discussions

In the current report, the patient received similar bilateral intervention and post-operative course despite graft size and segmental placement to the right Achilles tendon. Use of smaller graft applied in a segmental fashion may have perpetuated new adhesions and tendon fibrosis. The patient may require physical therapy or repeat debridement to assuage this continual discomfort.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sindhu Srinivas, DPM, MS	sind.srinivas@gmail.com	I/We have nothing to disclose	
Kristin Rizzo, DPM. FACFAS	kristin.rizzo@va.gov	I/We have nothing to disclose	
Jaclyn, D, Wessinger, DPM	jdwessinger@geisinger.edu	I/We have nothing to disclose	

Title

Surgical Treatment and Navigation of Complications with Progressive Collapsing Foot Deformity

Submit Date

08/29/2023

Correspondent

Last Name:	Isac		
Full Name:	Marina	Email:	misac019@gmail.com
Practice/Company/Residency Program:			Ascension St. Mary

Authors

Author 1:	Marina Isac, DPM	Author 2:	Xheni Gjergo, DPM
Author 3:	Michael Maghrabi, DPM, ABPS	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose

We examine the post-operative outcomes of a double arthrodesis in a case of progressive collapsing foot deformity (PCFD). We hope to provide the advantages and disadvantages of a double vs triple arthrodesis in PCFD.

Methodology

Procedures

PCFD is a debilitating condition defined by loss of the medial longitudinal arch with the posterior tibial tendon offering the largest contribution. As the foot becomes more rigid, the main treatment to date is arthrodesis. In this case report, we describe a 64 year old female with PCFD with arthropathy of the midfoot and hindfoot. Clinically, the patient has pain with limited ROM at the subtalar joint (STJ). Radiographs showed diffuse arthropathy of the transverse tarsal joints. Initially, talonavicular and calcaneocuboid joint arthrodesis was performed with success. Approximately eight months post-surgical correction, she developed pain to the STJ and to the anterior aspect of her ankle joint. Subsequent MRI revealed STJ arthritis and an osteochondral lesion (OCD) of the talus.

Results

Patient developed STJ arthritis and OCD lesion following initial double midfoot arthrodesis, warranting a triple arthrodesis and OCD repair. Patient remains pain free with no hardware complications at one year follow-up.

Discussions

Arthrodesis is the only effective treatment for PCFD once the deformity has become rigid. This case study presents the effects of double vs. triple arthrodesis. In a study by Harper and Tisdal, only 30% of the STJ motion was retained following a simulated double arthrodesis. This deformity is a challenging condition that requires thorough surgical planning and preparation for potential complications that may arise.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Marina Isac, DPM	misac019@gmail.com	I/We have nothing to disclose	
Xheni Gjergo, DPM	xheni.gjergo@ascension.org	I/We have nothing to disclose	
Michael Maghrabi, DPM, ABPS	michael.maghrabi@ascension.org	I/We have nothing to disclose	

Title

Use of Gait Training and Computerized Gait Analysis in Reconstructive Pes Planovalgus Surgery

Submit Date

08/29/2023

Correspondent

Last Name: Kimmel
 Full Name: Megan F Kimmel DPM Email: kimmelm4@upmc.edu
 Practice/Company/Residency Program: UPMC Harrisburg Podiatry Residency

Authors

Author 1: Megan F Kimmel, DPM Author 2: Sushila L Kabadi, DPM
 Author 3: Keri Tkatch, DPT Author 4: Daniel Yarmel, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Pes planovalgus deformities with associated apropulsive gait patterns are often encountered in the pediatric population and are managed conservatively or surgically. We hypothesized that computerized gait analysis and gait training are useful tools to accompany reconstructive flat foot surgery. They can assist patients in developing a functional gait pattern as well as educate them on post operative outcomes.

Methodology

Procedures

This case study follows a healthy 13-year-old male who was first evaluated in 2015 due to a painful right flatfoot deformity. The patient underwent a flatfoot reconstruction in 2021. Post-operatively he underwent physical therapy, with gait training, computerized gait analysis and pressure mapping. Limited research has been published on this topic, but computerized gait analysis is able to provide objective data when evaluating pes planovalgus foot types.

Results

Post-operatively and following gait training with physical therapy, a heel to toe gait pattern was noted, as well as an improved symmetrical distribution of forces. Gait analysis was able to quantify the functional impact of the reconstructive surgery for the patient.

Discussions

While some studies have shown the use of gait training and computerized gait analysis as objective metrics in evaluation of flatfeet, their role in patient education and post operative outcomes is not well documented. This case demonstrates how gait training, computerized gait analysis, and comanagement with physical therapy can be used as adjunctive tools to surgical intervention. It provides the surgeon with quantitative measurements, aids in post operative recovery, and is a tool to educate patients on their post operative progression and outcomes.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Megan F Kimmel, DPM	kimmelm4@upmc.edu	I/We have nothing to disclose	
Sushila L Kabadi, DPM	shila.kabadi@gmail.com	I/We have nothing to disclose	
Keri Tkatch, DPT	keri.tkatch@selectphysicaltherapy.com	I/We have nothing to disclose	
Daniel Yarmel, DPM, FACFAS	footdoc1@gmail.com	I/We have nothing to disclose	

Title

A Rare Case of an Angioleiomyoma in a 50-Year-Old Male

Submit Date

08/30/2023

Correspondent

Last Name: Kimmel

Full Name: Megan F Kimmel DPM

Email: kimmelm4@upmc.edu

Practice/Company/Residency Program:

UPMC Harrisburg Podiatry Residency

Authors

Author 1: Megan F Kimmel, DPM

Author 2: Allan Grossman, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Angioleiomyomas are rare, benign soft tissue tumors that are most commonly found in the lower extremities of middle-aged women. They commonly arise from the tunica media of subcutaneous vessels, and are typically slow growing.

Methodology

Procedures

This case study follows a 50-year-old male with a painful, hard, encapsulated, soft tissue mass to the medial aspect of the right ankle, that had been present around 10 years. Due to the size of the mass, it caused irritation in shoes, as well as increased pressure to the area. Previous aspiration of the mass was unsuccessful. On MRI it was noted that there was a 5.4 x 4.4 x 3.5 cm heterogeneous enhancing mass along the medial ankle without destruction of the underlying structures. The mass was surgically excised. Limited research has been published on these tumors, however it is noted that it is rare for it to occur in this patient population.

Results

The mass was surgically resected and pathologic analysis confirmed the mass was an angioleiomyoma. Post-operatively the patient did not develop any paresthesia, hematoma, or loss of function.

Discussions

In current literature, the presence of an angioleiomyoma on the ankle of a middle-aged male is rare. They are mostly found in women, and account for approximately 0.2% of benign soft tissue tumors in the feet. This patient underwent surgical resection, and tolerated the procedure well.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Megan F Kimmel, DPM	kimmelm4@upmc.edu	I/We have nothing to disclose	
Allan Grossman, DPM, FACFAS	ateam116@gmail.com	I/We have nothing to disclose	

Title Treatment of Calcaneal Osteomyelitis via Silo Technique: A Case Series

Submit Date 08/30/2023

Correspondent Last Name: Warciak
Full Name: David Warciak, DPM
Practice/Company/Residency Program:

Email: sjhdavid.warciak@gmail.com
Ascension Saint Joseph Chicago

Authors Author 1: David Warciak, DPM
Author 2: Remmy Owor, DPM
Author 3: Ersta Ferryanto, DPM
Author 4: Alexander Mckanna, DPM, APWH
Author 5:
Author 6:
Author 7:
Author 8:

Purpose We describe a case series using intraosseous antibiotic delivery, the Silo Technique, as an effective procedure for the treatment of calcaneal osteomyelitis while allowing for reduced bone resection and enhanced local delivery of antibiotics.

Methodology

Procedures The Silo technique is a calcanectomy with antibiotic cement delivered via drilled bone tunnels within the calcaneal body. We retrospectively evaluated charts of all patients that underwent calcanectomies with Silo Technique between January 1, 2020 - August 1, 2022. We recorded antibiotic used, success with primary closure, comorbidities, complications, and follow up times. 5 patients underwent 6 partial calcanectomies with Silo technique for treatment of calcaneal osteomyelitis. All patients had heel ulcerations which were recalcitrant to conservative management with underlying osteomyelitis. Osteomyelitis was confirmed via radiographic evaluation and pathologic assessment.

Results All 5 patients, and 6 heel ulcers, healed successfully. 5 out of 6 wounds were successfully primarily closed, 1 required routine wound care for eventual closure. 1 wound recurrence was noted 15 months status post index procedure due to pathologic fracture eventually leading to a proximal amputation. There were no other complications noted at final follow-up time.

Discussions Calcaneal osteomyelitis is a highly morbid condition with limb loss risk. Balancing good functional outcomes and effective infection control is challenging. The silo technique is an effective method of local antibiotic delivery that may reduce the risk of amputation. Through intraosseous delivery, the antibiotic penetrates and is able to locally diffuse for at least 30 days.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include David Warciak, DPM; Remmy Owor, DPM; Ersta Ferryanto, DPM; and Alexander Mckanna, DPM, APWH.

Title **Minimal invasive forefoot reconstruction following recurrent pediatric hallux abducto valgus deformity after Lapidus**

Submit Date 08/31/2023

Correspondent
 Last Name: Cerda
 Full Name: Tiffany E. Cerda DPM, MS Email: Tiffanycerda93@gmail.com
 Practice/Company/Residency Program: HCA Florida Mercy Hospital and Barry University

Authors
 Author 1: Tiffany Cerda DPM, MS Author 2: Luis Rodriguez Anaya, DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose To inform physicians on the effects of recurrent pediatric hallux abducto valgus deformity. Hallux valgus is a common condition and has been reported to affect up to 36% of the pediatric population. Pediatric bunion deformity may recur at a rate as high as 91%. Utilizing Minimally incisional surgery techniques patients are able to return to activity at a faster rate.

Methodology

Procedures This case represents a 15 year old athletic female who presented to clinic with severe hallux abducto valgus deformity. Initial presentation demonstrated pain on palpation to medial bump, hypermobility of first ray and intermetatarsal angle greater than 20 degrees. After careful consideration of patients radiographic findings it was agreed that a Lapidus procedure would address the triplanar severe deformity which healed initially with out incident. Within six months the bunion deformity recurred. After reoccurrence of the deformity, MIS surgery to address the distal metatarsal and hallux was decide adjunct to first metatarsal cuneiform arthrodesis.

Results This minimally invasive protocol improved the patient's condition substantially. MIS allowed the patient to rapidly regain full weight-bearing capability and achieved appropriate range of motion and muscle strength. Ultimately, the patient attained functional recovery with a painless satisfactory gait.

Discussions Pediatric deformity correction can prove to be difficult, having a multifactorial approach to deformity correction insures that the patient will have the best outcome. This patient bunion deformity did not maintain correction with powerful first metatarsal cuneiform arthrodesis but instead required adjunct of first metatarsal distal osteotomy and proximal phalanx osteotomy.

Format Case Study

Case Rpt Followup 16

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tiffany Cerda DPM, MS	tiffanycerda93@gmail.com	I/We have nothing to disclose	
Luis Rodriguez Anaya, DPM	LARodriguez@barry.edu	I/We have nothing to disclose	

Title Novel Approach to Talar En Bloc Reconstruction; Is There a Size Limit?**Submit Date** 08/30/2023**Correspondent**

Last Name: Vyas
 Full Name: Riya Email: riya.vyas15@gmail.com
 Practice/Company/Residency Program: Mercy St. Vincent Medical Center

Authors

Author 1: Riya Vyas, DPM Author 2: Junaid Khazi, DPM
 Author 3: Jian Zeng, DPM Author 4: Kyle McKray Smith, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Talar en bloc reconstruction is a reliable option for severe osteochondral defects, but is often limited by size restrictions. In our study we used a large allograft to cover a talar OCD about 1/3 of the size of talus in a young patient.**Methodology****Procedures**

Traditional talar en bloc involves harvesting a matching-sized talus from a cadaveric donor to replace the damaged talus. Usually, talar allograft transplant is done on smaller lesions, due to technical challenges and increased complications in larger grafts. This study discusses the option for allograft en bloc reconstruction involving the entire medial talar shoulder with complex anatomic contouring. Patient is a 47 year old male who underwent multiple ankle surgeries from outside surgeons. MRI of the ankle showed severe arthritis and large OCD involving nearly the entire medial talus. The donor allograft was mapped to match the recipient size and anatomy and fixated with hardware.

Results Anatomic alignment of tibiotalar joint restored, allograft was incorporated well into talus with resolution of pain and return to normal activity.**Discussions**

In patients with post-traumatic arthritis and OCDs of the ankle, often treatment is arthrodesis of the joint, resulting in stiffness and lack of motion. A larger lesion however can be treated with allograft en bloc reconstruction and is a viable limb salvage option, especially in younger patients. The use of large allograft provided us a solution for a significant osteochondral defect, surpassing the size limitations of en blocs and showcasing the potential of this technique in addressing severe talar injuries.

Format Case Study**Case Rpt Followup** 12**Student Club** Not a Student Club Poster**Classification** Rearfoot and Ankle Reconstruction**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Riya Vyas, DPM	riya.vyas15@gmail.com	I/We have nothing to disclose	
Junaid Khazi, DPM	jkhazi@gmail.com	I/We have nothing to disclose	
Jian Zeng, DPM	jzeng@mercy.com	I/We have nothing to disclose	
Kyle McKray Smith, DPM	kmckraycpm12@gmail.com	I/We have nothing to disclose	

Title

Unique Perspective Case Report from the Author as the Patient - 16-month follow-up of the OATS procedure for Second Metatarsal Freiberg's infraction

Submit Date 08/30/2023

Correspondent

Last Name: Gunter
 Full Name: Tobee, P, Gunter, DPM Email: tobee.gunter@gmail.com
 Practice/Company/Residency Program: Intermountain Health

Authors

Author 1: Tobee Gunter, DPM PGY-2 Author 2: Ryan Rigby, DPM FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The osteochondral autologous transplantation (OATs) surgery is gaining popularity for the treatment of Stage III-IV Freiberg's disease. The aim of this study is to detail the one-year efficacy of the OATs treatment for Stage III & IV Freiberg's disease with graft harvested from ipsilateral non-articulating talus. This case study is unique as it is authored by the patient who is a current podiatric medical resident.

Methodology

Procedures

Author's personal account 1.5 years s/p OATs procedure augmented by bone marrow aspirate concentrate for painful Freiberg's infraction. Staging of 2nd metatarsal head demonstrated by many imaging modalities. Surgical intervention performed by a fellowship-trained Doctor of Podiatric Medicine. Graft incorporation verified by serial radiographs. The assistance of a splint, CAM boot offloading, bone stimulation, plantarflexory night splint, and carbon fiber plate footwear was used in the postoperative period. Beyond 6 months patient was running up to 7 miles a day.

Results

Successful procedure and bony consolidation. Nearly complete improvement in VAS pain and FAOS scores at the 16-month mark with the patient able to return to normal activities.

Discussions

The OATs procedure utilizing autologous talar graft can be a reliable procedure for maintenance of lifestyle and joint integrity. The patient had a favorable outcome 16 months post-operatively with graft incorporation, improved pain and function scores, adequate motion, and restoration of 2nd metatarsal joint space. Minor complications of stiffness and minimal donor site pain. While larger long-term studies are recommended, clinicians should consider more joint-preserving treatment in smaller degenerative joints.

Format

Case Study

Case Rpt Followup

16

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tobee Gunter, DPM PGY-2	tobee.gunter@gmail.com	I/We have nothing to disclose	
Ryan Rigby, DPM FACFAS	ryan.rigby@imail.org	Consultant/Advisor/Speaker (List all affiliations)	Arthrex

Title **Poorly- Differentiated Invasive Squamous Cell Carcinoma in the Foot: A Case Study of an Atypical Presentation in the Toe**

Submit Date 08/30/2023

Correspondent

Last Name:	Patel	Email:	patelroshni95@gmail.com
Full Name:	Roshni B	Practice/Company/Residency Program:	HCA Florida Westside Hospital

Authors

Author 1:	Roshni B. Patel, DPM	Author 2:	Omar Rashid, MD, JD, FACS, FSSO, DABS
Author 3:		Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Osteomyelitis, infections, chronic wounds, and cellulitis are at the forefront of what podiatrists see and treat. The purpose of this report is to identify the risk factors and presentations of squamous cell carcinoma (SCC) that can easily be masked under chronic wounds or a sequela of trauma or infection. The goal is to establish the high index of suspicion of malignancy physicians should carry when dealing with chronic, non healing wounds.

Methodology

Procedures 86F diagnosed with invasive poorly differentiated SCC to dorsal aspect of Right second toe with history of extensive skin damage and PMH of skin cancer. Onset of the wound was progressive with associated pain when ambulating and daily tasks. The patient underwent radical resection of SCC of the right dorsal second toe with ovine rumen tissue mesh placement. Following negative margin results, a full thickness skin grafting from the ipsilateral thigh took place.

Results Fully healed, functional second toe following invasive poorly differentiated squamous cell carcinoma with no metastasis.

Discussions Squamous cell carcinoma is the second most common skin cancer secondary to sun exposure and in previous areas of chronic wounds, burn scars, and following radionecrosis. Several treatment options exist to eradicate squamous cell carcinoma; however, if left untreated, these poorly differentiated tumors have a 3-9% rate of metastasis to local lymph nodes, distant tissues and organs and can result in mortality. As this case report demonstrates, a high index of suspicion and taking the appropriate precautions to rule out a malignant process can increase patient safety and reduce mortality.

Format Case Study

Case Rpt Followup 14

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Roshni B. Patel, DPM	patelroshni95@gmail.com	I/We have nothing to disclose	
Omar Rashid, MD, JD, FACS, FSSO, DABS	orashid@femwell.com	I/We have nothing to disclose	

Title

Revisional Tibiotalocalcaneal Arthrodesis with Cage Following Atrophic Nonunion of the Subtalar Joint

Submit Date

08/30/2023

Correspondent

Last Name: Nolan
 Full Name: Kimberly Nolan, DPM Email: knolan11@kent.edu
 Practice/Company/Residency Program: Northwest Illinois Foot and Ankle Fellowship

Authors

Author 1: Kimberly Nolan, DPM Author 2: Doug Pacaccio, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of the case study is to evaluate the effectiveness of tibiotalocalcaneal arthrodesis with bone cage due to a painful nonunion of the subtalar joint with a critical size defect.

Methodology

Procedures

A patient with atrophic nonunion of the subtalar joint following a TTC arthrodesis with an intramedullary nail underwent a revisional TTC arthrodesis with bone cage. This was a staged procedure which initially included debridement of affected bone with application of external fixator and a supramalleolar osteotomy to correct the residual deformity. Followed by removal of the external fixator 3 months later. The final procedure consisted of a bone cage and STJ arthrodesis with a nail.

Results

A functional limb with minimal limb length discrepancy that went onto a union of the subtalar joint.

Discussions

There are limited studies looking at the efficacy of using a cage with TTC arthrodesis vs other methods to regain length in a deformity such as femoral head allograft. Ramhamadany 2021 suggests "The implant provides a strong mechanical structure resisting collapse and subsidence during the arthrodesis process". Historically femoral head allograft has been used to regain the length, but there is concern about reabsorption and subsidence over time with the graft.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kimberly Nolan, DPM	knolan11@kent.edu	I/We have nothing to disclose	
Doug Pacaccio, FACFAS	djpdpm.afas@gmail.com	Consultant/Advisor/Speaker (List all affiliations) Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Stryker, Merete, Enovis, Restor3d IPMA Board of Directors

Title **Custom Implantable Articulating 3rd Metatarsal Head for the Treatment of Severe Metatarsal Shortening Following Avascular Necrosis: A Case Report**

Submit Date 08/30/2023

Correspondent

Last Name:	Brandt	Email:	Mary.Brandt@ahn.org
Full Name:	Mary R. Brandt, DPM	The Western Pennsylvania Hospital, Division of Foot and Ankle Surgery	
Practice/Company/Residency Program:			

Authors

Author 1:	Mary R. Brandt, DPM	Author 2:	Scott D. Schleunes, DPM
Author 3:	Ryan L. McMillen, DPM, FACFAS	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose The impact of metatarsal shortening on forefoot loading has been long studied; however, the available treatment options can often be sparse. This case report documents the successful use of a custom articulating metatarsal head implant for the treatment of metatarsal shortening in the setting of avascular necrosis.

Methodology

Procedures A 39-year-old male presented with chronic left foot metatarsalgia pain. The patient underwent multiple neuroma resections in his early twenties. This was eventually complicated by third metatarsal head avascular necrosis. He subsequently underwent a third metatarsophalangeal joint arthroplasty followed by metatarsal head resections by outside providers. He developed pain sub first and fifth metatarsal heads with severe shortening of the third ray. The patient presented to us for another opinion and we developed a custom implant. We performed an excision of the remaining avascular bone with implantation of a custom articulating metatarsal head and associated tendon lengthening.

Results Upon follow-up there is continued restoration of metatarsal parabola and the implant remains intact without any signs of acute fracture dislocation. At the latest follow-up the patient reports no further pain to the plantar aspects of the first and fifth metatarsal heads; as well as restored length to his third ray.

Discussions Avascular necrosis is an unfortunate complication which can result in metatarsal shortening and concomitant disruption of the metatarsal parabola. Current treatment regimens range from adjacent metatarsal shortening to callus distraction. To our knowledge, we are one of the first to present a custom articulating implant to restore metatarsal length.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Mary R. Brandt, DPM	Mary.Brandt@ahn.org	I/We have nothing to disclose	
Scott D. Schleunes, DPM	sschleunespod@gmail.com	I/We have nothing to disclose	
Ryan L. McMillen, DPM, FACFAS	Ryan.McMillen@ahn.org	Consultant/Advisor/Speaker (List all affiliations)	Stryker, Vilex

Title Hexapod External Fixator for Correction of Midfoot Charcot Arthropathy**Submit Date** 08/30/2023**Correspondent**

Last Name: Nolan

Full Name: Kimberly Nolan, DPM

Email: knolan11@kent.edu

Practice/Company/Residency Program:

Northwest Illinois Foot and Ankle Fellowship

Authors

Author 1: Kimberly Nolan, DPM

Author 2: Douglas Pacaccio, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

A severe deformity of the midfoot in patient's with Charcot arthropathy can lead to debilitating dysfunction and chronic ulcerations. Achieving adequate reduction in this deformity can be challenging especially when factoring in comorbidities. This case series documents several cases of a midfoot Charcot undergoing a hexapod external fixator to obtain correction while evaluating the pre and postoperative angles.

Methodology**Procedures**

Patient's underwent a hexapod external fixator for midfoot Charcot arthropathy for deformity correction. Preoperative standard x-rays revealed significant deformity with Meary's angle, calcaneal inclination angle, and the hindfoot abduction angle.

Results

Patient's underwent a hexapod external fixator for correction of midfoot Charcot. There was significant improvement in the deformity following the removal of the external fixator, with most values within normal range following the procedure.

Discussions

Charcot arthropathy can be a debilitating deformity that can lead to functional difficulties along with limb threatening complications. Achieving and maintaining adequate reduction can prove difficult. In our case series, we compare Meary's angle, calcaneal inclination angle, and the hindfoot abduction angle before and after the hexapod external fixator. We found that most angles were within normal range following the procedure and up to at least one year following the final procedure.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kimberly Nolan, DPM	knolan11@kent.edu	I/We have nothing to disclose	
Douglas Pacaccio, DPM, FACFAS	djpdpm.afas@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker, Merete, Enovis, Restor3d
		Member of a medical publication or editorial governing board	IPMA Board of Directors

Title A Novel Case Study of an Eccrine Porocarcinoma of the Toe**Submit Date** 08/30/2023**Correspondent**

Last Name: Mahadai
 Full Name: Adena Mahadai, DPM Email: adena9170@yahoo.com
 Practice/Company/Residency Program: University of Cincinnati Medical Center

Authors

Author 1: Adena Mahadai, DPM Author 2: Bryce Yamat, DPM
 Author 3: Sameer Patel, MD Author 4: Suhail Masadeh, DPM FAFAS
 Author 5: Michael Liette, DPM Author 6:
 Author 7: Author 8:

Purpose To identify and bring recognition to a rare malignant soft tissue tumor that to our knowledge has never been reported as a primary, isolated tumor within soft tissues of the toe.**Methodology****Procedures**

Fifty-seven-year-old female undergoing soft tissue mass removal after appropriate laboratory workup, radiographs, and biopsy.

Results Primary eccrine porocarcinoma of the foot/ankle without evidence of metastases. No recurrence at this time.**Discussions** Eccrine porocarcinoma is a rare malignant tumor of eccrine sweat glands. It represents 0.005% of cutaneous epithelial neoplasms. When present they are aggressive tumors which are often highly invasive. The tumor most often found in elderly patients (> 60) on the head and neck or lower extremity. In the foot the lesion can often mimic other common pathologies, leading to misdiagnosis. They often present as a solitary firm, erythematous, violaceous, or skin colored papule, plaque, or nodule that is slow growing and may ulcerate. Diagnosis is often made using histologic and dermoscopic analysis. Wide local excision is the most common treatment. There is approximately a 20% chance of recurrence, 20% chance of metastases, and 60% chance of mortality with metastases.**Format** Case Study**Case Rpt Followup** 12**Student Club** Not a Student Club Poster**Classification** Soft Tissue/Tumor**Level of Evidence** Level V**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Adena Mahadai, DPM	mahadaaa@ucmail.uc.edu	I/We have nothing to disclose	
Bryce Yamat, DPM	yamatbr@ucmail.uc.edu	I/We have nothing to disclose	
Sameer Patel, MD	patel5se@ucmail.uc.edu	I/We have nothing to disclose	
Suhail Masadeh, DPM FAFAS	masadehsb@ucmail.uc.edu	I/We have nothing to disclose	
Michael Liette, DPM	lietteml@ucmail.uc.edu	I/We have nothing to disclose	

Title

Direct Deltoid Repair Versus Syndesmotic Repair Outcomes in Ankle Fractures With Deltoid Instability

Submit Date

08/30/2023

Correspondent

Last Name: Bruno
 Full Name: Richard
 Practice/Company/Residency Program: Eastern Virginia Medical School
 Email: richrbruno@gmail.com

Authors

Author 1: Richard R. Bruno, DPM, FACFAS
 Author 2: Jessica Lee, DPM
 Author 3: Marisa Mosier, DPM
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

The purpose of this study was to investigate the outcomes of syndesmotic versus deltoid repair in patients with ankle fracture trauma with deltoid instability at time of injury.

Methodology

Procedures

Literature reveals conflicting information on syndesmotic versus deltoid repair. Whitlock revealed similar functional and subjective outcomes in their patients receiving either or as a treatment option. In a study by Dabash, five studies with a total of 281 patients were reviewed with the determination a deltoid repair was not indicated definitively in ankle fracture treatments.

Results

Seventeen patients were included in the study with all patients having an ankle fracture with deltoid instability confirmed with stress examination radiographs and increased talar tilt. Eleven patients underwent direct deltoid repair while six patients received syndesmotic repair only. Intra-operative fluoroscopy was used to confirm improvement in stability with talar tilt within normal limits. Four of the six patients with syndesmotic repair went on to have deltoid instability and pain medially within six months of their repair procedure. All four patients went on to revision surgery to undergo deltoid repair. All eleven patients receiving the direct deltoid repair did not have recurrent pain or instability. Patients undergoing direct deltoid repair had greater AOFAS subjective scoring with all 11 patients scoring higher post-operatively than the syndesmotic cohort with improvement from pre-operative scores.

Discussions

Deltoid instability is better treated with direct deltoid repair. Syndesmotic repair alone was not sufficient in reproducing successful patient outcomes in our study with these patients often requiring revision and repair of the deltoid ligament.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Richard R. Bruno, DPM, FACFAS	richrbruno@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Kerecis
Jessica Lee, DPM	richrbruno@gmail.com	I/We have nothing to disclose	
Marisa Mosier, DPM	richrbruno@gmail.com	I/We have nothing to disclose	

Title

Rare presentation of a Spitzoid Nevus in an 11-year-old female: A Case Report

Submit Date

08/31/2023

Correspondent

Last Name: Brandt

Full Name: Mary R. Brandt, DPM

Email: Mary.Brandt@ahn.org

Practice/Company/Residency Program:

The Western Pennsylvania Hospital, Division of Foot and Ankle Surgery

Authors

Author 1: Mary R. Brandt, DPM

Author 2: Jonathan D. Nigro, DPM

Author 3: Nicki L. Nigro, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

A Spitz nevus is a melanocytic neoplasm that typically appears in childhood with features that make them difficult to distinguish from melanomas. We present a rare presentation of a digital lesion on an 11-year-old female.

Methodology

Procedures

An 11-year-old female presented to our office with an unknown red, papular lesion to the dorsal aspect of her right second toe measuring 1.0 x 1.0 x 0.5 cm. Treatments of both oral and topical steroids and antibiotics were unsuccessful. She underwent a shave biopsy which demonstrated a compound melanocytic neoplasm with spitzoid and atypical features. FISH results were negative. Full re-excision of the lesion was recommended.

Results

Pathology results following re-excision of the lesion were consistent with a spitzoid nevus with atypical features and negative margins. A full thickness skin graft was performed for closure. Due to the difficult location, margins remained close in proximity and the patient remains at risk for local recurrence. Lymph node biopsy was not recommended at the time. The patient is now three years out from re-excision of the lesion. The graft site remains well healed with no signs of recurrence. The patient follows up with pediatric dermatology on a yearly basis for TBSE.

Discussions

To this date the malignant potential of a Spitzoid nevus remains unclear. These lesions act benign but demonstrate clinical and pathologic behaviors similar to melanoma. Diagnosis is challenging and dermoscopy alone is not sufficient in differentiating the two. For that reason, it is important to be highly skeptical of similar unknown lesions in adolescents.

Format

Case Study

Case Rpt Followup

44

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Mary R. Brandt, DPM	Mary.Brandt@ahn.org	I/We have nothing to disclose	
Jonathan D. Nigro, DPM	Jonathan.Nigro@ahn.org	I/We have nothing to disclose	
Nicki L. Nigro, DPM, FACFAS	nigro@mac.com	I/We have nothing to disclose	

Title

One Year Follow Up of a One Stage Free Fibular Flap for First Metatarsal Reconstruction

Submit Date

08/30/2023

Correspondent

Last Name: Naveed
 Full Name: Anooshay Naveed, DPM Email: a.naveed1504@gmail.com
 Practice/Company/Residency Program: Detroit Medical Center

Authors

Author 1: Anooshay Naveed, DPM Author 2: Yara Karam, DPM
 Author 3: Brian G. Kissel, DPM, MBA, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Although amputation is an option for severely comminuted metatarsal fractures, first-ray defects can lead to altered biomechanics and metatarsalgia. There are a variety of interventions to treat bony defects of the foot, with vascularized fibular free flap being a viable option for the reconstruction of large bony defects. In this study, we present one-year postoperative outcomes of fibular osteocutaneous flap used for first metatarsal reconstruction.

Methodology

Procedures

Studies have shown that one-stage reconstruction, with simultaneous bone reconstruction and soft tissue coverage, leads to decreased postoperative complications and accelerated osseous union. This case study presents a 51-year-old male with medical history of May-Thurner Syndrome, venous stenting, tobacco use, and previously sustained gunshot wound resulting in significant injury to his right foot. He subsequently developed a nonunion and avascular bone to the 1st metatarsal. Pre-operatively patient had pain with ambulation. Bilateral 3D CT scans were obtained for pre-operative planning. The patient underwent first metatarsal reconstruction using fibular osteocutaneous flap harvest from the contralateral side and 1st metatarsophalangeal and tarsometatarsal joint fusion.

Results

Bony consolidation noted across 1st metatarsophalangeal and tarsometatarsal joint fusion with viable flap. Patient returned to baseline activities and pain-free ambulation within 1 year.

Discussions

Medial column motion is important for normal function of the foot and ankle. First ray insufficiency may result in midfoot collapse, lesser metatarsal overload, and arthrosis. In instances where the first metatarsal is severely injured, fibular osteocutaneous flap is a viable treatment option for first metatarsal reconstruction, resulting in restoration of function.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Anooshay Naveed, DPM	a.naveed1504@gmail.com	I/We have nothing to disclose	
Yara Karam, DPM	ykaram@kent.edu	I/We have nothing to disclose	
Brian G. Kissel, DPM, MBA, FACFAS	kisselbg@gmail.com	I/We have nothing to disclose	

Title

Angioleiomyoma in the ankle mimicking a schwannoma: a case report and review of literature

Submit Date 08/30/2023

Correspondent

Last Name: Akbar
 Full Name: Junaid Email: Jakbar@northwell.edu
 Practice/Company/Residency Program: Lenox Hill Hospital Podiatric Residency

Authors

Author 1: Stuart Katchis MD Author 2: Junaid Akbar, DPM
 Author 3: Jonathan Gabor, MD Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Angioleiomyomas are rare benign tumors of the tunica media of smooth muscle layer of blood vessels. Though often asymptomatic, they may cause neuropathic compression syndrome due to space occupying mass effect. There is a wide differential diagnosis, with ganglion cysts and peripheral nerve sheath tumors (e.g. schwannoma) being most common. We present a case study of a patient that presented with a solitary painful mass of the ankle, which was surgically excised and confirmed to be angioleiomyoma. By adding to the body of literature on angioleiomyomas of the foot and ankle, this report may aid in the diagnosis of this condition in the future.

Methodology

Procedures

A single case report of worsening ankle mass with associated neuropathic pain. Benign radiographs but MRI final read as schwannoma. Upon surgical excision and histopathological analysis, the mass confirmed to be an angioleiomyoma. Case of clinical significance due to non-specific presentation and MRI read as schwannoma.

Results

Histopathological analysis confirming presence of angioleiomyoma.

Discussions

Angioleiomyoma is a rare soft tissue benign tumor that can present with multiple nonspecific clinical findings. There is no single imaging modality that can be used to diagnose an angioleiomyoma but can be used to aid in narrowing the potential differential diagnosis. T2 MRI findings consistent with branching hyperintensities can be considered characteristic of angioleiomyomas. Surgical excision provides relief of symptoms and histopathology analysis is the gold standard for diagnosis. Angioleiomyoma should be considered when evaluating soft tissue masses of the lower extremities that present with neuropathic pain.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Stuart Katchis MD	skatchis@northwell.edu	I/We have nothing to disclose	
Junaid Akbar, DPM	jakbar@northwell.edu	I/We have nothing to disclose	
Jonathan Gabor, MD	jgabor@northwell.edu	I/We have nothing to disclose	

Title

The Masquelet technique as a method for limb salvage in talar avascular necrosis

Submit Date

08/30/2023

Correspondent

Last Name: Benge-Shea
 Full Name: Kiera M. Benge-Shea, DPM, AACFAS Email: kiera.benge@gmail.com
 Practice/Company/Residency Program: The Center for Advanced Foot and Ankle Surgery

Authors

Author 1: Kiera M. Benge-Shea, DPM, AACFAS Author 2: Jesse R. Wolfe, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The Masquelet technique has been utilized as a method for limb salvage and reconstruction following segmental bone loss. It is the utilization of a PMMA spacer with frame stabilization to facilitate the formation of a protective vascularized membrane to optimize subsequent bone block arthrodesis. This case study documents the utilization of the Masquelet technique in a patient with a history of chronic osteomyelitis, talar avascular necrosis (AVN), and varus instability.

Methodology

68 year old female underwent staged reconstruction of significant hindfoot deformity with Masquelet techniques.

Procedures

Results

Technique allowed for successful hindfoot reconstruction allowing for restoration of functionality in a limb that was otherwise being considered for proximal amputation.

Discussions

The Masquelet technique is reliant upon an induced vascular membrane to promote angiogenesis and osteogenesis to fusion sites which prevents graft resorption and loss of height. The greatest risk to the success of this procedure is the persistence of infection which can compromise the induced membrane and lead to subsequent failure of the bone graft. This patient, with a history of chronic osteomyelitis, there was concern of possible contamination which was accounted for in the resection and biopsy of all bones in the hindfoot. This staged reconstruction allowed for the return of functionality of a limb that was otherwise being considered for proximal amputation due to the degree of deformity. We advise that the Masquelet technique is a viable option for reconstruction in patients with loss of bone due to AVN.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kiera M. Benge-Shea, DPM, AACFAS	kiera.benge@gmail.com	I/We have nothing to disclose	
Jesse R. Wolfe, DPM, FACFAS	jwolvedpm@gmail.com	Consultant/Advisor/Speaker (List all affiliations) Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Nvision Biomedical, Enovis Board Member, Missouri Podiatric Medical Association

Title

Decompression of the Tarsal Canal with Distal Tarsal Tunnel Release with and without a Plantar Fasciotomy: A Case Series

Submit Date

08/30/2023

Correspondent

Last Name: Webb

Full Name: Brady, M, Webb, DPM

Email: bradymwebb71@yahoo.com

Practice/Company/Residency Program:

Rochester General Hospital

Authors

Author 1: Juan, A, Castillo, DPM

Author 2: Brady, M, Webb, DPM

Author 3: Paul, A, Stasko, DPM, AACFAS

Author 4: Peter, M, Stasko, DPM, AACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Tarsal tunnel syndrome (TTS) involves the entrapment of the posterior tibial nerve or its branches within its tunnel beneath the flexor retinaculum on the medial side of the ankle. Our aim is to assess the outcomes of surgical interventions for TTS with a tarsal tunnel release alone and a tarsal tunnel release plus an adjunctive procedure involving the plantar fascia.

Methodology

Procedures

Five patients and six feet undergoing a tarsal tunnel release with or without a second procedure involving the plantar fascia, ranging from a fasciotomy to fasciectomy. All patients had at least one year of follow up. Preoperative and postoperative VAS scores were analyzed along with the persistence of paresthesia and numbness postoperatively at one year of follow up were recorded.

Results

The three patients that had a tarsal tunnel release plus a plantar fascia procedure had an average VAS score of 5 (n=3) preoperatively and 0.67 (n=3) post operatively (87% reduction) with one patient with persistent numbness after one year. Whereas, the three patients that received only a tarsal tunnel release had a preoperative VAS score of 4 (n=3) and 0.67 (n=3) postoperatively (83% reduction) with one patient with persistence of paresthesia after one year.

Discussions

No statistically significant difference was appreciated between either group in evaluation of VAS score and presence of paresthesia or numbness. Our data does not support that the secondary procedures such as a plantar fasciotomies do not improve overall patient outcomes.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Neurological/Peripheral Nerve Disorders

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Juan, A, Castillo, DPM	castillojuan2196@gmail.com	I/We have nothing to disclose	
Brady, M, Webb, DPM	bradymwebb71@yahoo.com	I/We have nothing to disclose	
Paul, A, Stasko, DPM, AACFAS	paul.a.stasko@gmail.com	I/We have nothing to disclose	
Peter, M, Stasko, DPM, AACFAS	pmstasko25@gmail.com	I/We have nothing to disclose	

Title **Kirschner Wire Fixation for First Metatarsophalangeal Joint Arthrodesis in Patients with Poor Bone Quality**

Submit Date 08/30/2023

Correspondent

Last Name:	Mah	Email:	cmah@nespecialists.com
Full Name:	Clifford Mah, DPM	Northwest Extremity Specialists (Assistant Director of Legacy Health Residency)	
Practice/Company/Residency Program:			

Authors

Author 1:	Benjamin Bogert, DPM	Author 2:	Sammar Abueledoleh, DPM
Author 3:	Clifford Mah, DPM	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose First metatarsophalangeal joint arthrodesis is one of the most commonly performed procedures in the foot. Many patients undergoing this procedure demonstrate poor bone quality, which can make fixation more challenging. In this case series, we aimed to evaluate the use of Kirschner wire fixation in this patient population.

Methodology

Procedures A retrospective review was performed of 15 consecutive cases in 14 patients at a single institution who underwent 1st metatarsophalangeal joint arthrodesis and possessed poor bone quality. This was determined by the intraoperative finding of soft/cystic bone along with one of the following conditions: osteoporosis/osteopenia, vitamin D deficiency, chronic kidney disease, thyroid disease, or long-term oral steroid therapy use. Union rate, complications, hardware removal rate, and operative time were evaluated.

Results Thirteen patients demonstrated radiographic union at the 6-week follow-up (14/15 feet, 93%). Three patients experienced minor complications (3/15 feet, 20%), one of which required early removal of the intramedullary pin (1/15 feet, 7%). Five patients underwent future reoperation for hardware removal (6/15 feet, 40%). Two separate constructs were utilized, including crossing wires with a single intramedullary wire (n=13) or crossing wires with two intramedullary wires (n=2). When isolated fusions were performed (n=7), the mean procedure time was 51 minutes.

Discussions Many different fixation constructs are employed when fusing the first metatarsophalangeal joint. Traditionally, there is a tendency to include more hardware to stabilize the arthrodesis site, when poor bone quality is encountered or expected. However, our case series demonstrates that a simple fixation construct exists for these patients that serves as both a reliable, quick, and cost-effective alternative.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Benjamin Bogert, DPM	Cmah@nespecialists.com	I/We have nothing to disclose	
Sammar Abueledoleh, DPM	bcbogert@lhs.org	I/We have nothing to disclose	
Clifford Mah, DPM	abueldoleh@gmail.com	I/We have nothing to disclose	

Title **Traumatic Open Achilles Tendon Rupture in Pediatric Hockey Player: Case Study and Early Return to Sport**

Submit Date 08/30/2023

Correspondent Last Name: Garvin
Full Name: Justin Kim Garvin DPM
Practice/Company/Residency Program:
Email: garvinj@mlhs.org
MainLine Health

Authors Author 1: JUSTIN GARVIN, DPM
Author 2: Mark Capuzzi DPM, AACFAS
Author 3: Noah Kirshner DPM
Author 4: Tyler Minetola DPM
Author 5:
Author 6:
Author 7:
Author 8:

Purpose Acute Achilles ruptures secondary to sport injuries are well documented within the literature offering surgeons several protocols when choosing their operative and post operative management. Acute pediatric Achilles ruptures, however, are exceedingly rare leading to a lack of data to guide operative and post- operative treatment.

Methodology

Procedures 15 year old hockey player with complete tendon rupture secondary to laceration. MRI revealed a 3.41 cm rupture. Direct open repair performed with Krakow and Kessler techniques using 0-FiberWire. Patient splinted in equinus and is non-weight bearing. Week 2 patient placed in tall CAM walker with 3 heel lifts while remaining non-weight bearing. Patient slept in walker. Week 5 weight bearing as tolerated in CAM walker with 3 heel lifts. Patient removed one heel lift a week over 4 weeks until ankle in neutral position. Physical therapy initiated in week 7. Week 9 normal shoe with one wedge. Week 13 stiff soled support shoe, cleared for non-contact light skating activity. Week 17 patient had 95% extremity strength. Returned to hockey, no restrictions.

Results Return to sport in 17 weeks from Date of Initial Surgery

Discussions Immediate identification and repair of a pediatric acute Achilles rupture is vital to insure a quick return to sport. Open and Direct repair should be considered with pediatric patients. Aggressive and relatively early Physical therapy should be considered. The patient's plantarflexion should gradually be transitioned to the neutral position over several weeks. With this operative protocol our patient had a full return to sport in just under 4 months from date of initial injury.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Justin Garvin, Mark Capuzzi, Noah Kirshner, and Tyler Minetola.

Title

Rare Case of Bone Marrow Edema Syndrome in Bilateral Hindfoot and Midfoot

Submit Date

08/30/2023

Correspondent

Last Name: Adam
 Full Name: Abraham Z Adam DPM Email: abraham.z.adam@gmail.com
 Practice/Company/Residency Program: Henry Ford Macomb

Authors

Author 1: Abraham Z Adam DPM Author 2: Edmund Kowalchick DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Bone marrow edema syndrome (BMES) is a rare, self-limiting, debilitating condition of unclear etiology with no well-established treatment. Diagnosis can be established based on exclusion, with differential diagnoses including Chronic Regional Pain Syndrome (CRPS) and avascular necrosis (AVN). MRI imaging is unspecific however can illustrate marrow edema and osteonecrosis consistent with BMES. Presented is a rare case of bilateral BMES in the hindfoot and midfoot.

Methodology

Procedures

A 61-year-old female with history of psoriatic arthritis presented with right lower extremity pain in May 2022. Patient underwent right ankle MRI in June demonstrating active osteonecrosis with moderate marrow edema in anterior subtalar joint, and talus. Patient was placed in a CAM walker with bone stimulation. In August, patient reported resolution of right foot symptoms, with new left foot pain. She was immobilized and started on Medrol dose pack therapy. An MRI was notable for moderate marrow edema within the cuboid. Pain continued to persist in November, with repeat MRI showing decreasing marrow edema within cuboid, and acute marrow edema in cuneiforms, distal calcaneus, and 5th metatarsal. Evaluation by PM&R ruled out CRPS.

Results

Successful treatment with offloading, bone stimulation, steroid therapy, and PM&R consultation

Discussions

While first introduced by Hofmann et al in 2004, BMES continues to be challenging to diagnose and treat. Newer studies introduce bisphosphonates and Iloprost as possible treatment options for BMES. A high index of suspicion should be utilized alongside a multidisciplinary approach with advanced imaging to evaluate and manage BMES.

Format

Case Study

Case Rpt Followup

15

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Abraham Z Adam DPM	abraham.z.adam@gmail.com	I/We have nothing to disclose	
Edmund Kowalchick DPM	kowalche@gmail.com	I/We have nothing to disclose	

Title **Wide Resection of Recurrent Dermatofibrosarcoma Protuberans of the Right Hallux: A Case Study**

Submit Date 08/30/2023

Correspondent

Last Name: Moyer
 Full Name: Dustin J. Moyer, DPM Email: dustin.moyer@rochesterregional.org
 Practice/Company/Residency Program: Rochester General Hospital

Authors

Author 1: Dustin J. Moyer, DPM Author 2: Brady M. Webb, DPM
 Author 3: Anjni P. Patel, DPM Author 4: Kate A. Cryderman, DPM
 Author 5: Douglas A. Ring, DPM Author 6:
 Author 7: Author 8:

Purpose

A case report of recurrent Dermatofibrosarcoma Protuberans (DFSP) of the Right Foot. DFSP is exceptionally rare and a locally aggressive soft tissue sarcoma that arises from the dermal and subcutaneous layers of the skin. Misdiagnosis as a benign skin lesion is common thus accurate histopathological diagnosis is crucial for treatment and surgical planning.

Methodology

Procedures

We present a case of a 65 year old male diagnosed with DFSP of the right hallux that was treated with right hallux amputation with a 2 cm margin.

Results

Patient was initially seen for excision of lesion in 2020, where patient opted for excision of lesion rather than amputation. The DFSP returned and was re-evaluated in April of 2022. In July of 2023, a right hallux amputation was performed. Patient was followed at the 3 day, 17 day, 10 weeks, and 1 year post operatively. There continues to be no residual DFSP tissue identified at the surgical site.

Discussions

Due to the infiltrative behavior of DFSP, a common complication is local recurrence. Erdem et al propose that recurrence is due to incomplete removal of DFSP in regions of high recurrence. In this case, a wide excision of 2 cm margin was performed with hallux amputation and clean margin from 1st metatarsal head. Microscopic negative margins were obtained. Prioritizing at least 2 cm of wide excision with microscopic evidence of clean margin ensures the patient to have overall better prognosis for the future.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dustin J. Moyer, DPM	dustin.moyer@rochesterregional.org	I/We have nothing to disclose	
Brady M. Webb, DPM	brady.webb@rochesterregional.org	I/We have nothing to disclose	
Anjni P. Patel, DPM	anjni.patel@rochesterregional.org	I/We have nothing to disclose	
Kate A. Cryderman, DPM	kate.cryderman@rochesterregional.org	I/We have nothing to disclose	
Douglas A. Ring, DPM	douglas.ring@rochesterregional.org	I/We have nothing to disclose	

Title Complex Surgical Treatment in the setting of Charcot Neuroarthropathy**Submit Date** 08/31/2023

Correspondent

Last Name: Carr
 Full Name: Preston Email: prestoncarr25@gmail.com
 Practice/Company/Residency Program: Inova Fairfax Medical Center

Authors

Author 1: Preston Carr Author 2: Richard Derner
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Charcot neuroarthropathy and its progressive changes to the foot can be challenging and highly complicated to treat. The overall treatment to stabilize the foot can be a lengthy process. Studies report use of a wide range of approaches including soft tissue and osseous procedures, despite these attempts a large percentage may result in an amputation. This case study demonstrates the challenges in surgery regarding Charcot reconstruction and successful limb salvage.

Methodology

Procedures

52 y/o obese female with past medical history consistent with diabetes mellitus type II, hyperlipidemia, hypertension, gout, chronic kidney disease stage 4 and chronic pain issues presented to an outpatient office in early 2020 with concerns of right ankle pain and deformity. Patient was found to have severe Charcot changes to the hindfoot. She underwent several surgical procedures in an attempt to create a plantigrade foot. Unfortunately, this failed causing bone loss, requiring the final successful TTC fusion with cage implant arthrodesis.

Results

52 y/o obese female whom underwent custom cage implant as a limb salvage technique that led to a weight bearing limb with improved pain and function.

Discussions

Charcot Neuroarthropathy progression and deformity is a challenging pathology to treat surgically. Five year amputation frequencies have been reported up to 74%. Surgical algorithms for the treatment of Charcot are variable and rely on lower power literature support. Our case study represents a viable approach and construct for patients with this condition to recreate the plantigrade foot. Recent literature reports successful use of patient specific 3D implant for complex boney defects, deformities and arthrodesis procedures.

Format Case Study**Case Rpt Followup** 42**Student Club** Not a Student Club Poster**Classification** Rearfoot and Ankle Reconstruction**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Preston Carr	prestoncarr25@gmail.com	I/We have nothing to disclose	
Richard Derner	Richd87@me.com	I/We have nothing to disclose	

Title

3D Implant for the Reconstruction of the Midtarsal Joint following Septic Arthritis

Submit Date

08/30/2023

Correspondent

Last Name: Hu
 Full Name: Haoning Email: haoning.hu01@gmail.com
 Practice/Company/Residency Program: Medstar

Authors

Author 1: Haoning Hu Author 2: Alex Dang, DPM
 Author 3: Liliya Parkman, DPM Author 4: Paul Carroll, DPM, FACFAS
 Author 5: Rex Wei-Hung, MD, FACS Author 6: Griffin Van
 Author 7: Author 8:

Purpose

Septic arthritis is often an emergent surgical procedure including message arriving infected tissues in large bony resections. This presents a unique challenge to restore both functional and anatomical alignment. This case study documents one case of septic arthritis resection with 3D implant reconstruction and free flap.

Methodology

Procedures

A 61-year-old female with pmh of diabetes presented with acute inflammation, erythema and swelling over the midfoot region after received corticosteroid injection to the shoulder. Imaging studies and clinical presentation confirmed the presence of septic arthritis with extensive joint and bony destruction of themidtarsal region. Procedures: midfoot surgical debridement, 3D printed implant with screw fixation of themidtarsal joint, gracilis muscle flap, split thickness skin graft.

Results

12 month follow up revealed well resolved free flap site without surgical dehiscence

Discussions

Septic arthritis of the midfoot presents a unique challenge in restoring anatomic and biomechanical function. Patients with large bony resection in the presence of septic arthritis will likely require significant reconstruction. In our case study, patient specific 3D implants allowed for precise restoration respective to bone structures with additional free flap assisted in covering large soft tissue deficits.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Haoning Hu	haoning.hu01@gmail.com	I/We have nothing to disclose	
Alex Dang, DPM	Alex.Dang@medstar.net	I/We have nothing to disclose	
Liliya Parkman, DPM	Liliya.Parkman@medstar.net	I/We have nothing to disclose	
Paul Carroll, DPM, FACFAS	Paul.J.Carroll@medstar.net	I/We have nothing to disclose	
Rex Wei-Hung, MD, FACS	Rex.W.Hung@medstar.net	I/We have nothing to disclose	
Griffin Van	Griffin.van@medstar.net	I/We have nothing to disclose	

Title The Maisonneuve Fracture associated with a Weber B Fracture**Submit Date** 08/30/2023**Correspondent**

Last Name: Eljaua
 Full Name: Sahjar A. Eljaua Velez, PGY-2, DPM Email: sahjar.eljaua@beaumont.org
 Practice/Company/Residency Program: Corewell (Beaumont) Hospital- Wayne

Authors

Author 1: Sahjar A. Eljaua Velez, PGY-2, DPM Author 2: Lawrence Fallat, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The Maisonneuve fracture can be easily overlooked when evaluating an ankle fracture. It is rare to encounter a Maisonneuve fracture with a Weber B fracture. According to the Lauge- Hansen classification system, both fractures have different mechanisms of injury. In this study we report a rare case of a Maisonneuve fracture and Weber B fracture that occurred simultaneously and discuss its mechanism of injury.

Methodology**Procedures**

A 62-year-old female was evaluated for her left ankle injury. Preoperative standard x-rays of the ankle and leg revealed a minimally displaced oblique fracture through the lateral malleolus consistent with a Weber B fracture, tibio-fibular diastasis consistent with a syndesmotic injury and a minimally displaced oblique fracture noted at the upper one third of the fibula consistent with a Maisonneuve fracture.

Results

Patient underwent open reduction and internal fixation of the lateral malleolus with syndesmotic reduction of the ankle.

Discussions

In our patient we can see the fracture line of the Maisonneuve fracture has the characteristics of PER while the Weber B fracture has the characteristics of SER. We cannot definitely say our patient's mechanism of injury. We believe it is more likely her foot shifted from pronation to supination during her fall. Nevertheless, the proximal aspect of the fibula should always be examined as part of the physical exam in all ankle fractures to obtain an accurate diagnosis and to provide an appropriate treatment.

Format Case Study**Case Rpt Followup** 12**Student Club** Not a Student Club Poster**Classification** Trauma**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sahjar A. Eljaua Velez, PGY-2, DPM	sahjar.eljaua@corewellhealth.org	I/We have nothing to disclose	
Lawrence Fallat, DPM, FACFAS	lawrence.fallat@corewellhealth.org	I/We have nothing to disclose	

Title

Fibular groove deepening for treatment of lateral ankle ulcer in spastic paraplegia, a case study

Submit Date

08/30/2023

Correspondent

Last Name: Parkman
 Full Name: Liliya Parkman, DPM Email: liliya.parkman@medstar.net
 Practice/Company/Residency Program: MedStar

Authors

Author 1: Liliya M Parkman, DPM Author 2: Haoning Hu, DPM
 Author 3: Alex Dang, DPM Author 4: Linsey Andrews, DPM
 Author 5: Tiffany K. Hoh, DPM, FAFAS Author 6: David Z Martin, MD
 Author 7: Author 8:

Purpose

Subluxing peroneal tendons are characterized by abnormal movement of the peroneal tendon behind the lateral malleolus. While the relationship between peroneal instability and lateral ankle insufficiency has been acknowledged, further exploration of this as an underlying mechanism causing lateral ankle ulcers is warranted.

Methodology

Procedures

27 year old male with history of T7 paraplegia and spasticity after MVA presented with right lateral ankle ulcer. Conservative treatment included wound care with collagen and alginate dressings, weekly debridements, customized offloading padding, and botox injections for spasticity were attempted for 6 months. There was no improvement, and ultimately peroneal tendons and fibular periosteum were exposed. Procedures: The patient was admitted to the hospital and started on IV antibiotics. He underwent surgical debridements with NPWT until negative cultures were obtained. Fibular groove deepening was performed to prevent subluxation of the peroneals in the wound base. The wound was covered with bilayer skin substitute and NPWT.

Results

Bilayer skin substitute graft was removed revealing healthy granulation tissue. He underwent skin grafting with splint immobilization for complete resolution of the lateral ankle ulcer. The wound has remained closed.

Discussions

Discussion: Lateral ankle wounds are challenging to heal with subluxing peroneal tendons causing motion at the wound base. Several studies have explored the effectiveness of fibular groove deepening in preventing peroneal tendon pathology, however, there is not any recent literature addressing the correlation between tendon subluxation and ulcerations. This case report describes applying a known surgical procedure to treat a non-healing ankle wound.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Liliya M Parkman, DPM	liliya.parkman@medstar.net	I/We have nothing to disclose	
Haoning Hu, DPM	Haoning.hu@medstar.net	I/We have nothing to disclose	
Alex Dang, DPM	alex.dang@medstar.net	I/We have nothing to disclose	
Linsey Andrews, DPM	Linsey.andrews@medstar.net	I/We have nothing to disclose	
Tiffany K. Hoh, DPM, FAFAS	tiffany.k.hoh@medstar.net	I/We have nothing to disclose	
David Z Martin, MD	david.z.martin@medstar.net	I/We have nothing to disclose	

Title

Application of a Custom Three-Dimensional Navicular Implant with Talonavicular Fusion for Osteonecrosis of the Navicular

Submit Date 08/30/2023

Correspondent

Last Name: Eljaua
 Full Name: Sahjar A. Eljaua Velez, PGY-2, DPM Email: sahjar.eljaua@corewellhealth.org
 Practice/Company/Residency Program: Corewell (Beaumont) Hospital- Wayne

Authors

Author 1: Sahjar A. Eljaua Velez, PGY-2, DPM Author 2: Lawrence Fallat, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The navicular bone is at significant risk of osteonecrosis following a high energy type injury due to poor vascularization centrally. This can eventually result in navicular collapse, a shortened medial column, and talonavicular and/or naviculocuneiform arthritis. We present a case study where three-dimensional printing has allowed for the development of custom metallic implant for the navicular that provide mechanical stability while also conforming specifically to the patient's anatomy.

Methodology

Procedures

A 46-year-old male was evaluated for chronic progressive right foot pain. He suffered a motor vehicle accident 30 years ago which led to a navicular fracture for which he underwent open reduction and internal fixation. In the last 7 years, the hardware was removed. Preoperative standard x-rays revealed osteonecrosis of the navicular, arthritic changes noted to the talonavicular joint as well as subchondral cyst changes. CT scans revealed a non-union fracture of the navicular.

Results

Patient underwent application of a navicular custom three-dimensional implant with talonavicular arthrodesis. This case demonstrates that custom three-dimensional implant for the replacement of the navicular bone with osteonecrosis can be a successful functional surgical treatment option to preserve the anatomic foot structure.

Discussions

Custom three-dimensional implant technology has progressed in the field of surgery. The technology behind custom three-dimensional printing allows for a flexible design and permits production of personalized implants that conforms to the patient's needs. This new custom technology has given foot and ankle surgeons a new innovative way to compensate for bone loss.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sahjar A. Eljaua Velez, PGY-2, DPM	sahjar.eljaua@corewellhealth.org	I/We have nothing to disclose	
Lawrence Fallat, DPM, FACFAS	lawrence.fallat@corewellhealth.org	I/We have nothing to disclose	

Title Utility of Femoral Antegrade Nails in Tibiotalocalcaneal Arthrodesis**Submit Date** 08/30/2023**Correspondent**

Last Name: Mosier
 Full Name: Marisa, Mosier, DPM Email: mosierm@evms.edu
 Practice/Company/Residency Program: Eastern Virginia Medical School

Authors

Author 1: Marisa Mosier Author 2: Jonathan, Westerveld, DPM
 Author 3: Bradley, Levitt, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Tibiotalocalcaneal arthrodesis are frequently utilized in the setting of limb salvage when addressing charcot neuroarthropathy, osteoarthritis, trauma, avascular necrosis of the talus or failed total ankle arthroplasty. Nearly ½ of patients will face complications following TTC arthrodesis including hardware failure, infection or amputation. This case series documents utilization of femoral antegrade nails for TTC fusions including indications and advantages over traditional nailing systems.

Methodology**Procedures**

3 patients undergoing TTC arthrodesis via femoral antegrade nail are included. Indications include previously failed traditional TTC arthrodesis with poor bone stock, chronic unstable ankle fracture in the setting of a large BMI and primary Charcot reconstruction

Results

3 hindfoot deformities corrected via femoral antegrade intramedullary nails

Discussions

Tibiotalocalcaneal arthrodesis are limb salvage procedures accompanied by several complications. There are several advantages to femoral antegrade nails. Internal screws lock within the intramedullary rod decreasing risk of screw pullout and hardware failure especially in osteoporotic bone or revision cases. Lack of a posterior-anterior screw allows one to avoid violating decubitus ulcers and/or chronic calcaneal osteomyelitis without sacrificing stability. Femoral nailing systems also come in more diverse sizes ranging from 160-480 mm in length to 9-15 mm in diameter. Drawbacks include lack of internal compression if dynamization is desired.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Marisa Mosier	mosierm@evms.edu	I/We have nothing to disclose	
Jonathan, Westerveld, DPM	westerja@evms.edu	I/We have nothing to disclose	
Bradley, Levitt, DPM, FACFAS	bradley.a.levitt@gmail.com	I/We have nothing to disclose	

Title **Open Management Of Talar Body Fracture Utilizing Medial Malleolus Take Down Approach**

Submit Date 08/30/2023

Correspondent

Last Name: Nafal
 Full Name: Yousef Nafal, DPM Email: yousef.nafal@corewellhealth.org
 Practice/Company/Residency Program: Beaumont Wayne

Authors

Author 1: Yousef Nafal, DPM Author 2: Lawrence Fallat, DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Fractures of the talar body are serious and rare injuries accounting for less than 1 % of all fractures. Most talar body fractures are seen in polytrauma patients with concomitant fractures. This fracture is typically seen in high-velocity traumas and are often associated with extensive soft tissue envelop damage. The talus plays an essential role in the biomechanics of the ankle, subtalar and midtarsal joints. As such, anatomic reduction of talar body fractures is crucial to maintain and preserve appropriate physiological function.

Methodology

Procedures

We present a case of a 42-year-old female who presented to the emergency department with a chief complaint of a subtalar joint dislocation after sustaining a fall off a ladder. Post-reduction CT revealed a comminuted, intra-articular fracture of the posterior talar body.

Results

The patient underwent open reduction internal fixation of the talar body fracture utilizing a medial malleolus take down approach. At her 12-month follow up visit, the patient did not endorse any pain and has returned to her activities of daily living. Radiographs revealed consolidation across the fracture sites of the talar body and medial malleolus osteotomy site.

Discussions

Talar body fractures are rare and usually involve high velocity energy trauma. For complex talar body fractures that are irreducible, a medial malleolar take down is indicated to help visualize the medial aspect of the body of the talus. By performing this take down, we were able to reduce the fracture and restore appropriate anatomic congruency across the talar joints.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Yousef Nafal, DPM	yousef.nafal@corewellhealth.org	I/We have nothing to disclose	
Lawrence Fallat, DPM	yousef.nafal@corewellhealth.org	I/We have nothing to disclose	

Title

Rare Occurrence of Calcified Chondroid Mesenchymal Neoplasm of the Foot

Submit Date

08/30/2023

Correspondent

Last Name: Schuler

Full Name: Christine

Practice/Company/Residency Program:

Email: Christine.Schuler@baptisthealth.net

Bethesda East Residency Program

Authors

Author 1: Christine Schuler PGY3

Author 3: Adam Katz DPM

Author 5:

Author 7:

Author 2: Kaina Louis-Charles PGY2

Author 4: Dillon Moss, DPM PGY1

Author 6:

Author 8:

Purpose

Calcified Chondroid Mesenchymal Neoplasms are a rare benign neoplasm composed of cartilaginous tissue that accounts for about 1.5% of benign soft tissue tumors with very few occurrences in Podiatric literature.

Methodology

Procedures

41-year-old female presented with a soft tissue mass to the 2nd interspace of the left plantar foot. Patient had sustained a foreign body years before. MRI confirmed a soft tissue mass approximately 2.2 x 2.0 x 1.9cm in the second interspace. Once removed pathological analysis confirms calcified chondroid mesenchymal neoplasm.

Results

Soft tissue mass removal was performed and pathologic analysis confirmed a rare occurrence of calcified chondroid mesenchymal neoplasm.

Discussions

Soft tissue chondromas have a rare occurrence. The etiology of these neoplasms is currently unknown. The morphology of these neoplasms has been compared to the equine digital cushion suggesting a reactive/reparative etiology. Our case study supports this theory suggesting a correlation with a foreign body. Other proposed etiologies include non-random clonal alteration of chromosomes and metaplasia from tendon sheaths. The limited literature reports MRI to be the best diagnostic option as it can differentiate between bony and soft tissue. The recurrence rate is reported to be 15-18% and lists excision as the best treatment option.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Christine Schuler PGY3	christine.schuler@baptisthealth.net	I/We have nothing to disclose	
Kaina Louis-Charles PGY2	kaina.louischarles@baptisthealth.net	I/We have nothing to disclose	
Adam Katz DPM	ajkatz5@gmail.com	I/We have nothing to disclose	
Dillon Moss, DPM PGY1	dillonmoss@gmail.com	I/We have nothing to disclose	

Title

Neuropathic Wound and Osteomyelitis in a Pediatric Patient with Peripheral Neuropathy Associated with Spina Bifida

Submit Date

08/31/2023

Correspondent

Last Name: Lucitt
 Full Name: Sonali, Rachel, Lucitt, DPM, MA Email: sonali.sukumar@bswhealth.org
 Practice/Company/Residency Program: Baylor Scott & White

Authors

Author 1: Sonali Rachel Lucitt, DPM, MA Author 2: Dy Chin, DPM, MSBS
 Author 3: Richard N. Goad, DPM, MA (Bioethics) Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Our goal is to discuss evaluation and treatment of bone infection and factors to consider when treating children with neuropathic disorders

Methodology

Procedures

Patient is a 5-year old female with a PMH significant for spina bifida, lipomyelomeningocele, paraplegia and peripheral neuropathy. Social history including medical neglect. Initial wounds presented on the dorsum of bilateral feet. Her right foot wound eventually developed osteomyelitis localized to the medial cuneiform, this was confirmed via MRI. Patient developed additional wounds and osteomyelitis of the right 5th metatarsal and calcaneus. Over the course of her treatment, she was treated by infectious disease and podiatry for wound debridement and IV antibiotics. Patient underwent a right 5th metatarsal head resection with negative pressure wound therapy application. Subsequent wound care and follow up resulted in complete resolution of foot wounds.

Results

Intervention by Child Protective Services, long-term wound care, surgical and medical management leading to clinical and radiographic healing of wound and bone infection.

Discussions

A review of current literatures demonstrated that early detection of bone infection and medical management can potentially prevent surgical intervention. This study outlines a rare progression of osteomyelitis relating to a neuropathic wound in a pediatric patient. By investigating and intervening into the patient living situation, utilizing routine wound care, medical management and surgical intervention, and post-operative bracing the patient's outcome dramatically improved based on the severity of this infection.

Format

Case Study

Case Rpt Followup

48

Student Club

Not a Student Club Poster

Classification

Neurological/Peripheral Nerve Disorders

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sonali Rachel Lucitt, DPM, MA	sonali.sukumar@bswhealth.org	I/We have nothing to disclose	
Dy Chin, DPM, MSBS	dy.chin@bswhealth.org	I/We have nothing to disclose	
Richard N. Goad, DPM, MA (Bioethics)	richard.goad@bswhealth.org	I/We have nothing to disclose	

Title

Recalcitrant Calcaneal Intraosseous Lipoma Treated with a Cadaveric Femoral Head Allograft Plug and Internal Fixation: A Case Report

Submit Date 08/30/2023

Correspondent

Last Name: Schroeder
 Full Name: Quinn M Schroeder, DPM Email: quinnshroeder@gmail.com
 Practice/Company/Residency Program: Mercy Health St. Vincent

Authors

Author 1: Quinn Michael Schroeder Author 2: Kyle M Smith, DPM
 Author 3: Junaid M Khazi, DPM Author 4: Khase A Wilkinson, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose To illuminate a possible treatment option for recurrent, symptomatic benign calcaneal neoplasms and a surgical alternative for a wide range of benign bone tumors in the lower extremity.

Methodology

Procedures

In our study, a 22-year-old recent military graduate was treated for a recalcitrant intraosseous lipoma (IOL) of the calcaneus. Although among the rarest bone tumors, nearly a third of all IOLs reside in the calcaneus and standardization of treatment remains debatable. Our patient had undergone two previous surgeries without symptomatic relief or resolution. Definitive surgery consisted of aggressive debridement of the lesion with remodeling, interposition of a cadaveric femoral head allograft, and impaction of a tibial autograft. The graft was secured with a lag screw and an anatomic buttressing plate. The patient was able to return to full weight-bearing and comfortable ambulation. At 13 months follow-up there have been no signs of recurrence.

Results Incorporation of the allograft was achieved radiographically in two months. Fixational hardware remained intact without loosening or irritation. Patient transitioned to full weightbearing in regular shoe gear after 3 months. The patient was able to return to work and notes no pain with ambulation.

Discussions To the authors' knowledge, this is the first report detailing the treatment of an IOL with a femoral head allograft in addition to internal fixation. Secondly, fixation with a posterior-to-anterior oriented calcaneal screw to prevent graft translation and rotation has not been described previously for other treatments of IOLs.

Format Case Study

Case Rpt Followup 14

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Quinn Michael Schroeder	quinnshroeder@gmail.com	I/We have nothing to disclose	
Kyle M Smith, DPM	kmckraycpm12@gmail.com	I/We have nothing to disclose	
Junaid M Khazi, DPM	jkhazi@mercy.com	I/We have nothing to disclose	
Khase A Wilkinson, DPM, FACFAS	kawilkinson@mercy.com	I/We have nothing to disclose	

Title **Lateral Transligamentous Approach for Bulk Osteochondral Allograft of the Lateral Talus**

Submit Date 08/30/2023

Correspondent

Last Name: Varney
 Full Name: Rebecca L Varney, DPM Email: rlvarney25@gmail.com
 Practice/Company/Residency Program: Inova Fairfax Medical Campus

Authors

Author 1: Rebecca L Varney, DPM Author 2: Corine L Creech, DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Osteochondral defects of the talus are insidious yet common sequela of ankle trauma. Conventional anterior and medial malleolar osteotomy approaches do not allow access to the posterolateral talus for bulk allograft procedures. The purpose of this study is to describe a successful lateral transligamentous (LTL) approach to the talus for a large posterolateral osteochondral defect requiring bulk talar allograft which would have been inaccessible via traditional approaches. This is the first known description of this approach in vivo.

Methodology

Procedures One patient with post-traumatic ankle pain is included. A CT scan revealed a 1.9 cm x 1.1 cm osteochondral fracture along the posterolateral talar dome and rupture of the lateral ankle ligament complex. A single-incision, LTL approach was performed to access the posterolateral talus. A bulk talar allograft was performed with lateral ankle ligament reconstruction.

Results 12-month follow-up revealed a well-incorporated bulk talar allograft with a stable lateral ankle ligamentous complex and full range of tibiotalar motion without pain.

Discussions The LTL approach affords simultaneous access to the lateral talar dome and lateral ankle ligaments via a single incision and reduces morbidity associated with osteotomy. This approach has been described previously in cadaver models and now has been successfully employed in vivo for bulk allograft with excellent 12-month follow-up and low morbidity.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rebecca L Varney, DPM	rlvarney25@gmail.com	I/We have nothing to disclose	
Corine L Creech, DPM	creecher17@me.com	I/We have nothing to disclose	

Title

Neglected and Infected: Delayed Management of Open Bimalleolar Ankle Fracture

Submit Date

08/30/2023

Correspondent

Last Name: Alkhafaji

Full Name: Amar, K, Alkhafaji, DPM

Email: amarkalkhafaji@gmail.com

Practice/Company/Residency Program:

Detroit Medical Center

Authors

Author 1: Brian, G, Kissel, DPM

Author 2: Amar, K, Alkhafaji, DPM

Author 3: Seth, Wimbley, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Open ankle fractures are relatively rare, comprising around 1-4 percent of all ankle fractures. Traditional management follows the guidelines set by Gusillo Anderson, in which prompt antibiotic therapy and surgical intervention is critical for success. This case study highlights management of open fracture beyond the classic golden period, and introduces a protocol for success in these high risk presentations.

Methodology

Procedures

An 18-year-old male presented to clinic complaining of left ankle pain after falling down stairs two weeks prior. The patient related sustaining another fall in addition to spending some time in jail between the injury and our initial evaluation. Upon examination, the patient was noted to have an open, infected bi-malleolar ankle fracture.

Results

The patient was admitted to the hospital for immediate I&D and closed reduction of his left ankle followed by grafting to his open wound five days later. A six-week course of IV antibiotics was initiated. The patient returned to the OR after two weeks for definitive fixation. By the third post-operative visit, the patient had restored function to his left ankle and is currently ambulating pain-free in normal shoe-gear.

Discussions

Delayed-presentation open ankle fractures add a unique challenge to an already complex injury. Regardless of timing, principles remain the same: prompt debridement, extended abx therapy, advanced wound closure strategies, and appropriate timing of definitive fixation are all paramount to achieve better outcomes. More research is needed to determine measurable factors affecting outcomes in delayed presentation open ankle fractures.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Brian, G, Kissel, DPM	kisselbg@gmail.com	I/We have nothing to disclose	
Amar, K, Alkhafaji, DPM	amarkalkhafaji@gmail.com	I/We have nothing to disclose	
Seth, Wimbley, DPM	wimbleys1437@gmail.com	I/We have nothing to disclose	

Title

Decompression of the Calcaneocuboid Joint by Lateral Calcaneal Osteotomy for an Over-Corrected Evans Osteotomy: A Case Study

Submit Date

08/30/2023

Correspondent

Last Name: Gazes
 Full Name: Michael I. Gazes, DPM, MPH, FACFAS Email: michael.gazes@yale.edu
 Practice/Company/Residency Program: Yale New Haven Hospital

Authors

Author 1: Priyal N. Patel, DPM Author 2: Stephen Lazaroff, DPM, FACFAS
 Author 3: Michael I. Gazes, DPM, MPH, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The Evans calcaneal osteotomy is a primary surgical option offered in pediatric and adult populations with pes plano valgus. While this procedure offers a triplanar correction of pes plano valgus, overcorrection can drive the foot into a pes cavus-like deformity. This case study highlights a novel technique to reverse an over-corrected Evans osteotomy.

Methodology

Procedures

A 27-year-old male underwent subsequent left followed by right decompression of the calcaneocuboid joint (CCJ) by a lateral closing wedge osteotomy of the anterior aspect of the calcaneus. The patient was followed from October 2019 through March 2021. Pre-operative x-rays revealed a high calcaneal inclination angle, from an overcorrection of an initial flatfoot deformity, causing CCJ jamming and exostosis formation. Pre-operative MRI demonstrated a prominent dorsolateral CCJ exostosis with a healed calcaneal Evans allograft and fluid within the peroneal sheath.

Results

Bilateral resolution of the dorsolateral pain.

Discussions

The Evans calcaneal osteotomy is commonly utilized to address pes plano valgus. Overcorrection can lead to increased pressure in the CCJ but can be successfully addressed with a closing wedge osteotomy 1-1.5cm proximal to the CCJ. Clinicians must be able to identify an overcorrected Evans osteotomy and can offer an alternative solution to a calcaneocuboid arthrodesis.

Format

Case Study

Case Rpt Followup

17

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Priyal N. Patel, DPM	priyal.patel@yale.edu	I/We have nothing to disclose	
Stephen Lazaroff, DPM, FACFAS	stephenlazaroff@gmail.com	I/We have nothing to disclose	
Michael I. Gazes, DPM, MPH, FACFAS	michael.gazes@yale.edu	I/We have nothing to disclose	

Title **3D Printed Navicular Structural Cage Implant for Painful Post-Traumatic Navicular Avascular Necrosis Following Failed ORIF and Multiple Failed Talonavicular and Naviculocuneiform Arthrodesis Nonunions**

Submit Date 08/30/2023

Correspondent Last Name: McMahan
Full Name: Cameron L McMahan, DPM Email: cammcmahan@gmail.com
Practice/Company/Residency Program: The Ohio State University Wexner Medical Center

Authors Author 1: Cameron McMahan, DPM Author 2: Deana Lewis, DPM
Author 3: David Kaplansky, DPM Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose The purpose of this study is to highlight a surgical option for patients with avascular necrosis of the navicular who have failed single joint and multiple joint arthrodesis with autograft due to nonunion. Our goal is to present a successful case utilizing a 3D printed custom navicular cage implant and subtalar joint arthrodesis resulting in decreased pain and good functional outcome.

Methodology

Procedures Post-traumatic navicular avascular necrosis is a complex and challenging condition to treat. Traditional surgical treatment is through adjacent joint fusion of the talonavicular and naviculocuneiform joints. A few case reports of navicular implants report it as a great options for reconstruction, albeit with short-term results. Our patient, 41 year old male, presented after a MVA 13 years prior with resultant navicular fracture. He failed ORIF with nonunion and avascular necrosis of the navicular by another surgeon. He then underwent talonavicular arthrodesis with failed nonunion and subsequent talonavicular and naviculocuneiform arthrodesis with structural autograft with failed nonunion, pain, and broken hardware. We performed a reconstruction with 3D printed navicular cage implant with autograft and allograft and subtalar joint fusion.

Results The patient is now ambulating in normal shoe gear with stable alignment of the navicular implant and fusion of the subtalar joint confirmed on CT with minimal pain.

Discussions 3D printed navicular cage implant is a great option for reconstruction following avascular necrosis and failed conservative management and failed adjacent joint arthrodesis. Cost of the implant and lack of truly long-term larger patient population studies are limitations to consider.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Cameron McMahan, DPM	cammcmahan@gmail.com	I/We have nothing to disclose	
Deana Lewis, DPM	cammcmahan@gmail.com	I/We have nothing to disclose	
David Kaplansky, DPM	cammcmahan@gmail.com	I/We have nothing to disclose	

Title Total Talus 3-D Replacement. A Novel Approach to Maintain Rearfoot/Ankle Motion**Submit Date** 08/30/2023

Correspondent

Last Name: Herak
 Full Name: Trevor A Herak, DPM Email: trevorherak.dpm@gmail.com
 Practice/Company/Residency Program: University Hospitals Podiatric Medicine/Surgery Residency

Authors

Author 1: Aaron J. Chokan, DPM, FACFAS Author 2: Jonathan M. Moss, DPM, AACFAS
 Author 3: Trevor A. Herak, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Today's literature presents limited options for treatment of talar avascular necrosis (AVN) or severe crush features of the talar body as they often result in foot/ankle disability. Treatment consists of conservative options, bracing/activity modifications, or surgical. Arthrodesis is one option for surgical treatment with failure rates as high as 40%. This is a case review of two patients, one with severe cystic osteoarthritis (Patient 1) and the other with AVN of the talus secondary to trauma (Patient 2). Both patients underwent custom 3D-printed total talar replacement (TTR) with added subtalar joint (STJ) arthrodesis and tibial arthroplasty, with additional talonavicular joint (TN) arthrodesis in Patient 2.

Methodology

Procedures

Patient 1: 3D-printed TTR with STJ arthrodesis and total ankle arthroplasty with Bröstrom. Patient 2: 3D-printed TTR with STJ and TN arthrodesis, and total ankle arthroplasty with Bröstrom/deltoid ligament repair.

Results

Both patients underwent successful 3-D printed TTR with total ankle replacement. One postoperative complication noted to Patient 2, anterior ankle wound, which was treated successfully with local wound care.

Discussions

Two patients underwent successful TTR with concomitant STJ arthrodesis and tibial arthroplasty, with additional TN arthrodesis in Patient 2. Both patients able to return to work, with pain free ROM, and no evidence of hardware failure at one year follow-up. Reasonable to consider TTR with STJ arthrodesis and tibial arthroplasty as a viable surgical option for cases of AVN and/or severe osteoarthritis of the ankle/subtalar joints. Further research needed to evaluate long-term outcomes/effects of combined TTR with STJ arthrodesis and tibial arthroplasty.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Aaron J. Chokan, DPM, FACFAS	drchokan@gmail.com	I/We have nothing to disclose	
Jonathan M. Moss, DPM, AACFAS	jmos052812@gmail.com	I/We have nothing to disclose	
Trevor A. Herak, DPM	trevorherak.dpm@gmail.com	I/We have nothing to disclose	

Title

A Novel Technique Augmenting Tibiotalocalcaneal Intramedullary Nail Arthrodesis with Talocalcaneal Joint Screw Fixation: A Case Series

Submit Date

08/30/2023

Correspondent

Last Name: Wanniarachchi
 Full Name: Gayana Email: ghwanniarachchi@gmail.com
 Practice/Company/Residency Program: Katherine Shaw Bethea Hospital

Authors

Author 1: Gayana, H, Wanniarachchi, DPM Author 2: Rachit, Shah, DPM
 Author 3: James, H, Whelan, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to report and evaluate the novel use of supplemental talocalcaneal joint screw fixation to tibiotalocalcaneal intramedullary nail arthrodesis.

Methodology

Procedures

Tibiotalocalcaneal intramedullary nail arthrodesis is commonly indicated to address hindfoot deformities and arthritis. These pathologies can be associated with diabetes, Charcot neuroarthropathy, osteoporosis, and inflammatory arthritis, which can impede healing and result in high rates of complications. A successful construct can withstand axial and shear stress and decrease non-union rates across talocalcaneal joints. Two patients were retrospectively analyzed at Beloit Memorial Hospital who underwent tibiotalocalcaneal intramedullary nail arthrodesis. The first patient with a history of Charcot arthropathy underwent a standard lateral approach to tibiotalocalcaneal nail arthrodesis resulting in a non-union of the talocalcaneal joint. This was revised with a longer nail and augmented with an additional screw fixation across the talocalcaneal joint. The second patient with a history of comminuted pilon fracture had a primary tibiotalocalcaneal nail fixation with augmentation of talocalcaneal screw fixation.

Results

Both patients had successful union across the tibiotalocalcaneal joint after tibiotalocalcaneal nail fixation with augmentation of screw across the talocalcaneal joint. The mean time to union was 8 and 16 weeks for patient one and two, respectively.

Discussions

Management of non-union across tibiotalocalcaneal joints after tibiotalocalcaneal nail fixation can be difficult. These patients often require revisional surgery and sometimes result in proximal amputations. This complication can be avoided or managed by creating a more stable construct with augmentation of screw fixation across the tibiotalocalcaneal joint.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Gayana, H, Wanniarachchi, DPM	ghwanniarachchi@gmail.com	I/We have nothing to disclose	
Rachit, Shah, DPM	rshah023@gmail.com	I/We have nothing to disclose	
James, H, Whelan, DPM, FACFAS	jimhwhelan@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Secretary of Wisconsin Podiatric Licensing Board

Title

Over Compression Akin Osteotomy with use of Nitinol Staples: A Report of Two Cases

Submit Date

08/31/2023

Correspondent

Last Name: Namous

Full Name: Ahmad

Email: ahmad.namous@gmail.com

Practice/Company/Residency Program:

University Hospital

Authors

Author 1: Dr. Kieth Cook DPM FACFAS

Author 2: Dr. Adam Bernatsky FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The Akin osteotomy is a closing wedge osteotomy of the first proximal phalanx typically used as an adjunctive procedure for the correction of hallux valgus. Since its description there have been multiple fixation methods have been described including k wires, wire loops, screws, and staples. The purpose of the publication is to present two cases of over compression with use of nitinol staples in akin osteotomy.

Methodology

Procedures

Two patients, a 59 year old female with past medical history of asthma and a 52 year old male with past medical history of tobacco use underwent uneventful akin osteotomies with nitinol staple fixation.

Results

Both patients had fracturing of the lateral cortex and non union of the osteotomy sites with apparent over compression of the osteotomy site post operatively. One of the patients went on to have revisional surgery with 2 crossing k wires and eventual osseous union.

Discussions

To the authors knowledge these are the only reported cases of over compression of akin osteotomy with nitinol staples in the literature. The compressive forces generated from the nitinol staple appear to have been greater than what the proximal phalanx was able to withstand. There are multiple factors that may have contributed to the failed akin osteotomies reported above including size of the staple used, leg length, and bone density.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dr. Kieth Cook DPM FACFAS	cookkd@uhnj.org	I/We have nothing to disclose	
Dr. Adam Bernatsky FACFAS	Adam.Bernatsky@gmail.com	I/We have nothing to disclose	

Title Utilizing of 3D implant for Correction of Malunited Varus Deformity**Submit Date** 08/30/2023

Correspondent Last Name: Santiago
 Full Name: Hector Santiago DPM, PGY3 Email: hsantiagodpm@gmail.com
 Practice/Company/Residency Program: Baptist Health South Florida- Bethesda East

Authors Author 1: Kiana Louis-Charles DPM, PGY2 Author 2: Julio Ortiz DPM, AACFAS
 Author 3: Christine Schuler, DPM, PGY3 Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Case outlining the use of 3D formulated implant for correction of rigid rearfoot varus deformity providing a functional plantargrade limb for ambulation.

Methodology

Procedures Analysis of 1 patient that underwent rearfoot reconstruction utilizing a 3D printed Subtalar Cage with corrected STJ Fusion after a failed fusion of STJ due to traumatic fracture of talar body causing a rigid varus deformity. Patient originally underwent fusion following traumatic fracture of talar body and avascular necrosis. Attempted STJ fusion failed leading to nonunion and varus deformity. Revision was performed of fusion site with a calcaneal and talar osteotomy to fix the varus deformity as well as a 3D Subtalar Cage with STJ Fusion

Results Patient underwent a revision surgery in which hardware was removed along with avascular bone. Talar and Calcaneal osteotomy was performed with implantation 3D printed Subtalar Cage with STJ Fusion. Realignment of the rearfoot to the forefoot with plantargrade foot and nonpainful ambulation was accomplished

Discussions Reconstruction of rearfoot with bone defect poses a challenge in revision surgery. A key to success is appropriate preoperative planning in an attempt to maintain anatomical alignment to prevent uneven distribution of loads in the leg. Utilizing a custom 3D printed implant allows for successful planning and reproducible outcomes.

Format Case Study

Case Rpt Followup 36

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kiana Louis-Charles DPM, PGY2	kainalc@gmail.com	I/We have nothing to disclose	
Julio Ortiz DPM, AACFAS	jcortiz@gmail.com	I/We have nothing to disclose	
Christine Schuler, DPM, PGY3	christine.schuler@baptisthealth.net	I/We have nothing to disclose	

Title Hybrid Neurofibroma-Schwannoma of the Ankle: A Case Report**Submit Date** 08/30/2023**Correspondent**

Last Name: Dpirra

Full Name: Ali Dourra, DPM

Email: ali.dourra@corewellhealth.org

Practice/Company/Residency Program:

Corewell Health Hospital Wayne

Authors

Author 1: Ali Dourra, DPM

Author 2: Lawrence Fallat, DPM FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of our study is to comprehensively investigate the clinical, radiological, and histopathological characteristics of hybrid neurofibroma-schwannoma tumors within the spectrum of peripheral nerve sheath tumors. Our primary objective is to elucidate the diagnostic challenges and therapeutic implications associated with these rare benign tumors.

Methodology**Procedures**

We present a case of a 72-year-old female who initially presented with a non-painful soft tissue mass to the right ankle. Magnetic resonance imaging (MRI) was obtained which revealed a peripheral nerve sheath tumor located adjacent to the posterior tibial nerve. Due to her concerns of malignancy, the patient underwent surgical excision of the peripheral nerve tumor.

Results

The pathology report revealed a large peripheral nerve sheath tumor, consistent with hybrid neurofibroma/schwannoma which was positive for biological markers SOX-10, S100 and CD34, consistent with the diagnosis of a schwannoma-neurofibroma hybrid.

Discussions

In summary, the authors report a rare case of a hybrid neurofibroma/schwannoma of the ankle adjacent to the posterior tibial nerve. Surgical excision of these tumors remains the treatment of choice, however careful dissection is paramount. Recognition of hybrid nerve sheath tumors as a distinct clinical entity may facilitate the diagnosis of underlying neurocutaneous syndromes.

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ali Dourra, DPM	ali.dourra@corewellhealth.org	I/We have nothing to disclose	
Lawrence Fallat, DPM FACFAS	lawrence.fallat@corewellhealth.org	I/We have nothing to disclose	

Title **Extensile Anteromedial Incision with Vacuum Assisted Closure for Total Ankle Arthroplasty**

Submit Date 08/30/2023

Correspondent

Last Name: Aljumail
 Full Name: Akram Email: aljumaildpm@gmail.com
 Practice/Company/Residency Program: Ascension Providence Hospital

Authors

Author 1: Akram Aljumail, DPM Author 2: Hassan Alkhalil, DPM
 Author 3: Rachel Kaplan, DPM Author 4: Guy Pupp, DPM, FAFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

A devastating complication of the total ankle arthroplasty includes wound complications, which has been reported in up to 28% of cases. Many of these will require further surgical intervention, which may include removal of the prosthesis, salvage arthrodesis or limb loss. The authors present their approach for patients with soft tissue risk factors who are otherwise ideal candidates for a total ankle arthroplasty.

Methodology

Procedures

15 patients with end stage ankle arthritis with risk factors for wound complications, without contraindications for an ankle arthroplasty, were treated with a total ankle arthroplasty with an extensile anteromedial incisional approach to the ankle, "no-touch" technique and vacuum-assisted closure of the incision.

Results

All 15 patients who underwent total ankle arthroplasty with extensile anteromedial approach with vacuum assisted closure noted without wound or scar complications at a minimum of 13 months post-operatively

Discussions

The anteromedial incision is a documented approach to the ankle which gives excellent exposure while avoiding disruption of the anterior ankle angiosomes and tibialis anterior tendon sheath. Vacuum assisted closure has been shown to avoid infection, dehiscence, and seroma formation in high-tension incisions. Considering the devastating complications of a failed anterior ankle incision, the authors present a viable alternative in patients with concerns for wound healing.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Akram Aljumail, DPM	aljumaildpm@gmail.com	I/We have nothing to disclose	
Hassan Alkhalil, DPM	halkhalil@kent.edu	I/We have nothing to disclose	
Rachel Kaplan, DPM	rkaplan6@kent.edu	I/We have nothing to disclose	
Guy Pupp, DPM, FAFAS	guypupp@comcast.net	I/We have nothing to disclose	

Title

A Novel Case of Prevotella Oralis Causing Osteomyelitis in an Infected Total Ankle Replacement

Submit Date

08/30/2023

Correspondent

Last Name: Qureshi
 Full Name: Mujtaba Email: Mujtaba115@gmail.com
 Practice/Company/Residency Program: St. Mary's General Hospital

Authors

Author 1: Mujtaba Qureshi, DPM Author 2: Kenan Redzematovic, DPM
 Author 3: Rachel Gerber, DPM, AACFAS Author 4: Hyunji Boo, DPM, AACFAS
 Author 5: Michael Subik, DPM, FACFAS Author 6:
 Author 7: Author 8:

Purpose

Gram-positive bacteria are the most prevalent organisms causing osteomyelitis in the foot and ankle. *S. Aureus* is the most common gram-positive species isolated, whereas *Pseudomonas* species are the most common gram-negative rods, followed by *S. epidermidis* in infected total joint arthroplasty. The primary aim of this study is to highlight a never-reported finding of *Prevotella Oralis* in a case of Osteomyelitis of the ankle with an infected total joint implant.

Methodology

Procedures

A 69 y/o female with no pertinent past medical history presented with a chronic wound to her anterior ankle status post total ankle replacement (TAR) seven years ago. The patient had been receiving wound care, noted the wound had probed to bone, but previous imaging was negative for osteomyelitis.

Results

The patient underwent bone biopsies on the tibia, talus and fibula, along with debridement of infected bone and insertion of antibiotic impregnated cement. All biopsies were negative for aerobic growth. Patient's tibia and talus anaerobic bone cultures returned positive for *Prevotella Oralis*.

Discussions

P. Oralis, previously referred to as *Bacteroides oralis*, is a gram negative anaerobic bacteria that is native to the oral flora in humans. *Prevotella* species osteomyelitis have been found in in the vertebral spine and humerus, but only 1 case of *P. Oralis* has been reported. Infections by *P. oralis* have been suspected in patients taking either anabolic steroids or fluoroquinolones, due to an increased resistance in *Bacteroides* and *Prevotella* species to fluoroquinolones. We report the first known case of *P. Oralis* in ankle osteomyelitis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Mujtaba Qureshi, DPM	mujtaba115@gmail.com	I/We have nothing to disclose	
Kenan Redzematovic, DPM	kenanredzematovic@gmail.com	I/We have nothing to disclose	
Rachel Gerber, DPM, AACFAS	rachel.gerber.dpm@gmail.com	I/We have nothing to disclose	
Hyunji Boo, DPM, AACFAS	hyunji.boo@gmail.com	I/We have nothing to disclose	
		Consultant/Advisor/Speaker (List all affiliations)	Orthofix, Stryker, BD, Trice
Michael Subik, DPM, FACFAS	drsubik@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Medical Staff at St. Mary's General Hospital, ACFAS fellowship committee, ABFAS committee

Title Acute Compartment Syndrome of the Pediatric Foot; A Case Report**Submit Date** 08/30/2023**Correspondent**

Last Name: Wahl
 Full Name: Alanna G. Wahl, DPM Email: alanna.wahl@aah.org
 Practice/Company/Residency Program: Advocate Christ Medical Center

Authors

Author 1: Alanna G. Wahl, DPM Author 2: Paul Martin, DPM
 Author 3: Darshan Nagesh, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Acute compartment syndrome in the foot is rare in the pediatric population with very few well documented cases. This case is significant to showcase positive outcomes at one year follow up after acute compartment syndrome.

Methodology**Procedures**

Our patient is a 15 year old female who presents immediately to Advocate Christ Medical Center after a bike vs auto accident. Her podiatric exam revealed extremely edematous and tense right foot with diffuse ecchymosis and superficial skin necrosis at the dorsal midfoot. Dorsalis Pedis pulse was diminished and capillary fill time prolonged with pallor noted from the digits to midfoot. Patient's sensation was intact to the digits. She had diminished motor function of the right foot. There was significant pain, and foot compartments were very tense. Intracompartmental pressures were measured in the ED, which measured 70 in the medial compartment and 71 in the central compartment. Additionally, the patient had a Lisfranc injury noted on X-ray in the ED. Emergent fasciotomies were performed in the operating room. Patient had immediately regained a strong DP pulse and motor function. Two weeks later, the patient underwent ORIF Lisfranc, and biologic skin grafts were applied to fasciotomy sites.

Results

At one year follow up, the patient has no residual deficits, fasciotomy sites healed uneventfully, and patient is at full function without complaints.

Discussions

Acute compartment syndrome of the foot is not widely discussed in the pediatric literature. A high clinical suspicion and diagnosis with early intervention is important in order to preserve limb function and prevent long term complications.

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alanna G. Wahl, DPM	alanna.wahl@aah.org	I/We have nothing to disclose	
Paul Martin, DPM	paul.martin@aah.org	I/We have nothing to disclose	
Darshan Nagesh, DPM, FACFAS	dnagesh@faai.care	I/We have nothing to disclose	

Title **Surgical Management of Sural Neuritis: Sural Neurectomy with Capping and Burial into Muscle a Case Report**

Submit Date 08/30/2023

Correspondent
 Last Name: Wanniarachchi
 Full Name: Gayana, H, Wanniarachchi, DPM Email: ghwanniarachchi@gmail.com
 Practice/Company/Residency Program: Katherine Shaw Bethea Hospital

Authors
 Author 1: Gayana, H, Wanniarachchi, DPM Author 2: Dhruv, S, Patel, DPM
 Author 3: Brandon, R, Gumbiner, DPM FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose The purpose of this study is to highlight the surgical management of sural neuritis with the use of sural neurectomy with capping and burial into muscle.

Methodology

Procedures The sural nerve is derived from a communicating branch of both the tibial nerve and the common peroneal nerve that provides sensory innervation to the lateral aspect of the foot and leg. Based on its location, the sural nerve is prone to injury from both traumatic or iatrogenic etiologies. Sural neuritis can be a complicated pathology to treat, especially after exhausting conservative treatment including physical therapy, anti-inflammatories, and or use of oral nerve medications. Retrospective chart review was performed which revealed the patient sustained sural neuritis following surgery for removal of os trigonum. The patient failed conservative treatment of physical therapy and use of gabapentin and ultimately underwent sural neurectomy with capping and burial into muscle at Katherine Shaw Bethea Hospital.

Results During the 12 month follow up period the patient reported significant subjective improvement with pain resulting from sural neuritis.

Discussions Sural neuritis is a common complication following foot and ankle surgery and after traumatic incidents which often fails conservative treatment. Surgical management of sural neuritis by performing a sural neurectomy with capping with a conduit and burial into muscle should be considered as a viable treatment option for treating this debilitating pathology.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Gayana, H, Wanniarachchi, DPM	ghwanniarachchi@gmail.com	I/We have nothing to disclose	
Dhruv, S, Patel, DPM	dhruv.patel@my.rfums.org	I/We have nothing to disclose	
Brandon, R, Gumbiner, DPM FACFAS	brgumbin@gmail.com	I/We have nothing to disclose	

Title A Rare Presentation of Accessory Soleus Muscle: A Case Study**Submit Date** 08/30/2023**Correspondent**

Last Name: Dourra
 Full Name: Ali Dourra, DPM Email: ali.dourra@corewellhealth.org
 Practice/Company/Residency Program: Corewell Health Hospital Wayne

Authors

Author 1: Ali Dourra, DPM Author 2: Lawrence Fallat, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The accessory soleus muscle is a rare and unusual anatomic variant consisting of a soft-tissue mass herniating medially between the distal part of the tibia and the Achilles tendon. The incidence of this anatomic variation is estimated to occur in 0.7% to 5.6% of the general population. This study aims to investigate the clinical presentation and surgical management of a symptomatic accessory soleus muscle.

Methodology**Procedures**

We present a case of a healthy 40-year-old male who initially presented with a painful, palpable soft tissue mass on the medial aspect of the left ankle and lower leg with associated tarsal tunnel syndrome. Magnetic resonance imaging (MRI) was obtained which revealed a large accessory soleus muscle located adjacent to the posterior tibial nerve. Due to the severity of the patient's symptoms, the patient elected to proceed with surgical intervention consisting of debulking of the muscle mass.

Results

At the 12-month follow-up, the patient presented with a well-healed cicatrix along the posterior medial aspect of the left ankle, with no pain upon palpation to the surgical site. However, the patient reported mild pain upon percussion of the medial branch of the posterior tibial nerve. Clinically, the left foot and ankle's motor function was within normal limits with no edema or ecchymosis noted.

Discussions

In conclusion, our study presents a rare case of symptomatic accessory soleus muscle, emphasizing the importance of recognizing this anatomical variant as a potential source of tarsal tunnel syndrome.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ali Dourra, DPM	ali.dourra@corewellhealth.org	I/We have nothing to disclose	
Lawrence Fallat, DPM, FACFAS	lawrence.fallat@corewellhealth.org	I/We have nothing to disclose	

Title

Limb Preservation Utilizing Tibiotalar Calcaneal Fusion after Open Ankle Fracture with Tibial Osteomyelitis; A Case Report to Demonstrate Use in Non-Diabetic Patient Population

Submit Date

08/30/2023

Correspondent

Last Name: Leyk

Full Name: Madison, G, Leyk, DPM

Practice/Company/Residency Program:

Email: madison.leyk@hmed.org

Hennepin Healthcare

Authors

Author 1: Madison Leyk, DPM

Author 3: Michelle Winder, DPM FACFAS

Author 5:

Author 7:

Author 2: Kimberly Bobbitt, DPM FACFAS

Author 4:

Author 6:

Author 8:

Purpose

Limb preservation commonly refers to an older, diabetic population. This case presentation will review limb preservation in a young male through external and internal fixation that was complicated by tibial osteomyelitis.

Methodology

Procedures

A 28-year-old male with severe post-traumatic arthritis secondary to an open ankle fracture presented with a semi-rigid ankle valgus and suspected tibial osteomyelitis. The patient underwent multiple staged surgeries and obtained greater than 50% fusion of the ankle and subtalar joint utilizing external and internal fixation.

Results

The patient initially underwent hardware removal, antibiotic spacer placement, and ankle arthroscopy with bone biopsies in November 2021, which confirmed tibial osteomyelitis. An external fixator was applied January 2022 for ankle joint fusion but removed July 2022 per patient request. He underwent TTC arthrodesis in August 2022 after negative repeat bone cultures with internal fixation and obtained >50% fusion seven months post-operatively.

Discussions

Fusion of an infected joint is not commonly seen and is a large undertaking of the attending podiatric surgeon and patient. Utilizing external and internal fixation for fusion can achieve the desired result but is routinely met with complications. A literature review of rearfoot fusion using external and internal fixation revealed similar indications and complicated post-operative courses when compared to our current case review. The literature described patients much older than our case review with ages typically in their mid to late 50's and time to fusion ranging from 5 months to 10 months.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Madison Leyk, DPM	madison.leyk@hmed.org	I/We have nothing to disclose	
Kimberly Bobbitt, DPM FACFAS	kimberly.bobbitt@hmed.org	I/We have nothing to disclose	
Michelle Winder, DPM FACFAS	michelle.winder@hmed.org	I/We have nothing to disclose	

Title

Management of Unique Presentation of Charcot at the Interphalangeal Joint

Submit Date

08/30/2023

Correspondent

Last Name: Redzematovic

Full Name: Kenan Redzematovic, DPM

Practice/Company/Residency Program:

Email: kenanredzematovic@gmail.com

St. Mary's General Hospital

Authors

Author 1: Kenan Redzematovic, DPM

Author 3: Rachel Gerber DPM, AACFAS

Author 5:

Author 7:

Author 2: Henna Akbarzai, DPM

Author 4: Michael Subik, DPM, FACFAS

Author 6:

Author 8:

Purpose

Charcot neuroarthropathy is a destructive joint disorder commonly affecting the midfoot and rearfoot joints in the lower extremity. A Sanders and Frykberg Type 1 is an uncommon presentation with little evidence on proper operative management. This case report documents the clinical and operative course, as well as one year functional outcome involving a patient with charcot neuroarthropathy localized to the hallux interphalangeal joint (IPJ).

Methodology

Procedures

A 64-year-old male with past medical history significant for hypertension, hyperlipidemia, type II diabetes mellitus and neuropathy presented with 4-year history of a wound to plantar left hallux IPJ. X-ray findings revealed bony demineralization and osteolytic changes to proximal and distal phalanx. Patient underwent IPJ arthrodesis twice due to failure of hardware after the index procedure. Procedure: Initial percutaneous fixation with 4.5mm and 2.0mm partially threaded screws. Revisional fixation with 4.0mm Steinmann pin and 2.4mm K-wire. Bone biopsies were negative for infection, and imaging supported the diagnosis of IPJ Charcot.

Results

Successful fixation with steinmann pin and K-wire in this patient leading to plantigrade ulcer free foot one-year post operatively.

Discussions

Current research on management of Charcot at atypical locations is lacking. Our case study reviews consequences of improper fixation and outlines the postoperative course when adequate fixation is applied. We believe this research will assist in diagnosing and decreasing the risk of amputation in patients with Charcot at atypical locations.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kenan Redzematovic, DPM	kenanredzematovic@gmail.com	I/We have nothing to disclose	
Henna Akbarzai, DPM	hakbarzai@gmail.com	I/We have nothing to disclose	
Rachel Gerber DPM, AACFAS	rachel.gerber.dpm@gmail.com	I/We have nothing to disclose	
Michael Subik, DPM, FACFAS	drsubik@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Orthofix, Stryker, BD, Trice

Title

Surgical and Conservative Management of a Non-Compliant Patient with 11.0cm Achilles Tendon Deficit following Rupture; A Case Review

Submit Date

08/30/2023

Correspondent

Last Name: Leyk
 Full Name: Madison, G, Leyk, DPM Email: madison.leyk@hmed.org
 Practice/Company/Residency Program: Hennepin Healthcare

Authors

Author 1: Madison Leyk, DPM Author 2: Kimberly Bobbitt, DPM FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Achilles tendon rupture management has continued to evolve in respect to conservative and surgical management. The literature describes improved outcomes with operative management of defects greater than 2-3cm. This case study will walk through the post-operative course of a non-complaint 39-year-old male pursuing conservative management with an 11.0cm Achilles Tendon defect.

Methodology

Procedures

A 39-year-old male underwent a V to Y myotendinous junction lengthening with an outside provider for an acute Achilles tendon rupture. The initial post-operative course was complicated by non-compliance resulting in incision dehiscence requiring a return to the operating room for delta frame application and Achilles tendon debridement leaving an 11.0 cm defect that has since been treated conservatively.

Results

The patient regained 4 out of 5 plantarflexion strength ten months post-operatively. He comfortably wears his preferred shoe gear with an AFO and returned to his pre-injury level of physical activity at his one-year post-operative appointment.

Discussions

Conservative versus operative management of an Achilles tendon rupture is driven by the size of the defect and the patients functional goals. Current literature of Achilles tendon ruptures describes reduced daily functional abilities when defects less than 2.0 cm were treated conservatively. There is a paucity of literature describing the outcomes of a major Achilles tendon defect reconstruction with a defect the size of the current case study.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Madison Leyk, DPM	madison.leyk@hmed.org	I/We have nothing to disclose	
Kimberly Bobbitt, DPM FACFAS	kimberly.bobbitt@hmed.org	I/We have nothing to disclose	

Title

Vacuum Assisted Bone Marrow Curettage with Implantation of Antibiotic Bone Substitute for Treatment for Pathologic Tibial Fracture and Calcaneal Osteomyelitis in a Paraplegic

Submit Date 08/30/2023

Correspondent

Last Name: Amjad
 Full Name: Uzair
 Practice/Company/Residency Program: Uzair Amjad, DPM
 Email: uzair.amjad@yale.edu
 Yale New Haven Health

Authors

Author 1: Uzair Amjad, DPM	Author 2: Alexander Fried, DPM
Author 3: Steven D. Vyce, DPM, FACFAS	Author 4: Michael I. Gazes, DPM, MPH, FACFAS
Author 5:	Author 6:
Author 7:	Author 8:

Purpose To showcase a limb salvage technique utilizing an egg-shell type debridement of various bones in the lower extremities, with application of antibiotic impregnated calcium sulfate and calcium phosphate bone substitute allowing full preservation of the bilateral lower limbs.

Methodology

Procedures A 55-year-old male with substance use disorder that presents with bilateral heel pressure wounds. The patient eventually developed adducto-varus due to his paraplegia. He went into septic shock and osteomyelitis of the calcaneus and tibia. In addition to antibiotic therapy, a vacuum assisted bone marrow curettage harvester was used to create a cortical window to perform "egg-shell" type debridement of underlying cancellous bone while taking care to preserve the cortical bone. The voids were back filled with vancomycin and tobramycin-impregnated calcium sulfate and calcium phosphate. After further antibiotic and advanced wound care with offloading, bilateral lower extremities subsequently healed.

Results Vacuum Assisted Bone Marrow Curettage with Implantation of Antibiotic Bone Substitute for Tibial and Calcaneal Osteomyelitis

Discussions This novel "egg-shell" type bone debridement technique removes osteomyelitic cancellous bone while preserving the cortical bone. This technique can be particularly useful in the setting of osteomyelitis and attempts at limb salvage. This technique allows preservation of bilateral lower extremities in a bed-bound paraplegic patient, thus decreasing the need for proximal amputation.

Format Case Study

Case Rpt Followup 23

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Uzair Amjad, DPM	uzair.amjad@yale.edu	I/We have nothing to disclose	
Alexander Fried, DPM	alexander.fried@yale.edu	I/We have nothing to disclose	
Steven D. Vyce, DPM, FACFAS	steven.vyce@yale.edu	I/We have nothing to disclose	
Michael I. Gazes, DPM, MPH, FACFAS	Michael.gazes@yale.edu	I/We have nothing to disclose	

Title

Endoscopic Decompression of Leg Compartments for Management of Exertional Compartment Syndrome

Submit Date

08/30/2023

Correspondent

Last Name: SINGH
 Full Name: Jaipal Singh Email: jaipals@live.com
 Practice/Company/Residency Program: Inspira Medical Center

Authors

Author 1: Benjamin Marder, DPM, FACFAS Author 2: Jaipal Singh, DPM
 Author 3: Janki Patel, DPM Author 4: Anish Patel, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Chronic exertional compartment syndrome is an activity induced condition which leads to significantly elevated intra-compartmental pressures. This increased pressure can lead to pain, reversible tissue ischemia, and numbness. Non-operative options are generally unsuccessful without significant activity modification. Traditionally, a subcutaneous or open fasciotomy is performed. However, these have drawbacks such as increased healing time and scarring. An endoscopic fasciotomy is a less invasive surgical option. This case study documents a 19-year-old female collegiate athlete who elected to undergo endoscopic fasciotomies for CECS of her bilateral legs.

Methodology

Procedures

19 year old female collegiate athlete with outpatient testing confirming exertional compartment syndrome to bilateral legs. She failed conservative care and elected to undergo decompression of bilateral leg compartments. Procedure: Endoscopic fasciotomy of anterior, lateral, and deep posterior compartments to bilateral legs.

Results

Two successful endoscopic fasciotomies of bilateral anterior, lateral, deep posterior leg compartments

Discussions

Chronic exertional compartment syndrome should be considered in active patients who present with activity induced pain, numbness, and cramping. Surgical treatment is a superior option to conservative management in patients who want to continue to be highly active. This study documented a successful endoscopic fasciotomy in a 19-year-old female collegiate runner. She reported a significant reduction in symptoms after surgery and returned to full sport participation within two months.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Benjamin Marder, DPM, FACFAS	benjamin.marder@gmail.com	I/We have nothing to disclose	
Jaipal Singh, DPM	jaipals@live.com	I/We have nothing to disclose	
Janki Patel, DPM	j.patel@my.rfums.org	I/We have nothing to disclose	
Anish Patel, DPM	apatel1218@gmail.com	I/We have nothing to disclose	

Title	A Novel Approach with End-Stage Hallux Rigidus Choosing Function over Fusion with Hemi Implant		
Submit Date	08/30/2023		
Correspondent	Last Name: Garcia	Email: michelle.garcia1029@gmail.com	
	Full Name: Michelle, A, Garcia, DPM	Practice/Company/Residency Program: Kent Hospital Residency	
Authors	Author 1: Michelle, A, Garcia, DPM	Author 2:	
	Author 3:	Author 4:	
	Author 5:	Author 6:	
	Author 7:	Author 8:	
Purpose	Hallux Rigidus is common degenerative arthritis of the first metatarsal phalangeal joint (MPJ) with debilitating effects on one's quality of life. Advanced stages of Hallux Rigidus determined by the Coghlin and Shurnas classification, are usually managed with the goal of surgery to alleviate pain rather than improve motion. First metatarsophalangeal joint fusion is considered the gold standard of treatment in patients with advanced stages. However, with the advancing technology of implants, it may be time to consider alternate first-line treatment in patients who want to preserve motion and alleviate pain. This case series documents several cases of advanced Hallux Rigidus that received pain relief while improving motion with a hemi implant as first-line treatment.		
Methodology			
Procedures	Three patients undergoing surgery for stage 3 or 4 of Coghlin and Shurnas with a hemi implant of the metatarsal head. The VAS, AOFAS, and dorsiflexion were recorded preoperatively, at six weeks, six months, and twelve months.		
Results	Three patients with advanced Hallux Rigidus noted improvements in VAS, AOFAS, and first metatarsophalangeal joint dorsiflexion with the hemi implant.		
Discussions	First metatarsophalangeal joint fusion is considered the gold standard for treatment in patients with end-stage Hallux Rigidus. However, an arthrodesis compromises function for pain relief. In this study, three patients with advanced Hallux Rigidus underwent a metatarsal head hemi implant, with noted improvements in VAS score, AOFAS, and dorsiflexion. Clinicians should consider in some patients who would like to preserve their motion, hemi implants could be an optimal first-line treatment in the end-stage of Hallux Rigidus.		
Format	Case Study		
Case Rpt Followup	12		
Student Club	Not a Student Club Poster		
Classification	Forefoot Reconstruction		
Level of Evidence	Level IV		
Authors/Financial Disclosures			
Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michelle, A, Garcia, DPM	michelle.garcia1029@gmail.com	I/We have nothing to disclose	

Title **Compartment Syndrome in a Patient with Streptococcal Necrotizing Fasciitis: A Case Report**

Submit Date 08/30/2023

Correspondent

Last Name: Husic
 Full Name: Ridvan Email: ridvanhusic423@gmail.com
 Practice/Company/Residency Program: St. Mary's General Hospital

Authors

Author 1: Henna S. Akbarzai, DPM Author 2: Melody John, DPM
 Author 3: Rachel E. Gerber, DPM AACFAS Author 4: Michael Subik, DPM FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Compartment syndrome is a well-known severe condition that if left unattended can lead to compromised tissue perfusion and irreversible damage. As such, compartment syndrome requires swift clinical identification and decompressive surgical intervention. The purpose of the study is to raise clinical awareness to a rare presentation of compartment syndrome, thus reducing morbidity and mortality.

Methodology

Procedures

A 58 year old male with past medical history of hypertension presented to the emergency room two days after twisting his right ankle on a set of stairs. On presentation, the patient had severe 10/10 pain of the entire right lower limb. Initial laboratory findings revealed a WBC of 26.10, Na 133, Cr 4.1, AST 101, ALT 63, HbA1c 6.3, PT 30.7, INR 2.97, PTT 45.6, ESR 19. On physical examination, the patient had significant edema to the right lower limb, minimal range of motion to the digits, decreased sensation and decreased pulse compared to the contralateral limb. Utilizing a wicks catheter, first interspace was 77mmHg, fourth interspace was 48mmHg and lateral compartment was 68mmHg. Patient was then subsequently brought to the operating room for emergency fasciotomies.

Results

Significant amounts of purulent drainage were noted along with soft tissue discoloration.. The patient, unfortunately, coded in the operating room, was found to have a STEMI as well as multiple pulmonary emboli and subsequently was pronounced.

Discussions

Compartment syndrome commonly arises in the clinical setting in conjunction with severe trauma; however, there are rare secondary causes. The case presented is compartment syndrome of the foot caused by streptococcal necrotizing fasciitis

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Henna S. Akbarzai, DPM	hakbarzai@gmail.com	I/We have nothing to disclose	
Melody John, DPM	melodyyau1@gmail.com	I/We have nothing to disclose	
Rachel E. Gerber, DPM AACFAS	rachel.gerber.dpm@gmail.com	I/We have nothing to disclose	
Michael Subik, DPM FACFAS	drsubik@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker, Orthofix, Trice, BD

Title

Revision lateral ankle stabilization with synthetic elastic degradable matrix after prior failed suturetape fixation: midterm functional and radiographic outcomes

Submit Date 08/31/2023

Correspondent

Last Name: Lakhani
 Full Name: Rahim, R, Lakhani DPM Email: rlakhani327@gmail.com
 Practice/Company/Residency Program: Martin Foot and Ankle

Authors

Author 1: Rahim Rafiq Lakhani Author 2: Chloe Sakow DPM, MPH
 Author 3: Michael Younes, DPM, MBA, FACFAS Author 4: Jennifer Mulhern, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Research is limited when it comes to failed lateral ankle stabilization and viable surgical revisional options. Repair utilizing suturetape fixation can often fail due to overtightening, subsequently altering the normal integrity of the ligament complex and restricting the subtalar joint motion. Elastic degradable matrix is an absorbable biomaterial that allows normal anatomic contraction under tension while maintaining stability; this has not been studied as a revision option for initial overtightened suture tape repair.

Methodology

Procedures

Three cases were included in this retrospective analysis, which consisted of initial modified Brostrom ligament repair and suture tape fixation for lateral ankle stabilization. All three cases then underwent revisional modified Brostrom with implementation of an elastic degradable matrix. Postoperatively, patients were non-weight bearing for 2 weeks followed by protective weight-bearing with physical therapy initiated from weeks 2-8.

Results

Average radiographic anterior talar tilt, clinical anterior drawer and stress inversion exams were measured at initial preop, initial postop, revision preop, and revision postop. Post-revisional surgery at 2 weeks and 15 weeks all revealed within normal radiographic and clinical exam findings. Patients were fully weight-bearing and back to activity by 10 weeks after revision. All patients had 80% or greater reduction in pain at the 10 week mark compared to initial pre-op and initial postop evaluation.

Discussions

A complication with suture tape is potentially iatrogenic over tightening during fixation. Elastic degradable matrix is an option for failed initial lateral ankle stabilization with suturetape, allowing for a more physiologic augmentation at normal anatomic tension.

Format Case Study

Case Rpt Followup 15

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rahim Rafiq Lakhani	rlakhani327@gmail.com	I/We have nothing to disclose	
Chloe Sakow DPM, MPH	chloesakow@gmail.com	I/We have nothing to disclose	
Michael Younes, DPM, MBA, FACFAS	younes.mike@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Artelon
Jennifer Mulhern, DPM, FACFAS	jlmulhern@gmail.com	I/We have nothing to disclose	

Title

Synthetic elastic degradable matrix fixation for progressive deltoid insufficiency following flatfoot reconstruction

Submit Date 08/31/2023

Correspondent

Last Name: Lakhani
 Full Name: Rahim, R, Lakhani, DPM Email: rlakhani327@gmail.com
 Practice/Company/Residency Program: Martin Foot and Ankle

Authors

Author 1: Rahim, R, Lakhani, DPM Author 2: Chloe, Sakow DPM, MPH
 Author 3: Michael, B, Younes, DPM, MBA, FACFAS Author 4: Jennifer, Mulhern, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

In stage IV acquired flatfoot deformity, deltoid insufficiency and valgus talar tilt are frustrating outcomes following initial flatfoot reconstruction. Various deltoid reconstruction techniques have been described, including allograft and suturetape augmentation. Biomechanical studies show increased strain across the deltoid ligament at heel rise after triple arthrodesis. Synthetic elastic degradable matrix fixation with anatomic tensioning, along with reconstructive repair of the superficial and deep deltoid ligament insufficiency has not yet been studied as a viable surgical revision option.

Methodology

Procedures

One case study examines a 65 year old morbidly obese (BMI=41), type 2 diabetic who underwent prior subtalar and talonavicular arthrodesis for a rigid flatfoot deformity and presented 3 years postop with medial ankle instability and deltoid insufficiency. At 4 years postop she underwent superficial and deep deltoid reconstruction and augmentation using synthetic elastic degradable matrix fixation. The spring ligament was not addressed during revision surgery.

Results

Initial preop and postop talar tilt on AP and mortise radiographs measured 0 degrees, but at 3 years postop it measured 12 degrees of valgus. After deltoid reconstruction, the talar tilt measured 0 degrees at 1 week, 10 weeks, and 1 year follow up.

Discussions

Synthetic elastic degradable matrix fixation offers an absorbable, safe option with outcomes similar to literature reports of suture tape augmentation for deltoid insufficiency following flatfoot reconstruction. Consideration for medialization of the calcaneus at time of flatfoot reconstruction is essential to minimize stress across the deltoid complex, and can be considered an adjunct procedure at time of revision with deltoid augmentation and reconstruction.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rahim, R, Lakhani, DPM	rlakhani327@gmail.com	I/We have nothing to disclose	
Chloe, Sakow DPM, MPH	chloesakow@gmail.com	I/We have nothing to disclose	
Michael, B, Younes, DPM, MBA, FACFAS	younes.mike@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Artelon
Jennifer, Mulhern, DPM, FACFAS	jlmulhern@gmail.com	I/We have nothing to disclose	

Title **Current evidence based recommendations on recurrent osteochondroma of the second metatarsal requiring staged resection**

Submit Date 08/31/2023

Correspondent

Last Name: Lakhani
 Full Name: Rahim, R, Lakhani, DPM Email: rlakhani327@gmail.com
 Practice/Company/Residency Program: Martin Foot and Ankle

Authors

Author 1: Rahim, R, Lakhani, DPM Author 2: Chloe, Sakow DPM, MPH
 Author 3: Michael, B, Younes, DPM, MBA, FACFAS Author 4: Jennifer, Mulhern, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Osteochondromas are slow growing benign bone tumors that rarely metastasize to chondrosarcomas. Current literature estimates a 1-2% recurrence rate after surgical resection over a 10 year period. Limited research exists to direct surgical planning for recurrent solitary osteochondromas.

Methodology**Procedures**

One 27 year old male with an unremarkable past medical history presented to the office with generalized tenderness, numbness, and tingling to the second ray of the left foot. Initial diagnostic imaging (radiographs and MRI) identified a solitary osteochondroma, where initial partial second metatarsal resection surgery with biopsy was completed. A second radical resection of the second metatarsal was necessary after recurrence approximately five years later.

Results

After evaluation by orthopedic oncology, the patient underwent partial resection at the stalk of the osteochondroma in 2017. Revision surgery involved radical resection of the left second metatarsal with syndactylization of the left second and third digits. The resected bone tumor measured 3.2x3.0x2.8 cm with confirmed negative proximal bone margins. The patient was followed for an additional 5 years with serial radiographs to confirm remission.

Discussions

Recurrence of osteochondromas at the same site are attributed to poor initial surgical resection technique with possible conversion to malignancy. Marginal resection at the base of the stalk, including the cartilage cap is essential to prevent recurrence. CT or MRI assists with classification, grading, and staging. Wide surgical resection is the gold standard for secondary chondrosarcomas to prevent malignant transformation.

Format

Case Study

Case Rpt Followup

70

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rahim, R, Lakhani, DPM	rlakhani327@gmail.com	I/We have nothing to disclose	
Chloe, Sakow DPM, MPH	chloesakow@gmail.com	I/We have nothing to disclose	
Michael, B, Younes, DPM, MBA, FACFAS	younes.mike@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Artelon
Jennifer, Mulhern, DPM, FACFAS	jlmulhern@gmail.com	I/We have nothing to disclose	

Title

Clinical evidence for a novel technique for failed decompression of sural nerve

Submit Date

08/30/2023

Correspondent

Last Name: Khazi
Full Name: Junaid M Z Khazi, DPM
Practice/Company/Residency Program:
Email: jkhazi@mercy.com
Mercy Health -St. Vincent Medical Center

Authors

Author 1: Junaid. M. Z. Khazi, DPM
Author 2: Riya Vyas, DPM
Author 3: Jian Zeng, DPM
Author 4: Quinn Schroeder, DPM
Author 5: Kyle McKray Smith, DPM
Author 6:
Author 7:
Author 8:

Purpose

The objective of this case study is to present clinical evidence for reset neurectomy, a novel technique for patients with pain from a nontransection nerve injury. Much of this case study correlates with and reinforces the rational and surgical technique presented by Eberlin et.al. These nontransectional nerve injuries present in the form of pain and sensory distribution with preservation of function. Based on history and physical exam, a local anesthetic block is performed and with successful pain mitigation warrants surgery.

Methodology

Procedures

Our retrospective study includes 3 patients who underwent sural nerve reset neurectomies after single or multiple failed sural nerve decompressive surgeries. Patients underwent local anesthetic block proximal to the zone of injury which resulted in pain relief that warranted surgery. All conservative treatments were exhausted like physical therapy and pharmacotherapy. Preoperative NCV tests were also performed to assess the extent of damage to the nerve. Surgically, affected nerve was resected 5 cm proximal to the zone of injury. Nerve matrix conduit were placed in 2 patients and 1 allograft between the nerve ends and epineurium was sutured to conduits for axonal growth

Results

We compared pre and post-operative findings and noticed immediate relief post-surgically. Postoperatively overall patients reported 0/10 pain as their sensation is diminished but not gone and function is preserved.

Discussions

Patients were placed on multi-modal therapy including non-narcotic neuropathic pain medication to facilitate neurogenesis at the nerve matrix conduit. These patients also worked with physical therapy to help with gait training, axonal regeneration, and overall improved range of motion.

Format

Case Study

Case Rpt Followup

15

Student Club

Not a Student Club Poster

Classification

Neurological/Peripheral Nerve Disorders

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, and Disclosed Organisation(s). Rows include Junaid. M. Z. Khazi, Riya Vyas, Jian Zeng, Quinn Schroeder, and Kyle McKray Smith.

Title

The Rare Occurrence of Critical Limb Ischemia Caused by COVID-19

Submit Date

08/30/2023

Correspondent

Last Name: Syed

Full Name: Naureen Syed, DPM

Email: naureensyed3@gmail.com

Practice/Company/Residency Program:

Detroit Medical Center

Authors

Author 1: Naureen Syed, DPM

Author 2: Seth Wimbley, DPM

Author 3: Jordan Young, DPM

Author 4: Raed Al-Gharib, DPM

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

This case highlights the spontaneous occurrence of critical limb ischemia (CLI) to a patient's bilateral feet after contracting the Coronavirus disease (COVID-19).

Methodology

Procedures

COVID-19 was the subject of the recent pandemic that began in 2019. Although vaccinations and respiratory therapy have decreased its mortality over time, there have been new symptoms that have been unaccounted for. One rare occurrence is the spontaneous discoloration and overall ischemic progression to the toes. 59 year old active male presents with painful cramping of bilateral feet after a recent diagnosis of COVID-19. He was confirmed to have aortoiliac thrombosis and underwent tPA thrombolysis with success. Repeat arterial studies showed multiphasic bilateral inflow with poor intrinsic feet circulation and overall no flow to patient's digits. Patient's feet started to quickly demarcate.

Results

After medical clearance, the patient underwent bilateral transmetatarsal amputations and subsequent graft and wound vacuum applications for closure. The patient healed without complication and continues to remain pain free without recurrence of ischemia at the two-year follow up.

Discussions

In this case, a patient presented with bilateral painful feet secondary to CLI that began shortly after contracting COVID-19. Patient had no active comorbidities that would contribute to this sudden vascular insufficiency. One of the rising complications of this virus is hypercoagulability which may explain the occurrence of this patient's aortoiliac thrombosis thus leading to CLI. It is crucial to be aware of such unique symptoms that can potentially lead to limb loss as highlighted in this unique case of "COVID toes."

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Naureen Syed, DPM	naureensyed3@gmail.com	I/We have nothing to disclose	
Seth Wimbley, DPM	wimbleys1437@gmail.com	I/We have nothing to disclose	
Jordan Young, DPM	jyou134@kent.edu	I/We have nothing to disclose	
Raed Al-Gharib, DPM	ralghari@kent.edu	I/We have nothing to disclose	

Title New Age approach to Charcot arthrodesis**Submit Date** 08/30/2023**Correspondent**

Last Name: Khazi
 Full Name: Junaid. M. Z. Khazi, DPM Email: jkhazi@mercy.com
 Practice/Company/Residency Program: Mercy Health - St. Vincent Medical Center

Authors

Author 1: Junaid M.Z. Khazi, DPM Author 2: Kyle McKray Smith, DPM
 Author 3: Riya Vyas, DPM Author 4: Jian Zeng, DPM
 Author 5: Mitchel Rogaliner, DPM Author 6:
 Author 7: Author 8:

Purpose

Charcot neuroarthropathy is a debilitating and progressive disease in the setting of diabetes where the bones and joints of the foot are affected leading to the collapse of the midfoot, instability with gait, and possible ulceration to plantar midfoot. Standard surgical treatment for Charcot neuroarthropathy is an aggressive open surgical approach during correction. This retrospective poster discusses the benefits of minimally invasive Charcot reconstruction and addresses the hindfoot based on literature review and clinical evidence. Complications with open surgical approaches include delayed wound healing, ulcerations, and possible infection of the arthrodesis site compared to minimally invasive surgical technique to help minimize the incision site thus decreasing incision healing, vascular compromise and achieving arthrodesis at the osteotomy site.

Methodology**Procedures**

Our retrospective study includes 5 patients who underwent staged minimally invasive Charcot reconstructive surgery. The first stage of the surgery included minimally invasive preparation of Charcot joints and bones with the application of an external fixator. The external fixator was kept in place for approximately 12 weeks for consolidation of the arthrodesis site. Stage 2 of the surgery included the removal of external fixator and insertion of an intramedullary nail with and without beaming of the midfoot joint.

Results

We compared pre and post-radiographic findings and significant changes noted to the restoration of the midfoot, arch of the foot, calcaneal height, and Meary's angle.

Discussions

We did encounter complications with 2 of our patients including one pin site infection and one heel ulcer due to the posterior splint, which required a soft tissue advancement flap to heal

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Junaid M.Z. Khazi, DPM	jkhazi@mercy.com	I/We have nothing to disclose	
Kyle McKray Smith, DPM	kmckraysmith@toledoclinic.com	I/We have nothing to disclose	
Riya Vyas, DPM	ryyas@mercy.com	I/We have nothing to disclose	
Jian Zeng, DPM	jzeng@mercy.com	I/We have nothing to disclose	
Mitchel Rogaliner, DPM	mrogaliner@mercy.com	I/We have nothing to disclose	

Title Patient Non-Compliance and Self-Negligence Leads to Squamous Cell Carcinoma and Further Orthopedic Complications

Submit Date 08/31/2023

Correspondent
 Last Name: Mohiuddin
 Full Name: Hiba Mohiuddin, DPM Email: hiba_mohiuddin@yahoo.com
 Practice/Company/Residency Program: Baltimore VAMC / Sinai Foot & Ankle Surgical Residency Program

Authors
 Author 1: Hiba Mohiuddin, DPM Author 2: Nabih Masri, DPM
 Author 3: Hummira Abawi, DPM, FAFAS, DABPM Author 4: Emily Durrance, DPM, FAFAS
 Author 5: Vincent Ng, MD Author 6:
 Author 7: Author 8:

Purpose
 We present a case of Squamous Cell Carcinoma (SCC) in a Podiatric patient who initially presented for management of persistent bilateral foot and ankle wounds leading to osteomyelitis. In addition to early identification and intervention, close outpatient monitoring in high-risk patients is a key component to limit unexpected readmissions.

Methodology

Procedures
 29-year-old type 2 diabetic female admitted on multiple occasions for foot and ankle infections over a course of approximately four years. During her admissions, numerous encounters of non-compliance and leaving AMA were noted. She eventually underwent a Chopart's amputation for infection management and her intra operative cultures noted osteomyelitis of the calcaneus and squamous cell carcinoma of her non healing wound. Patient was referred to orthopedic oncology for further management.

Results
 Extensive physical examination revealed enlarged lymph nodes and PET CT confirmed localization of SCC. Left BKA was completed to ensure appropriate margins were obtained for both the OM and SCC. The decision to biopsy the left ankle proved to be a key step in identifying SCC.

Discussions
 Squamous cell carcinoma of the lower extremities is very rare. Social economic barriers and noncompliance place patients at high risk for metastatic changes. There is limited literature on the correlation between compliance and wound metastasis. Though early detection of the SCC was identified with biopsy, setting benchmarks to identify wound patients at high risk for readmission may help provide socioeconomic support in the outpatient setting.

Format Case Study

Case Rpt Followup 53

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hiba Mohiuddin, DPM	hiba_mohiuddin@yahoo.com	I/We have nothing to disclose	
Nabih Masri, DPM	masri_nabih@yahoo.com	I/We have nothing to disclose	
Hummira Abawi, DPM, FAFAS, DABPM	habawi@som.umaryland.edu	I/We have nothing to disclose	
Emily Durrance, DPM, FAFAS	edurran@som.umaryland.edu	I/We have nothing to disclose	
Vincent Ng, MD	vng@umm.edu	I/We have nothing to disclose	

Title

Total Ankle Arthroplasty with Lateral Ankle Ligament Reconstruction Using A Combined Percutaneous and Mini-Open Technique

Submit Date

08/30/2023

Correspondent

Last Name: Smith
 Full Name: Joshua T. Smith, DPM Email: jtsmith3912@gmail.com
 Practice/Company/Residency Program: VMFH Franciscan Health System - St. Francis Hospital

Authors

Author 1: Joshua Tyler Smith Author 2: Ravneet Sandhu, DPM
 Author 3: Lauren Likewise, DPM Author 4: Todd M. Chappell, DPM FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Patients who undergo total ankle arthroplasty (TAA) frequently have lateral ankle instability that needs to be addressed during their arthroplasty procedure. The purpose of this study is to demonstrate the effectiveness of treating lateral ankle instability during TAA while utilizing a combined percutaneous and mini-open (CPMO) technique for lateral ankle ligament repair.

Methodology

Procedures

We reviewed 5 patients with pre-operative radiographs demonstrating intrinsic ankle varus and clinical instability who received TAA with lateral ankle stabilization placed at the time of implantation with minimum of 1 year follow up. All cases were performed by one surgeon using the same technique. Procedure: After TAA implantation, lateral ligament repair is performed utilizing a CPMO technique through a 2 cm incision at the anterior margin of the fibula. Subsequent anchor placement for anterior talofibular and calcaneofibular ligaments are repaired utilizing a percutaneous technique including the extensor retinaculum and retrieval of suture material through the initial incision with care taken to avoid all neurovascular structures. This is then augmented with a suture tape construct.

Results

5 patients underwent TAA with CPMO lateral ligament repair and had clinical and symptomatic relief of instability without wound or nerve complications.

Discussions

Patients undergoing TAA frequently demonstrate need for lateral ligament repair. Literature is sparse detailing what methods are used to perform lateral ligament repair in conjunction with TAA. Using a CPMO technique, lateral ankle ligament reconstruction was successfully performed on five patients with a minimum 12 month follow up. All patients reported clinical and symptomatic improvement of instability without wound or nerve complications.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joshua Tyler Smith	jtsmith3912@gmail.com	I/We have nothing to disclose	
Ravneet Sandhu, DPM	ravksandhu2004@gmail.com	I/We have nothing to disclose	
Lauren Likewise, DPM	laurenlikewise@gmail.com	I/We have nothing to disclose	
Todd M. Chappell, DPM FACFAS	todd.chapps@gmail.com	I/We have nothing to disclose	

Title

Early Experience with Lengthening Osteotomy of the Medial Malleolus in Ankle Varus

Submit Date

08/30/2023

Correspondent

Last Name: Sakkab

Full Name: Ramez S. Sakkab, DPM, FACFAS

Email: rasakkab@gmail.com

Practice/Company/Residency Program:

Phoenix Foot & Ankle Institute

Authors

Author 1: Ramez S. Sakkab, DPM, FACFAS

Author 2: Jeffrey E. McAlister, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Coronal plane ankle deformities were once considered contraindications for total ankle arthroplasty (TAA) in the treatment of ankle osteoarthritis. As total ankle implants and implantation techniques matured, indications for TAA grew. Currently, ankle deformities may receive arthroplasty if the deformity is properly corrected. There is no consensus on technique to correct preoperative varus deformity at the ankle joint level. The current series documents several cases of ankle varus corrected via medial malleolar lengthening (Doets) osteotomy.

Methodology

Procedures

Twelve patients identified who underwent medial malleolar lengthening osteotomy for ankle varus, 9 met inclusion and exclusion criteria.

Results

Six patients underwent staged or simultaneous femoral head allograft medial malleolar lengthening osteotomy with TAA and ancillary procedures. Three underwent Doets osteotomy with tibiotalar canal arthrodesis. A mean age of 61.3 years and mean body mass index of 31.2 (kg*m2) was observed. Not all osteotomies progressed to radiographic graft incorporation (6/9) at an average of 14 months post-operatively. All patients had improvement in function and radiographic alignment (p<0.01). No reoperations or major complications occurred.

Discussions

Given the increasing rate of TAA for treatment of tibiotalar osteoarthritis, techniques for correction of pre-operative deformity need to be standardized. The present series demonstrates the power of medial malleolar lengthening osteotomy for rectifying varus malalignment with a center of rotation and angulation at the ankle. While promising, patients may need to be counseled that asymptomatic pseudoarthrosis is common (33%). Further research is needed regarding management of coronal plane deformities in ankle reconstruction.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ramez S. Sakkab, DPM, FACFAS	rasakkab@gmail.com	I/We have nothing to disclose	

Jeffrey E. McAlister, DPM, FACFAS	Jeff.mcalister@phoenixfai.com	Consultant/Advisor/Speaker (List all affiliations)	Jeffrey E. McAlister, DPM, FACFAS, declares a relationship of consultant with: Smith & Nephew plc., Medline Industries Inc., Treace Medical Concepts Inc, Globus Medical Inc.
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Title Delayed Presentation of a Calcaneal Avulsion Fracture**Submit Date** 08/30/2023

Correspondent

Last Name: Morlock
 Full Name: Callie, LH, Morlock, DPM Email: clhmorlock@gmail.com
 Practice/Company/Residency Program: Banner North Colorado Medical Center

Authors

Author 1: Callie Morlock Author 2: Ryan, D, Moss, DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose To demonstrate the challenging nature of calcaneal avulsion fractures with an added difficulty due to compromised soft tissue.

Methodology

Procedures A patient that presented multiple days after sustaining a calcaneal fracture. Preoperative x-rays revealed a tongue type fracture pattern with no other acute osseous abnormalities. Physical exam findings included a significant amount of soft tissue necrosis with an open wound probing to the avulsed fracture fragment.

Results After two open reduction internal fixation procedures, an Achilles tendon repair, and hardware removal, the patient progressed to full bony consolidation across the fracture site. During the healing process, local wound care was required due to the compromised soft tissue. At follow up, no pain or tenderness was noted to the surgical site.

Discussions Tongue type fractures account for 1.3 to 2.7% of all calcaneal fractures and usually result from insufficiency of bone quality or a strong force of muscular contraction combined with a direct impact injury. These injuries pose a great risk for soft tissue compromise due to the pressure from the avulsed fracture fragment making it imperative to address this injury urgently. Despite the need for quick treatment planning, there is no gold standard of fixation for these types of injuries and can lead to complications during the healing process. Clinicians should be aware of the fixation options and the need for urgent attention to prevent compromised skin quality.

Format Case Study**Case Rpt Followup** 13**Student Club** Not a Student Club Poster**Classification** Rearfoot and Ankle Reconstruction**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Callie Morlock	clhmorlock@gmail.com	I/We have nothing to disclose	
Ryan, D, Moss, DPM	ryan.moss@bannerhealth.com	I/We have nothing to disclose	

Title**Anatomical variation in the ankle and foot: incidental finding of peroneal longus insertion on fourth metatarsal on MRI****Submit Date**

08/30/2023

Correspondent

Last Name: Vo

Full Name: Timothy L Vo, DPM

Email: timv93@gmail.com

Practice/Company/Residency Program:

Chino Valley Medical Center

Authors

Author 1: Timothy L Vo, DPM

Author 2:

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Is the foot and ankle instability due to a secondary slip of the peroneus longus located inferior to the cuboid and inserts on the fourth metatarsal base?

Methodology**Procedures**

Peroneus longus main function is to produce the plantarflexion and eversion of the foot on the ankle joint. With its insertion being altered there is an imbalance in the foot and ankle during closed chain kinetics.

Results

The patient had right ankle pain with activity for over two months and had MRI which revealed findings of the peroneus longus having a secondary insertion to the fourth metatarsal base. No other clinical or imaging results correlated with the patient symptoms except for this incidental finding.

Discussions

This incidental finding of anatomic variance could help explain the imbalance of forces in the foot and ankle which can be symptomatic in patients without other identifiable causes.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Timothy L Vo, DPM	timv93@gmail.com	I/We have nothing to disclose	

Title

Implication of Rare Group B Streptococcus NSTI on the Lower Extremity

Submit Date

08/30/2023

Correspondent

Last Name: Mulligan
Full Name: Chloe Mulligan, DPM
Practice/Company/Residency Program:
Email: chloe.mulligan24@gmail.com
Swedish Medical Center - Cherry Hill Campus

Authors

Author 1: Chloe Mulligan, DPM
Author 2: Greg Grabowski, DPM
Author 3:
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose

Group A Streptococcus is the most common pathogen which causes necrotizing soft tissue infections. In contrast, Group B Streptococcus is a rare form of NSTI. This case study showcases six patients with GBS NSTI. Not only was this rare cause of NSTI observed in this group of patients, but the unique clinical presentation and geographical proximity to one another raises concern for rapidly evolving necrotizing infections.

Methodology

Procedures

Six patients who presented with concern for NSTI were evaluated by the podiatry team. Six patients were diagnosed with NSTI, however with an atypical presentation including vascular compromise and rapid deterioration of soft tissue. Multiple specimens were collected to confirm GBS as the cause of all NSTIs. This is not well documented in literature, especially with vascular implication. GAS is primarily identified.

Results

Five patients in this case study were transferred from the same outside hospital. All presented with a similar findings including multiple lower extremity vascular occlusions, despite not previously having any documented. Streptococcus agalactiae was identified via blood cultures and tissue specimens. This bacterium led to significant morbidity and mortality including one patient death, three BKAs, one TMA, and one successful limb salvage.

Discussions

GBS is a rare cause of NSTI, however six patients were evaluated, all presenting with vascular destruction, rapid soft tissue necrosis, with significant morbidity and mortality. This presentation has not been well-documented in the literature and necessitates further investigation. The significance of 5 out of 6 patients from the same hospital presenting with the same pathogen also warrants further epidemiological insight.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows for Chloe Mulligan, DPM and Greg Grabowski, DPM.

Title **Tungiasis: A Parasitic Infection Rarely Seen in the United States****Submit Date** 08/31/2023**Correspondent**

Last Name: Mulligan

Full Name: Chloe Mulligan, DPM

Email: chloe.mulligan24@gmail.com

Practice/Company/Residency Program:

Swedish Medical Center - Cherry Hill Campus

Authors

Author 1: Chloe Mulligan, DPM

Author 2: Zach Laidley, DPM

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Tungiasis, a skin infestation caused by the sandflea *Tunga penetrans*, is rarely encountered in the United States. It is important for clinicians to recognize this parasitic dermatosis in patients who have traveled to tropical, subtropical regions of the Caribbean, South America, and sub-Saharan Africa. The sandflea is known to burrow into the plantar aspect of the foot. Without prompt extraction and antibiotics, a bacterial super-infection will follow.

Methodology**Procedures**

Tungiasis is rarely documented in the United States. It affects those who live or have traveled to countries where this sandflea is endemic. It often presents on the plantar aspect of the foot, leading to a bacterial superinfection if not extracted. This can lead to sepsis, disfigurement, or mutilation of the feet if not properly treated (2022). This case study documents the rare presentation, diagnosis, and treatment of a 74 year old female with recent travel to Uganda who presented to the ED with a suspicious lesion to the plantar foot.

Results

This patient was successfully diagnosed and treated with prompt I&D to extract the sandflea. Presentation, imaging, procedure documentation, microbiology results, and outcome are well-documented. Evidence of bacterial infection confirmed via wound culture, demonstrating sandflea pathogenesis.

Discussions

Tungiasis is rarely seen in the United States, however clinicians must be aware of the presentation to ensure proper, effective treatment. It is crucial to perform a thorough history and physical exam, including travel history. Patients who are promptly treated with extraction, identification of parasite, and appropriate systemic treatment recover without persistent infection or deformity.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Chloe Mulligan, DPM	chloe.mulligan24@gmail.com	I/We have nothing to disclose	
Zach Laidley, DPM	zachlaidley@gmail.com	I/We have nothing to disclose	

Title Hematogenous Spread of Osteomyelitis: A Rare Case Report**Submit Date** 08/31/2023**Correspondent**

Last Name: Prasad

Full Name: Shalvi Prasad, DPM, PGY II

Email: sprasad@ucdavis.edu

Practice/Company/Residency Program:

DVA New Mexico Veterans Affairs Health Care System & Kaiser Foundation Hospital

Authors

Author 1: Shalvi Prasad, DPM, PGY II

Author 2: Atish Kumar, OMS II

Author 3: Gabor Szalai, MS, PhD

Author 4: Sarah Mele, DPM

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Hematogenous spread of osteomyelitis is most commonly found within the vertebrae or pelvis. Understanding the varying clinical presentations, diagnostic intricacies, and treatment approaches is pivotal for effective management and enhanced patient outcomes. This is a rare case where osteomyelitis resulted in the distal fibula of a patient with uncontrolled diabetes and no wounds.

Methodology**Procedures**

This rare case report is about a 47-year-old Male with a past medical history of poorly controlled T2DM (HgA1C 12.3%) presenting to the ED with progressive pain, redness, and swelling in his RIGHT lateral ankle for the past 2-3 weeks. It was later revealed that patient had osteomyelitis positive for *S. aureus* of his distal fibula; the likely source being hematogenous spread of unknown origin. He was eventually consented for an incision and drainage with a bone biopsy and wound vacuum placement.

Results

The patient subsequently suffered a fracture from the bone biopsy site and then needed to ambulate in a CAM boot until his fracture healed. An MRI was obtained to rule out whether the fracture was indeed pathological or if it was due to progressive osteomyelitis.

Discussions

This study aims to highlight a rare outcome of osteomyelitis of the distal fibular in a patient with no open wounds or lesions. Although it is not common to see hematogenous spread going to this bone, it is important to be aware that such cases exist and need to be in the differential diagnosis as a means to treat patients who may have uncontrolled diabetes or higher HbA1Cs.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Shalvi Prasad, DPM, PGY II	sprasad@ucdavis.edu	I/We have nothing to disclose	
Atish Kumar, OMS II	atish.a.kumar29@gmail.com	I/We have nothing to disclose	
Gabor Szalai, MS, PhD	gszalai@burrell.edu	I/We have nothing to disclose	
Sarah Mele, DPM	sarah.mele@va.gov	I/We have nothing to disclose	

Title 5 year follow up for custom 3-D printed hemi talar arthroplasty**Submit Date** 08/31/2023**Correspondent**

Last Name: Shinabarger
 Full Name: Andrew B Shinabarger DPM, MS, FACFAS Email: ashinaba@lhs.org
 Practice/Company/Residency Program: Legacy Health

Authors

Author 1: Andrew Shinabarger DPM Author 2: Grant Schindler DPM
 Author 3: Magnus Schlyer DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Large osteochondral defects of the talus in the young patient continues to be a challenging pathology. Overall options are limited, however with the emergence of additive printing of orthopedic implants new options exist. This case study documents the longest follow up to date in the literature, of a patient undergoing a custom 3-D printed Talar Hemiarthroplasty via a direct anterior approach.

Methodology**Procedures**

29 year old female with a 25mm x 15mm x 9 mm Talar shoulder osteochondral defect underwent a custom 3-D printed hemi-arthroplasty through a direct anterior approach.

Results

At 5 year follow up the prosthesis showed no signs of loosening or malalignment. Physical exam revealed equal and symmetric ankle range of motion compared to the contralateral extremity. She was back to all activities of daily living and recreational activities. At her 5 year follow up her AOFAS Ankle-Hindfoot score was 88.

Discussions

Large symptomatic talar OCD's in the younger patient population are rare and difficult to manage as outcomes of traditional operative treatment leaves much to be desired. With the advent of custom 3-D printed implants and CT guided cut blocks a new option exists. Traditionally this procedure was done with a medial malleolar osteotomy, however this technique is not without potential complications and damage to the distal tibia cartilage. This study presents that a custom 3-D printed hemi-talus arthroplasty through an anterior approach is a viable treatment option for osteochondritis dissecans with avascular necrosis (AVN) of the talus at a 5 year follow up.

Format Case Study**Case Rpt Followup** 60**Student Club** Not a Student Club Poster**Classification** Rearfoot and Ankle Reconstruction**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Andrew Shinabarger DPM	ashinaba@lhs.org	I/We have nothing to disclose	
Grant Schindler DPM	gmschind@lhs.org	I/We have nothing to disclose	
Magnus Schlyer DPM	mhschlye@lhs.org	I/We have nothing to disclose	

Title

Post-operative Wound Management of Pseudomonas Infection Using Acetic Acid Treatment: Case Report

Submit Date

08/31/2023

Correspondent

Last Name: Lee

Full Name: Hojin

Email: hlee.dpm@gmail.com

Practice/Company/Residency Program:

United Health Services

Authors

Author 1: Hojin Lee, DPM

Author 2: Jennifer Sweet, DPM FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of this case report was to provide evidence of a distinctive case that can help manage post-operative wound management from Pseudomonas infection and should be included in post-operative wound treatment.

Methodology

Procedures

P.aeruginosa is one of the most common gram-negative infections and is difficult to treat due to antibiotic resistance. Acetic acid has low toxicity and is used as a bactericidal agent against Gram-positive and Gram-negative organisms at a concentration between 0.5-5% for 8 days, 10-20minutes per day. Acetic acid acts against P. aeruginosa by decreasing the pH level and creating an incompatible habitat for growth and reproduction.

Results

85-year-old male presented with an infected post-operatively wound over the dorsal right second and third rays with necrosis and hypertrophic tissue with signs of acute infection. The wound was managed with 5% acetic acid solution and improved remarkably in 7 days with healthy granulation tissue. There are no signs of recurrence of skin infection at the follow-up after over a year.

Discussions

This case report demonstrates that while uncommonly reported, the incidence of Pseudomonas infection occurs postoperatively if the surgical site is not well managed. P. aeruginosa from the infection site is difficult to eliminate due to the multiple antibiotic resistance strains. Acetic acid treatment is inexpensive, non-toxic, and easy to maintain/manage, and minimal dressing supplies. The choice of utilizing acetic acid solution can be used as an alternate treatment option due to its effectiveness for post-operative Pseudomonas infection.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hojin Lee, DPM	hlee.dpm@gmail.com	I/We have nothing to disclose	
Jennifer Sweet, DPM FACFAS	Jennifer.Sweet@nyuhs.org	I/We have nothing to disclose	

Title **Intraoperative fluorescent angiography to assess vascular status in Podiatric trauma patients: a case report**

Submit Date 08/31/2023

Correspondent

Last Name:	Malik	Email:	inshal.malik@hmhn.org
Full Name:	Inshal		
Practice/Company/Residency Program:			Jersey Shore University Medical Center

Authors

Author 1:	Inshal Malik, PGY2 DPM	Author 2:	Tyler Verdoni, PGY3 DPM
Author 3:	James P. Sullivan, DPM	Author 4:	Chrisovalantis Lakhiani, MD
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose In this case report we present the use of intraoperative fluorescent angiography to assess viability of soft tissue and healing potential after a traumatic injury to the lower extremity. Open fractures pose challenges as they may require a multidisciplinary approach in order to achieve fixation of fractures and assessment of viability of soft tissue survivability and closure.

Methodology

Procedures We present a 22 year old male who presented to the trauma bay with a degloving injury after being struck by a car to the left foot and sustained multiple open metatarsal fractures with tarsometatarsal instability. After using intraoperative fluorescent angiography, it was determined that digits 1-4 were not viable. He underwent stabilization of fractures with amputation of digits 1-4. He then underwent split thickness skin grafting with Plastic Surgery and achieved full healing and closure of wound over time.

Results Fixation of metatarsal fractures with amputation of digits 1-4 after assessing intraoperative vascular status utilizing indocyanine green (fluorescence imaging dye). This was followed by a split thickness skin graft performed by plastic surgery and went on to completely heal

Discussions Traumatic injuries of the foot and ankle pose problems in regards to ultimate patient outcomes and healing potential, especially with extensive open injuries, the viability of the soft tissue remains a concern. Intraoperative fluorescence angiography proved to be beneficial in determining viability of the affected extremity after trauma to help direct appropriate care and operative planning in this case and may help guide treatment in similar cases that present to Level 1 trauma centers worldwide.

Format Case Study

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Inshal Malik, PGY2 DPM	inshal.malik@hmhn.org	I/We have nothing to disclose	
Tyler Verdoni, PGY3 DPM	tyler.verdoni@hmhn.org	I/We have nothing to disclose	
James P. Sullivan, DPM	james.sullivan@hmhn.org	I/We have nothing to disclose	
Chrisovalantis Lakhiani, MD	chrisovalantis.lakhiani@hmhn.org	I/We have nothing to disclose	

Title Use of 3D Printed Spherical Tibiotalar Implant In A Case of Charcot Neuroarthropathy in a High-Risk Patient

Submit Date 08/31/2023

Correspondent

Last Name:	Siddiqi	Email:	anas.siddiqi@corewellhealth.org
Full Name:	Anas		
Practice/Company/Residency Program:			Beaumont Wayne

Authors

Author 1:	Lawrence Fallat, DPM, FACFAS	Author 2:	
Author 3:		Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Charcot Neuroarthropathy is a debilitating condition which can result in significant morbidity for patients with the goals of surgery often being limb salvage. This can be further compounded in patients with significant comorbidities such as a history of digital amputations and chronic kidney disease. This case documents a novel technique for limb salvage in a patient with Charcot Neuroarthropathy with significant additional comorbidities.

Methodology

Procedures A 56-year-old female patient with past medical history significant for diabetes mellitus, chronic kidney disease and history of transtatarsal amputation presents with collapse of the talus, fragmentation of the calcaneus and complete destruction of the subtalar joint and a valgus foot structure with a history of repeated ulcerations. Patient underwent application of 3D custom printed, spherical tibiotalar implant with tibiotalocalcaneal arthrodesis and intramedullary nail fixation.

Results Rectus plantigrade foot with no incident of repeat ulcerations or progression of amputations at 12 month follow up

Discussions Charcot neuroarthropathy is a deformity that can result in gross foot deformities, repeated ulcerations and can often lead to infection. As is the case with our patient, history of amputations puts these patients at very high risk of below knee amputations and therefore using the most effective surgical techniques available is imperative to preserving their limb. Due to the extensive level of comminution and disruption noted to the tibiotalar joint we believed traditional fixation options were not recommended. We therefore utilized a novel technique of using a custom spherical tibiotalar implant that was 3D printed using CT scans of the patient's contralateral limb.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lawrence Fallat, DPM, FACFAS	lfallatdpm@aol.com	I/We have nothing to disclose	

Title **A Case Series Examining the Use of Intraoperative Fluorescence Angiography to Assess and Optimize Peroneus Brevis Flaps in the Foot and Ankle.**

Submit Date 08/31/2023

Correspondent

Last Name: Messina
 Full Name: Sarah, E, Messina, DPM PGY-3 Email: sarah.messina@ascension.org
 Practice/Company/Residency Program: Ascension St. John

Authors

Author 1: Coleman O. Clougherty, DPM, MA Author 2: Sarah E. Messina, DPM PGY-3
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This case study evaluates the results of five cases of peroneus brevis muscle flaps performed with the use of intraoperative fluorescence angiography, AKA indocyanine green fluorescence angiography (ICGFA), to assess perfusion.

Methodology

Procedures

ICGFA allows for evaluation of real time arterial blood flow intraoperatively with minimal risk to the patient, resulting in the ability for the surgeon to selectively debride non-viable muscle flaps prior to transposition. This technology has been around for more than 50 years¹ and has been used extensively during breast reconstruction, treatment of burn, and microsurgical procedures to treat chronic lymphedema², however it has not been extensively studied in use of lower extremity flaps. We look at five patients with an average age of 50.6 years old who underwent a peroneus brevis flap to cover an ankle wound. ICGFA was used to assess intraoperative perfusion of all of the flaps prior to transposition.

Results

Four of the flaps were noted to have brisk perfusion and went on to heal successfully, while one flap was noted to have a dark tip with sluggish perfusion mid muscle and ended up as a failure, resulting in a BKA

Discussions

There are multiple modalities that are currently utilized for preoperative flap planning including handheld doppler ultrasound, duplex ultrasonography, and CT angiography (CTA). ICGFA is an underutilized intraoperative tool that can guide intraoperative decision making during transpositional muscle flaps. With more real time information in the operating room, surgeons can make more accurate decisions that ultimately have the potential to influence success rates of transpositional flaps.

Format

Case Study

Case Rpt Followup

16

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Coleman O. Clougherty, DPM, MA	coleman.clougherty@gmail.com	I/We have nothing to disclose	
Sarah E. Messina, DPM PGY-3	sarah.messina@ascension.org	I/We have nothing to disclose	

Title Double Intrinsic Muscle Flaps for Wound Coverage: A Case Report**Submit Date** 08/31/2023**Correspondent**

Last Name: Mansager

Full Name: Sarah Mansager, DPM

Email: sarah.mansager@medstar.net

Practice/Company/Residency Program:

MedStar Washington Hospital Center/MedStar Georgetown University Hospital

Authors

Author 1: Sarah Mansager, DPM

Author 2: Tori Breitenbach, DPM

Author 3: Jayson Atves, DPM, FACFAS

Author 4: Christopher Attinger, MD, FACS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Local muscle flap reconstruction is a viable option for defects with exposed tendons, joints, or bone. It can provide a simpler alternative to free flaps or offer expedited coverage for stagnant non healing wounds. This study aims to illustrate a double intrinsic muscle flap advancement approach for coverage of a sinus tarsi ulceration.

Methodology**Procedures**

60 year-old-female with history of calcaneus fracture treated with ORIF. Subsequent formation of surgical site dehiscence and development of a sinus tarsi wound. Underwent initial incision and drainage with exploration and debridement of tissues. Repeat surgical debridements performed until culture negative, ultimately leading to exposure of STJ and peroneal tendons. Double intrinsic muscle flaps deemed appropriate for complete coverage of the soft tissue defect. The extensor digitorum brevis muscle was elevated to its dominant pedicle, tunneled, and rotated 180 degrees. Harvesting of the abductor digiti minimi was also performed following the same technique.

Results

At time of flap advancements, the ulcer measured approximately 3 x 3 cm with exposed bone, joint, and tendon. EBD and ADM flaps provided coverage of osseous and soft tissue structures within the base of the wound, adequately filling the depth of the defect. The local muscle flaps provided a scaffolding for complete healing by secondary intention.

Discussions

Joints, bones, and tendons are critical structures that necessitate expeditious coverage to avoid risks of infection or amputation. Intrinsic muscle flaps are a successful option for coverage of foot defects and should not be overlooked. The use of these techniques serve as valuable tools in limb salvage an reconstruction.

Format

Case Study

Case Rpt Followup

15

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sarah Mansager, DPM	sarah.mansager@medstar.net	I/We have nothing to disclose	
Tori Breitenbach, DPM	tori.breitenbach@medstar.net	I/We have nothing to disclose	
Jayson Atves, DPM, FACFAS	jayson.atves@medstar.net	I/We have nothing to disclose	
Christopher Attinger, MD, FACS	christopher.atinger@medstar.net	I/We have nothing to disclose	

Title

Excision with Grafting of Periprosthetic Tibial Bone Cyst after Total Ankle Arthroscopy

Submit Date

08/31/2023

Correspondent

Last Name: Foster

Full Name: Melissa Foster, DPM, AACFAS

Email: melfoster94@gmail.com

Practice/Company/Residency Program:

Foot and Ankle Physicians of Ohio

Authors

Author 1: Melissa Foster, DPM, AACFAS

Author 2: Elizabeth Hewitt, DPM, FACFAS

Author 3: Tiffany Liu, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The formation of periprosthetic bone cysts is a common radiographic finding after total ankle arthroplasty (TAA) that can contribute to subsidence, loosening, and failure. Management of these cysts is inconclusive throughout the literature and revisional TAA or arthrodesis is favored. This case study documents successful management of periprosthetic tibial cysts with excision and grafting.

Methodology

Procedures

A 54-year-old male status post triple arthrodesis presented with ankle arthritis after failing conservative treatment. A computerized tomography (CT) scan showed severe degenerative changes at the level of the tibiotalar joint, talofibular joint and distal tibiofibular syndesmosis. The patient underwent a TAA with a three-piece mobile bearing implant. 4 years after the TAA a CT scan revealed periprosthetic tibial cysts with the largest measuring 3.5cm x 2.3cm x 2.5cm and no evidence of subsidence. The patient underwent cyst excision with backfill of injectable bone substitute and insertion of a 6.5mm screw.

Results

Post-operative imaging including radiographs at weeks 1, 2, 6, 12, 36, and 88 and CT scans at 3- and 21-months following tibial cyst excision/grafting showed no evidence of new cyst formation, subsidence, or implant failure. Patient remained asymptomatic at his 22 month follow up.

Discussions

Management of periprosthetic cysts with excision and grafting has a varying failure rate in the literature, with Besse et al demonstrating a 92% failure rate. This case study demonstrated successful management of periprosthetic cysts with excision, grafting and screw insertion. Although the literature favors revisional TAA or arthrodesis for periprosthetic cysts, excision with grafting remains an alternative treatment option.

Format

Case Study

Case Rpt Followup

22

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Melissa Foster, DPM, AACFAS	melfoster94@gmail.com	I/We have nothing to disclose	
Elizabeth Hewitt, DPM, FACFAS	ehewittone@gmail.com	I/We have nothing to disclose	
Tiffany Liu, DPM, FACFAS	tliudpm@gmail.com	I/We have nothing to disclose	

Title **A Multidisciplinary Treatment Collaboration to a Reconstructive Salvation Following Dramatic Degloving Injury of the Lower Extremity**

Submit Date 08/31/2023

Correspondent
 Last Name: McGowan
 Full Name: Ryan C McGowan Email: megowary@uhnj.org
 Practice/Company/Residency Program: University Hospital

Authors
 Author 1: Ryan C McGowan, DPM Author 2: Keith Cook, DPM, FACFAS
 Author 3: Yida Cai, MD Author 4: Edward Lee, MD
 Author 5: Author 6:
 Author 7: Author 8:

Purpose
 The purpose of this study is to highlight a multidisciplinary approach to a salvation of the right leg. A healthy male suffered a complete degloving injury of his right foot extending above the ankle after being caught beneath a commercial passenger airplane. This case demonstrates how a collaboration with Podiatry and Plastic Surgery was able to successfully restore ambulatory function to a determined individual.

Methodology

Procedures
 A 34 year old male without significant medical history presented to University Hospital after sustaining a complete degloving injury. Skin of the right foot and ankle was entirely avulsed to more than 5 centimeters above the ankle with neurovascular and full motor function intact. Aside from a small fracture to the calcaneus, skeletal integrity was maintained. He was emergently taken to the operating room with Podiatry and Plastic Surgery to begin an intensive limb salvage effort.

Results
 This patient returned to the OR twelve times over 21 months with Plastic Surgery and Podiatry services. Initial viability assessment of the digits was poor due to microvascular injury, so a transtmetatarsal amputation was performed. After serial debridements with application of external fixation, an Anterolateral Thigh Flap with Vastus Lateralis transfer to the right foot was performed with sensory nerve repair. Today, this patient is fully ambulatory with ambition to return to work soon.

Discussions
 This patient was adamant about saving his leg while understanding the severity of his injury. Through a joint effort of services at a Level 1 Trauma Center, functional mobility was restored in an individual who suffered a tremendously unique injury.

Format Case Study

Case Rpt Followup 21

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ryan C McGowan, DPM	megowary@uhnj.org	I/We have nothing to disclose	
Keith Cook, DPM, FACFAS	cookkd@uhnj.org	I/We have nothing to disclose	
Yida Cai, MD	Caiyi@uhnj.org	I/We have nothing to disclose	
Edward Lee, MD	leee9@njms.rutgers.edu	I/We have nothing to disclose	

Title Metastatic Talar and Tibia Ewings Sarcoma in an Elderly Patient**Submit Date** 08/31/2023**Correspondent**

Last Name: Kennedy

Full Name: Matthew

Email: mkenned3@gmail.com

Practice/Company/Residency Program:

Kaiser San Francisco Bay Area Foot and Ankle Residency Program

Authors

Author 1: Matthew D Kennedy, DPM

Author 2: Francesca Castellucci-Garza, DPM

Author 3: Sandeep B Patel, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose This case study aims to highlight an incidence of metastatic Ewings sarcoma in the talus and tibial of an elderly adult.**Methodology****Procedures**

3-year-old man with history of gout presented to the emergency department for acute gout flare to his ankle. The patient was given prednisone and fluids and observed overnight. In the morning, podiatry was consulted who recommended ankle radiographs which showed complete talar collapse concerning for Charcot vs infectious vs malignancy. Further work-up and advanced imaging showed metastatic disease to lungs, vertebral bodies, iliac crest, pancreas, peritoneum and small bowels. Musculoskeletal oncology was consulted who recommended biopsy of right ankle and right iliac bone which revealed stage IV Ewings sarcoma. The patient started palliative chemotherapy. The patient's course was complicated by multiple DVTs with diffuse pulmonary emboli which lead to worsening hypoxia. Patient elected for comfort care and succumbed 4 months after diagnosis.

Results Ewings sarcoma of talus/tibia with metastatic spread to axial skeleton and multiple organs.**Discussions**

Ewings sarcoma is a rare diagnosis in the elderly, and as such literature for Ewings in the elderly population is sparse. The prognosis for elderly patients who present with metastatic disease is very poor. The small pool of literature available also suggests that approximately half of elderly patients diagnosed already have metastatic disease. Prompt referral to multispecialty specialists is crucial for these patients.

Format Case Study**Case Rpt Followup** 12**Student Club** Not a Student Club Poster**Classification** Soft Tissue/Tumor**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Matthew D Kennedy, DPM	kennedy.x.matthew@kp.org	I/We have nothing to disclose	
Francesca Castellucci-Garza, DPM	Francesca.M.Castellucci-Garza@kp.org	I/We have nothing to disclose	
Sandeep B Patel, DPM	Sandeep.B.Patel@kp.org	I/We have nothing to disclose	

Title Sodium Fluorescein Guided Resection of Foot Schwannoma**Submit Date** 08/31/2023**Correspondent**

Last Name: Krishnappan
 Full Name: Sharadha Krishnappan, DPM Email: sharadhakrishnappan@gmail.com
 Practice/Company/Residency Program: Loyola University Medical Center

Authors

Author 1: Gianna M. Ruiz, BS Author 2: Sandra Luu, DPM
 Author 3: Joshua E. Simon, MD Author 4: Vikram C. Prabhu, MD
 Author 5: Katherine E. Dux, DPM, FACFAS Author 6: Rodney M. Stuck, DPM, FACFAS
 Author 7: Sharadha Krishnappan, DPM Author 8:

Purpose

Schwannomas are benign, well-encapsulated tumors that originate from the myelin-producing cells of the central or peripheral nervous systems. Sodium fluorescein (SF), an intravenously administered passive fluorophore, has shown promise in the labeling and resection of tumors. This case study documents our experience with the surgical resection of a medial plantar nerve schwannoma using SF and discusses the benefits and limitations of this approach.

Methodology**Procedures**

A 56-year-old female presented to clinic with complaint of a painful, tender lesion along the plantar aspect of the left foot. MRI was notable for a well-circumscribed, contrast enhancing lesion, located at the level of the calcaneal cuboid joint.

Results

Following administration of 500mg of SF intravenously, under intermittent use of white light and the Yellow-560 nanometer filter lens of the operating microscope, the soft tissue lesion was excised en bloc and identified as a schwannoma following histological analysis.

Discussions

Approximately 10% of all peripheral nerve sheath tumors occur in the foot and ankle, while the incidence of schwannomas of the foot occurs in 3-4% of all cases. The use of the yellow-560 microscope lens illuminate tumors with a bright green fluorescence following SF administration, allowing the surgeon to distinguish the lesion from adjacent nerve fascicles, in concert with white light illumination. This case report demonstrates that using SF as a visualization adjunct in the gross total resection of a peripheral schwannoma is cost-effective, easy to administer, and non-toxic for use.

Format

Case Study

Case Rpt Followup

18

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Gianna M. Ruiz, BS	gruiz23@comcast.net	I/We have nothing to disclose	
Sandra Luu, DPM	sandrajluu@gmail.com	I/We have nothing to disclose	
Joshua E. Simon, MD	Joshua.Simon@lumc.edu	I/We have nothing to disclose	
Vikram C. Prabhu, MD	VPRABHU@lumc.edu	I/We have nothing to disclose	
Katherine E. Dux, DPM, FACFAS	KDUX1@lumc.edu	I/We have nothing to disclose	
Rodney M. Stuck, DPM, FACFAS	rstuck@lumc.edu	I/We have nothing to disclose	
Sharadha Krishnappan, DPM	sharadhakrishnappan@gmail.com	I/We have nothing to disclose	

Title**Posttraumatic Tibia Avascular Necrosis Treated with Total Ankle Arthroplasty****Submit Date**

08/31/2023

Correspondent

Last Name: Kennedy

Full Name: Matthew

Email: kennedy.x.matthew@kp.org

Practice/Company/Residency Program:

Kaiser San Francisco Bay Area Foot and Ankle Residency Program

Authors

Author 1: Matthew D Kennedy, DPM

Author 2: Sandeep B Patel, DPM

Author 3: Jack M. Schuberth, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of this case study is to outline treatment of tibia avascular necrosis, due to rotational ankle fracture, with total ankle replacement (TAA).

Methodology**Procedures**

56-year-old female with a tri-malleolar fracture dislocation with comminuted Weber C, in addition to a Maisonneuve fracture was treated with standard ankle ORIF. The patient's post-op course was uncomplicated at the 12-week post-op visit. At 29 weeks, the patient had continued medial ankle pain. Radiographs at that appointment showed valgus collapse of lateral tibial plafond. Advanced imaging demonstrated diffuse avascular necrosis (AVN) and collapse of the lateral tibial plafond.

Results

Patient with valgus collapse and avascular necrosis of lateral tibial plafond was treated with a period of non-weight bearing and eventually total ankle arthroplasty. At 20 months, patient with return to daily activities.

Discussions

Avascular necrosis of distal tibial following ankle fractures is a rare but devastating complication. Given the rarity of this injury pattern there is a sparse literature and little treatment guidelines. We present this case as an example of a viable treatment methodology for AVN of the tibia. The patient was placed non-weight bearing to halt progression of collapse. Serial imaging was used to confirm cessation of collapse. Once stabilized, the patient went for the removal of necrotic bone and total ankle replacement, with a stemmed implant to bridge the portion of sclerotic bone.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Matthew D Kennedy, DPM	kennedy.x.matthew@kp.org	I/We have nothing to disclose	
Sandeep B Patel, DPM	Sandeep.B.Patel@kp.org	I/We have nothing to disclose	
Jack M. Schuberth, DPM, FACFAS	kennedy.x.matthew@kp.org	Consultant/Advisor/Speaker (List all affiliations)	Exatec, Paragon 28

Title

Functional Outcomes of Tibial Retrograde Subchondral Drilling with Bone Substitute Injection in Distal Tibial Osteochondral Lesions Over a 12-month Period

Submit Date 08/31/2023

Correspondent

Last Name: Vincent
 Full Name: Gallo
 Practice/Company/Residency Program: Long Island Jewish/North Shore University Hospital Podiatry Residency
 Email: vinceg1116@gmail.com

Authors

Author 1: Joseph Waterhouse DPM, FACFAS
 Author 2: Sherwin Shaju DPM, MS
 Author 3: Ambreen Sharif DPM, MS
 Author 4: Farah Naz DPM, MS
 Author 5: Vincent Gallo DPM
 Author 6:
 Author 7:
 Author 8:

Purpose

Osteochondral defects of the distal tibia are rarely reported and thus treatment options are not well studied in literature. Most options mimic talar lesions including microfracture, chondral resurfacing, or abrasion. We propose retrograde drilling of the tibia with a bone substitute injection offers an advantageous outcome with respect to functional outcomes.

Methodology

Procedures

7 patients underwent retrograde drilling of distal tibia osteochondral lesions, cysts, or stress reaction. Over a 12-month period, Patients were asked to fill out AFI, CAIT, and VAS surveys before the procedure, at 3 months, 6 months, and 12 months postoperatively to measure their functional outcomes.

Results

Significant improvement in AFI, CAIT, and VAS scores at every time interval.

Discussions

Ankle osteochondral lesions of the talus are typically treated with microfracture or chondral resurfacing. In this study, we evaluated distal tibial osteochondral lesions and we propose retrograde tibial subchondral drilling with bone substitute injection as a comparable treatment modality for osteochondral lesions of the distal tibia. Postoperative weight bearing as well as technical ease of use offer distinct advantages. We show significant success through validated patient outcome measures over the course of 1 year follow up.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Arthroscopy

Level of Evidence Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joseph Waterhouse DPM, FACFAS	Jwaterhousedpm@gmail.com	I/We have nothing to disclose	
Sherwin Shaju DPM, MS	S28shaj@gmail.com	I/We have nothing to disclose	
Ambreen Sharif DPM, MS	Asharif0215@gmail.com	I/We have nothing to disclose	
Farah Naz DPM, MS	farahnaz173@gmail.com	I/We have nothing to disclose	
Vincent Gallo DPM	vinceg1116@gmail.com	I/We have nothing to disclose	

Title

Large Endemic Kaposi's Sarcoma of the Plantar Arch: A Case Presentation

Submit Date

08/31/2023

Correspondent

Last Name: Johnson
 Full Name: Carmen E. Johnson, DPM, PGY-3
 Practice/Company/Residency Program: Corewell Health Farmington Hills

Email: carmen.johnson2@corewellhealth.org
 Corewell Health Farmington Hills

Authors

Author 1: Carmen E. Johnson, DPM, PGY-3
 Author 2: Janet Baatile-Ajrouche, DPM, FACFAS, CWSP
 Author 3: Lilyana Raishouni
 Author 4: Maraudel N'Gola, BS
 Author 5: Sama Salih, AS
 Author 6: Anwita Poluru
 Author 7: Mehtab Singh
 Author 8: Havish Poluru

Purpose

Kaposi's Sarcoma is a soft tissue malignancy of vascular endothelial origin that is classified into four different subgroups. We present a case of Kaposi's Sarcoma in a Caucasian homosexual male with diabetes. The surgical course with complications will be reviewed.

Methodology

Procedures

A 69-year old Caucasian male with a past medical history significant for AIDS and multiple comorbidities was evaluated by podiatry and oncology for a nodular Kaposi's Sarcoma in the right plantar foot. The patient underwent surgical excision with adjunctive chemotherapy with subsequent complication of post operative abscess and cellulitis requiring admission.

Results

Although the patient had prolonged wound healing, he went on to heal successfully without recurrence of the lesion or diabetic foot complications for four years status post surgical excision.

Discussions

A multidisciplinary team approach in conjunction with close surveillance and wound care are integral to ensuring successful surgical outcomes in this challenging cohort.

Format

Case Study

Case Rpt Followup

60

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Carmen E. Johnson, DPM, PGY-3	carmen.johnson2@corewellhealth.org	I/We have nothing to disclose	
Janet Baatile-Ajrouche, DPM, FACFAS, CWSP	jbaatile@gmail.com	I/We have nothing to disclose	
Lilyana Raishouni	carmen.johnson2@corewellhealth.org	I/We have nothing to disclose	
Maraudel N'Gola, BS	carmen.johnson2@corewellhealth.org	I/We have nothing to disclose	
Sama Salih, AS	carmen.johnson2@corewellhealth.org	I/We have nothing to disclose	
Anwita Poluru	carmen.johnson2@corewellhealth.org	I/We have nothing to disclose	
Mehtab Singh	carmen.johnson2@corewellhealth.org	I/We have nothing to disclose	
Havish Poluru	carmen.johnson2@corewellhealth.org	I/We have nothing to disclose	

Title

Induced Membrane Technique for a Septic Tarsometatarsal Joint: A Case Report

Submit Date

08/31/2023

Correspondent

Last Name: Lebada
Full Name: Salem Email: salemlebada@gmail.com
Practice/Company/Residency Program: Adventist Health White Memorial

Authors

Author 1: Salem Lebada DPM Author 2: Renato Sousa DPM
Author 3: Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose

The induced membrane technique is a staged surgery, which involves removal of the bone lesion, and replacing it with a cement spacer for several weeks, which then allows a vascularized membrane to form around it. The second stage involves replacing the spacer with bone graft; the vascularized membrane is believed to enhance incorporation of the bone graft into the bone void. This technique was initially described in the long bones of the leg, however, has since been repurposed for other areas of the body. This case report details the use of the induced membrane technique for limb salvage in a diabetic patient to treat a septic first TMTJ.

Methodology

Procedures

Our patient presented to our hospital with a septic first TMTJ with associated osteomyelitis of the medial cuneiform and first metatarsal base. The patient was brought in for debridement, resection of infected bone, implantation of an antibiotic cement, and application of a wound vac. The patient was then brought back to the operating room two months later for replacement of the cement spacer with bone allograft and external fixation. She was then brought back for external fixation removal and application of a split thickness skin graft once the wound bed was granular and there was radiographic evidence of osseous fusion.

Results

Currently, our patient is ambulating without complications with only a small residual superficial wound from a percutaneous pin site.

Discussions

The authors believe that the induced membrane technique is an excellent limb salvage procedure for appropriate candidates with focal infection in the midfoot.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 3 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows for Salem Lebada DPM and Renato Sousa DPM.

Title

Continuous multimodal plantar monitoring using sensory insoles to effectively detect tissue changes associated with ankle trauma: a case report

Submit Date

08/31/2023

Correspondent

Last Name: Liden
 Full Name: Brock, A. Liden, DPM, ABPM, FAPWCA Email: dpmresearch@gmail.com
 Practice/Company/Residency Program: Cutting Edge Research

Authors

Author 1: Brock A. Liden, DPM, ABPM, FAPWCA Author 2:
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This case report examines a patient outfitted with sensory insoles to continuously monitor plantar pressure and temperature and detect the temperature changes associated with a fractured ankle fusion. Acute trauma following bone or joint fractures can result in areas of abnormal elevated pressure leading to an inflammatory response [1]. Multimodal monitoring aims to detect abnormal pressures and temperatures, as asymmetries can be indicative of inflammation or underlying tissue damage[2-4].

Methodology

Procedures

The patient has chronic osteomyelitis and fusion of the right subtalar and ankle joints with an external fixation system. The patient was provided with custom sensory insoles to monitor plantar pressure, temperature, step-count, and daily use; data collected was remotely monitored by a US-based nurse. When concerning data trends arose, the nurse contacted the patient and escalated the case to the treating physician, if needed.

Results

The patient generated numerous data flags while wearing the sensory insoles. Flags were acted upon by the RPM nurse, who ultimately escalated the patient to be seen by the physician. At the clinic visit, the patient presented with a red, hot, and swollen foot; upon assessment they had a broken talus head on the right foot.

Discussions

Continuous multimodal plantar monitoring can detect acute response to trauma. Remotely monitoring patients at risk for breaks or fractures in the foot can allow for early detection of traumatic incidents and encourage patients to be seen by their physician early to help prevent additional complications and improve treatment and overall patient outcomes.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Brock A. Liden, DPM, ABPM, FAPWCA	dpmresearch@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Orpyx Medical Technologies, Inc.

Title **Unusual Presentation of B-Lymphoblastic Lymphoma Involving the 5th Metatarsal: A Case Report**

Submit Date 08/31/2023

Correspondent Last Name: Sehgal
Full Name: Ashita, Sehgal, DPM Email: ashita.x.sehgal@kp.org
Practice/Company/Residency Program: Kaiser Permanente Oakland

Authors Author 1: Nickolas, P, Grimes, DPM Author 2: Ashita, Sehgal, DPM
Author 3: Jason, D, Pollard, DPM Author 4: Lee, J, Morse, MD
Author 5: Author 6:
Author 7: Author 8:

Purpose B-lymphoblastic lymphoma (BLL) is a hematopoietic stem cell neoplasm derived from B-progenitors. It is characterized by uncontrolled proliferation of abnormal, immature lymphocytes which leads to replacement of bone marrow elements and other lymphoid organs. This case study documents an unusual presentation of BLL involving the 5th metatarsal.

Methodology

Procedures : A 47-year-old male presented with right midfoot pain in the absence of trauma. Initial radiographs consistent with a subacute 5th metatarsal base fracture. While the 5th metatarsal base fracture healed, 8 week follow up radiographs revealed new diffuse osteopenia of the right midfoot despite the patient being WBAT in a post operative shoe. Due to the unusual course of healing, magnetic resonance imaging was obtained which revealed marked marrow edema and mixed lytic and sclerotic appearance of the midfoot. Computerized tomography scan revealed subacute fractures along the midfoot. Ultimately, bone biopsy of 5th metatarsal confirmed diagnosis of B-lymphoblastic lymphoma.

Results Bone biopsy pathology report revealed atypical monomorphic infiltrates that were positive for B-cell molecular markers, consistent with the diagnosis of B-lymphoblastic lymphoma.

Discussions While less commonly encountered, it is important to consider malignancy as a differential diagnosis of unexplained pain and fracture. In this case, the patient had unresolved pain for three months before a malignant cause was suspected. This case signifies the importance of imaging, labs, and biopsy in cases where musculoskeletal abnormalities occur without any discernible cause.

Format Case Study

Case Rpt Followup 13

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Nickolas, P, Grimes, DPM; Ashita, Sehgal, DPM; Jason, D, Pollard, DPM; Lee, J, Morse, MD.

Title

Perioperative Management of Tendon Lacerations of the Anterior Leg Compartment

Submit Date

08/31/2023

Correspondent

Last Name: Peralta
 Full Name: Diego A. Peralta Email: daperalta21@gmail.com
 Practice/Company/Residency Program: HCA Florida Westside Hospital (PMSR/RRA)

Authors

Author 1: Dhavel Chauhan, DPM Author 2: Emma R. Kayal, DPM
 Author 3: Diego A. Peralta, DPM Author 4: Fahad Rahman, DPM
 Author 5: Blake Lieberman, DPM Author 6:
 Author 7: Author 8:

Purpose

Extremity trauma can lead to significant morbidity, specifically delayed diagnosis and repair of vasculature leading to ischemic contractures and untreated extensor tendon ruptures with sequelae of decreased ROM and strength, drop foot, heel-cord contracture, ankle osteoarthritis and pes planus. This case study documents evaluation and management of a case with complete laceration of the tendons of the anterior compartment of the leg and difficult hemostasis.

Methodology

Procedures

47F patient with no major PMHx presented to ED for ankle laceration with profuse bleeding, unable to weight-bear, and presynocopal symptoms. Evaluation revealed probe to ankle capsule, DPA and PTA palpable, inability to dorsiflex foot and ankle, sensation intact

Results

Most recent follow-up resolved neuropraxia, vascular intact, full-ROM, 5/5 extensor tendon strength, FWB without restrictions, no pain

Discussions

Hemostasis was achieved gradually, by Trendelenburg, manual pressure, and last calf tourniquet to 200mmHg. Lumens were tied and tourniquet was released in intervals of 20mmHg periodically to assess bleeding. MRI of EHL and TA tendons showed defect of 4.6 cm, EDL 4.9 cm, however end-to-end repair was achieved without use of tendon allograft. Prompt hemostasis, and reapproximation of acute tendon injury contributed to the excellent patient-reported outcome.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dhavel Chauhan, DPM	dhavelc@gmail.com	I/We have nothing to disclose	
Emma R. Kayal, DPM	emnator06@yahoo.com	I/We have nothing to disclose	
Diego A. Peralta, DPM	daperalta21@gmail.com	I/We have nothing to disclose	
Fahad Rahman, DPM	bfnfahad786@gmail.com	I/We have nothing to disclose	
Blake Lieberman, DPM	blakerlieberman@gmail.com	I/We have nothing to disclose	

Title

Secondary Gonococcal Infection of Hematoma Following Closed Traumatic Foot Injury

Submit Date

08/31/2023

Correspondent

Last Name: Lundie
 Full Name: Lance Email: lancelundie@gmail.com
 Practice/Company/Residency Program: Detroit Medical Center - - Detroit, MI

Authors

Author 1: Lance Lundie Author 2: Erik Kissel, DPM, FACFAS
 Author 3: Raed Al Gharib, DPM, AACFAS Author 4: Razdum Ahmed, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This study seeks to bring awareness to the possibility of a traumatic hematoma becoming infected through transient bacteremia from a *Neisseria gonococcal* infection. A secondary purpose is to explore the management.

Methodology

Procedures

An unusual case of a patient presenting after a closed traumatic injury to her foot and found to have no osseous injury on initial presentation. Fourteen days later patient presented with a purulent bulla that grew *N. Gonorrhoea*. An initial incision and drainage was performed with placement of ceftriaxone impregnated antibiotic beads. Repeat incision and drainage with removal of antibiotic beads and primary closure performed seven days later. At seven week follow-up in clinic wounds were epithelialized.

Results

Gonococcal soft tissue infection successfully treated with antibiotic beads and fully healed at 7 weeks

Discussions

Upon review of the literature there is no reported cases of a hematoma infected with gonorrhoea. Our patient presented with a closed traumatic soft tissue injury without any open portal of entry and no osseous injury. This study suggests the possibility of a gonococcal infection producing transient bacteremia subsequently infecting a hematoma. We suggest appropriate management should include aggressive debridement with antibiotic bead placement.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lance Lundie	lancelundie@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Grand Ledge
Erik Kissel, DPM, FACFAS	erik.kissel@footandanklesemi.com	I/We have nothing to disclose	
Raed Al Gharib, DPM, AACFAS	ralghari@kent.edu	I/We have nothing to disclose	
Razdum Ahmed, DPM	Razdumahmed@gmail.com	I/We have nothing to disclose	

Title Candida Albican Injection for Treatment of Plantar Wart A Case Study**Submit Date** 08/31/2023**Correspondent**
Last Name: Hasan
Full Name: Taimur Hasan, DPM Email: thasan@geisinger.edu
Practice/Company/Residency Program: Geisinger Community Medical Center**Authors**
Author 1: Taimur Hasan Author 2: Meghan Susek, DPM
Author 3: Author 4:
Author 5: Author 6:
Author 7: Author 8:**Purpose** Recently, more directed treatments have been proposed with better outcomes. This case study further highlights the positive outcome of Candida Albican intralesional injection when other traditional modalities failed**Methodology****Procedures**
Literature reports that plantar warts are from HPV species with most attributed to HPV-1 with humans as primary reservoir. Estimated 0.84% Americans infected with plantar warts and affects children and adolescents the most. Several treatment modalities exist today with minimal benefits. A 38-year-old non-diabetic male patient initially seen in May of 2017 with chief complaint typical of plantar wart. Upon examination, 1.2cm x 0.2cm raised rough surface lesion noted with warty appearance. Area appeared to be hyperkeratotic with pain from lateral pressure. Spongy pale center and punctate pinpoint bleeding noted. Patient was diagnosed with Plantar verruca.**Results**
The patient then underwent a series of Candida Albican antigen injection 0f 0.2ml delivered intra-dermally directly at the site with three weeks apart. Patient felt significant relief from symptoms as well as disappearance of Plantar wart and returned to normal daily activities.**Discussions**
Recently, more directed treatments have been proposed with better outcomes. This case study further highlights the positive outcome of Candida Albican intralesional injection when other traditional modalities failed. After failing several conservative and surgical measures, patient then underwent a series of Candida Albican antigen injection 0f 0.2ml delivered intra-dermally directly at the site with three weeks apart. Patient felt significant relief from symptoms as well as disappearance of Plantar wart and returned to normal daily activities.**Format** Case Study**Case Rpt Followup** 16**Student Club** Not a Student Club Poster**Classification** Wound Care/Infectious Diseases**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Taimur Hasan	thasan@geisinger.edu	I/We have nothing to disclose	
Meghan Susek, DPM	mmsusek@geisinger.edu	I/We have nothing to disclose	

Title

Proposed Treatment Algorithm for Recurrent Peroneal Tendon Pathology Despite Previous Surgical Intervention with Example Case Study

Submit Date

08/31/2023

Correspondent

Last Name: Ley
 Full Name: Gabriella A. Ley, DPM Email: gabby.ley94@gmail.com
 Practice/Company/Residency Program: Regions Hospital/HealthPartners Institute

Authors

Author 1: Gabriella A. Ley, DPM Author 2: Troy J. Boffeli, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Literature provides limited guidance regarding surgical revision options in cases of recurrent peroneal tendon tear despite previous surgical intervention. The goal of this case study is to present a proposed algorithm for the workup and surgical treatment of recurrent peroneal pathology.

Methodology

Procedures

Peroneal disorders can be simplified to 4 main categories including: tenosynovitis, tendon tears/ruptures, subluxation/dislocation, and painful os peroneum syndrome. It is vital to identify and address underlying causes of peroneal disorders to avoid recurrences such as anatomic anomalies, rearfoot deformities, and chronic ankle instability. A 72 year old female with history of previous surgical peroneus brevis repair presented with recurrent pain and persistent deformity. She was identified to have underlying pes cavus deformity, subtalar joint arthritis, and chronic ankle instability along with peroneus brevis longitudinal split tear. She underwent pes cavus reconstruction with STJ arthrodesis, lateral ankle ligament reconstruction and peroneal tendon transfer. Postoperatively patient has done well without recurrence of pain.

Results

Patient has been doing well in the postoperative period without recurrence of lateral ankle pain. Exam demonstrates rectus alignment of the foot and ankle with normal eversion strength.

Discussions

When evaluating peroneal tendon pathology, it is important to identify the underlying cause for proper treatment and prevention of recurrence. Without proper treatment, recurrence of peroneal tendon pathology and subsequent tear can be challenging to treat. This case highlights the importance of addressing underlying cavus deformity and ankle instability in patients who present with recurrent peroneal pathology despite previous tendon repair.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Gabriella A. Ley, DPM	gabby.ley94@gmail.com	I/We have nothing to disclose	
Troy J. Boffeli, DPM, FACFAS	troy.j.boffeli@healthpartners.com	Hold more than a 2% financial interest (including stocks) in any organizations(s)	Owner Surgical Design Innovations
		Intellectual Property rights owned	Investor ExoToe, LLC

Title Adult cutaneous IgA Vasculitis in the lower extremities**Submit Date** 08/31/2023**Correspondent**

Last Name: Schuler

Full Name: Christine M. Schuler DPM PGY3

Email: Christine_schuler@hotmail.com

Practice/Company/Residency Program:

Bethesda Hospital

Authors

Author 1: Christine Schuler DPM

Author 2: Julio Ortiz DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Immunoglobulin A vasculitis (IgA), previously called Henoch-Schönlein vasculitis was typically a disease that affects children and is relatively rare with an incidence of 0.8–2.2 per 100,000 person-years in adults. Presentation and course of IgA vasculitis differ between adults and children. Adults tend to have a higher frequency of persisting and relapsing disease. With the presence of IgA vasculitis in adults following novel drug administration and COVID-19 infection, the incidence of IgA vasculitis in adults may increase. It is important for Podiatric physicians to be able to identify the lesions as it mostly affects the legs and buttocks.

Methodology**Procedures**

A 27-year-old female with past medical history of Crohn's that's well controlled with an Anti-TNF alpha inhibitor for 8 years, presented to office with chief complaint of red lesions on her toes and lower extremities. A biopsy was done in the office to confirm the diagnosis of IgA vasculitis. With a diagnosis the patient was able to start targeted therapy.

Results

Patient's diagnosis was identified following clinical identification and conformational biopsy, allowing treatment, resulting in fewer lesions and longer remission between relapses.

Discussions

The early recognition can help expedite treatment and put an end to the relapsing remitting course and prevent damage to other organ systems. IgA vasculitis is an important differential that needs to be included in not only in pediatric populations but adults as well.

Format

Case Study

Case Rpt Followup

32

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Christine Schuler DPM	christine_schuler@hotmail.com	I/We have nothing to disclose	
Julio Ortiz DPM, FACFAS	Jcortizdpm@gmail.com	I/We have nothing to disclose	

Title Total Ankle Arthroplasty with Dwyer Osteotomy for Cavovarus Deformity**Submit Date** 08/31/2023**Correspondent**
Last Name: Arif
Full Name: Amir, M, Arif, DPM Email: amir.arif@corewellhealth.org
Practice/Company/Residency Program: Corewell Health - Trenton**Authors**
Author 1: Amir, M, Arif, DPM Author 2: Daravatey, D, Pel, DPM
Author 3: Newton, S, Davis DPM Author 4: Moiz Khalid, DPM
Author 5: Nsima, Usen, DPM, FACAS Author 6:
Author 7: Author 8:**Purpose**
Cavovarus foot deformity, a complex structural anomaly of the foot, presents a distinctive challenge in orthopedic practice. Characterized by an elevated longitudinal arch and inversion of the hindfoot, this condition results in altered weight distribution, gait abnormalities, and pain. Understanding the multifaceted nature of cavovarus foot deformity is essential for effective diagnosis, treatment, and management, given its implications on mobility and quality of life. This study highlights surgical management of a cavovarus foot type with chronic ankle instability with a total ankle arthroplasty.**Methodology****Procedures**
Patient is a 48-year-old male with a pertinent past medical history of obesity presenting with a pes cavovarus foot deformity, left ankle pain, and instability attributed to osteoarthritis, compounded by a chronic rupture of the left anterior talofibular ligament (ATFL). To address these concerns, a comprehensive surgical treatment approach was pursued encompassing a total ankle arthroplasty, direct repair of the left anterior talofibular ligament, and the implementation of a Dwyer Osteotomy procedure.**Results**
A rectus foot type was noted with cessation of ankle pain and restoration of unrestricted physical activity.**Discussions**
Cavovarus foot deformity can significantly compromise an individual's mobility and quality of life due to altered gait mechanics, pain, and instability, potentially limiting their ability to engage in daily activities. Due to the severity of the patient's condition of cavovarus deformity in combination with chronic ATFL rupture and ankle instability, a multifaceted treatment approach was warranted. Ankle arthroplasty, ATFL repair, and calcaneal osteotomy were employed to achieve a functional, pain-free, and plantigrade foot alignment.**Format** Case Study**Case Rpt Followup** 12**Student Club** Not a Student Club Poster**Classification** Rearfoot and Ankle Reconstruction**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Amir, M, Arif, DPM	amirarif1995@gmail.com	I/We have nothing to disclose	
Daravatey, D, Pel, DPM	newtonsdavis@gmail.com	I/We have nothing to disclose	
Newton, S, Davis DPM	Khalid.moiz@corewellhealth.org	I/We have nothing to disclose	
Moiz Khalid, DPM	ddpel@gmail.com	I/We have nothing to disclose	
Nsima, Usen, DPM, FACAS	usen.nsima@corewellhealth.org	I/We have nothing to disclose	

Title Tenosynovial Giant Cell Tumor in the Foot**Submit Date** 08/31/2023**Correspondent**

Last Name: Thompson

Full Name: Anna-Kay K. Thompson, DPM, MS

Email: dr.annakaythompson@gmail.com

Practice/Company/Residency Program:

Boston University Medical Center

Authors

Author 1: Anna-Kay K. Thompson, DPM, MS

Author 2: Alyssa S. Miyasato, DPM

Author 3: Ewald Mendeszoon, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Tenosynovial Giant Cell Tumors are one of the most common benign soft tissue tumors of the foot and ankle; however, they are rarely seen. Subtypes are localized (L-TGCT), mainly a solitary nodule around the digits, and the diffused type (Dt-TGCT), notably intra-articular disease with spread in large joints.

Methodology**Procedures**

41 year old male presented with painful mass on the dorsal aspect of the left foot. MRI confirmed 3.0 x 2.2 cm enhancing mass from the dorsal third metatarsophalangeal joint (MTPJ) with scalloping of the third MTPJ. Findings were consistent with pigmented villonodular synovitis (PVNS). The tumor was resected with affected bone and antibiotic spacer was placed. Negative margins achieved with second surgery.

Results

Dt-TGCT was confirmed with Dt-TGCT. The histological features are noted with chondroid metaplasia and calcification ranging from "grungy" to focally lace-like and calcified chondroid mesenchymal neoplasms. MRI 3 months post-op showed no recurrence.

Discussions

Dt-TGCT most commonly affects large joints but can occur in any foot region. This type is locally aggressive and painful, with osteochondral destruction with a recurrence rate of approximately 44%. Surgical excision is usually the gold standard; current literature advocates adjuvant therapy such as colony-stimulating factor-1 receptor antagonists for recurrent and non-resectable tumors. In this case, the Dt-TGCT affected the patient's 3rd MTPJ. Complete resection of the tumor was achieved with negative margins. Adjuvant therapy is indicated to lessen tumor recurrence due to its high recurrence rate.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Anna-Kay K. Thompson, DPM, MS	dr.annakaythompson@gmail.com	I/We have nothing to disclose	
Alyssa S. Miyasato, DPM	alyssamiy@gmail.com	I/We have nothing to disclose	
Ewald Mendeszoon, DPM	ewald.mendeszoorn@bmc.org	I/We have nothing to disclose	

Title Use of Adhesive Suture Retention Device for Delayed Primary Closure: An Innovative Technique

Submit Date 08/31/2023

Correspondent
 Last Name: Patterson
 Full Name: Kristen, Patterson, DPM, FACFAS Email: Kpatte4@gmail.com
 Practice/Company/Residency Program: Hosey and Murphy Foot and Ankle Centers

Authors
 Author 1: Kristen Patterson, DPM, FACFAS Author 2: Kayna Patel, DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose
 The aim of this case series is to present the clinical results of a surgical technique utilizing an adhesive suture retention device for delayed primary closure of a surgical site. This technique allows skin closure to be performed in a clinical setting which eliminates return to the operating room for delayed closure and minimizes additional insult to the surgical site.

Methodology

Procedures
 Challenges that come with delayed primary closure include increased healing time, reoperation, and risk of infections. We present two cases utilizing an adhesive retention suture device for delayed primary closure. Case one underwent bilateral foot plantar fibroma excision with delayed primary closure and case two underwent debridement of ulcer and bone biopsy with delayed primary closure. An adhesive device was placed on either side of the incision, thereafter 2-0 Nylon was passed through the device and the suture ends were left untied and secured down with steristrips. At three days postop, packing was removed and the suture ends were tied down reapproximating the skin edges without the use of local anesthetic or additional soft tissue insult. Within three weeks postop the sutures and device were removed.

Results
 Both cases responded favorably with complete healing of the incision site and no major complications.

Discussions
 The present case series assesses the successful utility of an adhesive retention suture device for delayed primary closure of a surgical site mitigating return to the operating room and allowing for decrease in soft tissue handling. We believe our results depict a cost effective innovative technique for delayed primary closure.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kristen Patterson, DPM, FACFAS	Kpatte4@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Hemiguard
Kayna Patel, DPM	kaynapatel1994@gmail.com	I/We have nothing to disclose	

Title

Primary Subtalar Joint Arthrodesis as Treatment for Pediatric Tarsal Coalition

Submit Date

08/31/2023

Correspondent

Last Name: Most
 Full Name: Gary, J. Most, DPM FACFAS Email: smiggant@kent.edu
 Practice/Company/Residency Program: Foot & Ankle Physicians of Geauga

Authors

Author 1: Morgan A. MacLean, DPM Author 2: Natalie A. Spicer, DPM
 Author 3: Ann M. Profeta, DPM Author 4: Gary J. Most, DPM FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

To support subtalar joint arthrodesis as primary treatment option for pediatric tarsal coalitions.

Methodology

Procedures

A case series of 30 pediatric patients treated by a single surgeon at a single institution for talocalcaneal coalition with 12 month follow up. Pediatric patients with symptomatic tarsal coalition confirmed on CT scan were included. All were treated with primary subtalar joint arthrodesis with two screw fixation. Post operative protocol included 4 weeks non-weight bearing followed by progressive weight bearing over 4 week increments with an average return to activity of 3 months. Several studies in the current literature discuss excision of coalition with graft interposition as a preferred primary treatment option, however many of these patients go on to subtalar joint degeneration, ultimately requiring arthrodesis as definitive treatment. This paper argues that symptomatic tarsal coalitions in the pediatric population can be treated with primary subtalar joint arthrodesis with average return to activity being 3 months with minimal symptoms and no functional consequence.

Results

30 pediatric patients with talocalcaneal coalition treated with subtalar joint arthrodesis with 100% fusion rate confirmed on plain film x-ray. All patients had full return to activity at 3 months with reported reduction in pain level and no reported functional limitations.

Discussions

This paper argues that symptomatic tarsal coalitions in the pediatric population can be treated with primary subtalar joint arthrodesis with average return to activity being 3 months with minimal symptoms and no functional consequence.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Morgan A. MacLean, DPM	mmaclea2@kent.edu	I/We have nothing to disclose	
Natalie A. Spicer, DPM	nspicer4@kent.edu	I/We have nothing to disclose	
Ann M. Profeta, DPM	aprofeta@kent.edu	I/We have nothing to disclose	
Gary J. Most, DPM FACFAS	garymost@sbeglobal.net	I/We have nothing to disclose	

Title Extramedullary Fixation for Central Metatarsal Fractures**Submit Date** 08/31/2023**Correspondent**

Last Name: Bernard
 Full Name: Neil L Bernard DPM Email: neilbernard36@gmail.com
 Practice/Company/Residency Program: Mercy Health Regional Medical

Authors

Author 1: Neil L Bernard DPM Author 2: Eyad Rasoul MS-3
 Author 3: Brianna Lach DPM Author 4: Eric Beaujon DPM
 Author 5: James Connors DPM FACFAS Author 6: Mark Hardy DPM FACFAS
 Author 7: Author 8:

Purpose

Metatarsal fractures are frequently encountered in lower extremity emergencies/trauma. Most of these fractures are acute in nature, generally resulting from crush injuries or direct trauma to the foot. In cases of significant displacement, surgical reduction is necessary. Surgical reduction is recommended with more than 3mm of displacement in the frontal plane, an angle greater than 10 degrees in the sagittal plane, or a disruption of the parabola. Typical operative techniques for reduction pose a unique challenge when the fracture pattern is transverse in nature especially in the central metatarsals. This case study looks at a new type of extramedullary fixation for central metatarsal fractures.

Methodology**Procedures**

A 28-year-old patient underwent open reduction extramedullary fixation for metatarsal neck fractures. Preoperative radiographs revealed displaced transverse fracture of 3rd metatarsal and oblique displaced fracture 4th metatarsal. Easy anatomical reduction was obtained.

Results

Excellent reduction and healing using extramedullary fixation at 1 year follow-up.

Discussions

Given the limited anatomy of the lesser metatarsals, distal transverse fractures especially at the neck present without a standard technique for a predictable result. Clamp or temporary wire reduction can impair internal fixation options. Intramedullary wires alone provide initial stability but have the potential to require early removal as well as loss of reduction. As the fracture occurs more distally, the metatarsal head and neck typically hinders the placement of two screws for stability. This straightforward technique grants surgeons the benefits of extramedullary fixation without sacrificing the security of intramedullary K-wire placement to aid in fracture reduction.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Neil L Bernard DPM	neilbernard36@gmail.com	I/We have nothing to disclose	
Eyad Rasoul MS-3	erasoul@kent.edu	I/We have nothing to disclose	
Brianna Lach DPM	blach2@kent.edu	I/We have nothing to disclose	
Eric Beaujon DPM	ebeaujon@kent.edu	I/We have nothing to disclose	
James Connors DPM FACFAS	jconnor6@kent.edu	I/We have nothing to disclose	
Mark Hardy DPM FACFAS	hardy@balancecle.com	I/We have nothing to disclose	

Title Unique Presentation of Hidradenoma**Submit Date** 08/31/2023**Correspondent**

Last Name: Deutsch
 Full Name: Gloria B. Deutsch, DPM Email: docdeutsch@gmail.com
 Practice/Company/Residency Program: Crozer Health Residency Program

Authors

Author 1: Gloria B Deutsch, DPM Author 2: Ryan Shaner, DPM
 Author 3: Rhonda Cornell, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

A hidradenoma is mostly a benign, nodular tumor often described as an adnexal neoplasm. They can be subdivided from apocrine or eccrine origin. Hidradenomas are rarely discovered in extremities.

Methodology**Procedures**

We present a case study of a 32 year old male patient with a painful growth on the plantar surface of his second digit, with duration greater than one year. Preoperative MRI showed an ovoid, subcutaneous lesion on the plantar aspect of the second toe measuring 1.8x1.9 x1.4cm. The lesion is hyper-intense with focal areas of hypo-intensity on both T1 and T2 weighted images. Due to continued growth and worsening discomfort, the mass was surgically excised. A sample was sent to NeoGenomics Diagnostic Consult for external dermatopathology which reported a cystic lesion of upper dermis with no evidence of infiltration, tumor necrosis, increased mitotic activity, or nuclear pleomorphism to suggest a malignant tumor.

Results

The entire mass was excised surgically with salvage of the 2nd digit and normal function maintained. The patient recovered well and has not had reoccurrence in the twelve months since surgery.

Discussions

Identification of the tumor/growth was challenging, as hidradenomas are rare in lower extremities. Hidradenomas are predominantly discovered in women on the trunk, neck, or head, but can be found anywhere. Differential diagnosis might include acrospiroma, pyogenic granuloma, papillary adenocarcinoma, melanoma, or seborrheic keratosis. Hidradenomas can be atypical or malignant. The atypical hidradenomas are most worrisome for recurrence or malignancy potential. Surgical excision can be curative when resection has clean margins.

Format Case Study**Case Rpt Followup** 12**Student Club** Not a Student Club Poster**Classification** Soft Tissue/Tumor**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Gloria B Deutsch, DPM	docdeutsch@gmail.com	I/We have nothing to disclose	
Ryan Shaner, DPM	Ryan.Shaner@crozer.org	I/We have nothing to disclose	
Rhonda Cornell, DPM, FACFAS	rcornell34@gmail.com	I/We have nothing to disclose	

Title

Osteochondroma of the Subtalar Joint: Posterolateral Approach to Resection and Arthrodesis

Submit Date 08/31/2023

Correspondent

Last Name: Tippet
 Full Name: Caroline Tippet, DPM, AACFAS Email: carolinetippet1@gmail.com
 Practice/Company/Residency Program: University of Virginia Health

Authors

Author 1: Caroline Tippet Author 2: Jennifer Wentz, DPM, AACFAS
 Author 3: Nate Almario, BS Author 4: Jason Naldo, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Osteochondromas of the subtalar joint are rare, and the few reported cases in the literature are in pediatric patients and do not describe surgical approach to resection. Our purpose is to report an osteochondroma in a middle-aged female and the surgical approach to resection and arthrodesis of the subtalar joint.

Methodology

Procedures A 55 year old female presented with pain of the posterior hindfoot, and a mass palpable deep to the achilles tendon. There was no history of trauma. She experienced pain with palpation of the mass, plantarflexion of the ankle joint, and range of motion of the subtalar joint. X-rays revealed a large osseous mass in Kager's triangle that communicated with the posterior subtalar joint with associated degenerative changes. MRI suggested a benign bone tumor. The patient was taken for bone tumor resection and subtalar joint arthrodesis through a posterolateral approach.

Results Pathology was consistent with osteochondroma. Clinical and radiographic arthrodesis of the subtalar joint. Patient reported reduction in pain and no recurrence at 17 months.

Discussions While osteochondromas in the foot are rare, it is important for one to recognize the defining radiographic features, understand the risk factors associated with malignant transformation, and resection principles to prevent recurrence. The posterior approach to subtalar joint arthrodesis has been published regarding distraction and arthroscopic arthrodesis, but never regarding a bone tumor with associated degenerative arthritis. This approach allowed safe and adequate resection of the bone tumor and access to the subtalar joint through one incision without skin tension or violation of anatomic structures.

Format Case Study

Case Rpt Followup 17

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Caroline Tippet	carolinetippet1@gmail.com	I/We have nothing to disclose	
Jennifer Wentz, DPM, AACFAS	jwentz1234@gmail.com	I/We have nothing to disclose	
Nate Almario, BS	naytealmario@gmail.com	I/We have nothing to disclose	
Jason Naldo, DPM, FACFAS	jnaldo@carilionclinic.org	I/We have nothing to disclose	

Title **Not Your Everyday Heel Pain: One Veteran's Bone Cyst Treated with a Novel Windowed Technique**

Submit Date

08/31/2023

Correspondent

Last Name: Norris
 Full Name: Trevor A Norris, DPM Email: tnorri16@kent.edu
 Practice/Company/Residency Program: Mercy Health Regional

Authors

Author 1: Trevor Norris, DPM Author 2: Bradley Wiemken, DPM
 Author 3: Lauren Jones, DPM Author 4: James Connors, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Bone cysts are benign fluid filled lesions that appear in about 3% of all primary tumors in the body. The calcaneus is the most common location of the foot and the sixth most common location within the entire body. Operative vs. Conservative treatment is still debated. Here we present a case of a 33 year old veteran presenting for not your everyday heel pain. We further discuss the management of his 3.3 x 3.4 x 2.5 cm lesion to the central anterior aspect of the right calcaneus measured and identified on advanced imaging.

Methodology

Procedures

Windowing technique of the lateral wall of the calcaneus via pre-drilled locking plate with curettage and autograft harvest from the distal tibia via a vacuum bone harvesting technique

Results

Complete pain relief was achieved in this patient with return to activity with no restrictions

Discussions

Bone cysts have high recurrence rates up to 40%. When compared to other treatments, autogenous bone graft has been shown to provide a greater percentage of radiographic consolidation and over 80% success rate in pain reduction at three years. These lesions are often missed clinically and radiographically. It is important not only for appropriate detection, but differentiation from other suspicion lesions. Workups should include further advanced imaging. This case report focuses on helping the everyday podiatrist with workup, management, diagnosis, and presentation of a novel surgical technique for your not everyday heel pain.

Format

Case Study

Case Rpt Followup

36

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Trevor Norris, DPM	tnorri16@kent.edu	I/We have nothing to disclose	
Bradley Wiemken, DPM	bwiemken@kent.edu	I/We have nothing to disclose	
Lauren Jones, DPM	Ljone118@kent.edu	I/We have nothing to disclose	
James Connors, DPM	connorsjc2@gmail.com	I/We have nothing to disclose	

Title Oblique Osteotomy for Crossover Toe Correction**Submit Date** 08/31/2023**Correspondent**

Last Name: Ng
 Full Name: Terry Ng DPM-PGY-2 Email: tng@mercy.com
 Practice/Company/Residency Program: Mercy Health St. Rita's Medical Center

Authors

Author 1: Terry Ng, DPM PGY-2 Author 2: Andrew Aldstadt, DPM PGY-2
 Author 3: Shawn Ward, DPM FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to retrospectively evaluate the radiographic outcomes of an oblique distal lesser metatarsal osteotomy for the realignment of crossover toe.

Methodology**Procedures**

A case study was conducted on a patient presenting with 2nd toe and metatarsophalangeal joint pain with an associated overriding 2nd toe. Surgical intervention with an oblique distal metatarsal osteotomy was performed to correct the deformity. Radiographic analysis of pre operative and post operative imaging was done, comparing factors such as 2nd digit transverse plane deviation and 2nd metatarsal protrusion distance as measured through the Hardy and Clapham method.

Results

In this case study, the patient presented with 2nd digit transverse plane deviation of 8 degrees and a 2nd metatarsal protrusion distance of 4mm pre operatively using the Hardy and Clapham method. Following surgical correction with an oblique osteotomy, the patient measured a 2nd digit transverse plane deviation of transverse plane deviation of 1 degree and a 2nd metatarsal protrusion distance of 2mm.

Discussions

Angling the osteotomy in a distal lateral to proximal medial orientation the capital fragment shifts medially, lengthening the medial capsular soft tissues. This has the effect of tightening the opposing side soft tissues; in this case, the lateral side. This has the effect of pulling the second digit back into a more normal alignment upon the metatarsal head. The capital fragment is shifted in the direction the toe is deforming. We have seen great results with this osteotomy, both radiographically and through patient satisfaction.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Terry Ng, DPM PGY-2	tng@mercy.com	I/We have nothing to disclose	
Andrew Aldstadt, DPM PGY-2	aaldstadt@mercy.com	I/We have nothing to disclose	
Shawn Ward, DPM FACFAS	SCWard@mercy.com	I/We have nothing to disclose	

Title Localized Adjacent Tissue Transfers in Chronic Wound Closures

Submit Date 08/31/2023

Correspondent Last Name: Chowdhury Full Name: Farzana N. Chowdhury, DPM Email: farzana.chowdhury20@gmail.com Practice/Company/Residency Program: Morristown Medical Center

Authors Author 1: Farzana N. Chowdhury, DPM Author 2: Norman Li, DPM Author 3: Raymond Lee, DPM Author 4: Author 5: Author 6: Author 7: Author 8:

Purpose Chronic plantar wounds are often seen in diabetics. Despite conservative treatment options such as offloading and standard wound care, many of these wounds fail to heal. Other methods employed include use of costly skin substitutes, which often aggregate moderate expenses with often unreliable results. Excision of diabetic wounds in conjunction with adjacent tissue transfers can be a viable option in treating chronic non healing wounds. According to an article published in "Use of Local Flaps for Soft-Tissue Closure in Diabetic Foot Wounds" found success in approximately 75.5% of the population. This case series documents multiple cases of adjacent tissue transfers for successful closure of chronic diabetic wounds.

Methodology

Procedures 3 patients presenting with local standing plantar diabetic ulcerations undergoing complex closure of chronic wounds with adjacent tissue flap transfers. Inclusion criteria includes diabetic patients with chronic wounds (>6 month duration) and failure to close despite standard wound care (offloading, serial debridements, skin substitute applications). Exclusion criteria include wounds less than 6 month duration, nondiabetic patients, and patients with severe arterial compromise contraindicating surgical care.

Results All patients with successful closure of ulcerations, no recurrence to date

Discussions The chronic nature of diabetic plantar wounds can be exhaustive to both patients and the health care system. Standard wound care often fails to adequately resolve these chronic wounds, with resultant aggregation of costly treatments. Primary closure of chronic wounds through adjacent tissue transfers may potentially be a viable option to reduce the duration and cost of plantar diabetic foot wounds.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Farzana N. Chowdhury, DPM; Norman Li, DPM; Raymond Lee, DPM.

Title

A Novel Surgical Technique and Augmentation of Chronic Peroneal Tendon Tears reinforced with Bio-Inductive Scaffold Graft: A Case Report

Submit Date

08/31/2023

Correspondent

Last Name: Marsahl

Full Name: John Ellis Marshall IV, DPM, AACFAS, Fellow

Email: Dr.John.Marshalliv@gmail.com

Practice/Company/Residency Program:

Advanced Orthopedics and Rehabilitation/Phoenixville/Premier Orthopedics

Authors

Author 1: Sham Persaud, DPM, FACFAS

Author 2: Jason R. Miller, DPM, FACFAS

Author 3: John E. Marshall IV, DPM, AACFAS Fellow,

Author 4: Willman S. Pearcey, DPM, PGY-3

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Return to full activity at a level pre-injury as expediently as possible should be the goal of any surgical repair. This case study follows a patient with chronic lateral ankle pain verified by MRI to have suffered from extensive tears to both peroneal tendons, and their early return to full activity after utilizing a novel repair technique and the incorporation of a Bio-inductive graft to reinforce repair.

Methodology

Procedures

53-year-old female presents with Peroneal tendon pain for 1.5 years. Previously treated with immobilization, bracing, PT, and anti-inflammatories with no relief. Patient underwent repair and reinforcement of both peroneal tendons utilizing a Bio-inductive scaffold, implanted using a novel surgical technique.

Results

Patient returned to activity with no restrictions at 3 months. The patient has experienced no significant pain or complications for over 1 year.

Discussions

Chronic lateral ankle pain secondary to peroneal injury can be debilitating to patients with a decrease in activity. While return to weight bearing after surgical repair may occur in several weeks to a couple of months, return to pre-injury activity in many studies have been shown to be several months to over a year. We follow the course of a patient suffering from chronic peroneal pain, intraoperative findings, and surgical technique used to return the patient to full activity 3 months postoperatively with no self-reported pain.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sham Persaud, DPM, FACFAS	Shampersaudpm@yahoo.com	I/We have nothing to disclose	
Jason R. Miller, DPM, FACFAS	jrmiller1371@gmail.com	I/We have nothing to disclose	
John E. Marshall IV, DPM, AACFAS Fellow,	dr.john.marshliv@gmail.com	I/We have nothing to disclose	
Willman S. Pearcey, DPM, PGY-3	will.pearcey@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Aurora

Title

Efficacy of Partial Plantar Fasciectomy for Treatment of Medial interphalangeal Hallux Ulcers

Submit Date 08/31/2023

Correspondent

Last Name: Blades
 Full Name: Asha Email: ashablades12@gmail.com
 Practice/Company/Residency Program: Morristown Medical Center

Authors

Author 1: Asha Blades, DPM Author 2: Alisha Joshi, DPM
 Author 3: Raymond Lee, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Medial Hallux interphalangeal ulcers are often associated with extrinsic overload from both the first MPJ and medial column. The factors that drive first metatarsophalangeal joint instability and hallux limitus contribute to increase load to the plantar aspect of the first interphalangeal joint, resulting in pressure wounds on the plantar aspect of the first interphalangeal joint. Conservative treatments include forms of offloading, and surgical treatments include osseous procedures to reduce osseous prominences or to correct hallux limitus. This case series explores the efficacy of percutaneously performed partial plantar fasciectomy for treatment of the plantar medial first interphalangeal ulcers.

Methodology

Procedures

5 patients undergoing percutaneous partial plantar fasciectomy in the office setting are included in this study. All patients failed conservative treatment.

Results

5 plantar medial hallux interphalangeal ulcers undergoing surgical intervention with a partial plantar fasciectomy.

Discussions

Plantar medial first interphalangeal ulcerations are often contributed by biomechanical factors that need to be addressed to adequately heal wounds. Surgical treatment options often include osseous procedures that may be complicated based on patient comorbidities. A percutaneously performed selective medial band fasciectomy functions to increase the range of motion of the first metatarsophalangeal joint, hence reducing overload to the first interphalangeal joint. Percutaneously performed selective medial band fasciotomies may be an effective procedure for adjunctive treatment of plantar medial hallux interphalangeal joint ulcers.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Asha Blades, DPM	ashablades12@gmail.com	I/We have nothing to disclose	
Alisha Joshi, DPM	alishajoshi@gmail.com	I/We have nothing to disclose	
Raymond Lee, DPM	raymondleedpm@gmail.com	I/We have nothing to disclose	

Title

Efficacies of Intrinsic Muscle Flaps for Closure of Chronic Plantar Ulcers

Submit Date

08/31/2023

Correspondent

Last Name: Blades

Full Name: Asha

Email: ashablades12@gmail.com

Practice/Company/Residency Program:

Morristown Medical Center

Authors

Author 1: Asha Blades, DPM

Author 2: Alisha Joshi, DPM

Author 3: Raymond Lee, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Treatment of chronic diabetic foot wounds contribute to large portion of medical costs to the United States health care systems annually. In addition to their cost burdens, chronic diabetic foot wounds also pose a threat to amputations that imposes further patient morbidities and mortalities. Standard wound care such as offloading, negative pressure wound therapy, serial debridement, primary closures, and/or skin substitutes are sometimes inadequate in resolving chronic diabetic wounds. Use of intrinsic muscle flaps may serve to be useful adjuncts to closure of chronic diabetic wounds that failed to resolve through standard wound care. The purpose of this academic review is to re-evaluate the efficacies of intrinsic muscle flaps for closure of chronic plantar foot ulcers.

Methodology

Procedures

Multiple cases of Abductor Digiti Minimi muscle flaps and Flexor Digitorum Brevis muscle flaps for closure for chronic diabetic foot ulcers.

Results

Closure of chronic diabetic foot ulcers via intrinsic muscle flaps, improvement in patient outcomes.

Discussions

Standard wound care such as offloading, negative pressure wound therapy, serial debridement, primary closures, and/or skin substitutes are sometimes inadequate in resolving chronic diabetic foot wounds. Intrinsic muscle flaps are not as well documented as some of the more traditional approaches for coverage of diabetic foot defects. Intrinsic muscle flaps work to increase vascularity to wound recipient site and provide soft tissue coverage over exposed deep structures. Intrinsic muscle flaps may be useful as adjunctive treatment for chronic diabetic foot wounds.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Asha Blades, DPM	ashablades12@gmail.com	I/We have nothing to disclose	
Alisha Joshi, DPM	alishajoshi@gmail.com	I/We have nothing to disclose	
Raymond Lee, DPM	raymondleedpm@gmail.com	I/We have nothing to disclose	

Title

Gastrocnemius Aponeurosis Recession versus Achilles tendon lengthening in Management of Neuropathic Forefoot Ulcers

Submit Date 08/31/2023

Correspondent

Last Name: Chowdhury
 Full Name: Farzana N. Chowdhury, DPM Email: farzana.chowdhury20@gmail.com
 Practice/Company/Residency Program: Morristown Medical Center

Authors

Author 1: Farzana N. Chowdhury, DPM Author 2: Norman Li, DPM
 Author 3: Raymond Lee, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Purpose of this study is to compare the effectiveness of Tendo-Achilles lengthening versus Gastrocnemius Aponeurosis Recession in the management of neuropathic forefoot ulcers. Forefoot ulcers are often contributed by hindfoot equinus with several options for equinus correction available. Most prevalently utilized being Gastrocnemius Recessions vs. Tendo-Achilles lengthening. Proponents for Gastrocnemius Recessions cite concerns for risk of iatrogenic tendon rupture in Achilles tendon lengthening, whereas proponents for Tendo-Achilles lengthening reports the concern that gastrocnemius recessions may not adequately address hindfoot equinus. This case study documents one patient with bilateral plantar first metatarsal head ulcerations contributed by hindfoot equinus who underwent Tendo-Achilles lengthening and Gastrocnemius Recession on opposing limbs. Both resulted in no recurrence of ulcerations and no complications of Achilles tendon rupture. Although, recurrent hyperkeratosis is noted on the side of Gastrocnemius Recession.

Methodology

Procedures

1 patient with TAL and gastrocnemius recession on each lower extremity for purpose.

Results

No forefoot ulcers recurrence, recurrent hyperkeratotic lesion on gastrocnemius recession limb.

Discussions

Forefoot neuropathic ulcers contributed by hindfoot equinus represent significant challenges especially in the diabetic population. This study provides a comparison of Gastrocnemius Aponeurosis Recession versus Tendo-Achilles lengthening in a single patient with bilateral plantar first metatarsal head ulcerations. Successful resolution of ulcerations was noted on both sides, however the Gastrocnemius Recession demonstrates recurrent hyperkeratosis at the previous ulceration. No rupturing of the achilles tendon lengthening occurred. Both gastrocnemius recession and Tendo-Achilles lengthening may be suitable choices for treatment of hindfoot equinus contributing to forefoot ulcerations.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Farzana N. Chowdhury, DPM	farzana.chowdhury20@gmail.com	I/We have nothing to disclose	
Norman Li, DPM	norman0701@gmail.com	I/We have nothing to disclose	
Raymond Lee, DPM	raymondleedpm@gmail.com	I/We have nothing to disclose	

Title **A Novel Treatment for Surgical Treatment for Osteomyelitis: A Possible Alternative for Ray Resection**

Submit Date 08/31/2023

Correspondent Last Name: Paredes
Full Name: Dalon U. Paredes, MS-IV
Email: dparede1@kent.edu
Practice/Company/Residency Program: Erie Foot and Ankle Center/Kent State University College of Podiatric Medicine

Authors Author 1: Jacqueline Donovan, DPM, FACFAS Author 2: Nick Butler, DPM, AACFAS
Author 3: Dalon U. Paredes, MS-IV Author 4: Bria Pallas, MS-IV
Author 5: Gabriella Grillo, MS-II Author 6: Anitha Anbalagan, MS-IV
Author 7: Drake Lohnes, MS-III Author 8:

Purpose Osteomyelitis is one of the most common infections found in the foot, present in 50% of severe cases of chronic bone infections. Conservative amputation with attention to maintaining length and cortical integrity in an infected metatarsal is key to maintain biomechanical integrity.

Methodology

Procedures Conservative surgical treatment of osteomyelitis is done to reduce loss of the body structures and avoid amputation. Bone removal can lead to structural instability and increase the risk of infection recurrence due to dead space. A 4-5 cm linear incision was made at the 4th MPJ moving proximally along the metatarsal shaft. A resection of the distal half of the metatarsal shaft including the head until bone integrity was noted was made. Length of the 4th metatarsal was the main priority. A power drill was sequentially drilled to ream the inside of the 4th metatarsal shaft until "chatter" was noted to create a canal for antibiotic bone cement and to clean the medullary bone of osteomyelitis.

Results This case study highlights an alternative with one year follow up without complication to standard amputation by detailing a unique surgical limb salvage approach for osteomyelitis treatment.

Discussions Postoperative radiographs demonstrate successful partial removal of the right fourth metatarsal with application of bone cement with no radiographic signs of osteomyelitis. No postoperative complications were observed. The outcome demonstrates that resection of the fourth metatarsal head with application of antibiotic bone cement is an appropriate and effective procedure for treatment of a patient who presents with osteomyelitis in conjunction with long standing type II diabetes mellitus.

Format Case Study

Case Rpt Followup 13

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Jacqueline Donovan, Nick Butler, Dalon U. Paredes, Bria Pallas, Gabriella Grillo, Anitha Anbalagan, and Drake Lohnes.

Title

Postoperative Effects of Single-Dose Dalbavancin Infusion Following Partial Foot Amputations for Acute Diabetic Foot Infections: A Case Series

Submit Date

08/31/2023

Correspondent

Last Name: Hmady
 Full Name: Marwa, Hmady, DPM Email: hmadyarwa@gmail.com
 Practice/Company/Residency Program: McLaren Macomb

Authors

Author 1: Marwa, Hmady, DPM Author 2: Kristen Patterson, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This case series assesses the postoperative outcomes and benefits of single-dose Dalbavancin infusion after toe amputations in acute diabetic foot infections. Investigating wound healing, infection control, and recovery, the study contributes insights into Dalbavancin's potential as adjunctive therapy.

Methodology

Procedures

Four male diabetic patients underwent toe amputations. All received immediate Dalbavancin infusion, with progress tracked for wound healing, infection resolution, and recovery trends.

Results

Timely wound healing occurred in all amputations without complications. One patient, due to peripheral arterial disease (PAD), required an above-knee amputation. This highlights distinguishing infection and vascular-related challenges.

Discussions

This case series reveals positive outcomes from immediate Dalbavancin infusion post toe amputations in diabetic patients with acute foot infections. Wound healing after amputation was efficient without complications, supporting Dalbavancin's potential benefits. These findings align with timely antibiotic intervention's significance in mitigating diabetic foot infection-related complications. Diabetic foot infections, often stemming from neuropathy and vascular issues, pose complex clinical challenges. Our observations reaffirm prompt, targeted antibiotic therapy, exemplified by Dalbavancin, in halting infection progression and promoting optimal healing outcomes. The case of an above-knee amputation due to peripheral arterial disease (PAD) underscores the need to distinguish between infection and vascular-related complexities in diabetic foot management. This series contributes insights into Dalbavancin's potential benefits, underscoring comprehensive patient care encompassing infectious control and broader aspects.

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Marwa, Hmady, DPM	hmadyarwa@gmail.com	I/We have nothing to disclose	
Kristen Patterson, DPM, FACFAS	kpatte4@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Hemiguard (previously)

Title **The Surgical Management of Turf Toe : A Case Report**

Submit Date 08/31/2023

Correspondent Last Name: Bergstrom
Full Name: Taylor K Bergstrom DPM Email: tay.bergstrom@gmail.com
Practice/Company/Residency Program: JFK Medical Center

Authors Author 1: James Clancy DPM, FACFAS Author 2: Elizabeth Connolly DPM
Author 3: Taylor Bergstrom DPM Author 4: Josh Joseph DPM
Author 5: Author 6:
Author 7: Author 8:

Purpose Turf toe is a frequent sports related injury that affects the first metatarsophalangeal joint. This condition typically occurs secondary to a hyperextension injury resulting in attenuation, strain, or complete disruption of the capsular ligamentous complex supporting the joint. Disruption of this complex can create instability, dysfunction, and deformity. There is a paucity of literature discussing the surgical treatment for grade 3 turf toe injuries.

Methodology

Procedures This case study presents the diagnosis, surgical treatment, and rehabilitation of a 36 year old female with a turf toe injury. Accurate diagnosis was obtained through the history, physical exam findings as well as MRI imaging. Surgical correction was achieved by using a three incision approach and application of suture buttons.

Results At one year the patient showed good clinical recovery after surgical intervention and rehabilitation. The purpose of this study was to discuss the diagnosis and describe the three incision surgical technique with suture button fixation.

Discussions The vast majority of turf toe injuries are treated non operatively with good functional outcomes; however surgical intervention should be considered with grade three injuries and gross instability. Surgical techniques, fixation, and outcomes is lacking for this condition in the literature. This case study describes the successful clinical course following correction with a three incision technique and suture button fixation for turf toe.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level V

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include James Clancy DPM, Elizabeth Connolly DPM, Taylor Bergstrom DPM, and Josh Joseph DPM.

Title

Challenging the Odds: Aggressive Wound Care in Necrotizing Fasciitis for Successful Limb Preservation

Submit Date

08/31/2023

Correspondent

Last Name: Moussa
 Full Name: Natalie Moussa, DPM Email: nmoussadpm@gmail.com
 Practice/Company/Residency Program: HCA Florida Hospital Aventura

Authors

Author 1: Natalie Moussa, DPM Author 2: Valentina Clinton
 Author 3: Sydney Sears, BS Author 4: Patricia Toledo, BS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Necrotizing fasciitis affecting the lower limb encompasses a group of life-threatening soft tissue infections that rapidly progress across the fascia. While the mainstay treatment to address this severe infection includes intravenous antibiotic delivery and debridement, the incidence of amputation, even with proper treatment, can reach up to 22%. Moreover, these patients face an aggregated mortality rate as elevated as 34%. This particular case study centers around an instance of necrotizing fasciitis within a high-risk patient.

Methodology

Procedures

A 46-year-old patient presented with bubbling, black crepitus tracking up the proximal leg with islands of mobile, malodorous blue tissue consistent with necrotizing fasciitis. This patient was medically complex, with a history of uncontrolled hypertension, diabetes, and congestive heart failure. After treatment with incision and drainage and ankle arthrotomy, BKA was recommended but refused by the patient. This decision prompted the adoption of an assertive wound care approach. Amnion grafts as well as TheraSkin grafts were used circumferentially, and a delayed antibiotic-covered TTC nail with external fixation was used to fuse his ankle secondary to his rigid dropfoot.

Results

Following long-term wound care, the patient regained ambulation and preserved quality of life through the salvage of his limb.

Discussions

Though necrotizing fasciitis is known to have a grave prognosis, the use of an aggressive wound care approach despite the patient's complex medical history led to optimal outcome. This case stands as a significant testament to the potential of aggressive wound care in achieving limb salvage in even the most challenging cases of necrotizing fasciitis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Natalie Moussa, DPM	nmoussadpm@gmail.com	I/We have nothing to disclose	
Valentina Clinton	valentina.clinton@mymail.barry.edu	I/We have nothing to disclose	
Sydney Sears, BS	sydni.sears@mymail.barry.edu	I/We have nothing to disclose	
Patricia Toledo, BS	patricia.toledo@mymail.barry.edu	I/We have nothing to disclose	

Title **Role of calcaneal osteotomy in Midfoot Charcot Reconstruction**

Submit Date 08/31/2023

Correspondent Last Name: Giagnacova
Full Name: Albert Email: Albertdpm@gmail.com
Practice/Company/Residency Program: Company

Authors Author 1: Albert Giagnacova DPM AACFAS Author 2: James Polowczyk DPM FACFAS
Author 3: Anthony Mina DPM Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose Bio-mechanical implications of recreating the horizontal and vertical arches of foot, by engaging the Windlass mechanism. Most often medializing the Achillies tendon the resulted in raising the medial column and align the Midfoot Charcot. We feel that alone EGR , Achillies lengthening, are not enough of longterm correction, and Achillies release caused Calcaneal wounds , gait issues. Ankle Mtpj Charcot patient were excluded.

Methodology

Procedures Literature review is scant there is one mention in a popular non scientific Podiatry trade magazine, however there osteotomy was dorsiflexory not translational like our study. Mishko · 2022 ,mention a plantarflexory osteotomy. One article by Lahoti 2016 documented a Calcaneal osteotomy with long bone osteotomy.

Results review of 37 patients, show key Radiographic results particularly restoration on AP Meary's angle this technique started 7 years ago until one year ago. Metrics such as lack of revision rate. Successful outcome measures are complete healing of ulcer, clearance of infection without recurrence, a clinically plantigrade foot and the ability to use regular shoes or diabetic footwear, and ability quality of brace are also good metrics. We also look at Silfverskiold Test which all showed adequate long term dorsiflexed passed 10 degrees.

Discussions All patients remain stable, did not further break down, 2 patients develop ankle Charcot , We had 3 patients who has hardware issue, typically associated with neutralized plates. One patient develop active chronic osteomyelitis. Approximately 20 percent were placed in torch type walkers. All patient had accommodative diabetic shoes, with modifications. Restoring the naive horizontal and vertical arch may be the next step after properly addressing Equinus.

Format Case Study

Case Rpt Followup 84

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Albert Giagnacova DPM AACFAS, James Polowczyk DPM FACFAS, and Anthony Mina DPM.

Title

Utilizing Abductor Digiti Minimi Muscle Flap for Heel Wound Coverage and Closure in Cases of Calcaneal Osteomyelitis: A Comprehensive Surgical Approach

Submit Date

08/31/2023

Correspondent

Last Name: Chowdhury

Full Name: Farzana N. Chowdhury, DPM

Email: farzana.chowdhury20@gmail.com

Practice/Company/Residency Program:

Morristown Medical Center

Authors

Author 1: Farzana N. Chowdhury, DPM

Author 2: Jasmine Hawkins, DPM

Author 3: Raymond Lee, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Heel wounds complicated with underlying osteomyelitis are often difficult to manage. Treatment options include calcanectomies, long term antibiotic therapies, negative-pressure wound therapies, skin substitutes, and methods of offloading; all with varying results. The purpose of this study is to evaluate the efficacy in treating heel wounds with underlying osteomyelitis with abductor digiti mini flaps.

Methodology

Procedures

3 patients undergoing abductor digiti minimi muscle flaps for heel wound coverage with calcaneal debridement.

Results

Adequate closure and healing of muscle flaps in calcaneal osteomyelitis with wounds.

Discussions

Diabetic heel wounds complicated with osteomyelitis hold a higher rate of further amputations along the lower extremity. Treatment options include calcanectomies, long term antibiotic therapies, negative-pressure wound therapies, skin substitutes, and methods of offloading; all with varying results. This study serves to explore the use of intrinsic muscle flaps as another methodology for successful treatment of these wounds, and to include it as part of the comprehensive surgical approach towards caring for calcaneal wounds complicated by osteomyelitis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Farzana N. Chowdhury, DPM	farzana.chowdhury20@gmail.com	I/We have nothing to disclose	
Jasmine Hawkins, DPM	jhawkinsdpm@gmail.com	I/We have nothing to disclose	
Raymond Lee, DPM	raymondleedpm@gmail.com	I/We have nothing to disclose	

Title **Pediatric flat foot reconstruction with Evans and Tendoachilles Z-plasty in the Arab population**

Submit Date 08/31/2023

Correspondent

Last Name:	Khalid	Email:	Moiz.khalid@corewellhealth.org
Full Name:	Moiz		
Practice/Company/Residency Program:			Beaumont Trenton

Authors

Author 1:	Moiz Khalid DPM PGY3	Author 2:	Daravatey D Pel DPM PGY2
Author 3:	Amir Arif DPM PGY3	Author 4:	Newton Davis DPM PGY2
Author 5:	Bilal Ismail DPM, FACFAS	Author 6:	
Author 7:		Author 8:	

Purpose Pediatric flatfoot poses distinctive complexities in its therapeutic and strategic handling, particularly within the adolescent demographic. The primary approach to managing pediatric deformities usually involves regulation through custom orthotics and physical rehabilitation. However, these interventions occasionally fall short of fully alleviating discomfort or rectifying the deformities. Within the Arab population, these challenges are particularly accentuated due to limited access to comprehensive healthcare services. Ineffective treatment can precipitate adverse consequences for both physiological and communal well-being, impeding the involvement of children in peer-related activities. This case series documents surgical techniques of pediatric flatfoot with successful rectification of deformities, mitigation of pain, and resumption of physical activities.

Methodology

Procedures Comprehensive Literature review yielded no consensus on pediatric flatfoot reconstruction. 4 feet (13-17 year old) presents with pain and decreased calcaneal inclination angle, increased talar declination angle, and increased disarticulation of the talonavicular joint. Lateral column lengthening and tendo-achilles Z-plasty was performed.

Results Improved forefoot to rearfoot alignment with resolution of pain and return to activity.

Discussions Pediatric flatfoot presents a unique challenge as failed non-surgical treatment can lead to detrimental social and health effects especially in the Arab population due to the scarcity of care. Patients underwent Evans lateral column lengthening to correct forefoot abduction, talar head uncovering, and recreation of the medial arch. Equinus contracture and heel position was corrected with tendo-Achilles Z-plasty. All patients followed the same post-operative protocol. Final x-rays exhibited improved rearfoot to forefoot alignment. All patients returned to full activity with elimination of pain.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Moiz Khalid DPM PGY3	moiz.khalid@corewellhealth.org	I/We have nothing to disclose	
Daravatey D Pel DPM PGY2	Daravatey.pel@corewellhealth.org	I/We have nothing to disclose	
Amir Arif DPM PGY3	Amir.Arif@corewellhealth.org	I/We have nothing to disclose	
Newton Davis DPM PGY2	Newton.Davis@corewellhealth.org	I/We have nothing to disclose	
Bilal Ismail DPM, FACFAS	Bilal.Ismail@corewellhealth.org	I/We have nothing to disclose	

Title **Primary Repair of the Tibialis Anterior Tendon Utilizing Semitendinosus Allograft and Suture Anchor**

Submit Date 08/31/2023

Correspondent

Last Name: Somma
 Full Name: Jessica, M, Somma, DPM, PGY2
 Email: jsomma07@gmail.com
 Practice/Company/Residency Program: Tower Health Podiatric Medicine & Surgery Residency at Phoenixville Hospital

Authors

Author 1: Steven Soondar, DPM
 Author 2: Jessica Somma, DPM, Resident
 Author 3: Nathan Fletcher, DPM, Resident
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose Tibialis anterior tendon (TAT) rupture is a rare injury; few recent literature publications discuss operative techniques for repair. This case showcases the use of semitendinosus graft to repair the TAT and the use of a suture anchor to reinforce the insertion.

Methodology

Procedures Recent literature describes EHL/EDL tendon transfer or tensioning autografts using suture buttons, but does not describe the technique of an autograft and endobutton. Complete TAT rupture as noted on MRI with >6.5cm retraction. The proximal stump was above the ankle, with sparse fibers at the insertion. A semitendinosus graft was used to bridge the stumps. Using the Arthrex Fibertak anchor, a hole was directed into the medial cuneiform. The graft was whipstitched, then directed through the suture anchor. The anchor was pulled through and deployed. The tendon was successfully re-routed through the medial cuneiform.

Results Sutures were removed once the incision healed. The patient experienced no wound complications. Patient transitioned from passive ROM exercises to active ROM and physical therapy over the course of 2 months. The resulting increased dorsiflexion was maintained at 1 year follow-up with no incidence of contracture/failure.

Discussions Our surgical technique utilizing both an allograft and a suture anchor has not been previously described in the current available literature. Our case aimed to bring more recent literature to the topic and also bring attention to the surgical technique utilized. The patient had excellent results, as dorsiflexion was maintained after 1 year with no evidence of contracture or failure.

Format Case Study

Case Rpt Followup 16

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Steven Soondar, DPM	ssoondar@gmail.com	I/We have nothing to disclose	
Jessica Somma, DPM, Resident	jsomma07@gmail.com	I/We have nothing to disclose	
Nathan Fletcher, DPM, Resident	fletcher.nathane@gmail.com	I/We have nothing to disclose	

Title A rare case of tuberculosis in the foot**Submit Date** 08/31/2023**Correspondent**

Last Name: Nguyen

Full Name: Thanh Thao T. Nguyen, DPM, MPH

Email: tnguye37@bidmc.harvard.edu

Practice/Company/Residency Program:

BIDMC

Authors

Author 1: Thanh Thao T. Nguyen, DPM, MPH

Author 2: Usman Aleem, DPM

Author 3: Rahul Mishra, DPM

Author 4: Thuy Trinh H. Nguyen

Author 5: Kevin Riemer, DPM, FACFAS

Author 6:

Author 7:

Author 8:

Purpose

Tuberculosis (TB) is a chronic, granulomatous disease which most often affects the respiratory system. Extra-pulmonary skeletal tuberculosis manifestation in the foot is exceedingly rare.

Methodology**Procedures**

A previously healthy 30-year-old male, originally from India, presents with a newly discovered destructive spinal mass and right dorsal third metatarsal base ulcer. The foot ulcer started as a <1 cm skin cyst that ruptured spontaneously, however, with ongoing "fishy" discharge and cellulitis, not improved with local wound care and trimethoprim/ sulfamethoxazole antibiotic.

Results

MRI scans were suggestive of infectious tenosynovitis of the third through fifth extensor tendons and osteomyelitis of the 3rd metatarsal. Subsequently, a biopsy was performed on the base of the right third metatarsal, with intraoperative findings resembling caseating granulomatous material. Pathological findings indicated granulomatous inflammation and localized necrosis of bone and soft tissues, consistent with tuberculosis. Intra-operative cultures unveiled Mycobacterium tuberculosis strain resistant to rifampin. Consequently, the patient's treatment regimen was broadened to include bedaquiline, pretomanid, linezolid, and moxifloxacin. This condition was also found to have spinal involvement, leading to partial motor loss of the left arm, necessitating spinal debridement with hardware fixation.

Discussions

Skeletal TB involving the foot is exceedingly rare, leading to delays in both diagnosis and treatment. The differential diagnosis includes pyogenic osteomyelitis, sarcoma, sarcoidosis, Paget's disease and other granulomatous infections. Biopsy is performed to confirm the diagnosis. The treatment is specific antimicrobial therapy with surgical excision if necessary. Podiatrists should keep high suspicion for skeletal TB in any non-healing foot ulcers which are otherwise unexplained.

Format

Case Study

Case Rpt Followup

15

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Thanh Thao T. Nguyen, DPM, MPH	tnguye37@bidmc.harvard.edu	I/We have nothing to disclose	
Usman Aleem, DPM	ualeem@bidmc.harvard.edu	I/We have nothing to disclose	
Rahul Mishra, DPM	rmishra@bidmc.harvard.edu	I/We have nothing to disclose	
Thuy Trinh H. Nguyen	rmishra@bidmc.harvard.edu	I/We have nothing to disclose	
Kevin Riemer, DPM, FACFAS	kriemer@bidmc.harvard.edu	I/We have nothing to disclose	

Title **Novel tibial sesamoidectomy closure technique for prevention of hallux abductovalgus complication**

Submit Date 08/31/2023

Correspondent

Last Name: Biscorner

Full Name: Brady

Email: bbiscorner@gmail.com

Practice/Company/Residency Program:

Tower Health Podiatric Medicine & Surgery Residency at Phoenixville Hospital

Authors

Author 1: Jason R. Miller, DPM, FACFAS

Author 2: Brady N. Biscorner, DPM, PGY-3

Author 3: Jessica M. Somma, DPM, PGY-2

Author 4: Khoa V. D. Nguyen, DPM, PGY-1

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of the present study is to describe a novel closure technique for tibial sesamoidectomy to minimize risk of hallux abductovalgus deformity following sesamoidectomy.

Methodology**Procedures**

Tibial sesamoidectomy can be a powerful tool for the treatment of chronic sesamoiditis, however formation of hallux abductovalgus deformity is a well documented complication occurring in as many as 42% of patients. Prior studies have demonstrated that precise anatomic dissection can mitigate risk of deformity formation, however to our knowledge, no specific closure techniques have been described to date to minimize incidence of hallux abductovalgus deformity following tibial sesamoidectomy. In our technique the medial phalangeal-sesamoid ligament, medial metatarsal-sesamoid ligament and intersesamoid ligament are carefully identified, freed from the tibial sesamoid and anastomosed following sesamoid excision. The medial head of the FHB tendon is then sutured to this ligamentous structure. Capsule is then closed over this structure, followed by Subcutaneous tissue and skin. The hallux is then bandaged into a slight varus position with splintage bandaging techniques.

Results

Our case series describes five tibial sesamoidectomies in four patients, which resulted in 0 incidence of deformity complication. All patients were functioning well with no residual pain and no complications for a minimum of 1 year following their procedure.

Discussions

The present study is the first described technique to minimize risk of hallux abductovalgus deformity following tibial sesamoidectomy. In our study of 5 tibial sesamoidectomies in 4 patients, there were no instances of deformity following sesamoidectomy. This technique can easily be integrated and studied in a larger scientific study.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jason R. Miller, DPM, FACFAS	jrmiller1371@gmail.com	I/We have nothing to disclose	
Brady N. Biscorner, DPM, PGY-3	bbiscorner@gmail.com	I/We have nothing to disclose	
Jessica M. Somma, DPM, PGY-2	jsomma07@gmail.com	I/We have nothing to disclose	
Khoa V. D. Nguyen, DPM, PGY-1	khoanguyen2571@gmail.com	I/We have nothing to disclose	

Title Treatment of Talar Avascular Necrosis with Custom Total Talus Replacement: A Case Series

Submit Date 08/31/2023

Correspondent

Last Name: MacRae
 Full Name: Tyler M MacRae DPM Email: tylermacrae0@gmail.com
 Practice/Company/Residency Program: Lehigh Valley Health Network

Authors

Author 1: Tyler M MacRae DPM Author 2: Stephen A Brigido DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Three-dimensional metal additive manufacturing has become increasingly useful in orthopedic technology. Custom printed patient specific instrumentation (PSI) has led to novel treatment options in foot and ankle surgery. Custom total talus replacement may be a promising alternative to hindfoot fusion.

Methodology

Procedures

Early talar body prosthesis had poor results. Third generation talar prosthesis made from ceramic materials have shown favorable short-term results. Recent advancements utilize additive manufacturing, creating a biomechanically superior product compared to former processes, with an elastic modulus closer to native bone. Short term follow up on these prostheses show favorable results at an average 58 months. Three patients diagnosed with AVN of the talus subsequently treated with custom-printed total talus replacement were included in this case series.

Results

Follow up for patients 1 and 2 were 50 and 53 months respectively. Both patients maintained radiographic alignment, improved postoperative range of motion, and improved VAS scores at final follow up. Patient 3 developed a deep infection with conversion to antibiotic cement spacer at month 8, now awaiting reimplantation once infection is eradicated.

Discussions

While early talar body prosthesis had largely poor outcomes, improvements in design and materials have shown promise in total talus replacement. At final follow up 2/3 patients in this case series were ambulating without pain and satisfied with the procedure. Third generation total talus replacements demonstrate a safe alternative to hindfoot fusion with low rates of complications in this case series.

Format

Case Study

Case Rpt Followup

53

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tyler M MacRae DPM	tylermacrae0@gmail.com	I/We have nothing to disclose	
Stephen A Brigido DPM	drsbrigido@me.com	Consultant/Advisor/Speaker (List all affiliations) Intellectual Property rights owned	Stryker In2Bones/Conmed

Title **4th and 5th Intermetatarsal Base Coalition Resection and 5th Metatarsal Base Osteotomy with Screw Fixation**

Submit Date 08/31/2023

Correspondent
 Last Name: Adams
 Full Name: Adams
 Practice/Company/Residency Program: Lovell FHCC Residency Program
 Email: milesgreg32@gmail.com

Authors
 Author 1: Alison Joseph, DPM
 Author 2: Richmond Robinson, DPM
 Author 3: Miles Adams, PGY2
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose
 Intermetatarsal coalition is rarely described, and it is almost certainly an underrecognized condition. This case study adds to the literature by presenting a 4th/5th intermetatarsal coalition, describing the imaging findings and surgical technique. Expeditious diagnosis of coalition for patients presenting with nonspecific midfoot/forefoot pain is important as this condition can be debilitating but treatable.

Methodology

Procedures
 One patient underwent 4th and 5th intermetatarsal coalition resection and 5th metatarsal base osteotomy with screw fixation.

Results
 Desired 4-5th IM angle maintained post-operatively with maintained 5th metatarsal osteotomy. Patient is pain free, back to regular/desired activity levels in regular shoe gear.

Discussions
 Different treatments of isolated coalition have been reported and should be treated individually and according to patient symptoms. Resection of the bony bridge between 4/5 bases combined with a 5th metatarsal dorsal closing wedge osteotomy are the most common management in reported cases.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alison Joseph, DPM	Alison.joseph@va.gov	I/We have nothing to disclose	
Richmond Robinson, DPM	Richmond.robinson@va.gov	I/We have nothing to disclose	
Miles Adams, PGY2	milesgreg32@gmail.com	I/We have nothing to disclose	

Title

Modified External Bunnell Suture repair for ruptured Achilles following post-operative infection

Submit Date

08/31/2023

Correspondent

Last Name: Hu
 Full Name: Haoning Email: haoning.hu01@gmail.com
 Practice/Company/Residency Program: Medstar

Authors

Author 1: Haoning Hu Author 2: Alex Dang, DPM
 Author 3: Liliya Parkman, DPM Author 4: Paul Carroll, DPM, FACFAS
 Author 5: Rex Wei-Hung, MD, FACS Author 6:
 Author 7: Author 8:

Purpose

To repair the Achilles tendon with a modified external Bunnell suture technique with a non-absorbable monofilament suture to decrease the risk of infection with retained suture.

Methodology

Procedures

A 29-year-old with an unremarkable past medical history, sustained a left Achilles tendon injury while playing basketball. An MRI was ordered which demonstrated a complete rupture of the Achilles tendon. The patient underwent a primary end-to-end Achilles tendon repair. In subsequent follow-ups, areas of necrosis developed around the wound edges with erythema. After serial debridements, clean cultures were obtained, the remaining tendinous portions were repaired with the modified Bunnell technique.

Results

At 12-month follow-up, the patient exhibited full range of motion and muscle strength in the left lower extremity. The patient is walking with a normal heel-to-toe gait.

Discussions

A common complication of Achilles repair is wound dehiscence. These injuries require tendon debridement and resection with reanastomosis or tendon transfer to restore the function and mobility of the Achilles. Our study shows that the use of non-absorbable, monofilament externally placed sutures was effective in restoring the Achilles after surgical dehiscence without further infectious complications requiring additional surgery.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Haoning Hu	haoning.hu01@gmail.com	I/We have nothing to disclose	
Alex Dang, DPM	Alex.Dang@medstar.net	I/We have nothing to disclose	
Liliya Parkman, DPM	Liliya.Parkman@medstar.net	I/We have nothing to disclose	
Paul Carroll, DPM, FACFAS	Paul.J.Carroll@medstar.net	Consultant/Advisor/Speaker (List all affiliations)	Altrazeal
Rex Wei-Hung, MD, FACS	Rex.W.Hung@medstar.net	I/We have nothing to disclose	

Title **Robotic Assisted Midfoot Charcot Reconstruction****Submit Date** 08/31/2023**Correspondent**

Last Name: Dean
 Full Name: Hafсах Dean, DPM Email: hafsahdean@gmail.com
 Practice/Company/Residency Program: Kaiser Sacramento

Authors

Author 1: Hafсах Dean, DPM Author 2: Ramez Sakkab, DPM, AACFAS
 Author 3: Yaseer Parupia, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Charcot Arthromy is condition characterized by progressive joint and bony destruction in weight bearing areas of the lower extremity. Early diagnosis and intervention are crucial to preventing irreversible damage and limb salvage. With severe deformities, surgical intervention often utilized to help restore the foot alignment, stability and weight bearing capacity to help provide a functional plantigrade foot. Surgeons employ combinations of different techniques to reach these goals with reconstruction procedures in areas of compromised anatomy. This case report presents robotic assisted Charcot reconstruction in setting of severe Charcot foot deformity.

Methodology**Procedures**

A 53-year-old male presented with Charcot foot deformity with midfoot dislocation. Patient underwent a two-staged Charcot reconstruction procedure using innovative technology, robotic computer assisted external fixator. The utilization of the robotic butt external fixator facilitated six-week period of controlled distraction and deformity correction, effectively positioning the midfoot for subsequent reconstruction. The reconstruction process involved fusing the rearfoot and midfoot, resulting in restored, plantigrade foot.

Results

Successful Charcot reconstruction

Discussions

Charcot reconstructions can be complicated and unique procedures that require careful planning and multiple considerations. The use of dynamic external fixator provides controlled movements leading to gradual correction over time. Limitations to dynamic external fixators including maintenance and patient compliance. New innovative technology utilizing robotic computer assisted dynamic correction with external fixator enables precise distraction and gradual correction without the risk of patient error. This technology can provide predictable planned correction and aid with reconstruction to help provide patients with Charcot deformity with biomechanically stable plantigrade foot.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hafsah Dean, DPM	hafsahdean@gmail.com	I/We have nothing to disclose	
Ramez Sakkab, DPM, AACFAS	rasakkab@gmail.com	I/We have nothing to disclose	
Yaseer Parupia, DPM	yaseer.parupia@kp.org	I/We have nothing to disclose	

Title **Pediatric Hallux Varus Secondary to First Tarsometatarsal Joint Coalition: A Case Report**

Submit Date 08/31/2023

Correspondent

Last Name: Schneiders
 Full Name: Hannah R. Schneiders, DPM Email: hrschneiders@gmail.com
 Practice/Company/Residency Program: The Pediatric Orthopedic Center

Authors

Author 1: Hannah Schneiders, DPM Author 2: Joslin L. Seidel, DPM, AACFAS
 Author 3: Mark E. Solomon, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose We are reporting the following case of a patient with a first tarsometatarsal joint coalition which presented as painful hallux varus deformity necessitating surgery

Methodology

Procedures

11-year-old male presented with left foot pain. On physical examination, the patient exhibited hallux varus deformity, hammertoe deformity, and restricted motion of the first ray. Standard foot radiographs revealed asymmetric growth at the first metatarsal physis and an irregularity at the first tarsometatarsal joint, suggesting a synostosis or os intermetatarsum. CT scan confirmed the presence of the coalition. Conservative management was ineffective. Intraoperative findings confirmed an osseous coalition, which was resected. This improved the range of motion of the affected joint. However, the hallux varus deformity remained. A medial capsulotomy of the first metatarsophalangeal joint was performed followed by a release of the abductor hallucis. The surgical correction resulted in the adequate realignment of the hallux varus deformity. A fat graft was harvested from the ipsilateral gluteal fold and interposed at the site of the coalition resection.

Results Patient did exceedingly well following surgery with the only complication being incision irritation which quickly resolved with cephalixin and local wound care. Fifteen months later, he remains pain-free with maintained correction and no evidence of premature physal closure or coalition recurrence.

Discussions Isolated first tarsometatarsal joint coalitions are exceedingly rare. Coalitions resulting in restricted motion causes alteration of kinematics and leads to associated deformities. This case highlights the importance of surgical intervention when conservative measures fail to alleviate symptoms in cases of osseous coalition with associated deformities.

Format Case Study

Case Rpt Followup 15

Student Club Not a Student Club Poster

Classification Biomechanics and Anatomy

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hannah Schneiders, DPM	hrschneiders@gmail.com	I/We have nothing to disclose	
Joslin L. Seidel, DPM, AACFAS	joslin.l.seidel@gmail.com	I/We have nothing to disclose	
Mark E. Solomon, DPM, FACFAS	drsolomon@advfoot.com	I/We have nothing to disclose	

Title **A Comprehensive Approach to Medial Swivel Dislocation - A Case Study**

Submit Date 08/31/2023

Correspondent Last Name: Moussa
Full Name: Natalie Moussa, DPM
Practice/Company/Residency Program:
Email: nmoussadpm@gmail.com
HCA Florida Aventura Hospital

Authors Author 1: Natalie Moussa, DPM
Author 2: Valentina Clinton, BS
Author 3: Sydney Sears, BS
Author 4: Patricia Toledo, BS
Author 5: Deeva Frankel, DPM
Author 6:
Author 7:
Author 8:

Purpose Medial swivel dislocation stands as one of the lesser-known variants of subtalar joint dislocations. This study delves into its rarity and intricacies through the lens of a 39-year-old male who arrived at the emergency room after ejection from a motor vehicle accident.

Methodology

Procedures The patient's presentation was marked by an open talar dislocation on the medial aspect of his left foot, accompanied by diffuse swelling and tenderness. Radiological assessments, comprising plain film X-rays and CT scans, unveiled the complexity of the injury. The dislocation involved not only the calcaneus and talus but also their relationship with the navicular and cuboid bones, signifying a midtarsal dislocation. Impressively, the forefoot exhibited a considerable 3.4 cm superior dislocation. Alongside this, a comminuted fracture of the lateral malleolus was evident. The patient's management required an immediate incision and drainage with an open reduction secondary to the open fracture and visibility of the talus. An open reduction was performed to regain the fibular length and the use of ligamentotaxis to reduce the subtalar dislocation. Additionally, an external fixator was applied with percutaneous k wire fixation to stabilize the fractures and facilitate bone consolidation.

Results This approach resulted in regained ankle mobility without fusion.

Discussions This case underlines the challenges associated with medial swivel dislocations and underscores the significance of a comprehensive treatment regimen for optimal outcomes. The rarity of this variant, coupled with the complexities of concurrent injuries, exemplifies the importance of sharing insights gained from its management to enhance clinical understanding and patient care.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, and Disclosed Organisation(s). Rows include Natalie Moussa, DPM; Valentina Clinton, BS; Sydney Sears, BS; Patricia Toledo, BS; and Deeva Frankel, DPM.

Title**Effectiveness Prolotherapy injections via ultrasound guidance for 1st MTPJ pathology****Submit Date**

08/31/2023

Correspondent

Last Name: Giagnacova
 Full Name: Albert Email: Albertdpm@gmail.com
 Practice/Company/Residency Program: Lower Bucks Hospital Podiatry Residency

Authors

Author 1: Albert Giagnacova Author 2: Anthony Mina
 Author 3: Daniel Hennessey Author 4: Lev Blekher
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Does Prolotherapy have a role in all first metatarsal joint pathology, has been fully investigate typically usage has include Achillies, plantar fasciitis, ligaments ,and tendon injuries.

Methodology**Procedures**

Hamilton did a landmark study for Achillies, LM Sanderson in 2015 look at safety of prolotherapy injections for management of lower limb tendinopathy and fasciopathy: a systematic review. Bae 2021 with chronic musculoskeletal pain: systematic review and meta-analysis but entire body. Ojofeitmi 2016 looks at dancer and 2nd mtpj pathology. Davidson · 2011 reviewed at guide interventions

Results

Our study looks at 5 pathologies, hallux limitus, Adhesion of EHL, turf toe, sesamoiditis, and generalized pain. we compare utilized 17 patient with 3 cc of prolotherapy with 1 cc lidocaine versus control group 3 cc of lidocaine 19 patients. All patients we used the same ultrasound machine and thorough exam. Every patient had some periods of relief from 1 day to almost 5 months. The prolotherapy had longer period of relief. 11 patients went on to surgery no different between both group. 19 patients who failed meaning relieve were given orthotics. This limitation is small size but the length relief are powerful.

Discussions

The role of prolotherapy has been described by has causing angiogenesis in senile inflammatory cell utilizing the action NA K exchange pump. The "lysising" of the cell intracellularly occurs as a result. . The 26 extraarticular group faired better than intraarticular group 12 respectively. We look at specific one joint which has some excellent clinical value . Early conclusions anecdotally the question posed "Patients would consider this as alternative to PRP, steroids BMAC or others". Regardless guide injection provided more accuracy.

Format

Case Study

Case Rpt Followup

17

Student Club

Not a Student Club Poster

Classification

Physical Therapy/Rehabilitation

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Albert Giagnacova	Albertdpm@gmail.com	I/We have nothing to disclose	
Anthony Mina	mina@temple.edu	I/We have nothing to disclose	
Daniel Hennessey	lbhpodiatry@gmail.com	I/We have nothing to disclose	
Lev Blekher	lbhpodiatry@gmail.com	I/We have nothing to disclose	

Title

Novel low energy mechanism of injury in subtalar joint depression calcaneus fractures.

Submit Date

08/31/2023

Correspondent

Last Name: Biscorner

Full Name: Brady N. Biscorner, DPM, PGY-3

Email: bbiscorner@gmail.com

Practice/Company/Residency Program:

Tower Health Podiatric Medicine & Surgery Residency at Phoenixville Hospital

Authors

Author 1: Matthew R. Rementer, DPM, FACFAS

Author 2: Brady N. Biscorner, DPM, PGY-3

Author 3: Justine Manuel B. Cardino, DPM, PGY-1

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of the present case study to propose a novel mechanism of injury in subtalar joint depression calcaneus fractures.

Methodology

Procedures

The mechanism of injury truly involves a combination of shear and compressive forces typically with high energy impact as the driving force of injury. In these injuries the talus acts to both shear and compress the calcaneus at the subtalar joint. The present case series presents 3 patients with an identical low energy mechanism of injury resulting in subtalar joint depression calcaneal fractures. All patients had a fall from a low height, ground level or 1 step, landing with the injured foot with the ankle in a plantarflexed and inverted position. All fractures were significantly displaced necessitating open reduction with internal fixation.

Results

Three of the four included patients in the present study were initially misdiagnosed with ankle sprains. CT scan revealed that all patients had subtalar joint depression calcaneal fractures. One patient's fracture was not able to be classified due to loss of images. One patient suffered a Sanders Type 2 B fracture, one patient suffered a Sanders Type 3 A B fracture and one patient suffered a Sanders Type 3 B C fracture. All fractures were treated operatively with open reduction internal fixation via lateral extensile approach with anatomic reduction of the posterior facet of the subtalar joint.

Discussions

To our knowledge this is the first instance that plantarflexion and inversion with a low energy fall has been described as the mechanism of injury in subtalar joint depression calcaneus fractures.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Matthew R. Rementer, DPM, FACFAS	mattrementer@gmail.com	I/We have nothing to disclose	
Brady N. Biscorner, DPM, PGY-3	bbiscorner@gmail.com	I/We have nothing to disclose	
Justine Manuel B. Cardino, DPM, PGY-1	jcardino1996@gmail.com	I/We have nothing to disclose	

Title

Case Study: Bilateral Pantalar Arthrodesis for Severe Equinovarus Deformity Following Traumatic Abdominal Stab Wound

Submit Date

08/31/2023

Correspondent

Last Name: Delino
 Full Name: Nicole-Gabrielle, S, Delino, DPM Email: nicolegabrielle.delino@dhha.org
 Practice/Company/Residency Program: Denver Health and Hospital Authority

Authors

Author 1: Nicole-Gabrielle Delino, DPM Author 2: Adam Ferguson, DPM
 Author 3: Kristine Hoffman, DPM, ABFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

To examine outcomes of bilateral tibiototalcaneal (TTC) arthrodesis following a unique mechanism of injury resulting in progressive and severe bilateral equinovarus deformity

Methodology

Procedures

A case review of a single patient who sustained abdominal stab wounds in 2011, requiring complex abdominal surgery for traumatic injuries to the pancreas, renal vein, superior mesenteric vein, small bowel, and colon. Patient's injury was complicated by the development of bilateral lower leg compartment syndrome requiring bilateral leg fasciotomies. Subsequently, the patient was referred to podiatry after progressive development of severe equinovarus deformity to the bilateral lower extremity. We thoroughly reviewed chart data of this patient's treatment course including initial injury, surgical interventions, and post-op follow up to evaluate treatment outcomes.

Results

Patient attempted multi-modal conservative treatment options for bilateral equinovarus deformity including bracing, cast boot immobilization, and physical therapy. However, due to the severity and rigidity of the patient's deformity and resultant weaknesses to all muscle groups, conservative treatment had limited benefits and surgical intervention was discussed. First, the patient underwent TCC arthrodesis, talonavicular (TN) arthrodesis and Achilles tendon lengthening to the right lower extremity. Following successful reconstruction, the patient underwent the same procedure on the contralateral leg 8 months later. Serial post-op x-ray imaging demonstrated good anatomical alignment and full bony bridging at arthrodesis sites. At 12 months status post procedure, the patient was pain free and progressed to full weightbearing in regular shoes.

Discussions

Pantalar arthrodesis is a powerful treatment option for patients with severe rigid equinovarus deformities.

Format

Case Study

Case Rpt Followup

20

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Nicole-Gabrielle Delino, DPM	nicolegabrielle.delino@dhha.org	I/We have nothing to disclose	
Adam Ferguson, DPM	adam.ferguson@dhha.org	I/We have nothing to disclose	
Kristine Hoffman, DPM, ABFAS	kristine.hoffman@dhha.org	I/We have nothing to disclose	

Title **Case Study: Takedown of a Painful Nonunion of an Ankle Arthrodesis Converted to Total Ankle Arthroplasty Without a Distal Fibula**

Submit Date 08/31/2023

Correspondent
 Last Name: Loveland
 Full Name: Jeffrey D. Loveland DPM,FACFAS Email: lovelanddpm@yahoo.com
 Practice/Company/Residency Program: Central Tennessee Foot and Ankle Center

Authors
 Author 1: Jeffrey Loveland DPM FACFAS Author 2: Brandon Denton MBA, ABSA
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose To open further discussion on the efficacy of the takedown of a painful nonunion ankle-arthrodesis, with prior resection of the fibula, and converting to Total Ankle Arthroplasty (TAA), versus revisional ankle arthrodesis. The takedown procedure has been an increased topic of discussion amongst the foot & ankle community for failed ankle-arthrodesis as a viable restorative procedure.

Methodology

Procedures A retrospective chart and radiographic review was conducted. Patient was 18 months status post ankle-arthrodesis with a nonunion confirmed via CT scan. The patient underwent a TAA to regain movement, presenting a unique case without a distal fibula that was removed during the initial procedure. A staged reconstruction with removal of hardware first. 2- months later, converted to a tibial stemmed TAA using patient-specific instrumentation. This technology was used to help approximate the correct level to recreate the ankle joint line and position of the implants.

Results The patient was pain-free and walking in shoes, without limping, at 12 months post-TAA. Patient returned to normal activities and x-rays demonstrated a well-aligned and fixated total ankle implant, even without a distal fibula.

Discussions Several journals have discussed options for nonunion of an ankle arthrodesis. This case demonstrated TAA as a viable option for ankle arthrodesis that progresses to a painful nonunion, and the viability of a successful stemmed TAR to provide additional stability without a distal fibula. Overall, patients having TAA are typically able to weight bear sooner with less pain and greater functional gait/motion compared to a revisional ankle arthrodesis.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jeffrey Loveland DPM FACFAS	lovelanddpm@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker and Vilex
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Past president of Tennessee Podiatric Medical Association
		Grant/Research funding	Stryker
Brandon Denton MBA, ABSA	brandondenton15@gmail.com	I/We have nothing to disclose	

Title **Isolated Case Report of A Comminuted Talar Body Fracture Secondary To A Ballistic Injury**

Submit Date 08/31/2023

Correspondent Last Name: Cohen
Full Name: Steven, D, Cohen, DPM Email: cohensteven882@gmail.com
Practice/Company/Residency Program: Morristown Medical Center

Authors Author 1: Steven, D, Cohen, DPM Author 2: Dainelle, L, Morris, DPM
Author 3: Rohan, G, Desai, DPM Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose A case report to highlight successful treatment of a gunshot injury causing a comminuted fracture of the talus.

Methodology

Procedures A 56 year old male presented after suffering victim to a gunshot injury. Ankle x-rays did not clearly show any acute evidence of bony abnormality. However, CT scan revealed an acute comminuted fracture of the talus with a portion of the fracture extending to the articular surface of the posterior subtalar joint. After washout was performed an application of an external fixator was accomplished to pull the talar fracture out to length. Due to the trajectory of the bullet, no damage occurred to any vital neurovascular structures on the medial or lateral aspect of the ankle. The patient's postoperative follow up course went smoothly. After a year of postoperative follow up, no signs of avascular necrosis of the talus were observed and talar dome function remained intact.

Results Through external fixation, successful reduction of the talus fracture was obtained. After removal of the external fixation device the patient's weightbearing status was protected in a CAM boot. Patient had joint stiffness that improved with physical therapy focusing on ankle dorsiflexion. After four months patient was able to transition into a sneaker with orthoses.

Discussions A talar body fracture status post a gunshot injury is an extremely rare injury with grave sequelae and a poor prognosis. This fracture type constitutes 13 to 23% of all talar fractures. Clinicians must be suspicious for avascular necrosis along with impeded talar dome function.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 3 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Steven, D, Cohen, DPM; Dainelle, L, Morris, DPM; Rohan, G, Desai, DPM.

Title **Mycotic Thoracic Aortic Aneurysm presenting with Irregular Pedal Ulceration: A unique case study**

Submit Date 08/31/2023

Correspondent

Last Name: Marion
 Full Name: Reid Email: rmarion388@gmail.com
 Practice/Company/Residency Program: VA Puget Sound HCS

Authors

Author 1: Reid M Marion Author 2: Nikhil Boga DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Mycotic aneurysms, or infective native aortic aneurysm (INAA), is a pseudoaneurysm secondary to infection of damaged endothelium. No prior literature describes peripheral manifestations of INAA. We describe a novel case involving a patient presenting with irregular pedal lesions, ultimately ending with delayed diagnosis of INAA after failed conventional management.

Methodology

Procedures

A one patient case retrospective of a 72 year old male who presented with irregular pedal lesions, following initial management, atypical differential diagnostics, and outcome. Recommended treatment for INAA involves prompt antimicrobial therapy, blood pressure control, and endothelial repair. With prompt diagnosis and treatment, mortality rates are still high. Identifying early symptoms for diagnosis is important for minimizing ultimate mortality, however specific peripheral manifestations have not been documented thoroughly.

Results

A nail avulsion was performed bedside to evaluate for traumatic nail injury with superimposed infection. Subsequent incision and drainage and amputation were performed for source control, unsuccessfully. Delayed diagnosis of INAA following repeated and separate foci of infection were identified.

Discussions

Our patient presented with pedal wound and infection, which is a common presentation within podiatric medicine. His physical exam was unusual but not remarkable. Following traditional infection control methods for this patient ultimately proved unsuccessful and may have led to suboptimal outcome. This case highlights the importance of surveillance for physical signs and timely workup for central infections in patients with appropriate risk factors, as presentations vary greatly.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Reid M Marion	rmarion388@gmail.com	I/We have nothing to disclose	
Nikhil Boga DPM	nikhil.boga.1995@gmail.com	I/We have nothing to disclose	

Title

Retrospective Case Series of 10 Neuropathic Patients that Underwent Primary Tibiotalocalcaneal Arthrodesis Following Acute Trimalleolar Ankle Fracture

Submit Date

08/31/2023

Correspondent

Last Name: Loveland

Full Name: Jeffrey D. Loveland DPM, FACFAS

Email: lovelanddpm@yahoo.com

Practice/Company/Residency Program:

Central Tennessee Foot and Ankle Center

Authors

Author 1: Jeffrey Loveland DPM, FACFAS

Author 2: Brandon Denton MBA, ABSA

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Ankle fracture management in neuropathic patients has been an ongoing discussion for many years. Several references agree that the complication rates following an acute ankle fracture are significantly higher among neuropathic patients. There is evidence that primary ankle arthrodesis in this population could provide a lower complication rate and decrease the potential for a Charcot Neuroarthropathy event and the need for additional procedures.

Methodology

Procedures

A patient chart and radiographic review of 10 Neuropathic patients that underwent a primary Tibiotalocalcaneal arthrodesis following acute trimalleolar ankle fracture with at least 12 months follow-up. The Tibiotalar and subtalar joints were prepared and platelet platelet-derived growth factor synthetic bone graft was used in the joints. A hindfoot fusion nail and external fixator were applied on all 10 patients. All of the patients received a CT scan to confirm fusion prior to removal of the external fixator. At that time, they were fitted with CROW boot or Ankle foot orthotic (AFO) as their weight-bearing and ambulation status improved.

Results

During the follow-up, there were no major complications. 8 patients were diabetic. All 10 patients had stable fusions confirmed by radiograph and CT scan on average of 13 weeks. All 10 patients returned to weight-bearing at 17 weeks. There was no loss of correction or development of Charcot Neuroarthropathy.

Discussions

Given the complexity of the Neuropathic patient population and increased complication rates, consideration of a primary tibiotalocalcaneal arthrodesis for acute neuropathic trimalleolar ankle fractures has the potential for better outcomes and decrease the potential for Charcot Neuroarthropathy.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected: Consultant/Advisor/Speaker (List all affiliations)	Disclosed Organisation(s): Stryker and Vilex
Jeffrey Loveland DPM, FACFAS	lovelanddpm@yahoo.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Past president of Tennessee Podiatric Medical Association
		Grant/Research funding	Stryker
Brandon Denton MBA, ABSA	brandondenton15@gmail.com	I/We have nothing to disclose	

Title **Transmalleolar Approach for Ankle Arthrodesis For The Treatment of Severe Bilateral Cavovarus Deformity In A Patient with Charcot Marie Tooth Disease**

Submit Date 08/31/2023

Correspondent
 Last Name: Siddiqi
 Full Name: Anas Siddiqi DPM Email: anas.siddiqi@corewellhealth.org
 Practice/Company/Residency Program: Beaumont Wayne

Authors
 Author 1: Lawrence Fallat DPM FACFAS Author 2:
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose
 Charcot-Marie-Tooth disease can often result in debilitating effects, leading to significant lower extremity pathology. Skeletal irregularities in the lower extremities may range from intrinsic musculature irregularities to severe deformities such as cavovarus foot structure or metatarsus adductus. Given the severity of these deformities, achieving rectus alignment of the foot and ankle post-surgical correction becomes imperative. This case report aims to highlight a unique approach involving the utilization of medial malleolar and lateral malleolar osteotomies in ankle arthrodesis to treat severe bilateral cavovarus deformities, associated with Charcot-Marie-Tooth disease.

Methodology

Procedures
 A 39-year-old wheelchair bound female patient with past medical history significant for Charcot Marie Tooth disease presents with severe bilateral varus deformities of the hindfoot and ankle with polyarticular osteoarthritis of the subtalar and tibiotalar joints. Bilateral ankle arthrodesis through trans-malleolar approach with the use of intramedullary nail were performed.

Results
 Rectus hindfoot and ankle with plantigrade foot noted to bilateral lower extremities following procedure. Patient was pain free and able to ambulate without a wheelchair post-operatively.

Discussions
 Severe cavovarus foot deformity can result in debilitating consequences and significantly lower the patient's quality of life. Patients with such deformities often encounter complications like gait abnormalities, reduced mobility, pain, and occurrences of ulcerations and infections. Given the severity of this condition, achieving proper foot and ankle alignment during surgery can be incredibly challenging. Therefore, a unique approach of both medial and lateral malleolar osteotomies were utilized to obtain rectus alignment and adequate correction with favorable functional outcomes.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lawrence Fallat DPM FACFAS	lfallatdpm@aol.com	I/We have nothing to disclose	

Title

Prospective Case Series of 11 Charcot Neuropathic Patients that Underwent Midfoot Arthrodesis with Medial Column Beaming

Submit Date

08/31/2023

Correspondent

Last Name: Loveland

Full Name: Jeffrey D. Loveland DPM, FACFAS

Email: lovelanddpm@yahoo.com

Practice/Company/Residency Program:

Central Tennessee Foot and Ankle Center

Authors

Author 1: Jeffrey Loveland DPM, FACFAS

Author 2: John Zanella, MS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Charcot neuroarthropathy is a complicated condition with the potential to cause severe deformity that makes the foot susceptible to the development of ulcers, infection, and the need for amputation. Given the aim of treatment is to prevent neuropathic joint progression and limb-threatening complications, surgery is often considered to be a salvage procedure. As a last resort to avoid limb loss, evolving surgical techniques have focused on improved stability to diminish the likelihood of failure of the procedure by extending fixation hardware proximally and distally into areas where the bone has not been compromised. Midfoot beams have emerged as an option to mitigate the complications associated with Charcot and have become popular for cases of complex midfoot reconstruction.

Methodology

Procedures

Eleven (11) patients undergoing open reduction internal fixation of midfoot arthrodesis with medial column beaming as part of a Charcot salvage procedure is included in this study.

Results

Eleven (100%) Charcot midfoot arthrodesis salvage cases had achieved bony union and were walking at the 12-month follow-up visit. There were no adverse events associated with the internal fixation hardware.

Discussions

Charcot neuropathic reconstructions are complex procedures associated with high complication rates. When stabilizing the midfoot, fusion with midfoot beams may be a consideration since these implants are intended to be used in multiple joint fusion, providing adjacent joint fixation beyond the level of Charcot involvement, and have the potential to deliver a stable, ulcer-free foot, allowing the patient return to weight-bearing and ambulation.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jeffrey Loveland DPM, FACFAS	lovelanddpm@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker and Vilex
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Past president of Tennessee Podiatric Medical Association
		Grant/Research funding	Stryker
John Zanella, MS	jmzanella@bellsouth.net	I/We have nothing to disclose	

Title

Improved Quality of Life and Physical Function in Patients that Underwent Reconstructive Surgery for Charcot Neuroarthropathy Deformities

Submit Date

08/31/2023

Correspondent

Last Name: Loveland

Full Name: Jeffrey D. Loveland DPM,FACFAS

Email: lovelanddpm@yahoo.com

Practice/Company/Residency Program:

Central Tennessee Foot and Ankle Center

Authors

Author 1: JEFFREY LOVELAND DPM FACFAS

Author 2: John Zanella MS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Charcot neuroarthropathy is a complicated condition with the potential to cause severe deformity. The deformities are often associated with chronic ulceration and osteomyelitis, which may eventually require amputation. Salvage reconstruction surgery may be performed with the aim of reducing these risks of ulceration by creating a stable plantigrade foot allowing the patient to bear weight and mobilize. Charcot neuroarthropathy deformity can have a dramatic negative effect on lifestyle, but does successful correction of the deformity correspond to an improvement in patient-reported outcomes?

Methodology

Procedures

Thirty-one (31) patients undergoing Charcot deformity salvage procedure with the use of internal and/or external fixation techniques were included in this prospective study.

Results

Thirty-one (31) subjects reported a mean EQ-5D-5L score of 0.93 ± 0.07 (range: 0.78 – 1.0) 1 year following a salvage reconstruction procedure improving from a mean pre-operative score of 0.09 ± 0.29 (range: -0.52 – 0.68). EQ-VAS improved from 32.74 ± 10.23 (range: 20 – 50) to 86.3 ± 8.8 (range: 70 – 100). FAAM Activities of Daily Living improved from 24.0 ± 12.4 (range: 4 – 58) to 91.5 ± 7.0 (range: 67 – 100). These subjects did not complete the FAAM Sports subscore portion of the questionnaire.

Discussions

Charcot neuropathic deformity salvage reconstruction aims to deliver a stable, ulcer-free foot, allowing the patient to return to weight-bearing and ambulation. The 1-year patient-reported outcomes results indicate that successful surgical reconstruction greatly reversed the negative impact of the disease process on the subjects' quality of life.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
JEFFREY LOVELAND DPM FACFAS	lovelanddpm@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker and Vilex
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Past president of Tennessee Podiatric Medical Association
		Grant/Research funding	Stryker
John Zanella MS	jmzanella@bellsouth.net	I/We have nothing to disclose	

Title **When exposed hardware can't be removed. Complex wound cases with exposed hardware and their successful management with application of skin substitute and negative pressure wound therapy.**

Submit Date 08/31/2023

Correspondent

Last Name: Statkus
 Full Name: Rimvydas (Rimi) P. Statkus, DPM, FACFAS Email: drstatkus@illinoisfoot.com
 Practice/Company/Residency Program: Northern Illinois Foot & Ankle Specialists

Authors
 Author 1: Rimvydas (Rimi) P. Statkus, DPM, FACFAS Author 2: Patrick A. McEneaney, DPM, FACFAS
 Author 3: Peter F. Lovato, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Surgical wounds with exposed hardware are a perpetual challenge for any surgeon. Infection involving internal hardware can jeopardize bone healing and result in lifelong issues with bone infection, limb loss or death. When hardware is prematurely removed, complications arise if the fracture or osteotomy sites have not adequately healed rendering instability and loss of correction. The case series highlight patients who recently underwent surgery and developed wound complications and exposure of internal fixation post operatively. Each case demonstrates various approaches for successful wound management without hardware removal.

Methodology

Procedures Hardware removal after recent surgery could lead to instability and loss of correction. Each underwent aggressive treatment including antibiotic therapy, wound debridement, application of skin substitute and application of continuous NPWT.

Results Wounds healed within 4-8 weeks depending on extent of initial soft tissue loss. Early detection of infection and immediate treatment initiated in all cases, including surgical debridement and appropriate antibiotic coverage while liaising with Infectious Diseases. Multiple applications of skin substitutes assisted with immediate coverage over exposed hardware and initiation of NPWT assisted with healing.

Discussions Infection management standards, including removal of hardware, have been routinely implemented for decades. Contrary to previous standard of care, this case series showcases that salvage of hardware is possible with early, aggressive management. This includes appropriate antibiotic coverage, thorough irrigation and debridement while incorporating advanced wound modalities such as NPWT, and application of skin substitutes for rapid healing. Appropriate infection management was achieved without the need for removal of hardware or limb loss in each case presented.

Format Case Study

Case Rpt Followup 18

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rimvydas (Rimi) P. Statkus, DPM, FACFAS	drstatkus@illinoisfoot.com	Consultant/Advisor/Speaker (List all affiliations)	Kerecis
Patrick A. McEneaney, DPM, FACFAS	drmceneaney@illinoisfoot.com	Consultant/Advisor/Speaker (List all affiliations)	CrossRoads, Kerecis
Peter F. Lovato, DPM, FACFAS	drlovato@illinoisfoot.com	Consultant/Advisor/Speaker (List all affiliations)	Kerecis

Title Sinusoidal shape for Lateral Ankle and Fibular incision, an alternative**Submit Date** 08/31/2023**Correspondent**

Last Name: Giagnacova

Full Name: Albert

Email: Albertdpm@gmail.com

Practice/Company/Residency Program:

Next Step Foot and Ankle / Lower Bucks Hospital Podiatry Residency

Authors

Author 1: Albert Giagnacova DPM AACFAS

Author 2: ANthony Mina DPM

Author 3: Samuel W. Belsky DPM

Author 4: Eddie Kwon DPM

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The traditional linear vertical incision for fibular presents problems with dehiscence . Once this occurs for osteomyelitis and hardware failure among others are high risk.I have performed my incision 57 times we reviewed 145 with traditional exposure with 6 other surgeons including the primary author.

Methodology**Procedures**

Fattori 2020 had recommend NPWT in fracture model. Zolper 2020 look at vascular abnormality. Conversely Abdelgaid in JFAS 2018 posed the question Minimally Invasive Treatment of Ankle Fractures in Patients at High Risk of Soft Tissue Wound Healing Complications. Numerous authors have offered etiologies for failure but no one has offer alternative incision.

Results

We have no dehiscences , the biggest drawback is length of closure time which average 42 minutes as compare to 14 minutes.We had one soft tissue injury has result of poor tissue handling, no evidences of neuritis hypertrophic scar nor Keloids Hematoma or Seroma were not noted no drains were used.

Discussions

The majority of literature deals with dehiscences in calcaneal fracture realm, numerous tips quips and pearls have been offered. Numerous other biomedical products have been recently develop. Our knowledge we are first to offer this shape incision. We offer vastly improve visualize of anatomy no need to traumatic touch with forceps or aggressive retraction. We had no issues with soft tissue mobility longterm. The biggest concern was average length incision when "unraveled" or "Straightout" almost 16 cm as compare to 7 cm linear. The data addressed issue with skin tension where as drawback may be cosmesis. My cohort group include patient presenting with DM PVD dislocation tobacco as known risk factors.

Format

Case Study

Case Rpt Followup

20

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Albert Giagnacova DPM AACFAS	Albertdpm@gmail.com	Hold more than a 2% financial interest (including stocks) in any organizations(s) Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Company Yardley
ANthony Mina DPM	mina@temple.edu	I/We have nothing to disclose	
Samuel W. Belsky DPM	samuelwbelsky@gmail.com	I/We have nothing to disclose	
Eddie Kwon DPM	lbhpodiatry@gmail.com	I/We have nothing to disclose	

Title Correction of Rigid Equinovarus Deformity with Dynamic External Fixation

Submit Date 08/31/2023

Correspondent Last Name: TRAN Full Name: SON Email: sonhtran5@gmail.com Practice/Company/Residency Program: FASCO Fellowship

Authors Author 1: Kwame, Doh, DPM Author 2: SON TRAN Author 3: Alexandra, T, Black, DPM, AACFAS Author 4: Daniel Logan, DPM, FACFAS Author 5: Author 6: Author 7: Author 8:

Purpose Rigid equinovarus deformity is one of the most challenging conditions treated by foot and ankle surgeons. Correction of the deformity allows for improvement in gait, reduction in pain, and reduced risk of skin breakdown. Rapid correction of the deformity may result in neurovascular as well as dermatologic complications. Gradual correction of these deformities with dynamic external fixation may reduce the risk of these complications while achieving successful deformity correction. This case series documents several cases of patients who have undergone gradual correction of severe equinovarus deformities with dynamic external fixation.

Methodology

Procedures 5 patients with severe equinovarus deformity treated with lengthening of the medial ankle flexor tendons and placement of a dynamic external fixator are included in this study. Preoperative standard x-rays as well as clinical examination demonstrated severe rigid equinovarus deformity. Intraoperative radiographs are obtained to establish initial parameters for planning of deformity correction.

Results All patients achieved successful correction of their deformity resulting in improvement in gait and function. All deformities were corrected to a more plantigrade foot in less than 8 weeks. None of the deformities resulted in recurrence or neurovascular compromise.

Discussions Rigid equinovarus deformity is often associated with neurologic conditions such as traumatic brain injury or cerebrovascular accident, including patients in this case series. Correction of such deformities is technically challenging to achieve while avoiding neurovascular complications. The results of the patients in this series suggest that gradual correction with dynamic external fixation and lengthening of the ankle tendons allows for successful deformity correction without neurovascular complication.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Kwame, Doh, DPM; SON TRAN; Alexandra, T, Black, DPM, AACFAS; Daniel Logan, DPM, FACFAS.

Title **Consequences of Chronic Foot Osteomyelitis: A Rare Case of Hematogenous Spread to the Vertebral Spine**

Submit Date 08/31/2023

Correspondent Last Name: Elagamy
Full Name: Tariq K. Elagamy Email: tariq.elagamy@footandanklesemi.com
Practice/Company/Residency Program: Foot and Ankle Specialists of Southeast Michigan

Authors Author 1: Tariq K. Elagamy, DPM Author 2: Stephanie Gonzales, DPM
Author 3: Erik C. Kissel, DPM FACFAS Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose This study highlights a unique instance of hematogenous spread of chronic osteomyelitis in the foot to the spine. Recognizing this potential complication of chronic osteomyelitis, along with understanding its symptoms and treatment options, is crucial to preventing significant morbidity and mortality.

Methodology

Procedures Vertebral osteomyelitis (VO) is a rare but serious condition, typically resultant from hematogenous seeding of bacteria from a distant site. Few cases report vertebral osteomyelitis (VO) as a complication of diabetic foot infections, and none demonstrate it as a result of spread from chronic osteomyelitis or infected hardware following elective foot surgery. One patient who underwent subtalar joint (STJ) arthrodesis for posttraumatic arthritis after calcaneal fracture experienced a delayed wound healing process, being later diagnosed with methicillin-sensitive staphylococcus aureus (MSSA) contamination. Twenty-one months post-surgery, he presented with chest pain and extremity weakness. Imaging revealed osteomyelitis in the cervical and lumbar spine along with ankle joint effusion and STJ arthrodesis site malunion.

Results Neurosurgery performed urgent anterior cervical discectomy and interbody fusion. Cultures from intervertebral disc space returned positive for MSSA. Podiatry performed ankle arthrotomy with hardware removal and multiple implantations of polymethylmethacrylate antibiotic beads - hardware, soft tissue, and bone cultures returned positive for MSSA also. Intravenous antibiotic therapy was administered alongside hyperbaric oxygen therapy. The patient's symptoms resolved over a period of months.

Discussions The study emphasizes the importance of prompt recognition, aggressive surgical intervention, and targeted antibiotic therapy in managing complications of chronic osteomyelitis and hardware infections, with particular attention to hematogenous spread to the spine.

Format Case Study

Case Rpt Followup 23

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Tariq K. Elagamy, Stephanie Gonzales, and Erik C. Kissel.

Title

Surgical Outcomes and Complication Rates of Ankle Fracture Open Reduction Internal Fixation by Podiatric Surgeons: A Retrospective Case Series

Submit Date

08/31/2023

Correspondent

Last Name: Ternent
 Full Name: Katherine
 Email: kternent249@gmail.com
 Practice/Company/Residency Program: Trinity Health Livonia Hospital

Authors

Author 1: Katherine Ternent, DPM
 Author 2: Sam Wier, DPM
 Author 3: Rachel Warner, DPM
 Author 4: Ronald Adelman, DPM, ABFAS
 Author 5: Oliver Ryan, DPM, ABFAS
 Author 6: Vanessa Adelman, DPM, ABFAS
 Author 7:
 Author 8:

Purpose

The primary objective of our study is to assess the incidence of post-surgical complications following ankle fracture treatments through open reduction and internal fixation (ORIF) at a distinguished institution in Michigan. This investigation aims to establish a comparative analysis between our findings and the complication rates documented in prior scholarly works.

Methodology

Procedures

This study includes 72 patients who had ORIF for ankle fractures. Three researchers conducted thorough chart reviews, collecting data on patient demographics, medical history, ankle fracture types, hardware used, and complications. Our investigation involved a comparative analysis between distinct patient demographics of those who experienced complications and those who did not.

Results

Cohort of 72 patients, 3 individuals exhibited postoperative complications.

Discussions

Ankle fractures are common, with an incidence of over 1.8 per 1000 adults. The literature varies regarding post-operative complication rates after ankle fracture surgeries, influenced by several factors. In our retrospective analysis of 72 patients, only 3 exhibited complications following ORIF for ankle fractures. This rate appears lower when compared to recent literature.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Katherine Ternent, DPM	kternent249@gmail.com	I/We have nothing to disclose	
Sam Wier, DPM	samjwier@gmail.com	I/We have nothing to disclose	
Rachel Warner, DPM	warnrac@gmail.com	I/We have nothing to disclose	
Ronald Adelman, DPM, ABFAS	ronald_adelman@ihacares.com	I/We have nothing to disclose	
Oliver Ryan, DPM, ABFAS	oliver_ryan@ihacares.com	I/We have nothing to disclose	
Vanessa Adelman, DPM, ABFAS	vanessaadelman@yahoo.com	I/We have nothing to disclose	

Title

Flipper Foot Technique with Ankle Arthrodesis for the Treatment of Charcot Neuroarthropathy Deformities

Submit Date

08/31/2023

Correspondent

Last Name: Loveland

Full Name: Jeffrey D. Loveland DPM, FACFAS

Email: lovelanddpm@yahoo.com

Practice/Company/Residency Program:

Central Tennessee Foot and Ankle Center

Authors

Author 1: JEFFREY LOVELAND DPM, FACFAS

Author 2: Aaron Mates MD

Author 3: Brandon Denton MBA, ABSA

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

To show the efficacy of the described “flipper foot” procedure as a viable option in the treatment of neuropathic foot and ankle deformities.

Methodology

Procedures

Retrospective chart review with 77 patients who underwent hindfoot and ankle arthrodesis with a midfoot osteotomy. Hindfoot and ankle arthrodesis was fixated with an intramedullary nail and using an external fixator to control the midfoot osteotomy with a bent wire to create a pseudo fusion/articulation point within the midfoot or talonavicular region. CT scans were obtained to assess fusion. Once the fixator was removed, the patient was then placed into a CROW Boot to bear weight.

Results

There were 77 patients who underwent ankle arthrodesis with midfoot osteotomy for treatment of Charcot Neuroarthropathy. CT scans confirmed fusion of the ankle joint on average of 14 weeks and with an average of 32 months follow up. 70 patients went on to fusion with 7 patients requiring a revisional surgery for a nonunion. There was no breakdown or increased deformity seen in the pseudo fusion/articulation point in the midfoot. No wounds developed following the reconstructive surgery along with no limb loss was noted.

Discussions

The results show evidence the “Flipper Foot technique” could be used as a viable limb salvage option for patients with Charcot Neuroarthropathy deformities. With a stable hindfoot/ankle along with the motion segment in the foot provides some movement to put on shoe gear and allows the patient to have a near-normal gait pattern. This technique described may become a standard in the treatment of Charcot deformities in the future.

Format

Case Study

Case Rpt Followup

84

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
JEFFREY LOVELAND DPM, FACFAS	lovelanddpm@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker and Vilex
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Past president of Tennessee Podiatric Medical Association
		Grant/Research funding	Stryker
Aaron Mates MD	akmates@me.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker, Arthrex and Vilex
Brandon Denton MBA, ABSA	brandondenton15@gmail.com	I/We have nothing to disclose	

Title

Patient specific total talus replacement and opening wedge supramalleolar osteotomy with total ankle arthroplasty in the setting of post-traumatic talar avascular necrosis and collapse

Submit Date 08/31/2023

Correspondent

Last Name: Cramer
 Full Name: Kira Cramer Email: kirakirac@gmail.com
 Practice/Company/Residency Program: Highlands/Presbyterian St. Luke's Hospital

Authors

Author 1: Kira Cramer, DPM Author 2: Alan Ng, DPM, FACFAS
 Author 3: David Hahn, MD Author 4: Brett Sachs, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Therapeutic strategies for talar collapse encompass interventions such as talectomy, pantalar arthrodesis, tibiototalcaneal arthrodesis, and, in extreme cases, BKA. However, these options impart abnormal biomechanics and result in functional deficits for patients. This case study documents the series of surgical interventions required to reconstruct the tibiototalcaneal joints in the setting of talar collapse using 3D CT scans and patient specific instrumentation.

Methodology

Procedures

A healthy 26 year old male presented with chronic right ankle pain after a MVA on 11/01/2020. He fractured his talus and calcaneus and was placed into an external fixator. Definitive ORIF was delayed 22 days. Medial malleolar, talar, and calcaneal ORIF was performed on 11/2020. In July 2021 he had a CT which revealed talar avascular necrosis. The patient was referred to our clinic to discuss a total talus replacement.

Results

Procedure performed included patient specific total talus replacement with subtalar joint arthrodesis, custom titanium graft for an opening wedge supramalleolar osteotomy, and total ankle arthroplasty. 3 years post injury the patient is ambulating for greater than 12 hrs per day in regular shoes, has returned to work, and functions with minimal pain.

Discussions

The first account of partial talus replacement was documented in 1997 and since then technological advancements have evolved. The presented case study underscores the complexities and challenges posed by post-traumatic talar avascular necrosis and subsequent collapse, particularly in young patients with a significant history of trauma. It also highlights the successful utilization of a multidimensional surgical strategy to address these challenges combining innovative surgical techniques and patient-specific interventions.

Format

Case Study

Case Rpt Followup

36

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kira Cramer, DPM	kirakirac@gmail.com	I/We have nothing to disclose	
Alan Ng, DPM, FACFAS	kirakirac@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Anika Therapeutics
David Hahn, MD	kirakirac@gmail.com	I/We have nothing to disclose	
Brett Sachs, DPM, FACFAS	kirakirac@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	ZimmerBiomet

Title

Candida Osteomyelitis Management Through Intramedullary Spacer Utilizing Heat-Stable Amphotericin B and Polymethylmethacrylate Cement: A Novel Therapeutic Approach for Infected Nonunion Tibiocalcaneal Arthrodesis in Charcot Neuropathy

Submit Date 08/31/2023

Correspondent

Last Name: Rodriguez
 Full Name: Monique G. Rodriguez, DPM
 Practice/Company/Residency Program: Mount Auburn Hospital Podiatric Medicine and Surgery Residency Program
 Email: moniquerodriguezdpm@gmail.com

Authors

Author 1: Monique G. Rodriguez, DPM
 Author 2: Philip Basile, DPM
 Author 3:
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

This study details our clinical outcomes employing an innovative technique that combines heat-stable Amphotericin B and Polymethylmethacrylate cement as an intramedullary spacer for managing infected nonunion tibiocalcaneal arthrodesis stemming from Candida osteomyelitis.

Methodology

Procedures

Fungal osteomyelitis, while rare, poses a significant threat to immunosuppressed individuals due to its rapid dissemination and potential fatality. Candida, accounting for roughly 20% of invasive fungal osteomyelitis cases, often displays heightened biofilm-forming tendencies. Candida metapsilosis was isolated from intraoperative bone cultures of an infected nonunion, 1.5 years post tibiocalcaneal arthrodesis. Collaborative efforts confirmed Amphotericin B's fungicidal efficacy against Candida metapsilosis. The choice of Amphotericin B was guided by its compatibility with the heat generated during the polymerization of polymethylmethacrylate cement, occurring within the range of 230°F in the mixing bowl and 129°F within the bone. Three vials of 150mg Amphotericin B were amalgamated with polymethylmethacrylate cement, resulting in a 1 cm diameter, 250mm length rod. This rod was then implanted intramedullarily into the tibia, secured by a circular external fixator applied to maintain tibia-calcaneus stability.

Results

The antifungal cement rod was extracted after a month with bone cultures of the tibia and calcaneus displaying absence of Candida metapsilosis. Two year follow up demonstrated microfungus resolution.

Discussions

Fungal osteomyelitis, particularly in immunocompromised individuals like those with Charcot neuropathy, poses substantial challenges in eradication. Our innovative approach, harnessing the synergistic properties of heat-stable Amphotericin B and Polymethylmethacrylate cement, proves promising in successfully combatting Candida osteomyelitis. This novel technique underscores its potential as a viable therapeutic avenue warranting consideration.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Monique G. Rodriguez, DPM	monique.rodriguez@mah.harvard.edu	I/We have nothing to disclose	
Philip Basile, DPM	pbasile@mah.harvard.edu	I/We have nothing to disclose	

Title

Retrospective case series review of Charcot Neuropathic patients with Tibiototalcaneal / Tibiocalcaneal Arthrodesis with Intramedullary Nail Fixation and Percutaneous Screw Fixation Outside the Nail

Submit Date 08/31/2023

Correspondent

Last Name: Loveland
 Full Name: Jeffrey D. Loveland DPM, FACFAS Email: lovellanddpm@yahoo.com
 Practice/Company/Residency Program: Central Tennessee Foot and Ankle Center

Authors

Author 1: JEFFREY LOVELAND DPM, FACFAS Author 2: Brandon Denton MBA, ABSA
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose To review a retrospective case series of Charcot Neuropathic patients who underwent Tibiototalcaneal / Tibiocalcaneal Arthrodesis (TTC / TC) with intramedullary nail fixation and investigate the efficacy and outcomes of incorporating additional fixation and stability around the nail with screw fixation outside the nail.

Methodology

Procedures

A patient chart and radiographic review of Charcot Neuropathic patients that underwent a primary TTC/TC arthrodesis with Intramedullary nail fixation and percutaneous screw fixation outside the nail for a limb salvage procedure with a minimum of 12 months follow-up. Some of these patients had circular external fixation applied at the time of surgery. Patients had CT scans done to access the bony fusion process and monitor the stability of implant fixation. Once bony fusion was identified, the patients were then fitted with CROW boot or Ankle foot orthotic (AFO) as their weight-bearing and ambulation status improved.

Results

There were 20 patients who had intramedullary nail and screw fixation. During the follow-up, there were no major complications. All patients had stable fusions confirmed by CT scan on average of 13 weeks. All patients returned to weight-bearing at 17 weeks. There was no loss of correction, limb loss, or new Charcot Neuropathy events.

Discussions

Given the complexity of the Neuropathic patient population and increased complication rates of limb salvage procedures in the hindfoot and ankle with the loss of fixation. Consideration of additional fixation with fully threaded screws outside the nail could provide additional stability and support to the overall construct to promote healing in this difficult patient population.

Format Case Study

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
JEFFREY LOVELAND DPM, FACFAS	lovellanddpm@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker and Vilex
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Past president of Tennessee Podiatric Medical Association
		Grant/Research funding	Stryker
Brandon Denton MBA, ABSA	brandondenton15@gmail.com	I/We have nothing to disclose	

Title Lateral FHL Transfer for Concomitant Peroneal Tendon Tears**Submit Date** 08/31/2023

Correspondent

Last Name: Irfan
 Full Name: Zuhair, M, Irfan Email: zuhair.irfan1@gmail.com
 Practice/Company/Residency Program: Foot and Ankle Specialists of Central Ohio

Authors

Author 1: Zuhair Irfan Author 2: Son Tran, DPM
 Author 3: Kwame Doh, DPM Author 4: Daniel Logan, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The Flexor Hallucis Longus tendon is utilized often for reconstruction of the Achilles tendon when considerable damage is noted, however less commonly so it can also be utilized in a lateral transfer to the 5th metatarsal base, replacing the peroneal tendons when non-viability and severe pathology is noted of both peroneal tendons.

Methodology

Procedures

A 29 year old female patient with a history of previous peroneal tendon surgery presented with pain and difficulty in ambulation along the lateral ankle. Patient had pain to the peroneal tendons and imaging demonstrated significant tear and pathology of both peroneal tendons. While mentioned in the literature, lateral FHL transfers have not been extensively evaluated. Case reports and series appear to be promising, and the transfer has been shown to have success in cases with concomitant, irreparable peroneal tendon tears and resultant equinovarus deformity.

Results

The patient underwent lateral FHL transfer to the 5th metatarsal base with an biotenedosis screw. The procedure was supplemented with a lateralizing calcaneal osteotomy to address the rearfoot deformity and protection of the lateral soft tissues. The patient did well in the post operative phase and progressed well with a progressive weight bearing protocol, gaining eversion strength in the extremity.

Discussions

Lateral transfer of the Flexor Hallucis Longus is a viable option for concomitant pathological and non-viable peroneal tendons. Surgeons should be aware of and consider this technique and appropriately include in the consent and peri-operative surgical discussions with the appropriate surgical candidate.

Format Case Study

Case Rpt Followup 13

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Zuhair Irfan	Zuhair.Irfan1@gmail.com	I/We have nothing to disclose	
Son Tran, DPM	stran@fasco.health	I/We have nothing to disclose	
Kwame Doh, DPM	kdoh@fasco.health	I/We have nothing to disclose	
Daniel Logan, DPM, FACFAS	daniel.logan75@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Acumed

Title **Lateral Ankle Ligament Reconstruction Using Acellular Dermal Matrix Allograft and Ultrasonically Interdigitated Bioresorbable Suture Anchors**

Submit Date 08/31/2023

Correspondent

Last Name:	Berkelbach		
Full Name:	Christopher J. Berkelbach, DPM	Email:	christopher.berkelbach@penmedicine.upenn.edu
Practice/Company/Residency Program:			Penn Presbyterian Medical Center

Authors

Author 1:	Christopher J. Berkelbach, DPM	Author 2:	Hamidat Momoh, DPM
Author 3:	Michael A. Troiano, DPM, FACFAS	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose When performing surgical repair for chronic ankle instability, oversewing and tightening of the ATFL and CFL requires quality native ligamentous tissue, which may be lacking in patients with longstanding pathology. Few studies have evaluated outcomes of lateral ankle stabilization by means of ligament reconstruction using acellular dermal matrix allograft, which boast excellent repair strength and host compatibility.

Methodology

Procedures We performed a retrospective review of patients who underwent lateral ankle stabilization with ligament reconstruction using acellular dermal matrix allograft and ultrasonically interdigitated bioresorbable suture anchors from 2018-2023. Patients with previous lateral ankle ligament surgery, ankle fracture open reduction with internal fixation, or <3 months follow-up were excluded.

Results 44 patients (70.5% female, mean age 43.9) were identified. Average follow-up was 11.3 months. All patients underwent concurrent ankle arthroscopy. 30 patients (68.2%) required peroneal tendon repair, for which a y-shaped incision was utilized for access to both the peroneal tendons and lateral ankle ligament complex. 14 patients (31.8%) without peroneal pathology received a J-shaped incision. Average time to protected weightbearing and transition to lace-up ankle brace was 5.6 and 9.2 weeks, respectively. Thirteen patients had minor complications, most frequently superficial wound dehiscence. Two patients (4.5%) underwent reoperation (recurrent instability necessitating revision; deep infection).

Discussions Lateral ankle ligament reconstruction using acellular dermal matrix allograft is a reliable procedure over medium-term follow-up. Risk of implant failure and deep infection is low. The y-shaped incisional approach used to concurrently address peroneal tendon pathology may put certain patients at risk for delayed incision healing.

Format Case Study

Case Rpt Followup 60

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Christopher J. Berkelbach, DPM	christopher.berkelbach@penmedicine.upenn.edu	I/We have nothing to disclose	
Hamidat Momoh, DPM	hamidat.momoh@penmedicine.upenn.edu	I/We have nothing to disclose	
Michael A. Troiano, DPM, FACFAS	michael.troiano@penmedicine.upenn.edu	Consultant/Advisor/Speaker (List all affiliations)	Stryker/Wright Medical

Title **Cockup 5th toe revision, Double mason allen stitch and transpositional flap 7 year followup**

Submit Date 08/31/2023

Correspondent

Last Name: Giagnacova
 Full Name: Albert Email: Albertdpm@gmail.com
 Practice/Company/Residency Program: Lower Bucks Hospital Podiatry Residency

Authors

Author 1: Albert Giagnacova Author 2: Anthony Mina
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Cockup 5th toe is difficult particularity in presents of second revisional surgery. Historically some would consider amputation we both a Mason Allen stitch at plantar 5th MTPJ joint and 7 cm transpositional elongated flap running the length of 5th metatarsal 1 cm wedge was removed

Methodology**Procedures**

Ruiz Mora have been wrote about numerous times including Vispo 1998 again 2020. Syndactylization within literature are well represented. Flexor tendon transfer as describe by DiDomenico in numerous articles and personal experiences. Robiataille 2006 via PI Institute did a good review article with her technique. Liu 2019 used Mason Allen in Brostrom Gould repairs.

Results

one patient with failed v to y and flexor transfered was revision for second time using a Mason Allen stitch plantarly and transpositional flap. Results no submet 5 lesion nor pain, nor difficult using shoe gear. There was no need for taping or Orthotics postoperatively. Suture were removed at 40 days as compare to 21 days. No visible scars were noted .

Discussions

These two technique should be entered into a Surgeon's repertoire techniques offered as combo in concert to difficult case. Observation of this patient over 60 times without complaint. Purpose of this study to avoid syndactylization or elective amputation of 5th digit. Mechanical strength Mason Allen via the should literature demonstrates the clinical strength although rarely utilizing in foot surgery, and should be considered outside of Rotational cuff surgery. Some consider plantar flaps taboo however the author has no issues if the flap raised correctly the use of large gauge suture is used 2 nylon as oppose to 3 -0 nylon.

Format

Case Study

Case Rpt Followup

84

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Albert Giagnacova	albertdpm@gmail.com	I/We have nothing to disclose	
Anthony Mina	mina@temple.edu	I/We have nothing to disclose	

Title **Complication Rates Associated with Direct Midline Approaches for Achilles Tendon Pathology: A Case Review**

Submit Date 08/31/2023

Correspondent
 Last Name: Kim
 Full Name: John K. Kim, DPM Email: jkim5874@gmail.com
 Practice/Company/Residency Program: Washington Orthopaedic Center

Authors
 Author 1: John J. Kim, DPM Author 2: Amar Chandra, DPM
 Author 3: Michael Dujela, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose The posterior midline incision is a commonly utilized approach for Achilles tendon debridement, augmentation, and repair. The purpose of this study is to determine whether the midline approach for Achilles tendon surgery is a safe and viable method for surgical management of Achilles tendinopathy.

Methodology

Procedures 26 patients who underwent achilles tendon rupture repair, achilles tendon debridement and repair, flexor hallucis tendon transfer, and/or partial excision of the calcaneus utilizing an open, midline incisional approach between 2018-2021 were identified. All complications were recorded Any patients undergoing minimally invasive approaches were excluded from the study.

Results The mean age of our cohort was 51 years old. The wound complication rate was 11%. The infection rate was 3%, with all infections being superficial infections. There was a statistically significant correlation between wound complications and the presence of diabetes. History of smoking and the number of procedures performed were not associated with wound complications.

Discussions Currently, no consensus exists as to which incisional approach is safest. It has been assumed that direct midline incisions carry the risk of increased wound complications, however, there is limited high-level evidence supporting this. Overall, the reported complication rates for open achilles procedures range from 7-14% and 89% of these are wound complications. Here, we have demonstrated that the standard midline incision is a safe approach and provides adequate exposure for management of pathologies related to the Achilles tendon.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
John J. Kim, DPM	jkim5874@gmail.com	I/We have nothing to disclose	
Amar Chandra, DPM	chandraamar92@gmail.com	I/We have nothing to disclose	
Michael Dujela, DPM, FACFAS	michaeldujela@yahoo.com	Consultant/Advisor/Speaker (List all affiliations) Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s) Member of a medical publication or editorial governing board	Paragon28, Synthes ABFAS JFAS

Title

Surgical Outcomes and Complication Rates of Ankle Fracture Open Reduction Internal Fixation by Podiatric Surgeons; A Retrospective Case Series

Submit Date

09/01/2023

Correspondent

Last Name: Wier
 Full Name: Sam, DPM
 Practice/Company/Residency Program: Trinity Health Livonia

Email: samjwier@gmail.com

Authors

Author 1: Katherine Ternent, DPM
 Author 2: Sam Wier, DPM
 Author 3: Rachel Warner, DPM
 Author 4: Ronald Adelman, DPM, ABFAS
 Author 5: Oliver Ryan, DPM, ABFAS
 Author 6: Vanessa Adelman, DPM, ABFAS
 Author 7:
 Author 8:

Purpose

The primary objective of our study is to assess the incidence of post-surgical complications following ankle fracture treatments through open reduction and internal fixation (ORIF) at a distinguished institution in Michigan. This investigation aims to establish a comparative analysis between our findings and the complication rates documented in prior scholarly works.

Methodology

Procedures

This study includes 72 patients who had ORIF for ankle fractures. Three researchers conducted thorough chart reviews, collecting data on patient demographics, medical history, ankle fracture types, hardware used, and complications. Our investigation involved a comparative analysis between distinct patient demographics of those who experienced complications and those who did not.

Results

Cohort of 72 patients, 3 individuals exhibited postoperative complications.

Discussions

Ankle fractures are common, with an incidence of over 1.8 per 1000 adults. The literature varies regarding post-operative complication rates after ankle fracture surgeries, influenced by several factors. In our retrospective analysis of 72 patients, only 3 exhibited complications following ORIF for ankle fractures. This rate appears lower when compared to recent literature.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Katherine Ternent, DPM	kternent24@gmail.com	I/We have nothing to disclose	
Sam Wier, DPM	samjwier@gmail.com	I/We have nothing to disclose	
Rachel Warner, DPM	Rachelwarner@my.rfums.org	I/We have nothing to disclose	
Ronald Adelman, DPM, ABFAS	ronaldadelman@ihacares.com	I/We have nothing to disclose	
Oliver Ryan, DPM, ABFAS	oliverryan@ihacares.com	I/We have nothing to disclose	
Vanessa Adelman, DPM, ABFAS	vadelman6@gmail.com	I/We have nothing to disclose	

Title

Synovial Sarcoma - A Rare Case Report of a Subfascial Intramuscular Soft Tissue Tumor of the Ankle

Submit Date 08/29/2023

Correspondent

Last Name: Kipp
 Full Name: Noelle Email: nkipp@kent.edu
 Practice/Company/Residency Program: Cleveland Clinic

Authors

Author 1: Coleman O. Clougherty, DPM Author 2: Mark C. Razzante, DPM
 Author 3: Christina Pratt, DPM Author 4: Noelle M. Kipp, MS4
 Author 5: Kelsi A. Whitlow, MS4 Author 6:
 Author 7: Author 8:

Purpose

Synovial sarcoma is a rare and highly malignant soft tissue sarcoma that mostly occurs in young adults under 20 years old. There is limited data on synovial sarcomas of the foot, but clinicians should be suspicious of this condition in young adults with deep pedal pain. This case presentation documents one case of a 14 year old female who had an incidental finding of an ankle synovial sarcoma during a tarsal tunnel decompression by removal of soft tissue mass.

Methodology

Procedures

A 14 year old female experienced 2 years of insidious onset of right foot pain with no known trauma or injury. After failing many conservative treatments, the patient came to the clinic for a fourth opinion. A repeat MRI came back as an 8mm superficial subcutaneous fluid intensity with the possibility of a small soft tissue ganglion. The patient and her mother wanted to pursue surgery. The surgery consisted of a tarsal tunnel release and an excision of the mass which came back from pathology as an incompletely excised synovial sarcoma.

Results

The patient was immediately transferred to pediatric oncology and radiation oncology after the excision of the ankle synovial sarcoma.

Discussions

In the early development of synovial sarcomas there may not be any signs. This can lead to the condition being overlooked. Clinicians should include synovial sarcoma in the differential diagnosis for all deep pedal pain, especially in young adults with unknown origin that has failed multiple treatments. Depending on the nature of the tumor, common treatment options include excision, radiation and chemotherapy, and amputation.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Coleman O. Clougherty, DPM	coleman.clougherty@gmail.com	I/We have nothing to disclose	
Mark C. Razzante, DPM	RazzanteDPM@gmail.com	I/We have nothing to disclose	
Christina Pratt, DPM	prattdpm@gmail.com	I/We have nothing to disclose	
Noelle M. Kipp, MS4	nkipp@kent.edu	I/We have nothing to disclose	
Kelsi A. Whitlow, MS4	kpeter69@kent.edu	I/We have nothing to disclose	

Title

Recurrent Subcutaneous Granuloma Annulare in a 3-Year-Old Patient: A Case Study and Management Approach

Submit Date 08/13/2023

Correspondent

Last Name: Alkhalil
 Full Name: Hassan Email: halkhali@kent.edu
 Practice/Company/Residency Program: Ascension Providence Hospital

Authors

Author 1: Hassan I Alkhalil, DPM Author 2: Alicia Ward, DPM, FACFAS
 Author 3: Akram Aljumail, DPM Author 4: Rachel Height-Kaplan
 Author 5: Author 6:
 Author 7: Author 8:

Purpose This case study presents the clinical course and management approach for a 3-year-old patient with a slow growing nodule on the dorsal aspect of her right foot.

Methodology

Procedures

The initial presentation demonstrated a painless, well-demarcated subcutaneous nodule on the dorsum of the right foot, measuring approximately 1.5 cm in diameter in July of 2022. Surgical excision was performed, successfully removing the mass, and histopathological examination confirmed the diagnosis of subcutaneous granuloma annulare (SGA).

Results

Six months postoperatively, the patient experienced a recurrence of the multiple nodules at the same location along with lateral aspect of her right ankle. Systemic involvement was not observed. A literature review was conducted, revealing similar cases and management approaches. In this case, a conservative approach was chosen, involving topical corticosteroids and close monitoring. Over subsequent months, the lesion gradually resolved and recurred. This case highlights the importance of considering subcutaneous granuloma annulare as a potential diagnosis in young children presenting with soft tissue masses. Surgical excision may provide temporary relief; however, recurrence should be expected. The literature review supports the use of topical corticosteroids as an effective management approach for this condition. Long-term follow-up is crucial to monitor disease progression, recurrence, or systemic involvement.

Discussions

This case study provides insights into the clinical course, management approach, and recurrence of SGA. It highlights the importance of considering this condition as a differential diagnosis and highlights the effectiveness of topical corticosteroids as a treatment option. Further research is warranted to advance our knowledge and improve patient outcomes.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hassan I Alkhalil, DPM	halkhali@kent.edu	I/We have nothing to disclose	
Alicia Ward, DPM, FACFAS	awade110@gmail.com	I/We have nothing to disclose	
Akram Aljumail, DPM	aljumaildpm@gmail.com	I/We have nothing to disclose	
Rachel Height-Kaplan	rkaplan6@kent.edu	I/We have nothing to disclose	

Title

Give It A Brake: Open Tongue Type Calcaneal Fracture After Zip Lining Accident

Submit Date

07/20/2023

Correspondent

Last Name: Maguire

Full Name: Amelia B Maguire, DPM

Email: amaguire1@geisinger.edu

Practice/Company/Residency Program:

Geisinger Community Medical Center

Authors

Author 1: Amelia Maguire

Author 2: Victoria Garcia

Author 3: Nicole Branning, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Calcaneal fractures are the most common tarsal fracture, with 1.3-2.7% being tongue-type fractures. This pattern of trauma causes significant pressure on the soft tissue coverage of the posterior calcaneus, resulting in skin ischemia, which occurs in 21%. In most cases, the patient is splinted until the soft tissue envelope has stabilized before undergoing surgical correction. This case study documents an open tongue-type calcaneal fracture that was surgically corrected immediately following a trauma.

Methodology

Procedures

A 48-year-old male had a zip lining accident where his brakes failed and he crashed into a tree feet first. The patient presented with a laceration and exposed calcaneal bone to the left lower extremity. Imaging confirmed a tongue-type calcaneal fracture with protrusion of the calcaneus.

Results

Procedures performed were incision and drainage of left heel wound, left Achilles tendon lengthening, and open reduction and temporary external fixation of left calcaneus. Surgical intervention resulted in a reduction of the left calcaneus with return to function.

Discussions

Tongue-type calcaneal fractures significantly compromise the soft tissue envelope surrounding the calcaneus. Literature shows most are fixated with ORIF weeks after the initial trauma, allowing for soft tissue stabilization. No previous case study has reported an open tongue-type calcaneal fracture that was immediately surgically corrected. Therefore, there is no medical precedent regarding the most appropriate method of surgical correction. This case illustrates a rare occurrence with a novel fix: using an Achilles lengthening and temporary external pinning to reduce an open tongue-type calcaneal fracture immediately following the traumatic incident.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Amelia Maguire	amaguire1@geisinger.edu	I/We have nothing to disclose	
Victoria Garcia	vgarcia3@geisinger.edu	I/We have nothing to disclose	
Nicole Branning, DPM, FACFAS	nbranning@geisinger.edu	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ABPM

Title **Putting it on Autopilot: Use of Automated, External Fixation Struts for Equinocavovarus Correction**

Submit Date 08/15/2023

Correspondent

Last Name: Moon
 Full Name: Zohaib Email: zohaibmoon3@gmail.com
 Practice/Company/Residency Program: HCA Florida Northwest Hospital

Authors

Author 1: Zohaib Moon, DPM PGY-3 Author 2: Samuel Clellen, DPM PGY-3
 Author 3: Alan MacGill, DPM, FAFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose This case review highlights the use of automated, external fixation struts for combined acute and gradual equinocavovarus correction.

Methodology

Procedures

67-year-old female with PMHx of multiple falls due to alcohol abuse, leading to spinal issues and a progressive dropfoot deformity to her left lower extremity. Presents as wheelchair-bound with a non-reducible equinus ankle contracture and severe Cavovarus attitude of the midfoot/hindfoot. We describe a staged approach for correction of equinocavovarus deformity. Initially performing an acute soft tissue release consisting of tendo-achilles lengthening, talonavicular capsulotomy, posterior tibial tendon release/harvest, spring ligament release, Steindler stripping, and tarsal tunnel decompression followed by application of an automated external fixator for gradual correction. The specialized frame allowed for automatic adjustments via a software-programmed correction plan. 6 weeks after the initial stage, a posterior tibial tendon transfer was performed.

Results Stable, plantigrade foot, 12 months out ambulating brace-free. Postoperative AOFAS hindfoot score 88, improved from 40 preoperatively.

Discussions

Our patient successfully completed the computer-assisted protocol with high satisfaction. While literature on the use of automated struts are slim, they are unequivocally positive. Gigi 2021 studied 8 patients with pre-programmed adjustments finding less than 1 mm of discrepancy in 94% of the patients, and 2-3 mm in the remaining 6%. Hoellwarth 2022 retrospectively reviewed 16 patients who underwent external fixation with automatic struts, also deeming it to be safe and reliable with all patients achieving the index and residual adjustments as programmed. Clinicians should be aware of the important advantages that may benefit the patient, caregiver, and surgeon.

Format

Case Study

Case Rpt Followup

16

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Zohaib Moon, DPM PGY-3	zohaibmoon3@gmail.com	I/We have nothing to disclose	
Samuel Clellen, DPM PGY-3	samclellen@gmail.com	I/We have nothing to disclose	
Alan MacGill, DPM, FAFAS	alanmacgill@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Arthrex, Inc.

Title

Medial Femoral Condyle Periosteal Free Flap for Femoral Head Allograft Vascularization for Tibiotalocalcaneal Arthrodesis

Submit Date 08/05/2023

Correspondent

Last Name: Verdoni
 Full Name: Tyler J. Verdoni Email: tyler.verdoni@gmail.com
 Practice/Company/Residency Program: Jersey Shore University Medical Center

Authors

Author 1: Tyler J. Verdoni, DPM Author 2: Umeer Sheikh, DPM
 Author 3: Justin J. Fleming, DPM, FACFAS Author 4: Chrisovalantis Lakhiani, MD
 Author 5: Author 6:
 Author 7: Author 8:

Purpose To present a case report on a 39 year old female with avascular necrosis of the talus who underwent talectomy, femoral head allografting and tibiotalocalcaneal arthrodesis with a periosteal free flap from the medial femoral condyle.

Methodology

Procedures We present a 39 year old female who initially sustained a talus fracture dislocation and underwent open reduction internal fixation. She developed avascular necrosis requiring debridement with bone grafting in addition to a talonavicular joint arthrodesis. Avascular necrosis persisted and progressed to the entire talus. To maintain a plantigrade foot, give her pain free ambulation and have hopeful bony fusion across the arthrodesis site, she underwent talectomy, femoral head allografting, tibiotalocalcaneal arthrodesis and medial femoral condyle periosteal free flap.

Results The patient went on to heal both her free flap site in addition to achieve bony union across the arthrodesis site at her 6 month follow up. At 1 year follow up she is able to ambulate and has no postoperative complications.

Discussions Here we present a complicated case of recurrent avascular necrosis of the talus requiring multiple surgeries. Due to patient comorbidities, the decision was made to do a talectomy with femoral head allografting and tibiotalocalcaneal arthrodesis. A medial femoral condyle periosteal free flap was harvested by the plastic surgeon and laid on top of the allograft in attempt to vascularize the graft and assist with arthrodesis. This technique can be used in bone deficits requiring bone grafting to assist with incorporation of the graft.

Format Case Study

Case Rpt Followup 14

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tyler J. Verdoni, DPM	tyler.verdoni@gmail.com	I/We have nothing to disclose	
Umeer Sheikh, DPM	Usheikh20@gmail.com	I/We have nothing to disclose	
Justin J. Fleming, DPM, FACFAS	flemingjmak@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Arthrex
Chrisovalantis Lakhiani, MD	chrisovalantis.lakhiani@hmn.org	I/We have nothing to disclose	

Title Pigmented Poroma of The Anterior Leg: A Rare Case Report**Submit Date** 07/20/2023

Correspondent

Last Name: Harada
 Full Name: Arden M. Harada DPM Email: ardenharada@gmail.com
 Practice/Company/Residency Program: Jefferson Health Northeast

Authors

Author 1: Arden M. Harada DPM Author 2: Robert Norton DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

A poroma is a benign adnexal neoplasm arising from the intraepidermal portion of a sweat gland duct. The occurrence of these lesions on the lower extremity is unusual. One variant of a poroma is called a pigmented hydroacanthoma simplex (HAS). In literature, there are very few reported cases of this tumor type.

Methodology

Procedures

A case report of a 48 year old male with past medical history of diabetes mellitus type 2, hypertension, seizure disorder, and schizophrenia presented with a nodular lesion to the right anterior leg. Patient provided little history regarding the lesion, but stated that he had noticed it two years prior. He reports increase in size of the lesion. Denied any pruritus, pain, warmth, or drainage.

Results

On exam, the right lower extremity was edematous with a 2.5 centimeter in diameter nodular lesion that was raised about 1-1.5 centimeters. The mass was red and firm with surrounding hyperpigmented skin. Incisional biopsy was obtained with specimen sent to pathology in formalin. The histopathology results revealed a pigmented poroma, benign lesion. The lesion stained for p40 and scattered melanocytes stained for SOX10 as expected per pathologist. Negative stain for HMB-45.

Discussions

While benign, a pigmented HAS has the properties to become malignant and should be followed closely. This case report aims to present on a rare presentation of a pigmented HAS on the lower extremity. Given similarities of the lesion presentation to malignant melanoma, this case report is to emphasize the use of skin biopsy to aide in diagnosis of lower extremity lesions.

Format Case Study**Case Rpt Followup** 12**Student Club** Not a Student Club Poster**Classification** Soft Tissue/Tumor**Level of Evidence** Level IV**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Arden M. Harada DPM	ardenharada@gmail.com	I/We have nothing to disclose	
Robert Norton DPM	robert.norton5307@gmail.com	I/We have nothing to disclose	

Title **Primary Antiphospholipid syndrome causing critical limb ischemia and ultimately amputation in an otherwise healthy young female**

Submit Date 07/24/2023

Correspondent

Last Name:	Lyons	Email:	ksamuel@umich.edu
Full Name:	Katherine	Practice/Company/Residency Program:	Trinity Health Livonia Residency Program

Authors

Author 1:	Katherine Lyons	Author 2:	Ronald Adelman
Author 3:	Britney Wenig	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Antiphospholipid syndrome (APS) is an autoimmune disease that frequently manifests as recurrent thrombotic events, ischemic strokes, and miscarriages. APS affecting primarily the arteries is less common than venous thrombosis. The purpose of the current case report is to emphasize that APS should be kept on the differential for arterial ischemic events without another known cause, and should be managed with an interprofessional team approach.

Methodology

Procedures Our case describes an otherwise healthy 43 year old female presenting with severe pain, foot drop, and critical limb ischemia secondary to APS. Peripheral arterial complications of APS are rare with prevalence of 6%. Research suggests that Warfarin and Enoxaparin are more effective at preventing thrombosis in patients with APS than DOACs. Our patient underwent multiple vascular interventions and was placed on lifelong anticoagulation with Apixaban. No further investigation was done for clotting disorders at that time. Neurologic manifestations of APS are rarely reported, and there is only one other case of foot drop in literature that describes an unusual presentation of stroke in patient with APS. Our case describes a patient that developed foot drop due to thrombosis of a peripheral artery.

Results Our patient continued to present with recurrent thrombosis, and eventually was diagnosed with APS. At this point, no further vascular intervention was possible and patient underwent BKA.

Discussions Early diagnosis and proper anticoagulation therapy could have prevented limb loss for our patient. APS should be kept on the differential and investigated in patients with unusual neurological symptoms and ischemic arterial thrombotic events.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Neurological/Peripheral Nerve Disorders

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Katherine Lyons	ksamuel@umich.edu	I/We have nothing to disclose	
Ronald Adelman	ronald_adelman@ihacares.com	I/We have nothing to disclose	
Britney Wenig	britneywenig@gmail.com	I/We have nothing to disclose	

Title **Traumatic Rupture of Tibialis Anterior following Motor Vehicle Crash with Direct End-To-End Surgical Repair**

Submit Date 08/28/2023

Correspondent

Last Name: Fischer
 Full Name: Allison C Fischer, DPM Email: allisoncfischer@gmail.com
 Practice/Company/Residency Program: Denver Health Podiatric Medicine and Surgical Residency

Authors

Author 1: Allison C Fischer, DPM Author 2: Chad F Simmons, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Tibialis anterior rupture is a rare injury that is often diagnosed late rather than in the acute phase. Review of literature shows only 81 identified cases from 1905 to 2018. In this case, the patient arrived for an annual diabetic foot exam when he was noted to have a foot drop 1 week s/p a MVC. Due to early detection, we were able to promptly perform direct end-to-end repair.

Methodology

Procedures

Review of literature showed only 81 identified cases from 1905 to 2018, making this a relatively rare injury. The TA is a strongest muscle in the anterior compartment and comprises 80% of dorsiflexors strength. These often go undiagnosed due to robust compensatory ability of remaining dorsiflexors. Prior systematic reviews have examined surgical vs nonsurgical repair. This case can contribute to the success of surgical repair, especially with early detection and treatment when end-to-end is the most optimal repair for long-term success.

Results

The patient underwent surgical repair of the tendon within 2 weeks of injury. He went on to fully heal and undergo physical therapy. He demonstrated slight decrease in dorsiflexors strength but no longer has foot drop and is able to resume activities of daily living.

Discussions

We find this case pertinent because of the timeline affecting the method in which we were able to repair the tendon, which also likely contributed to a full recovery. Because it was detected early, we were able to achieve end-to-end repair without requiring augmentation or grafting which is often not an option in these injuries.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Allison C Fischer, DPM	allisoncfischer@gmail.com	I/We have nothing to disclose	
Chad F Simmons, DPM, FACFAS	chad.simmons@va.gov	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	National Advisory Panel for Internal Fixation Systems

Title

Full Thickness Soft Tissue Defects at the Lateral Foot: Consideration for Local Flap Coverage

Submit Date 08/29/2023

Correspondent

Last Name: Liu
 Full Name: Tiffanie
 Practice/Company/Residency Program: MedStar Georgetown University Hospital

Email: tiffanie.liu@medstar.net

Authors

Author 1: Tiffanie Liu, DPM
 Author 2: Liliya Parkman, DPM
 Author 3: Jonathan Furmanek, DPM
 Author 4: Aria Mansoori, DPM
 Author 5: Jayson Atves, DPM, FACFAS
 Author 6: Christopher Attinger, MD
 Author 7:
 Author 8:

Purpose

ateral midfoot wounds are complicated in dysvascular/neuropathic patients. 5th metatarsal base prominence may lead to full thickness soft tissue defects. Surgical intervention to remove dead/infected tissue may result in loss of peroneus brevis insertion and eversion strength. Tibialis anterior and tibialis posterior can increase varus deformity, perpetuating stress on the lateral column. The purpose of this study is to present a technique for soft tissue coverage by using local foot flaps for limb salvage in patients who are not candidates for major reconstruction.

Methodology

Procedures

86M with right BKA presented with left lateral midfoot wound with 5th metatarsal base bone exposed. The patient is a frail, household ambulator - not deemed a candidate for reconstructive surgery (tendon or free tissue transfer). We opted for limb salvage with local flaps. Angiogram showed patent posterior tibial and peroneal arteries. Flexor digitorum brevis (FDB) and abductor digiti minimi (ADM) muscles are in close proximity of the defect and are both supplied by branches of the posterior tibial artery. An incision distal to the wound along the glabrous junction of the 5th metatarsal was made to expose FDB and ADM muscles. We reflected FDB to allow for 180 degree rotation while maintaining doppler sound. The ADM muscle pedicle was dopplered out and the muscle reflected and lateralized.

Results

At 2 years, patient continues to ambulate with cane and prosthetic.

Discussions

Patients with decreased baseline function or poor surgical candidates for reconstruction may benefit from local flaps for soft tissue coverage as options for limb salvage.

Format Case Study

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tiffanie Liu, DPM	tiffanie.liu@medstar.net	I/We have nothing to disclose	
Liliya Parkman, DPM	liliya.parkman@medstar.net	I/We have nothing to disclose	
Jonathan Furmanek, DPM	jonathan.furmanek@medstar.net	I/We have nothing to disclose	
Aria Mansoori, DPM	axm120230@gmail.com	I/We have nothing to disclose	
Jayson Atves, DPM, FACFAS	jayson.atves@medstar.net	I/We have nothing to disclose	
Christopher Attinger, MD	christopher.attinger@medstar.net	I/We have nothing to disclose	

Title

Rare case of a fibroma of a tendon-sheath of the fourth toe: A case report

Submit Date

07/31/2023

Correspondent

Last Name: Nguyen
 Full Name: Thanh Thao T Nguyen, DPM, MPH Email: tnguye37@bidmc.harvard.edu
 Practice/Company/Residency Program: BIDMC

Authors

Author 1: Thanh Thao T Nguyen, DPM, MPH Author 2: Glen Nie
 Author 3: John Giurini, DPM, FACFAS Author 4: Usman Aleem, DPM
 Author 5: Thuy Trinh H. Nguyen Author 6:
 Author 7: Author 8:

Purpose

Fibroma of the tendon sheath (FTS) is a rare, benign soft tissue tumor, manifests as a painless, slow-growing mass with strong attachment to tendon sheath. FTS involving the toe has been reported in less than 10 cases. This case aims to bring attention to this uncommon FTS as a potential cause of an isolated toe mass.

Methodology

Procedures

We report on a rare case of FTS in a 61-year old healthy male with an indolent, slow-growing subcutaneous mass resulting in progressive swelling and joint stiffness, without history of trauma. It circumferentially encompassed the 4th toe. MRI showed iso-intense signals to muscles on T1-weighted images and low-intense signals to muscles on T2-weighted images. Core needle biopsy was performed, consistent with FTS. This was followed by local excision.

Results

The tumor was a dense, pink-tan, multi-lobulated soft tissue fibrous mass, measuring 4.0 x 3.5 x 1.3 cm, adhering to the EDL. Histopathology revealed a paucicellular dense fibroblastic lesion with extensive stromal hyalinization, consistent with fibroma of tendon sheath. Latest follow-up at 18 months shows no evidence of recurrence.

Discussions

FTS involving the toe has been reported in less than 10 cases. The pathogenesis is unclear. It might be misdiagnosed as giant cell tumor of tendon sheath, nodular fasciitis, or fibrous histiocytoma. Treatment is local excision of the mass. Malignant transformation has never been described. This case is reported to highlight this rare soft tissue tumor of the tendon sheath as a possible cause of an isolated mass of the toe.

Format

Case Study

Case Rpt Followup

18

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Thanh Thao T Nguyen, DPM, MPH	tnguye37@bidmc.harvard.edu	I/We have nothing to disclose	
Glen Nie	jiabaonie@gmail.com	I/We have nothing to disclose	
John Giurini, DPM, FACFAS	jgiurini@bidmc.harvard.edu	I/We have nothing to disclose	
Usman Aleem, DPM	ualeem@bidmc.harvard.edu	I/We have nothing to disclose	
Thuy Trinh H. Nguyen	tnguye37@bidmc.harvard.edu	I/We have nothing to disclose	

Title

Lower Limb Peripheral Nerve Reset Neurectomy with End-to-Side Nerve Supercharging for Treatment of Foot and Ankle Peripheral Nerve Injury

Submit Date 08/09/2023

Correspondent

Last Name: Owor
 Full Name: Remmy S. Owor, DPM Email: sjhremmy.owor@gmail.com
 Practice/Company/Residency Program: Ascension Saint Joseph-Chicago

Authors

Author 1:	Remmy S. Owor, DPM	Author 2:	David Warciak, DPM
Author 3:	Ersta P. Ferryanto, DPM	Author 4:	Stephanie A. Oexeman, DPM, AACFAS
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Chronic pain syndromes are complications of foot and ankle surgery, and those undergoing revision procedures are at increased risk. Traditional treatments of chronic pain syndromes largely target symptomatic relief. We describe the successful application of multiple technique micro-nerve procedures for the definitive treatment of peripheral pain syndromes.

Methodology

Procedures The patient is a 42 year old female presenting with hyperesthesia, chronic pain, numbness, after repeated hallux valgus correction surgeries. She failed conservative management course. Nerve injury was confirmed via ultrasound guided nerve injections and EMG/NCV studies. Patient agreed to proceed with surgical interventions described below. Procedure: Superficial peroneal nerve reset neurectomy - neurectomy with conduit-allograft-conduit assisted repair, cutaneous nerve branch target nerve muscle transfer, deep peroneal nerve neurectomy with end to side supercharged nerve transfer to superficial peroneal nerve, and tibial nerve external neurolysis

Results Description of reset neurectomy, end-to-side supercharge nerve transfer, nerve decompression, and targeted muscle reinnervation procedure for the successful treatment of chronic pain syndrome in the foot and ankle.

Discussions Traditional treatments of chronic pain syndromes are considered inadequate when new procedures become efficacious. Considerations include comprehensive history and physical as well as diagnostic studies before proceeding with peripheral nerve surgery. However, we believe that peripheral nerve surgery techniques are able to treat chronic nerve pain of the foot and ankle.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Neurological/Peripheral Nerve Disorders

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Remmy S. Owor, DPM	sjhremmy.owor@gmail.com	I/We have nothing to disclose	
David Warciak, DPM	sjhdavid.warciak@gmail.com	I/We have nothing to disclose	
Ersta P. Ferryanto, DPM	sjhersta.ferryanto@gmail.com	I/We have nothing to disclose	
Stephanie A. Oexeman, DPM, AACFAS	s.oexeman@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Integra and Orthofix

Title Surgical Treatment of Congenital Vertical Talus; A Case Report

Submit Date 07/31/2023

Correspondent Last Name: Smith
Full Name: Christopher M Smith, DPM, PGY-3
Practice/Company/Residency Program:
Email: csmithdpm@gmail.com
Hunt Regional Medical Center

Authors Author 1: Christopher M Smith, DPM, PGY-3
Author 2: Joe R Galvan, DPM, PGY-3
Author 3: Kevin J Huntsman, DPM
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose The purpose of this case report is to evaluate the clinical and surgical treatment of a 7 year old male patient with a rare case of bilateral congenital vertical talus. In the following case review, we will be showcasing the utility of surgical management and how it can be favored over non-operative approaches, such as the traditional serial casting methods.

Methodology

Procedures A 7 year old male patient underwent a staged procedure with initial soft tissue release, TAL and pinning of the TN and ST joints with 0.062 k wires. Followed by arthroereisis placement 6 weeks after the initial procedure. Preoperative x-rays revealed a plantar flexed talus with talar axis parallel to the axis of the tibia.

Results At 1 year follow up, this patient is ambulating pain free and completely satisfied with the results of this reconstructive procedure and care. The radiographs showed complete correction of the vertical alignment of the Talus and placed the overall talar declination angle to approximately 20 degrees and the calcaneal inclination to approximately 22 degrees. Biomechanical evaluation revealed a rectus-slight inversion hindfoot and rectus-slight eversion of the forefoot in relation to the rearfoot. He is now able to walk, run, squat, jump without pain or complications.

Discussions We believe a staged procedure consisting of an Achilles tendon lengthening, soft tissue release, pinning the TN and subtalar joint followed by an arthroereisis placement is a reliable procedure of choice for correcting a congenital vertical talus that has failed conservative treatment.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Christopher M Smith, DPM, PGY-3; Joe R Galvan, DPM, PGY-3; and Kevin J Huntsman, DPM.

Title

The Use of Ilizarov External Fixator Device for Tibial Lengthening in a Tibiocalcaneal Arthrodesis Due to Loss of Talus in Charcot Neuroarthropathy

Submit Date

08/31/2023

Correspondent

Last Name: Farhan
 Full Name: Mohammed A. Farhan, DPM Email: drfarhan@afacutah.com
 Practice/Company/Residency Program: Advanced Foot and Ankle Center

Authors

Author 1: Mohammed A. Farhan, DPM Author 2: Amanda Khoury, DPM, AACFAS
 Author 3: David Seegmiller, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The rearfoot is the second most commonly affected location for Charcot Neuroarthropathy(CN). Often rearfoot CN is associated with talar destruction causing a limb length discrepancy(LLD). The LLD causes an increased rate of pressure ulcers to the shorter limb. Traditionally a femoral head allograft(FHA) has been used to address LLD but they have shown to have high complication rates. This case used an alternative method to address the LLD in a patient with CN

Methodology

Procedures

51yF with left ankle charcot underwent a tibiocalcaneal arthrodesis with tibial lengthening and flipper foot osteotomy for her LLD after losing the talus to charcot and an infection. She also had a mid and hindfoot ulcer

Results

Patient underwent a 25mm lengthening of the tibia over 5 months paired with a tibiocalcaneal arthrodesis at initial frame application. External fixator was replaced with a hindfoot nail at 5months. The ulcer healed while in the external fixator and remains healed 20 months postoperatively with successful fusion at the tibiocalcaneal and lengthening sites

Discussions

Tibiocalcaneal arthrodesis has been the procedure of choice to create a rigid stable hindfoot to allow for ambulation in rearfoot charcot. rearfoot charcot has a high incidence of talar loss and FHA and other allografts have shown to fail at a high rate, in not only charcot but healthy patients. The tibial lengthening allowed for direct tibiocalcaneal arthrodesis, which has a higher arthrodesis rate, and used the patient's own healthy bone to gradually address the LLD, and allowed soft tissue structures to adapt to the lengthening

Format

Case Study

Case Rpt Followup

20

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Mohammed A. Farhan, DPM	drfarhan@afacutah.com	I/We have nothing to disclose	
Amanda Khoury, DPM, AACFAS	fellow@afacutah.com	I/We have nothing to disclose	
David Seegmiller, DPM, FACFAS	drdseegmiller@afacutah.com	I/We have nothing to disclose	

Title

Beyond Lisfranc: A Systematic Surgical Approach for Complex Midfoot Trauma

Submit Date

08/26/2023

Correspondent

Last Name: Pritchett

Full Name: Blake E Pritchett, DPM

Email: bpritchdpm@gmail.com

Practice/Company/Residency Program:

University of Louisville

Authors

Author 1: Blake E Pritchett, DPM

Author 2: Garrett P Wireman, DPM

Author 3: Alexander J Schultz, DPM

Author 4: Alden Simmons, DPM

Author 5: David Seligson, MD

Author 6: Nicholas J Laco, DPM

Author 7:

Author 8:

Purpose

The purpose of this seven-patient series is to present a 5-step approach used at a Level I Trauma Center for the surgical management of patients presenting with severely comminuted and unstable Lisfranc injuries.

Methodology

Procedures

This is a study of seven patients who presented to our Level I Trauma center with high-energy midfoot injuries and were treated with the same 5-point surgical approach: primary medial column stabilization, longitudinal traction of foot, reestablishment of 2nd cuneiform as keystone, 2nd metatarsal restoration, percutaneous pinning of lateral column, if unstable. Literature Review: Cain (1981) initial algorithm; Cenatiempo (2019) published on similar injury patterns and treatment; Kadow (2014) staged these procedures with external fixation; Boffeli (2014) reported a single case with similar approach -- our study adds 7 cases; Perez (2021) computational analysis verifying success rates between approaches

Results

Five of the seven patients made full recovery with an average return to activity of 9.4 weeks. One patient went on to TMA due to infection from the initial injury, but has also returned to full activity. One of the seven patients did not recover due to noncompliance with ambulation of the postoperative limb. All patients have >1 year follow up.

Discussions

Our study adds to existing research in this field by (a) providing a series of severe Lisfranc injuries with different injury patterns and fixation techniques with an identical surgical approach, (b) advocating for use of different medial column reduction methods to restore length and stability, (c) advocating for use of staged management of these injuries where soft tissue is compromised.

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Blake E Pritchett, DPM	bpritchdpm@gmail.com	I/We have nothing to disclose	
Garrett P Wireman, DPM	garrett.wireman@louisville.edu	I/We have nothing to disclose	
Alexander J Schultz, DPM	alexanderschultzdpm@gmail.com	I/We have nothing to disclose	
Alden Simmons, DPM	aldensimmons8@gmail.com	I/We have nothing to disclose	
David Seligson, MD	david.seligson@louisville.edu	I/We have nothing to disclose	
Nicholas J Laco, DPM	nicholas.laco@louisville.edu	I/We have nothing to disclose	

Title Percutaneous distal osteotomy of lesser metatarsals for Chronic Non-Healing 2nd Metatarsal Head Ulceration

Submit Date 08/02/2023

Correspondent
 Last Name: Alikhani-Koopaei
 Full Name: Amir, P, Alikhani-Koopaei, DPM Email: tuh48938@temple.edu
 Practice/Company/Residency Program: LECOM Health/Millcreek Community Hospital

Authors
 Author 1: Amir, P, Alikhani-Koopaei, DPM Author 2: Anthony, D, Colonna, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Distal osteotomy of the lesser metatarsals can be a viable solution for a chronic non-healing ulceration located at the head of the second metatarsal.

Methodology

Procedures

An 83-year-old female underwent partial amputation of the first ray by another podiatrist, leading to concern about a non-improving ulcer on the right sub-metatarsal 2. Despite four months of local wound care and various treatments such as offloading boot, skin substitute, total contact cast, and collagen powder, the wound did not show improvement. To address the wound, the patient underwent a surgical procedure called distal floating osteotomy of metatarsals 2-5 via a minimally invasive approach.

Results The patient's ulcer healed within three weeks and remained healed during the most recent twelve-month follow-up.

Discussions

In conclusion, distal floating osteotomy can be a reliable option for treating resistant and recurrent ulcerations located plantar to the metatarsal heads in neuropathic patients. It allows the affected metatarsal head to be elevated and settle into its new position, leading to a rapid response of the plantar soft tissue to off-loading. This results in ulcer healing, elimination of callus, and the restoration of normal skin in the affected area. The procedure is relatively simple and quick, and it can help prevent further breakdown of ulcers and future amputations.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Amir, P, Alikhani-Koopaei, DPM	tuh48938@temple.edu	I/We have nothing to disclose	
Anthony, D, Colonna, DPM, FACFAS	colonnaad@gmail.com	I/We have nothing to disclose	

Title

Geometric anatomy of minimally invasive hallux valgus surgery fixation: a case report.

Submit Date

08/04/2023

Correspondent

Last Name: Meyr
 Full Name: Andrew J. Meyr, DPM FACFAS Email: ajmeyr@gmail.com
 Practice/Company/Residency Program: Temple University

Authors

Author 1: Asher Cherian, DPM Author 2: Kwasi Y. Kwaadu, DPM FACFAS
 Author 3: Andrew J. Meyr, DPM FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The post-operative radiographs of minimally invasive hallux valgus fixation techniques have a different visual appearance than more traditional constructs. In fact, it can often appear that the resultant anatomy is “more metal than metatarsal”. The objective of this investigation was to perform a geometric analysis of the fixation of minimally invasive hallux valgus surgery.

Methodology

Procedures

We identified subject GT who underwent successful minimally invasive hallux valgus surgery to include fixation with 2 cannulated 4.0mm screws in the first metatarsal. A uniplanar perpendicular osteotomy was performed 20.0mm proximal to the first metatarsal-phalangeal joint. The lateral screw was inserted 11.6mm into the capital fragment, while the medial screw was inserted 15.6mm into the capital fragment. What made subject GT relatively unique was history of performance of a foot CT scan allowing for calculation of the height (18.3mm) and width (15.2mm) of the first metatarsal 20mm proximal to the first metatarsal-phalangeal joint. Therefore, calculation of both the cross-sectional area of the first metatarsal at the level of the osteotomy and the volume of the capital fragment could be performed assuming an approximate cylindrical shape to the capital fragment.

Results

The two 4.0mm screws were 11.5% [25.1/218.4] of the cross-sectional area of the metatarsal osteotomy and 7.8% [341.6/4367.1] of the volume of the capital fragment.

Discussions

The results of this investigation provide evidence that, despite a relatively unique radiographic appearance, the hardware construct for minimally invasive hallux valgus correction involves a small percentage of the cross-sectional anatomy of the osteotomy and volume of the capital fragment.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Asher Cherian, DPM	asher.cherian@tuhs.temple.edu	I/We have nothing to disclose	
Kwasi Y. Kwaadu, DPM FACFAS	kwasi.kwaadu@temple.edu	I/We have nothing to disclose	
Andrew J. Meyr, DPM FACFAS	ajmeyr@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ACFAS, AACPM, ABFAS, APMA, COTH, CPME, PPMA
		Member of a medical publication or editorial governing board	JFAS

Title**Total Ankle Arthroplasty with Custom 3D Printed Talus: A Case Study****Submit Date**

08/06/2023

Correspondent

Last Name: Issac
 Full Name: Akhila Email: drissac@prfootandankle.com
 Practice/Company/Residency Program: Nebraska Foot and Ankle Reconstructive Surgery Fellowship

Authors

Author 1: David Waters DPM, FACFAS Author 2: Evan Lenertz DPM, AACFAS
 Author 3: Akhila A Issac DPM Author 4: Ashley Anderson PA-C
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

3D printed implants are a relatively new advancement in foot and ankle reconstruction, which can overcome the pitfalls of universal implants that may not conform to a patient’s specific anatomy. We believe that a custom printed total talus implant designed to articulate with a tibial tray and TAR poly spacer is an appropriate option for a patient with talar collapse and concomitant tibiotalar joint arthritis to retain hindfoot motion and improve pain and quality of life.

Methodology**Procedures**

A 77 year old non-diabetic male presented with chronic left ankle pain after TAR and two revisions. There is subsidence of the talar component of the implant with ankle arthritis and complete loss of the talus on imaging.

Results

No evidence of implant loosening or subsidence and return to pain-free normal function

Discussions

Talar collapse is a major complication of total ankle replacement due to implant subsidence. Solutions to this problem (talectomy, arthrodesis, universal implant) do not come without pitfalls. Issues arise in talectomy with the increased chance of peritalar instability. Arthrodesis results in loss of motion of the peritalar joints. Universal implants fail to meet the demands of the patient in terms of individual anatomy and biological function. This study demonstrates the successful utilization of 3D printed talar implants after 2 failed attempts at revision total ankle arthroplasty to overcome these pitfalls.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
David Waters DPM, FACFAS	pinakafoot@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Paragon28
Evan Lenertz DPM, AACFAS	drlenertz@prfootandankle.com	I/We have nothing to disclose	
Akhila A Issac DPM	drissac@prfootandankle.com	I/We have nothing to disclose	
Ashley Anderson PA-C	aaanderson@prfootandankle.com	I/We have nothing to disclose	

Title **Osteogenesis Salvage Options for Large Segmental Bone Defects following Total Ankle Replacement Explant**

Submit Date 08/18/2023

Correspondent

Last Name: Page
 Full Name: Trevor S. Page, DPM Email: tspageaz@gmail.com
 Practice/Company/Residency Program: Virginia Mason Franciscan Health

Authors

Author 1: Trevor S. Page, DPM Author 2: Oliver A. Knauer, DPM
 Author 3: Todd M. Chappell, DPM, FACFAS Author 4: Byron L. Hutchinson, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Surgeons attempting salvage hindfoot/ankle arthrodesis following explant of failed total ankle prosthesis must address large osseous defects in order to prevent future complications of limb length discrepancy. Current literature includes multiple techniques to address these challenging cases, including revision total ankle arthroplasty and revision tibiototalocalcaneal (TTC) arthrodesis with structural allografts or metallic implants. Minimal literature exists regarding application of Ilizarov and other osteogenesis techniques in the setting of revision ankle arthrodesis (TAA) following total ankle replacement (TAR) explant.

Methodology

Procedures

A single-institution, retrospective review of six cases of TTC arthrodesis with critical-sized segmental bone defects following TAR prosthesis explant was performed. Demographic, radiographic and outcome data were analyzed. The average follow-up was 35.35 ± 32.31 months.

Results

Procedures included two TTC arthrodesis with metallic implant and retrograde intramedullary nail, three TTC arthrodesis with distal tibial corticotomy distraction osteogenesis with external fixation, and one TTC fusion with Masquelet induced membrane (MIM) technique with external fixation and retrograde intramedullary nail.

Discussions

All 6 cases achieved stable TTC union with osseous consolidation spanning the fusion site and a clinically stable, functional limb. One patient required removal of retrograde intramedullary nail due to tibial shaft fracture, with antegrade tibial intramedullary nail revision, but maintained radiographic TTC fusion without internal hardware.

Format

Case Study

Case Rpt Followup

35

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Trevor S. Page, DPM	tspageaz@gmail.com	I/We have nothing to disclose	
Oliver A. Knauer, DPM	oliverknauer100@gmail.com	I/We have nothing to disclose	
Todd M. Chappell, DPM, FACFAS	todd.chapps@gmail.com	I/We have nothing to disclose	
Byron L. Hutchinson, DPM, FACFAS	highlinef@aol.com	I/We have nothing to disclose	

Title **Metal Allergy and the Use of Custom Implants in Primary Total Ankle Replacement: A Case Study**

Submit Date 08/08/2023

Correspondent

Last Name:	Ekladios	Email:	josh.eklad76@gmail.com
Full Name:	Joshua	Practice/Company/Residency Program:	Florida Orthopedic Foot & Ankle Center

Authors

Author 1:	Joshua M. Ekladios DPM MS	Author 2:	Jay S. Badell DPM AACFAS
Author 3:	James M. Cottom DPM FACFAS	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Patients with metal allergy often go undiagnosed prior to surgery. This can lead to increased complication rates, especially with orthopedic implants as many are composed of variable metals. The purpose of this case study is to highlight the use of pre-operative allergy testing in patients with known history of metal allergy, and to report in literature the success of custom printed orthopedic total ankle implants manufactured without the use of traditional metal compositions.

Methodology

Procedures The patient originally presented to the clinic with post-traumatic end-stage ankle arthritis after a skydiving accident 20 years prior. She had been treated conservatively for many years with minimal success before referral to our institution. Appropriate imaging was obtained prior to surgery to assess for periarticular bone quality. The patient was found to be an excellent candidate for ankle replacement surgery. The patient did report a history of metal allergy complications with prior total knee arthroplasty. Referral was then made to an Allergist for comprehensive metal patch testing, which revealed positive allergies to cobalt, nickel, and palladium. Industry partners with custom printing capabilities were contacted and a cobalt-free titanium-majority implant was manufactured.

Results The patient had uncomplicated recovery with partial weightbearing at post-op week 3 in a short leg cast. Follow-ups at appropriate intervals over 12 months were uneventful.

Discussions Very few cases of metal sensitivity to total ankle replacement exist in the literature. However, when addressed with proper pre-operative planning and industry collaboration, these patients can expect favorable outcomes with custom printed implants.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joshua M. Ekladios DPM MS	josh.eklad76@gmail.com	I/We have nothing to disclose	
Jay S. Badell DPM AACFAS	jaybadell@gmail.com	I/We have nothing to disclose	
James M. Cottom DPM FACFAS	jamescottom300@hotmail.com	I/We have nothing to disclose	

Title

Pyoderma Grangrenosum: A case study with multiple surgical debridement's and application of ovine forestomach matrix graft as alternative to below knee amputation

Submit Date

08/28/2023

Correspondent

Last Name: Mason
 Full Name: Avery, J, Mason DPM Email: amasondpm@gmail.com
 Practice/Company/Residency Program: Ascension St. John

Authors

Author 1: Avery, J, Mason DPM Author 2: Randy, K, Kaplan, DPM, FACFS, FASPS
 Author 3: Jimmy, C, Haouilou, MD, FACS, RPVI Author 4: Joshua, D, Rhodenizer, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Limb salvage utilizing ovine forestomach matrix in surgical management of severe pyoderma gangrenosum.

Methodology

Procedures

Pyoderma gangrenosum (PG) is a rare, inflammatory skin disorder characterized by rapidly progressing, painful ulcers with irregular, undermined edges. Diagnosis is mainly clinical, skin biopsies can be supportive, revealing neutrophilic infiltrates without vasculitis or infection. The exact cause of PG remains unclear, but it's believed to be an autoimmune-driven disorder involving genetic predisposition, immune dysregulation, and environmental triggers. Managing PG is challenging due to its unpredictable course and potential resistance to treatment. Therapeutic strategies aim to control systemic inflammation and address underlying comorbidities, however management of the dermatological lesions remains challenging. Topical and systemic corticosteroids, immunosuppressive agents, and biologic therapies targeting TNF- α or IL-1 β have been used with varying success-may impact healing though.

Results

Suffering from an extensive PG lesion, the patient was recommended to undergo a below knee amputation multiple times. With a multidisciplinary clinical team, the patient underwent multiple surgical debridement's and applications of ovine forestomach matrix graft and ultimately achieved epithelialization of the lesion, noted improved pain, and was able to ambulate. No evidence of wound recurrence at the 12-month follow-up.

Discussions

PG can have significant implications for patient quality of life. Understanding its pathogenesis has led to the development of targeted therapies, but treatment remains challenging and requires a multidisciplinary approach. Surgical debridement with application of ovine forestomach matrix and management with a multi-disciplinary team can be an effective treatment option for the most extensive PG patients.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Avery, J, Mason DPM	amasondpm@gmail.com	I/We have nothing to disclose	
Randy, K, Kaplan, DPM, FACFS, FASPS	rklions2@gmail.com	I/We have nothing to disclose	
Jimmy, C, Haouilou, MD, FACS, RPVI	jimmy.haouilou@ascension.org	Consultant/Advisor/Speaker (List all affiliations)	Medtronic Inc.
Joshua, D, Rhodenizer, DPM, FACFAS	joshua.rhodenizer@ascension.org	I/We have nothing to disclose	

Title A Rare Case of Symphalangism of the Hallux Interphalangeal Joint**Submit Date** 08/09/2023**Correspondent**

Last Name: Schneiders

Full Name: Hannah R. Schneiders, DPM

Email: hrschneiders@gmail.com

Practice/Company/Residency Program:

The Pediatric Orthopedic Center

Authors

Author 1: Hannah R. Schneiders, DPM

Author 2: Joslin L. Seidel, DPM, AACFAS

Author 3: Mark E. Solomon, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

This publication presents a unique case of a first interphalangeal joint coalition in a 6-year-old female patient.

Methodology**Procedures**

A 6-year-old healthy female presented with a painful bump on her right hallux, limited range of motion, and tenderness on palpation. Radiographs indicated a potential osseous irregularity, suggesting an old avulsion fracture or coalition. Conservative treatment failed to improve symptoms, leading to surgical intervention. Intraoperatively, an extra-articular osseous coalition was found and successfully resected.

Results

The immediate postoperative period was complicated by an allergic reaction to the chlorhexidine prep, which promptly resolved upon removal of the prep with rubbing alcohol. One week after surgery, the patient transitioned from a surgical shoe to a supportive shoe. At the one-year follow-up, she remained pain-free, with full range of motion in the affected joint, and no evidence of recurrence.

Discussions

Symphalangism is a rare syndrome characterized by joint fusion in the hands and/or feet, with proximal interphalangeal joint involvement being more common. Flatt and Wood classified symphalangism into different types, while Baek further subdivided true symphalangism into grades based on joint fusion extent. Distal symphalangism of the fifth toe is the most prevalent form, rarely affecting other toes or the hallux. Clinically, symphalangism presents as joint stiffness and immobility, leading to various foot pathologies and an increased risk of osteoarthritis. Awareness of pedal symphalangism is crucial, as it is seldom reported, and surgical resection has shown successful outcomes for patients.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hannah R. Schneiders, DPM	hrschneiders@gmail.com	I/We have nothing to disclose	
Joslin L. Seidel, DPM, AACFAS	Joslin.L.Seidel@gmail.com	I/We have nothing to disclose	
Mark E. Solomon, DPM, FACFAS	drsolomon@advfoot.com	I/We have nothing to disclose	

Title **The Use of an Acellular Wound Matrix For Mohs Surgical Reconstruction: A Case Series**

Submit Date 08/09/2023

Correspondent

Last Name:	Ansert	
Full Name:	Elizabeth	Email: eaansert@gmail.com
Practice/Company/Residency Program:	Thibodaux Regional Health Systems	

Authors

Author 1:	Elizabeth Ansert	Author 2:	Paul J. Kim
Author 3:	James Thornton	Author 4:	Amy Du
Author 5:	Alexandra Thornton	Author 6:	
Author 7:		Author 8:	

Purpose The purpose of this study is to examine the use of an acellular wound matrix for surgical reconstruction after a Mohs procedure.

Methodology

Procedures Acellular wound matrices have been used throughout the literature on a large range of soft tissue deficits, including soft tissue reconstruction in plastic surgery, in diabetic foot ulcerations, and after oncological surgical resection of lesions. However, no literature has been found for the use of these matrices for lower extremity Mohs procedure reconstructions. This case series examines 29 patients who received an acellular wound matrix after Mohs resection of a skin lesion.

Results 22 (75.9%) were noted to have complete epithelialization at their last follow up. The average follow up was 140 days and the mean wound size was 4.4 x 4.0 x 0.8cm. Total time to healing was 139 days from Mohs procedure. There were 8 complications during the healing process, including 4 infections, 4 lesion recurrences, and 1 graft failure. 22 (75.9%) patients also underwent adjunct procedures, including split thickness skin grafts and debridements. Almost all patients with outcome information available were noted to be satisfied with the results and returned to daily activity and work without restriction.

Discussions Using a skin substitute for Mohs surgical reconstruction is a viable option for lesions in the lower extremity to fill the soft tissue void and preserve function. Patients were noted to have good healing rates at the time of follow up and most were able to return to their pre-operative level of function.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Elizabeth Ansert	eaansert@gmail.com	I/We have nothing to disclose	
Paul J. Kim	Paul.Kim@utsouthwestern.edu	I/We have nothing to disclose	
James Thornton	James.Thornton@utsouthwestern.edu	I/We have nothing to disclose	
Amy Du	YueAmyDu00@outlook.com	I/We have nothing to disclose	
Alexandra Thornton	thornton.m.alexandra@gmail.com	I/We have nothing to disclose	

Title

Staged Revisional Total Ankle Replacement in the Setting of Delayed Periprosthetic Joint Infection: A Case Report

Submit Date 08/30/2023

Correspondent

Last Name: Singh

Full Name: Ravnik Singh, DPM

Practice/Company/Residency Program:

Email: ravnik.singh@corewellhealth.org

Corewell Health - Wayne

Authors

Author 1: Ravnik Singh, DPM

Author 3:

Author 5:

Author 7:

Author 2: Lawrence Fallat, DPM FACFAS

Author 4:

Author 6:

Author 8:

Purpose

Periprosthetic joint infections (PJI) are rare but potentially devastating complications associated with total ankle replacement (TAR). There is no consensus standard of care for treatment, however appropriate management of this complication is crucial to improving patient outcomes and maintaining long-term functionality.

Methodology

Procedures

A 50-year-old male presented to clinic 3 years following left TAR with a chief complaint of pain, erythema, and edema to the left ankle. Radiographs revealed distal tibial periostitis and tibial tray loosening. The patient subsequently underwent incision and drainage with multiple bone biopsies of the distal tibia. Following the procedure, the patient was admitted with a consult placed to infectious disease for antibiotics. The bone biopsies were negative for osteomyelitis and the patient continued with outpatient follow-up. 2 months later, new radiographs demonstrated further displacement of the tibial tray and the patient underwent a second surgery consisting of tibial tray removal, insertion of a PMMA antibiotic spacer, and distal tibial bone biopsy. Once again, the biopsy was negative, and the patient underwent another course of antibiotics per ID recommendations.

Results

Approximately 6 months later, the patient remained free of signs of infection, and underwent revisional TAR with a long-stemmed tibial component. Following revisional TAR, the patient has maintained pain-free ROM of his ankle joint and remained free from infection recurrence to date.

Discussions

PJI is a rare albeit increasingly problematic potential complication in the TAR patient. With the rate of TAR procedures increasing, the podiatric surgeon must be equipped to diagnose and manage PJI should it be encountered.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ravnik Singh, DPM	ravnik.singh@corewellhealth.org	I/We have nothing to disclose	
Lawrence Fallat, DPM FACFAS	lfallatdpm@aol.com	I/We have nothing to disclose	

Title **A Novel Approach to Stage 2/3 Hallux Rigidus with Cheilectomy, Osteotomy, and Allograft**

Submit Date 08/30/2023

Correspondent

Last Name: Misra
 Full Name: Anita Misra, DPM, MS Email: anitaxmisra@gmail.com
 Practice/Company/Residency Program: Memorial Health Care System

Authors

Author 1: Anita Misra, DPM, MS Author 2: Naveed Chippa, DPM, MS
 Author 3: Michael A. Rivera, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This study aims to investigate a novel approach to the management of stage 2 and 3 hallux rigidus by performing a cheilectomy in conjunction with a decompressive osteotomy as well as addressing osteochondral defects if present. Hallux rigidus may be caused by any condition that limits the ability of the first metatarsal to plantarflex in the late stance phase of gait (1). The addition of a decompressive osteotomy in addition to performing a cheilectomy shows promise as an adjunct. Additionally, there are few studies showing the use of osteochondral autografts in the first metatarsal.

Methodology

Procedures

8 patients (n= 10 feet) who underwent cheilectomy with decompressive wedge osteotomies were included in this study. In patients who were found to have an osteochondral cyst to the first metatarsal head, an allograft was placed for lesions less than 1 cm in size. These procedures took place from 2017-2022, with a minimum of 12 months follow up for each patient.

Results

We obtained pre-operative and post-operative VAS and AOFAS forefoot scores to analyze the improvement in patient reported symptoms. Patients showed significant improvement in both scores following the procedure.

Discussions

This technique for approaching stage 2 and 3 hallux rigidus shows significant improvement in patient reported subjective as well as objective symptoms and should be considered when addressing this deformity. In addition, in the case of osteochondral deficits in the first metatarsal head, the use of an allograft or autograft should be considered as well.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Anita Misra, DPM, MS	anitaxmisra@gmail.com	I/We have nothing to disclose	
Naveed Chippa, DPM, MS	naveedchippa@gmail.com	I/We have nothing to disclose	
Michael A. Rivera, DPM, FACFAS	drrivera@flafootandankle.com	I/We have nothing to disclose	

Title

Orthogonal Plating for Nonunion Jones Fracture in Collegiate Athlete: Case Report

Submit Date

08/14/2023

Correspondent

Last Name: Holte

Full Name: Nathaniel, M, Holte, DPM

Email: nathanielholte@gmail.com

Practice/Company/Residency Program:

Iowa Methodist Medical Center

Authors

Author 1: Eric A Barp, DPM, FACFAS

Author 2: Alivia R Passet, DPM, PGY-III

Author 3: Nathaniel M Holte, DPM, PGY-II

Author 4: Erica W Reed, DPM, PGY-I

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Jones fractures are debilitating injuries with treatments having a high complication rate consisting of non-unions and refracturing. Collegiate athletes have a tendency to place increased external forces on the 5th metatarsal. This case report documents the treatment of a complicated nonunion Jones fracture with refracturing and the final surgical procedure resulting in the patient's successful return to play.

Methodology

Procedures

Surgical complication rates for Jones fractures treated with IM fixation remain high at 19%, including painful hardware, nonunion, delayed union, refracturing and infection. For athletes, the nonunion and refracture rates have been reported between 4-12%, with some studies reporting a refracture rate as high as 30% for elite level athletes. This case report follows a collegiate athlete undergoing orthogonal plating for a nonunion Jones fracture with refracturing. Dual 90-degree plating provided a rigid construct that allowed full return to play at 6 weeks.

Results

Collegiate athlete with acute on chronic Jones fracture returns to play at 6 weeks after revision surgery.

Discussions

Jones fractures can be difficult to treat especially in high level athletes who exert explosive side to side motion. Intramedullary screws do not provide stability in the coronal plane and athletes are prone to refracturing and nonunions. Orthogonal plating was chosen due to initial complications. This technique provides increased physiological stability compared to the IM screw or single plantar plating. Foot and Ankle Surgeons should consider this construct for complicated revision Jones fractures in athletes.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Eric A Barp, DPM, FACFAS	ebarp@iowaclinic.com	I/We have nothing to disclose	
Alivia R Passet, DPM, PGY-III	alivia.passet@unitypoint.org	I/We have nothing to disclose	
Nathaniel M Holte, DPM, PGY-II	nathaniel.holte@unitypoint.org	I/We have nothing to disclose	
Erica W Reed, DPM, PGY-I	erica.reed@unitypoint.org	I/We have nothing to disclose	

Title **A Unique Case of Pediatric Calcaneal Osteochondroma Causing Subtalar Joint Coalition**

Submit Date 08/21/2023

Correspondent
 Last Name: Thompson
 Full Name: Rosemary, J, Thompson, DPM Email: rosie.thompson@gundersenhealth.org
 Practice/Company/Residency Program: Gundersen Health System

Authors
 Author 1: Rosemary J. Thompson, DPM Author 2: Jonathan B. Peterson, MD
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Osteochondromas are a common benign tumor, however there are few reported cases arising from the calcaneus. To our knowledge, there has been only one other reported case of calcaneal osteochondroma causing subtalar joint coalition reported in the literature, which was reported in an adult male. This pediatric case study aims to document and explore the clinical identification and surgical management of this unique presentation of osteochondroma.

Methodology

Procedures An 11-year-old male with a three-year history of progressively worsening right foot pain refractory to conservative treatment. Pertinent exam findings include a rigid flat foot with decreased subtalar joint range of motion, tenderness on palpation inferior to the medial malleolus. CT revealed a fragmented ossification in the area of the medial facet. Surgical excision was performed with intraoperative findings of an osseocartilaginous mass located within the medial facet.

Results The histopathological analysis found viable bone with hyaline cartilage cap, consistent with an osteochondroma. Post-operatively, the patient had significant improvement in pain and subtalar joint range of motion.

Discussions Although osteochondromas of the foot, particularly the calcaneus, are rare, they should be considered in differential diagnoses of pediatric foot pain, even when a coalition is suspected. Many osteochondromas are asymptomatic, however in our case, the patient reported pain and loss of function requiring complete resection of the joint occupying mass. When the cartilage cap is resected in total, like in our case, the recurrence rate is much lower. To date, there has been no recurrence of osteochondroma in this patient.

Format Case Study

Case Rpt Followup 15

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rosemary J. Thompson, DPM	rosie.thompson@gundersenhealth.org	I/We have nothing to disclose	
Jonathan B. Peterson, MD	jbpeters@gundersenhealth.org	I/We have nothing to disclose	

Title Acute Vs. Gradual Correction of Charcot**Submit Date** 08/17/2023**Correspondent**

Last Name: Mohapatra

Full Name: Diksha

Email: diksha.mohapatra@gmail.com

Practice/Company/Residency Program:

Our Lady of Lourdes Memorial Hospital

Authors

Author 1: Diksha Mohapatra, DPM

Author 2: Suril Amin, DPM

Author 3: Genise Kennedy, DPM

Author 4: Guido LaPorta, DPM, MS, FACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

This case study documents a case of Charcot which can be addressed with acute or gradual correction, key points about each option, and implications each can have on the patient's treatment outcome. Both choices can exhibit challenges for the patient, depending on what stage of Charcot the patient is in, among other factors.

Methodology**Procedures**

This study focuses on a 49-year-old male who has Charcot with wounds and blisters to his right foot that had been treated conservatively. He was immobilized in a below knee cast after an acute flare and requested a long-term solution. Gradual correction is often a two-pronged approach, with external fixation in the primary step that prepares the foot for a rigid implantation of internal fixation as the second step. External fixation primarily maintains reduction, prevents collapse of the foot, aids in soft tissue management, and provides a more rigid form of skeletal stabilization. On 7/5/22, patient underwent right foot gastrocnemius recession, midfoot osteotomy, and external fixator application. On 8/16/22, he underwent right external fixation removal, triple arthrodesis, and midtarsal arthrodesis.

Results

One year follow-up demonstrated that the patient's midtarsal, subtalar, and ankle joints showed excellent anatomical alignment on radiograph. His surgical wounds have healed appropriately and the patient is continuing physical therapy.

Discussions

Although acute correction is historically the chosen method, gradual correction has become a preferred option due to decreased complications and increased patient satisfaction and is often a more optimal reconstructive procedure for complex Charcot patients with multiple comorbidities.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Diksha Mohapatra, DPM	diksha.mohapatra@gmail.com	I/We have nothing to disclose	
Suril Amin, DPM	suril.amin@gmail.com	I/We have nothing to disclose	
Genise Kennedy, DPM	gigibee3@gmail.com	I/We have nothing to disclose	
Guido LaPorta, DPM, MS, FACFAS	glaporta1@mac.com	I/We have nothing to disclose	

Title **Reverse Sural Artery Flap for GSW-Induced Open Calcaneus Fracture and Achilles Tendon Injury**

Submit Date 08/31/2023

Correspondent

Last Name:	Cerda	Email:	Tiffanycerda93@gmail.com
Full Name:	Tiffany, E., Cerda, DPM, MS	Practice/Company/Residency Program:	HCA florida Mercy Hospital/ Barry University

Authors

Author 1:	Arthur E. Desrosier III, MD	Author 2:	Mario Cala, DPM
Author 3:	Tiffany Cerda DPM, MS	Author 4:	Marika Jackson, DPM
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Highlight comprehensive approach in management of a catastrophic lower extremity injury resulting from atraumatic gunshot wound.

Methodology

Procedures Gunshot wounds cause severe bone and soft tissue damage leading to devastating sequela. This case study presents 29-year-old male with no significant past medical history who sustained traumatic GSW, resulting in open calcaneal fracture and substantial loss-of-domain including soft tissue and bony defect. This study demonstrates long-term lower limb salvage involving multiple techniques and multidisciplinary approach. Treatment comprised various strategies: initial calcaneal closed reduction with external fixation, serial debridements and subtotal Achilles tendon excision secondary to MDRO infection. Hyperbaric oxygen therapy and IV antibiotic therapy were utilized to clear the infections. Definitive limb salvage was performed via combined approach with external fixator and staged supercharged reverse sural artery flap; the recipient bed preparation consisted of serial graft applications including autologous adipose derived stem cells.

Results Frame/flap combo limb salvage protocol improved the patient's condition substantially. His calcaneal fracture and soft tissue infections were successfully addressed as result of meticulous surgical procedures, wound care, and HBOT. Frame/flap protocol enabled the patient to regain full weight-bearing capability, and achieved appropriate ROM and strength. Ultimately, patient attained functional recovery with satisfactory gait.

Discussions This case emphasizes complexities of managing gunshot injuries to the lower extremities. It underscores the need for multifaceted approach, involving a range of surgical interventions and a collaborative, multidisciplinary team. Effective coordination and integration of these strategies were pivotal in achieving successful outcomes for the patient's comprehensive rehabilitation.

Format Case Study

Case Rpt Followup 18

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Arthur E. Desrosier III, MD	drarthur@arthurmd.com	Consultant/Advisor/Speaker (List all affiliations)	Organogenesis
Mario Cala, DPM	calam0927@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	stryker
Tiffany Cerda DPM, MS	Tiffanycerda93@gmail.com	I/We have nothing to disclose	
Marika Jackson, DPM	marikajackson81@gmail.com	I/We have nothing to disclose	

Title

A Rare Case of Brodie's Abscess in the Tibial Diaphysis Masquerading as a Vaso-occlusive Sickle Crisis

Submit Date

08/17/2023

Correspondent

Last Name: Amin
 Full Name: Suril Amin, DPM, MHA Email: suril.amin@gmail.com
 Practice/Company/Residency Program: Our Lady of Lourdes

Authors

Author 1: Suril H Amin, DPM, MHA Author 2: Diksha Mohapatra, DPM
 Author 3: Sahil H Amin, MHA Author 4: Shefali Amin, DO, MsEd
 Author 5: Guido Laporta, DPM, MS, FACFAS Author 6:
 Author 7: Author 8:

Purpose

Clinicians should be aware that patients with sickle cell disease are prone to Brodie's abscess, and it should be a differential for symptoms of relenting bone pain

Methodology

Procedures

A 19-year-old male with a history of sickle cell anemia presented to the hospital with worsening left lower extremity pain. Given his acute presentation and history of recurrent pain crises, he was admitted to the hospital for management of a suspected acute pain crisis. An MRI, among other exams, were ordered, revealing heterogenous T1 and T2 hyperintense signals within the proximal tibial diaphysis measuring 6.6 x 1.6 x 2.2 cm with a thick rim of peripheral irregular enhancement with surrounding periosteal reaction and soft tissue edema, concerning for osteomyelitis and developing Brodie's abscess.

Results

The patient underwent irrigation and debridement of the tibia with the placement of vancomycin and tobramycin beads. Perioperatively, minimal purulence was noted in the tibial canal. The patient was discharged home within two weeks from admission and sent home with a peripherally inserted central catheter line to complete a total of six weeks of intravenous antibiotics with piperacillin-tazobactam with no complications

Discussions

Patients with sickle cell disease are prone to Brodie's abscess which can be quiescent in presentation. Hence, it should be considered one of the differentials in these patients, especially if the relenting bone pain is near the metaphysis. Therefore, there should be a low threshold for radiologic investigations in suspected cases to differentiate it from a vaso-occlusive crisis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Suril H Amin, DPM, MHA	suril.amin@gmail.com	I/We have nothing to disclose	
Diksha Mohapatra, DPM	diksha.mohapatra@gmail.com	I/We have nothing to disclose	
Sahil H Amin, MHA	tuf08002@temple.edu	I/We have nothing to disclose	
Shefali Amin, DO, MsEd	shefali.amin@towerhealth.org	I/We have nothing to disclose	
Guido Laporta, DPM, MS, FACFAS	glaporta@msn.com	I/We have nothing to disclose	

Title **Tibialis Anterior Tendon Reconstruction Utilizing Split Tendon Turndown: A Case Report and Technique Guide**

Submit Date 08/18/2023

Correspondent
 Last Name: Hill
 Full Name: Zachary P. Hill, DPM
 Practice/Company/Residency Program: Grant Medical Center
 Email: zph1582@gmail.com

Authors
 Author 1: Zachary P. Hill, DPM
 Author 2: Ryan J. Stone, DPM, AACFAS
 Author 3: Timothy R. Holmes, DPM, FACFAS
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose
 Tibialis anterior tendon (TAT) ruptures are relatively rare injuries with incidence of less than 1% of all musculotendinous injuries. Direct end-to-end repair is the preferred method for TA tendon ruptures, but it may not be feasible in cases where there is a large residual tendon defect. The authors present a unique technique utilizing a minimal incision TA tendon turndown with dermal matrix allograft augmentation and a successful case where this technique was employed in a patient with a large insertional defect.

Methodology

Procedures
 A 67-year-old male with pain to the right anterior ankle for 2 months. Found to have chronic TAT rupture via MRI. Intra-operatively, there was an 8cm TAT deficit with no viable distal attachment following debridement. Surgical intervention included TAT reconstruction via split TAT turn-down with dermal matrix allograft augmentation. Technique guide included.

Results
 The patient was followed postoperatively for 12 months. At final follow-up, the patient's postoperative VAS pain score was 1.0. The postoperative FAAM score was 81/84 (96%). The Oxford muscle power strength was 5/5, with a symmetrical ankle joint range of motion. The patient was "very satisfied" with his procedure and would undergo again. No postoperative complications noted. At one year, he is pain-free without restrictions.

Discussions
 TA ruptures remain a challenging pathology for surgeons to manage, as there is a lack of treatment guidelines and functional recovery is unpredictable. We describe a versatile, minimal incision surgical technique and feature a case study to illustrate the successful management of chronic TA ruptures that aren't amenable to end-end repair.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Zachary P. Hill, DPM	zph1582@gmail.com	I/We have nothing to disclose	
Ryan J. Stone, DPM, AACFAS	ryan.stone177@gmail.com	I/We have nothing to disclose	
Timothy R. Holmes, DPM, FACFAS	Tholmesone@yahoo.com	I/We have nothing to disclose	

Title Periprosthetic Total Ankle Replacement Fractures**Submit Date** 08/18/2023**Correspondent**

Last Name: Hill
 Full Name: Zachary P. Hill Email: zph1582@gmail.com
 Practice/Company/Residency Program: Grant Medical Center

Authors

Author 1: Zachary P. Hill, DPM Author 2: Joseph R. Brown, DPM
 Author 3: Daniel Degenova, DO Author 4: Benjamin Taylor, MD, FAAOS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Traumatic periprosthetic fractures around total ankle replacements (TAR) are rare, with less than 13 cases reported. TAR usage continues to rise, thus periprosthetic fractures will likely increase. Literature discussing classification, treatment, and outcomes of this pathology is sparse. We present a case report and classification system of postoperative periprosthetic ankle fractures based on location, implant stability, and surrounding bone quality to assist in guiding treatment and improving outcomes. Similar classifications have been validated for periprosthetic knee and hip fractures.

Methodology**Procedures**

419 ankle fractures at a level 1 trauma center were retrospectively reviewed. 2/419 (0.004%) were found to have a traumatic periprosthetic ankle fracture and treated operatively with minimally invasive plate and screw stabilization. The low incidence owes to the rarity of this injury. These patients were followed for a year.

Results

Results included 100% radiographic union at an average of 5 months. Neither patient required revision surgery following the index procedure. No wound-healing complications or superficial/deep infections were encountered postoperatively. The operative ankle joint range of motion was full without restrictions. Both patients returned to their previous ambulatory function.

Discussions

This matches the largest cohort of traumatic periprosthetic fractures about TAR and, to the best of our knowledge, the first to describe treatment and outcomes of traumatic fractures about the INBONE Total Ankle System (Wright Medical Group, Memphis, TN). The previously proposed classification focused on intraoperative and stress fractures not accounting for surrounding bone stock. Herein we propose a treatment-centered classification system for postoperative traumatic periprosthetic ankle fractures based on stability, location, and quality of surrounding bone.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Zachary P. Hill, DPM	zph1582@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Columbus
Joseph R. Brown, DPM	jrbrowndpm@gmail.com	I/We have nothing to disclose	
Daniel Degenova, DO	ddegenova22@gmail.com	I/We have nothing to disclose	
Benjamin Taylor, MD, FAAOS	drbentaylor@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Dr.Benjamin Taylor is a consultant for Zimmer Biomet, and Stryker

Title

Outcomes Following Repair of a Tibial Nerve Transection Resulting from Total Ankle Arthroplasty: A Case Report

Submit Date

08/31/2023

Correspondent

Last Name: Yoakim

Full Name: Michelle K. Yoakim, DPM, PGY-3

Email: michelleyoakim@gmail.com

Practice/Company/Residency Program:

North Colorado Podiatric Medicine & Surgery Residency

Authors

Author 1: Michelle K. Yoakim, DPM, PGY-3

Author 2: Gregory P. Still, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Tibial nerve injury is a rare complication of total ankle arthroplasty (TAA) that has been outlined in the literature. However, the literature is sparse regarding iatrogenic tibial nerve injury and proper treatment in situations of delayed diagnosis. This case report highlights a nerve repair technique using a nerve allograft for a severe potential complication associated with total ankle arthroplasty.

Methodology

Procedures

Our patient had a TAA in November 2021, and presented to our clinic in March 2022 with loss of sensation and increasingly rapid loss of the motor function in the tibial nerve distribution. Nerve conduction and electromyography studies revealed injury to the deep peroneal and tibial nerves at the lower leg. She subsequently underwent fasciotomy, large neuroma excision, and tibial nerve repair with nerve allograft.

Results

One large neuroma in continuity with near complete transection of the tibial nerve with almost complete reversal of symptoms including a decrease in the visual analog scale score from 10 to 4.

Discussions

While tibial nerve injury during TAA is rarely reported, it is likely unrecognized or misdiagnosed resulting in significant complication for patients. Where complete or near-complete nerve transection results in neuroma formation, we recommend repair using a nerve allograft as neuroma resection with end-to-end repair has been shown to have high failure rates with recurrence in the foot. Nerve allografts reduce the risk of recurrent symptomatic neuromas by allowing nerve endings to exhaust any subsequent outgrowth.

Format

Case Study

Case Rpt Followup

17

Student Club

Not a Student Club Poster

Classification

Neurological/Peripheral Nerve Disorders

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michelle K. Yoakim, DPM, PGY-3	michelleyoakim@gmail.com	I/We have nothing to disclose	
Gregory P. Still, DPM, FACFAS	gps40dpm@gmail.com	Consultant/Advisor/Speaker (List all affiliations) Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Speaker for Artelon ACFAS board of director

Title A Rare Case of Spindle Cell Sarcoma in the Toe**Submit Date** 08/23/2023**Correspondent**

Last Name: Reardon
 Full Name: Brennan K. Reardon, DPM Email: bkreardo@wakehealth.edu
 Practice/Company/Residency Program: Wake Forest Baptist Health

Authors

Author 1: Lindsay K. Lesavage, DPM Author 2: John P. Bonvillian, DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Spindle cell sarcoma is a form of cancer that is most commonly found in long bones. These tumors account for 2-5% of all bone cancer cases. We report a case of a soft tissue mass on the distal aspect of a second toe diagnosed as spindle cell carcinoma after excision, resulting in staged digital amputation.

Methodology**Procedures**

A 51 year old female presented with a left second toe "cyst". The mass was present for 2 years, without preceding trauma or injury. It was increasing in size and causing pain with standing and ambulation. Radiographs didn't show any sign of cortical disruption. MRI revealed a solitary 13 x 5 mm well circumscribed cystic lesion, suspected to be adventitial bursa, foreign body granuloma, or ganglion cyst.

Results

The patient elected to proceed with surgical excision of the second toe lesion. The mass was excised without damage to surrounding structures. Surgical pathology demonstrated cellular proliferation with atypical histiocytic cells, giant cells in an inflammatory background, and mitotic activity with atypical mitosis. Final pathological diagnosis confirmed high grade spindle cell carcinoma. The patient was referred to orthopedic oncology who recommended tumor bed excision with full thickness skin graft versus toe amputation. The patient decided to proceed with digital amputation. There has been no recurrence, metastasis, or complications after 12 months.

Discussions

Spindle cell sarcoma is very rare and spindle cell carcinoma is an even rarer variant. 5 year survival rate is about 65%. There are few reported cases distal to the ankle joint. Our case demonstrates spindle cell carcinoma of the toe after excision.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lindsay K. Lesavage, DPM	llesavag@wakehealth.edu	I/We have nothing to disclose	
John P. Bonvillian, DPM	jpbonvil@wakehealth.edu	I/We have nothing to disclose	

Title

Minimally Invasive Proximal Tibia Bone Harvesting Following Periprosthetic Bone Cyst Formation in Total Ankle Arthroplasty

Submit Date 08/28/2023

Correspondent

Last Name:	Leo	Email:	LeoT@evms.edu
Full Name:	Trenton	Eastern Virginia Medical School	
Practice/Company/Residency Program:			

Authors

Author 1:	William Simon, DPM, FACFAS	Author 2:	Trenton Leo, DPM
Author 3:		Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose To determine the viability and short term success of autogenous tibial bone harvesting through minimally invasive measures in combating periprosthetic cyst formation from total ankle arthroplasty

Methodology

Procedures Recent literature has illustrated efficacious outcomes of autogenous bone grafting to repair cystic changes following total ankle replacement. However, the majority of current studies' donor sites are the cancellous and/or iliac crest which possess donor site morbidity and can dissimulate pain and mobility assessment respectively. Just inferior to the medial tibial condyle is relatively safe in terms of neurovasculature and contact force mapping has shown evidence of relatively no structural integrity deficit with bone harvest from this area.

Results AOFAS hindfoot scores increased following treatment at 3 months (87) and remain increased at 12 months following surgery (81). No reports of donor site pain were reported following removal of stitches at 2.5 weeks. Most notable increase in AOFAS subcategory was pain which was improved from severe to mild. VAS scores improved and were maintained at one year (Reduced from 8 to 4). The Karlsson and Peterson scoring system was modified with surgery used as pre-injury reference. This illustrated greater improvement at short term interval of 3 months (79) compared to 12 months (64). Further quantitative measurement to be obtained at 18 months.

Discussions This short term case study manifests success in terms of function and pain measures while reducing potential complications. Excellent osseous incorporation and no residual deficit can be visualized by provided imaging despite possible suboptimal MSC concentration when compared to iliac crest. Long term outcomes certainly will be of further value.

Format Case Study

Case Rpt Followup 15

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
William Simon, DPM, FACFAS	wsimon4860@aol.com	I/We have nothing to disclose	
Trenton Leo, DPM	LeoT@evms.edu	I/We have nothing to disclose	

Title

Vacuum-Assisted Eggshell Type Bone Debridement with Implantation of Antibiotic-Impregnated Bone Substitute for Treatment of Calcaneal Osteomyelitis with Subsequent Charcot Reconstruction: A Case Report

Submit Date 08/30/2023

Correspondent

Last Name: Cheung
 Full Name: Timothy P Cheung, DPM, PhD, CPT
 Practice/Company/Residency Program: Yale New Haven Hospital
 Email: timothy.cheung@yale.edu

Authors

Author 1: Timothy P Cheung, DPM, PhD, CPT
 Author 2: Grant Yonemoto, DPM, AACFAS
 Author 3: William Stallings, DPM
 Author 4: Steven D Vyce, DPM, FACFAS
 Author 5: Michael I Gazes, DPM, MPH, FACFAS
 Author 6:
 Author 7:
 Author 8:

Purpose

The purpose of this case study is to report a novel vacuum-assisted eggshell-type debridement in treating calcaneal osteomyelitis.

Methodology

Procedures

Charcot neuroarthropathy complicated by calcaneal osteomyelitis can be difficult to treat. There are various surgical techniques described on how to manage these conditions. Eggshell-type debridement with application of antibiotic-impregnated bone substitute is a viable option that eliminates osteomyelitis and allows staged reconstructive surgery. In this case, a 50 year old female with right midfoot Charcot presented with septic shock and hematogenous osteomyelitis of the calcaneus, navicular and lateral cuneiform. A vacuum-assisted eggshell-type debridement was performed and the calcaneal defect was filled with antibiotic-impregnated bone substitute.

Results

After the osteomyelitis resolved at 8 weeks, the patient underwent a staged Charcot reconstructive surgery with an application of a dynamic multiplanar external fixator with gradual deformity and split-thickness skin graft to cover the residual plantar lateral foot wound. The second stage included septic fusion of the midfoot and subtalar joint from the frame. At 12 weeks postoperatively, radiographic union was achieved, the external fixator was removed, and the patient maintained a plantigrade foot. The patient was transitioned to a total contact cast. At the final follow up of 18 months from the initial procedure, the patient continues to be wound-free and weight bearing in a CROW boot.

Discussions

This report demonstrates the effectiveness of a novel vacuum-assisted eggshell-type debridement in treating calcaneal osteomyelitis in the setting of calcaneal osteomyelitis and should be considered as an alternative to a partial calcanectomy.

Format

Case Study

Case Rpt Followup

18

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Timothy P Cheung, DPM, PhD, CPT	timothy.cheung@yale.edu	I/We have nothing to disclose	
Grant Yonemoto, DPM, AACFAS	grant.yonemoto@yale.edu	I/We have nothing to disclose	
William Stallings, DPM	william.stallings@yale.edu	I/We have nothing to disclose	
Steven D Vyce, DPM, FACFAS	steven.vyce@ynhh.org	I/We have nothing to disclose	
Michael I Gazes, DPM, MPH, FACFAS	michael.gazes@yale.edu	I/We have nothing to disclose	

Title

Presence of Wound Complications with Use of Incisional Wound Vacuum Therapy on Outpatient Total Ankle Arthroplasty Surgery

Submit Date

08/22/2023

Correspondent

Last Name: Levene

Full Name: Maxwell Levene, DPM, FACFAS

Email: MAXL221@GMAIL.COM

Practice/Company/Residency Program:

Mid-Atlantic Permanente Medical Group

Authors

Author 1: Maxwell Levene, DPM, FACFAS

Author 2: Jordan Tacktil, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The most commonly performed incisional approach to total ankle arthroplasty(TAA) surgery is through an anterior ankle approach. With the anterior incision approach wound complications are among the most common after TAA. This case series documents several cases of total ankle arthroplasty surgery with application of immediate incisional wound vacuum therapy closure in the outpatient surgical setting with discharge within 23 hours and the prevalence of wound complications post-operatively.

Methodology

Procedures

18 patients underwent outpatient TAA in the outpatient setting through an anterior approach by a single surgeon with application of incisional wound vacuum therapy over a closed surgical incision with identical closure and settings with removal in a 5–8-day post-operative period.

Results

18 patients underwent TAA via anterior approach in the outpatient setting with application of incisional wound vacuum therapy over a closed incision. 0 out of 18 patients developed wound complications throughout the post-operative course of 12 months or more.

Discussions

The most commonly performed incisional approach is through an anterior approach for TAA. With this approach comes wound complications of greater than 30% yielding detrimental effects on functional and clinical outcomes and patient satisfaction. Surgeons must be aware of these complications and closure techniques that are available to help mitigate wound complications.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Maxwell Levene, DPM, FACFAS	MAXL221@GMAIL.COM	I/We have nothing to disclose	
Jordan Tacktil, DPM, FACFAS	jztacktil@gmail.com	I/We have nothing to disclose	

Title Eccrine carcinoma of the hallux: A case study**Submit Date** 08/22/2023**Correspondent**

Last Name: Pratt
 Full Name: Alyssa Email: apratt@capefearvalley.com
 Practice/Company/Residency Program: Cape Fear Valley Health System - - Fayetteville, NC

Authors

Author 1: Hoa, Q, Phan, DPM Author 2: Alyssa, J, Pratt, DPM
 Author 3: Roberto, Bermudez, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Eccrine carcinomas are an extremely rare malignancy in sweat glands that is not frequently found in the lower extremities. They account for approximately 0.01% of primary tumors of the skin. It typically is seen in the fourth and fifth decades of life, and begins as a slow growing plaque or nodule. They are typically found on the head and neck region, and less common in the trunk and distal extremities. These tumors have an indolent phase, but once they are clinically apparent, they are highly invasive and have a high tendency to recur after excision at 50% and to metastasize at 14%.

Methodology**Procedures**

55- year- old male presents to clinic for a growth on the plantar aspect of his right hallux. He admits the growth had reappeared a few years ago and is getting larger, and painful. He states that the etiology of the mass was traumatic. Has pain with ambulation, standing and performing daily activities. We obtained a radiograph and MRI. Results showed a large subcutaneous mass that did not invade the bone. The mass was removed, and the hallux was amputated distal to the proximal phalanx base. The mass did not invade any nearby soft tissue. Specimen sent to pathology.

Results

Pathology resulted: carcinoma with basaloid features and tumor necrosis in subcutaneous tissue. Patient underwent further surgery: the remainder of the proximal phalanx was disarticulated at the level of the MPJ

Discussions

Eccrine carcinoma of the lower extremity are rare, but knowing how to identify, diagnosis, and treat, will help prevent further metastasis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hoa, Q, Phan, DPM	hphan@capefearvalley.com	I/We have nothing to disclose	
Alyssa, J, Pratt, DPM	apratt@capefearvalley.com	I/We have nothing to disclose	
Roberto, Bermudez, DPM	rberm@capefearvalley.com	I/We have nothing to disclose	

Title

A Novel Case of Non-Infectious Soft Tissue Emphysema of the Lower Extremity

Submit Date

08/23/2023

Correspondent

Last Name: Hammock
 Full Name: Kaitlyn A Hammock, DPM Email: kaitlynhammock@gmail.com
 Practice/Company/Residency Program: AdventHealth East Orlando

Authors

Author 1: Phillip M. Calaj, DPM Author 2: Kaitlyn A. Hammock, DPM
 Author 3: Thomas D. Ferrise, DPM Author 4: Joseph A. Conte, DPM, FACFAS
 Author 5: Christopher L. Reeves, DPM, MS, FACFAS Author 6: Amber Shane, DPM, MS, FACFAS
 Author 7: Author 8:

Purpose

Subcutaneous emphysema (SE) is gas trapped under soft tissue generally along a fascial plane. Emphysema in the soft tissue when associated with infection usually from gas forming organisms can spread quickly and requires emergent medical management due to the associated systemic impact (1). Ruling out a necrotizing infection during initial evaluation becomes critical. The purpose of this study is to document our management of benign soft tissue emphysema.

Methodology

Procedures

In recent literature, 67 cases of non-infectious soft tissue emphysema have been reported in the English literature, with no reports of non-infectious soft tissue emphysema described in the lower extremity. Only a handful of cases of NSTI have been reported in the upper extremity which most commonly occurs from injection of high pressure air through a negative gradient. Disruptions in the soft tissue envelope act as a “one-way valve” or “ball valve mechanism” (1)(3). A healthy 23 year old male who suffered ankle trauma and subsequent subcutaneous emphysema inconsistent with necrotizing infection. To our knowledge, this report is the first discussion of benign soft tissue emphysema in the lower extremity.

Results

Surgical Cultures had no growth, with infection ruled out, percutaneous repair of the left ankle bi-malleolar fracture performed.

Discussions

Empiric antibiotics, multidisciplinary consultation, and surgical exploration are key in evaluating any soft tissue emphysema. Ruling out insidious STE prior to surgical stabilization of the fracture is key in preventing poor outcomes. Easy dissection of fascial layers upon probing, negative cultures, trending laboratory values and vital signs to be confident to rule out infection.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Phillip M. Calaj, DPM	pcalaj123@gmail.com	I/We have nothing to disclose	
Kaitlyn A. Hammock, DPM	kaitlynhammock@gmail.com	I/We have nothing to disclose	
Thomas D. Ferrise, DPM	thomas.ferrise@gmail.com	I/We have nothing to disclose	
Joseph A. Conte, DPM, FACFAS	jconte7@yahoo.com	I/We have nothing to disclose	
Christopher L. Reeves, DPM, MS, FACFAS	dooreevesl@yahoo.com	I/We have nothing to disclose	
Amber Shane, DPM, MS, FACFAS	ambershanereeves@yahoo.com	I/We have nothing to disclose	

Title A Novel Approach for Salvage of Infected Tibiototalcaneal Arthrodesis

Submit Date 08/23/2023

Correspondent Last Name: LeSavage
Full Name: Lindsay, K, LeSavage, DPM
Practice/Company/Residency Program:
Email: llesavag@wakehealth.edu
Wake Forest Baptist Health

Authors Author 1: Lindsay, K, LeSavage, DPM
Author 2: Brooke, E, Kiefer, DPM
Author 3: Ashleigh, W, Medda, DPM
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose Infection of retrograde intramedullary nails for tibiototalcaneal arthrodesis can be limb threatening, especially in high risk patients, and typically requires hardware explantation, canal irrigation, debridement, antibiotic management, and ultimately fixation revision. We present a novel approach for salvage of an infected retrograde intramedullary nail using an "upside down" antegrade tibial nail.

Methodology

Procedures A 77 year old female presented for evaluation of new plantar heel wound with malodorous drainage status post tibiototalcaneal arthrodesis at an outside facility one year prior. The patient was started on intravenous antibiotics taken to the operating room on three separate occasions for attempted limb salvage. The procedures included: hardware removal, antibiotic rod placement and exchange, and serial debridement with bone cultures. Following completion of six weeks intravenous antibiotics and total wound healing, the patient opted for surgical revision.

Results We describe the technique of using an antibiotic coated antegrade tibial nail "upside down". The patient recovered without postoperative complications and was ambulatory in a double upright brace at nine months.

Discussions In this case, specific considerations were the previous screw holes proximally, a narrow medullary canal, and relatively poor bone quality from repeat surgery and infection. To combat these factors, a 32mm tibial nail was inserted "upside down" to allow for new interlock screw placement that had not been compromised by the previous fixation. It also allowed for increased screw placement options through the nail, spanning to a more appropriate length, and better fit of the patient's narrow canal once antibiotic coating was added.

Format Case Study

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, and Disclosed Organisation(s). Rows include Lindsay, K, LeSavage, DPM; Brooke, E, Kiefer, DPM; and Ashleigh, W, Medda, DPM.

Title

Fasciocutaneous Rotational Flap With External Fixation For Lower Extremity Limb Salvage: Case Report

Submit Date

08/30/2023

Correspondent

Last Name: Yun
 Full Name: Catherine R. Yun, DPM Email: catherine.rose.yun@gmail.com
 Practice/Company/Residency Program: Community Medical Center Podiatric Residency Program

Authors

Author 1: Catherine R. Yun, DPM Author 2: Sai Vemula, DPM
 Author 3: Pranav S. Phadtare, DPM Author 4: Fahad Hussain, DPM
 Author 5: Matthew J. Modugno, DPM, AACFAS Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to demonstrate a surgical technique for limb salvage via a partial calcaneotomy, fasciocutaneous rotational flap and offloading with an external fixator for chronic heel pressure wounds with underlying calcaneal osteomyelitis.

Methodology

Procedures

79-year-old male suffered a motor vehicle accident in June 2021 and sustained a left open calcaneal fracture, which was treated by an outside orthopedic surgeon. Following the surgery, patient developed a chronic heel wound that resulted in calcaneal osteomyelitis. He failed numerous conservative treatment modalities, which included long-term intravenous antibiotics, wound debridements, total contact casting, hyperbaric oxygen therapy and synthetic skin substitutes. We ultimately performed a staged procedure with a heel wound excision and partial calcaneotomy, followed by a rotational flap closure and the application of an offloading external fixator. The external fixator was removed 1 month later after full incorporation of the flap.

Results

At 1-year follow-up, the patient's flap has fully healed without recurrence of the heel wound. Patient is now weight-bearing as tolerated in his custom leather gauntlet ankle-foot orthosis offloading brace and diabetic shoe.

Discussions

Heel pressure wounds are a challenge and often result in osteomyelitis of the calcaneus. Our surgical approach illustrates a successful alternative for chronic heel osteomyelitis with the use of partial calcaneotomy, rotational flap closure, and offloading external fixator in a patient who otherwise would have required a below-knee amputation.

Format

Case Study

Case Rpt Followup

13

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Catherine R. Yun, DPM	catherine.rose.yun@gmail.com	I/We have nothing to disclose	
Sai Vemula, DPM	saivemuladpm@gmail.com	I/We have nothing to disclose	
Pranav S. Phadtare, DPM	psphadtare0@gmail.com	I/We have nothing to disclose	
Fahad Hussain, DPM	fahadhussaindpm@gmail.com	I/We have nothing to disclose	
Matthew J. Modugno, DPM, AACFAS	modugnojm@gmail.com	I/We have nothing to disclose	

Title

Central Strap Gastrocnemius Aponeurosis Turn-Down Flap Reconstruction for Chronic Achilles Tendon Ruptures with Large Defects: A Novel Frontal Plane 180-Degree Rotation Technique for Large Tendon Defects.

Submit Date 08/28/2023

Correspondent

Last Name: Bischoff
 Full Name: Alex, J, Bischoff, DPM AACFAS Email: bischoff91@gmail.com
 Practice/Company/Residency Program: Balance Foot and Ankle Reconstruction Fellowship

Authors

Author 1: Alex, Bischoff, DPM AACFAS Author 2: Zachary, Hill, DPM
 Author 3: Joseph, Brown, DPM Author 4: Alexa, Bykowski, DPM
 Author 5: Robert, Mendicino, DPM FACFAS Author 6:
 Author 7: Author 8:

Purpose Bridging a large tendon gap in chronic Achilles ruptures requires obtaining additional length. However, functionality and possible bulk cause many providers to question the benefit of reconstruction. The purpose of this study is to describe clinical outcomes of the central strap gastrocnemius turn-down flap for chronic Achilles tendon ruptures with large defects.

Methodology

Procedures

Three consecutive patients had Achilles tendon reconstruction with central strap turn down with a flexor hallucis longus tendon transfer. Each are functioning well without increased bulk to calf. Overall, literature evaluating Achilles reconstruction after rupture is sparse. The senior author (RW) has previously published a similar technique, but no available literature evaluates outcomes of this novel approach.

Results Among the three patients, the AOFAS hindfoot and ankle scores were 98, 95, and 87. All exhibited 5/5 muscle strength to the operative extremity. Calf circumference at final follow up was variable, but demonstrated no predilection toward increased bulk of the achilles or calf in the reconstructed limb. No patient had an operative side measurement greater than 1.0 centimeter difference compared to the non-operative side. No patient required revision operation.

Discussions

Repair of chronic Achilles tendon ruptures are difficult due to loss of tendon elasticity. In low demand patients, isolated flexor hallucis longus tendon transfer may provide sufficient muscle strength. However, higher demand patients may benefit from direct reattachment of the gastrosoleal complex. With this achilles reconstruction technique, functional capabilities were preserved, and bulk was not significantly increased. We propose this advanced reconstruction for high functional demand patients with chronic ruptures and large defects.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alex, Bischoff, DPM AACFAS	bischoff91@gmail.com	I/We have nothing to disclose	
Zachary, Hill, DPM	zph1582@gmail.com	I/We have nothing to disclose	
Joseph, Brown, DPM	jrbrown6289@gmail.com	I/We have nothing to disclose	
Alexa, Bykowski, DPM	alexabykowski36@gmail.com	I/We have nothing to disclose	
Robert, Mendicino, DPM FACFAS	rmendicino@faiwp.com	I/We have nothing to disclose	

Title

Dynamic Contractures of Flexor Digitorum Longus and Flexor Hallucis Longus, after Open Tibial Trauma: Checkrein Deformity

Submit Date

08/23/2023

Correspondent

Last Name: Kienzle
 Full Name: Wolfgang Kienzle Email: wolfkienzle1@gmail.com
 Practice/Company/Residency Program: New York Presbyterian Brooklyn Methodist Hospital

Authors

Author 1: Joann, Li, DPM Author 2: Wolfgang, C, Kienzle, DPM
 Author 3: Saman, Tabari, DPM Author 4: Ernest, G, Megdanis, FACFAS, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Checkrein deformity is a rare occurrence characterized by flexure contractures of the digits during midstance during heel off, and may be recreated through passive dorsiflexion of the ankle. This dynamic pathology develops secondary to entrapments or fibrous adhesions of the flexor compartment myotendinous apparatus. Many theories exist as to the cause of the Checkrein deformity which includes contractures of the muscles in the posterior muscle group or entrapment from injury to the tendon muscle bellies following a fracture. This study delves into the treatment of Checkrein deformity through selective surgical lengthening of the Flexor hallucis longus (FHL) and flexor digitorum longus (FDL) tendons at the retromalleolar level.

Methodology

Procedures

This study involves an 18 year old male with Checkrein deformity affecting the left toes due to a sustained open left tibia-fibula fracture. Following Tibial IM nail and skin graft procedures, the patient developed Checkrein deformity. MRI studies showed scarring of the flexor retinaculum causing tenosynovitis of the FHL and FDL tendons. The Checkrein deformity was treated by selectively lengthening the FHL and FDL tendons at the retromalleolar level.

Results

18 year old male with Checkrein deformity who underwent Z lengthening of the flexor hallucis longus and flexor digitorum longus

Discussions

The surgery relieved tension on the flexor tendons, thereby restoring proper movement of the affected toes and improving overall functionality. The study provides a detailed account of the surgical technique, including preoperative assessments and considerations, surgical procedure, and postoperative rehabilitation.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joann, Li, DPM	Joann.li.94@gmail.com	I/We have nothing to disclose	
Wolfgang, C, Kienzle, DPM	wolfkienzle1@gmail.com	I/We have nothing to disclose	
Saman, Tabari, DPM	samy.tabari@gmail.com	I/We have nothing to disclose	
Ernest, G, Megdanis, FACFAS, DPM	erm9002@nyp.org	I/We have nothing to disclose	

Title

Bilateral Exercise Induced Compartment Syndrome and Follow Up: A Case Study

Submit Date

08/29/2023

Correspondent

Last Name: Chippa
 Full Name: Naveed Y Chippa DPM Email: naveedchippa@gmail.com
 Practice/Company/Residency Program: Memorial Healthcare System

Authors

Author 1: Naveed Y Chippa, DPM Author 2: Anita Misra, DPM
 Author 3: Michael Rivera, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this case report is to highlight a pathology that may be commonly overlooked upon initial examination. This case reflects an instance of compartment syndrome, missed by the emergency department prior to an in clinic visit. This study may elucidate signs frequently missed by emergency department physicians and aims to reflect additional testing to accurately diagnose compartment syndrome when suspected.

Methodology

Procedures

Chronic exercise induced compartment syndrome occurs secondary to repetitive activity. This patient experienced pain during her Zumba class which worsened with time. She presented to the ED for bilateral heel pain, which discharged her with flexeril, norco. She was seen outpatient and referred back, noted to have compartment pressures of 65 bilaterally and CPK levels of 1276. Fasciotomy was performed and outpatient care to follow up.

Results

A fasciotomy resulted in decreased VAS scores from 10 preoperatively, to 3 at the first post operative visit. This subsequently subsided to a score of 1 following physical therapy at 4 weeks postoperatively. The patients maintenance of limited weightbearing postoperatively in a DARCO shoe with the aid of a walker yielded a return to full weightbearing at 4 weeks postoperatively.

Discussions

Exertional compartment syndrome, while sometimes managed by physical therapy and conservative care, can lead to fasciotomy. Fasciotomy, in this case, resulted in significantly decreased VAS scores postoperatively. Delayed diagnosis may be avoided with additional testing in emergency departments, including but not limited to, CPK levels.

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Naveed Y Chippa, DPM	naveedchippa@gmail.com	I/We have nothing to disclose	
Anita Misra, DPM	anitaxmisra@gmail.com	I/We have nothing to disclose	
Michael Rivera, DPM, FACFAS	drrivera@flafootandankle.com	I/We have nothing to disclose	

Title **Multiple Sites of Avascular Necrosis in Both the Foot and Ankle In A Post Chemotherapy Patient**

Submit Date 08/24/2023

Correspondent
 Last Name: Sreeram
 Full Name: Akshitha Sreeram DPM Email: akshitha.sreeram@ascension.org
 Practice/Company/Residency Program: Ascension SE Wisconsin- Milwaukee Residency

Authors
 Author 1: Akshitha Sreeram, DPM Author 2: Robert Rawski DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose
 Avascular necrosis is a condition in which there is a loss of blood supply to bone, leading to bony cell death and structural damage. AVN of the foot and ankle is a relatively uncommon condition that can lead to joint collapse. The primary and secondary purpose of this study is to highlight a case of AVN due to chemotherapy in multiple areas of the foot and ankle and to emphasize the importance of a thorough workup.

Methodology

Procedures
 55 year-old African American female presented to clinic for left Achilles pain. MRI revealed AVN of the distal tibia, talus, calcaneus, and midfoot. She has a significant PMH of breast and malignant colon cancer in 2016 that required surgical resection and chemotherapy for two years.

Results
 The patient was provided with bracing therapy which has provided much pain relief. Serial radiographs to monitor for pathologic fractures and bone biopsy would be an appropriate next step if condition worsens.

Discussions
 There is an exhausted list of theories and risk factors for the metabolic development of AVN including chemotherapy, radiotherapy, thermal injury, and smoking. This case study presents a rare case of aseptic necrosis of the midfoot, hindfoot, and distal tibia secondary to chemotherapy. Due to relatively nonspecific clinical findings, a complex workup with a multidisciplinary approach was necessary.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level V

Authors/Financial Disclosures

Full Name: Email: Disclosure(s) selected: Disclosed Organisation(s):

Akshitha Sreeram, DPM akshitha.sreeram@ascension.org I/We have nothing to disclose

Robert Rawski DPM, FACFAS robertrawskidpm@gmail.com I/We have nothing to disclose

Title Management of Navicular Avascular Necrosis with 3D Printed Navicular**Submit Date** 08/25/2023**Correspondent**

Last Name: Likewise

Full Name: Lauren Ashley Likewise, DPM

Email: laurenlikewise@gmail.com

Practice/Company/Residency Program:

Virginia Mason Franciscan Health

Authors

Author 1: Lauren Likewise, DPM

Author 2: Jennifer McGorty Droll, DPM

Author 3: Oliver Knauer, DPM

Author 4: Todd M. Chappell, DPM, FACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Navicular avascular necrosis (AVN) is challenging to treat, with few treatment strategies described. The purpose of this case report is to present successful surgical management of navicular AVN utilizing CT guided, 3D printed metallic implant in an adult patient with concurrent talonavicular (TN) and subtalar joint (STJ) arthrodesis.

Methodology**Procedures**

51 year old female with symptomatic navicular AVN. Despite exhausting conservative modalities, the patient experienced no significant pain relief and therefore elected to undergo surgical correction with 3D printed metallic navicular implantation with concurrent TN and STJ arthrodesis. Patient underwent gastrocnemius recession, STJ arthrodesis, tailor's bunionectomy, TN arthrodesis with 3D printed custom navicular implantation in 2021. Patient developed STJ nonunion eleven months after initial procedure and underwent STJ revision and naviculocuneiform and calcaneocuboid arthroplasties performed.

Results

Despite requiring subsequent procedures in adjacent joints 11 months after implantation, the custom metallic implant continues to remain in good overall alignment without signs of failure or loosening. Clinically, the patient reports significant improvement in pain, function and activity level.

Discussions

There are few studies describing the use of 3D printed navicular for AVN with concurrent TN and STJ arthrodesis. These were performed to promote long term stability for both the implant and the patient. Bony consolidation was appreciated visually at the talar-implant interface during revision surgery and confirmed by CT scan. This study's goal was to highlight the utilization of metallic implants for treatment of navicular AVN as a viable treatment option.

Format

Case Study

Case Rpt Followup

21

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lauren Likewise, DPM	laurenlikewise@gmail.com	I/We have nothing to disclose	
Jennifer McGorty Droll, DPM	jlmcgorty@gmail.com	I/We have nothing to disclose	
Oliver Knauer, DPM	oliverknauer100@gmail.com	I/We have nothing to disclose	
Todd M. Chappell, DPM, FACFAS	todd.chapps@gmail.com	I/We have nothing to disclose	

Title

Mycobacterium tuberculosis Found During Charcot Reconstruction: A Case Study

Submit Date

08/26/2023

Correspondent

Last Name: Kim
 Full Name: Joon Hyung Kim Email: joonhkim91@gmail.com
 Practice/Company/Residency Program: Mount Sinai Medical Center

Authors

Author 1: Joon Hyung Kim, DPM Author 2: Holly Seigle, DPM
 Author 3: Jana Olivova, DPM Author 4: Rajan Singh, DPM
 Author 5: Muhammad Khan, DPM Author 6: Dock Anderson, DPM
 Author 7: Author 8:

Purpose

The objective of this study is to explore the course of a patient who underwent Charcot foot reconstruction and was found to have tuberculosis in the bone. It also discusses perioperative improvements.

Methodology

Procedures

82-year old female patient first presented with ongoing infection in her foot in 2021 and has received frequent wound care. Patient also displayed Charcot changes in her midfoot. Initial microbiology and pathology results were negative for infection and the patient elected to undergo reconstructive surgery. However, the acid-fast stain was positive for mycobacteria prior to the procedure. Patient was closely monitored during the post-operative period for any signs and symptoms of infection. When sufficient bone healing was noted through imaging and the patient was asymptomatic in terms of pain and infection, hardware was removed. Specimens were taken again during removal.

Results

Specimens obtained during hardware removal were negative after six weeks. The Infectious Disease team was following the case upon the initial discovery of mycobacterium. Patient was offered a course of treatment for mycobacterium but declined. Patient did not present with wounds or signs of infection at her last visit with podiatry and was instructed to follow up as needed.

Discussions

It remains paramount to send samples to send samples to both pathology and microbiology, order fungal, AFB, and anaerobic testing, and wait for final results, prior to any major reconstructive surgery. In addition, good history-taking, physical examination, and inter-departmental communication remain crucial for positive patient outcomes.

Format

Case Study

Case Rpt Followup

20

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joon Hyung Kim, DPM	joonhkim91@gmail.com	I/We have nothing to disclose	
Holly Seigle, DPM	Hseigle8@gmail.com	I/We have nothing to disclose	
Jana Olivova, DPM	janicka.olivova@gmail.com	I/We have nothing to disclose	
Rajan Singh, DPM	rajansingh241994@gmail.com	I/We have nothing to disclose	
Muhammad Khan, DPM	mkpod13@gmail.com	I/We have nothing to disclose	
Dock Anderson, DPM	djranderson@hotmail.com	I/We have nothing to disclose	

Title Midfoot Charcot Deformity Correction Using "Ladder Plating" Internal Fixation: Survivorship and Complications

Submit Date 08/31/2023

Correspondent
Last Name: McKeon
Full Name: Kelly A. McKeon, DPM Email: kelly.mckeon@upperlinehealth.com
Practice/Company/Residency Program: Pediatric and Adult Foot and Ankle Surgical Fellowship

Authors
Author 1: Kelly A. McKeon, DPM Author 2: Craig A. Camasta, DPM, FACFAS
Author 3: Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose To explore the benefits and survivorship of Ladder plating as a surgical approach for reconstruction midfoot and rearfoot foot surgery in a patient with Charcot neuroarthropathy.

Methodology

Procedures The current literature shows good success rates of union and limb salvage with different fixation techniques for achieving stability; however, studies report different variability in union rates based on the technique. Dalton et al compared internal fixation with 92.9% success rate, and Lowery et al reported 76% success rate; however both did have amputation rates of 3.5% and 1.2% respectively. Garchar et al reported 98% success rate with no amputation rate through his plantar plating technique. 25 patients with diagnosed charcot neuropathy underwent Ladder plating technique, medial and lateral column extended arthrodesis. These patients had a similar success outcome to Garchar's results as it is a biomechanically sound construct allowing to achieve osseous union, and no amputation rate.

Results 25 patients with Ladder plating for charcot reconstruction followed for an average of 44.3 months. 92.6% had osseous union rate, 20% had a non-union but were braceable and ulcer free, 24% superficial infection that resolved, 0% with deep infection or hospitalizations, and 0% patients resulted in proximal amputation.

Discussions Ladder plating is a viable, reproducible, and low complication rate procedure that can be used to correct a complex foot deformity in Charcot neuroarthropathy. The stability of the construct has allowed for decreased amputation and infection rates, increased in osseous union, and restores biomechanical functionality.

Format Case Study

Case Rpt Followup 48

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kelly A. McKeon, DPM	kelly.mckeon@upperlinehealth.com	I/We have nothing to disclose	
Craig A. Camasta, DPM, FACFAS	ccamasta@aol.com	I/We have nothing to disclose	

Title Unique lower extremity salvage case following an extruded talus in-situ

Submit Date 08/26/2023

Correspondent Last Name: Dort
Full Name: Porscha Email: pdort@geisinger.edu
Practice/Company/Residency Program: Geisinger Community Medical Center

Authors Author 1: Porscha Dort Author 2: Nicole Branning, DPM
Author 3: Victoria Gracia, PhD, MPH Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose Total talar dislocation is the dislocation of the talus from the tibiotalar, subtalar and talonavicular joints and accounts for 2% of all talar injuries. Talar extrusion is often associated with loss of vascular supply and can lead to severe complications such as osteomyelitis and avascular necrosis. This case report demonstrates a unique treatment modality.

Methodology

Procedures A 67-year-old female presented to the emergency department following a motor vehicle accident which resulted in a right ankle dislocation. On physical examination, ecchymosis, edema and skin tenting were noted along with medial malleolus with the skin still intact. Radiographs demonstrated an extensively dislocated ankle mortise with posterior dislocation of the talar dome. Reduction was attempted, but the talus remained extruded. The patient subsequently underwent a right ankle reduction with an application of external fixation. The patient ultimately underwent a Tibiotalocalcaneal arthrodesis of the right hindfoot with use of bone substitute, hardware, and retained internal implant.

Results Reconstruction was achieved with a tibial symmetric cone augment (metallic implant) was used in place of the talus to preserve length and alignment of the ankle and fixated with an intramedullary nail. The most recent X-rays shows the fracture has healed with hardware still in place.

Discussions Dislocation and/or necrosis of the talus is conventionally treated by inserting an implant into the tibiotalar space to restore the anatomic height of the ankle, achieved in this case using a tibial symmetric cone augment. The patient has maintained the ability to ambulate at one year following this novel surgical intervention.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Porscha Dort	pdort@geisinger.edu	I/We have nothing to disclose	
Nicole Branning, DPM	nbranning@geisinger.edu	I/We have nothing to disclose	
Victoria Gracia, PhD, MPH	vgracia3@geisinger.edu	I/We have nothing to disclose	

Title Atypical Presentation of Chondroblastoma of the Calcaneus: A Case Report**Submit Date** 08/26/2023**Correspondent**

Last Name: Huchital

Full Name: Michael

Email: mhuchital.dpm@gmail.com

Practice/Company/Residency Program:

Centerock Podiatry Associates/ Good Samaritan Hospital

Authors

Author 1: Michael Huchital

Author 2: Todd Stewart

Author 3: Lori Anderson

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The Purpose of this poster is to report an atypical presentation of a benign bone tumor of the calcaneus as well as subsequent surgical management.

Methodology**Procedures**

Chondroblastoma is a rare bone tumor most commonly occurring in the second decade of life. Overwhelmingly the occurrence rate favors short and tubular bones including the talus and calcaneus. Several reports exist describing secondary aneurysmal bone cyst formation in the calcaneus. The majority of cases were reported in the posterior tuber, posterior subchondral portions of the calcaneus. The patient underwent excision of the lesion in a two stage manner. The first stage included creation of a cortical window and resection of the lesion with back filling of calcium phosphate (Hydrocettm) cement. The orientation of the cortical window spared the subtalar and calcaneocuboid articulations and was fixated with a nitinol staple. A linear external fixator was applied to preserve the length of the lateral column. The second stage involved removal of the fixator at 3 weeks and immobilization for 2 weeks followed by progressive weight bearing.

Results

Surgical pathology diagnosed chondroblastoma with secondary aneurysmal bone cyst formation. The patient progressed to full weight bearing and resumed normal activities without complication. Followup at two years demonstrated pain free ambulation with no limitation in joint motion.

Discussions

We present a case in which a neoplasm of the calcaneus atypically presented in the anterior portion of the bone and involved two articular surfaces. Excision augmented with external fixation provided a functionally desirable result.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michael Huchital	mhuchital.dpm@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Metalogix Ortho
Todd Stewart	drtsdpm@gmail.com	I/We have nothing to disclose	
Lori Anderson	Lori.anderson@Wmchealth.org	I/We have nothing to disclose	

Title

The Five Pin Frame: A Cost Effective External Fixator for Staged Damage Control Orthopedics of the Lower Extremity

Submit Date

08/27/2023

Correspondent

Last Name: Schultz
 Full Name: Alexander, J, DPM Email: alexanderschultzdpm@gmail.com
 Practice/Company/Residency Program: University of Louisville

Authors

Author 1: Alexander J Schultz Author 2: Anthony, J, Brando, DPM
 Author 3: David, Seligson, MD Author 4: Nicholas, J, Laco, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Lower extremity fractures represent a significant burden to the USA Healthcare system. Commercially available external fixators present a dilemma to healthcare systems due to high component costs. We present a case series using a cost containing external fixator for damage control orthopedics.

Methodology

Procedures

We present 10 patients in which the cost containing external fixator was utilized for staged fracture fixation. Definitive fixation was conducted in some instances with the frame left intact to maintain fracture reduction. We discuss technical application of the fixator and its general ease of use when compared to other fixators. Lit review: Hernigou 2016 Cinthuja 2022 Kugler 1988 Kouassi 2020 Logan 2015 Forrest 2021 Fernandez 1994

Results

Included patients in the study later went on to definitive fixation and were followed for over one year. Comparative pricing of the cost containing fixator compared to others used at our institution show a reduction of 33% for the component cost.

Discussions

We present the application of a cost containing external fixator for use in staged damage control orthopedics from our level I trauma center. A series of 10 patients was included in the study in which the fixator was utilized. Patients were followed for over a year with outcomes measured. The fixator was shown to have a 33% reduction of component costs when compared with other fixators utilized at our same institution.

Format

Case Study

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alexander J Schultz	alexanderschultzdpm@gmail.com	I/We have nothing to disclose	
Anthony, J, Brando, DPM	ajbrando97@gmail.com	I/We have nothing to disclose	
David, Seligson, MD	davidseligson@louisville.edu	I/We have nothing to disclose	
Nicholas, J, Laco, DPM	nicholasjlaco@gmail.com	I/We have nothing to disclose	

Title

The Pedicle Cross-Leg Flap: A case report and review of its efficacy for lower extremity wound closure

Submit Date 08/31/2023

Correspondent

Last Name: Clellen
 Full Name: Samuel
 Practice/Company/Residency Program: HCA Florida Northwest Hospital
 Email: samclellen@gmail.com

Authors

Author 1: Samuel Clellen, DPM, MBA
 Author 2: Zohaib Moon, DPM
 Author 3: Bose Yalamanchi, MD, FACS
 Author 4: Rishad Ahmed, DPM, FACFAS
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

Traumatic lower extremity defects present a difficult scenario particularly with underlying tendon and bony injury. Since the 1970s, the gold standard for soft tissue coverage in such scenarios has been microvascularized free flaps. Alternatively, the use of a pedicle cross-leg flap is a viable option in certain situations. We present a use of this alternative option to provide viable soft tissue coverage over a traumatic defect, without the need for advanced expertise in microvascular surgery, as well as a brief review of literature.

Methodology

Procedures

A single patient endured a distal leg injury, resulting in a large soft tissue defect, including severance of all anterior ankle tendons, loss of the anterior tibial artery, and bimalleolar ankle fracture. Primary repair was performed to the tendons and ankle fracture, and the patient subsequently underwent a cross-leg flap, stabilized by an external fixator, after failing wound care.

Results

Successful and timely healing of the soft tissue defect, including underlying tendon repair and ankle fracture.

Discussions

Soft tissue defects coupled with underlying trauma in the lower extremity are commonly treated with microvascularized free tissue flaps, as soft tissue coverage is essential to the underlying repair. Although this technique is the gold standard, scenarios exist where a cross-leg flap may be necessary. Literature supports the advantages to this technique, which include ease of dissection, versatility, shorter OR time, minimal donor site morbidity, and little need for surgical revision. It also bypasses the need for real microvascular proficiency of microanastomosis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Samuel Clellen, DPM, MBA	samclellen@gmail.com	I/We have nothing to disclose	
Zohaib Moon, DPM	zohaibmoon3@gmail.com	I/We have nothing to disclose	
Bose Yalamanchi, MD, FACS	DrYalamanchi@aol.com	I/We have nothing to disclose	
Rishad Ahmed, DPM, FACFAS	rishsa21@gmail.com	I/We have nothing to disclose	

Title **Minimally Invasive Technique Utilization in Charcot Foot Reconstruction: A Case Report**

Submit Date 08/27/2023

Correspondent Last Name: Kim
Full Name: Joon Hyung Kim, DPM
Practice/Company/Residency Program: Mount Sinai Medical Center
Email: joonhkim91@gmail.com

Authors Author 1: Joon Hyung Kim, DPM
Author 2: Holly Seigle, DPM
Author 3: Jacob M Silverstone, DPM
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose The objective of this study is to assess the outcome of Charcot foot reconstruction that utilized the minimally invasive (MIS) approach. Charcot foot reconstruction is difficult not only in technique, but also in perioperative management, in which a multi-disciplinary approach to patient care is necessary. The benefits that are offered by MIS include faster recovery period, decrease in postoperative pain, and less stress on the immune system.

Methodology

Procedures This is a 68 year-old male patient with Charcot foot stemming from non-diabetic neuropathy with a non-healing ulcer that was being treated conservatively for about a year. Patient was referred to orthopedic surgery for a surgical option. Forefoot Charcot reconstruction was performed, utilizing MIS approach and external fixation. Patient was followed post-operatively for 24 months after the initial procedure.

Results Successful, plantigrade foot was made utilizing MIS approach with no surgical wound necrosis. The existing ulcer healed secondarily and recurrence prevention was achieved. Complications followed due to ongoing neuropathy and led to Charcot joint at the ankle on the ipsilateral side. Tibiotalocalcaneal fusion was performed afterwards and non-union was noted via imaging. Overall however, the patient is doing well without major complaints and has achieved better function prior to surgery.

Discussions Charcot foot reconstruction remains a challenging task for any foot and ankle surgeon and MIS approach may be a valuable tool for such cases, due to its benefits offered.

Format Case Study

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, and Disclosed Organisation(s). Rows include Joon Hyung Kim, DPM; Holly Seigle, DPM; and Jacob M Silverstone, DPM.

Title

Tibial Mechanical Axis based PSI versus Mechanical Axis of the Limb in Total Ankle Arthroplasty: A Case Study

Submit Date

08/27/2023

Correspondent

Last Name: Schleunes

Full Name: scott

Email: sschleunespod@gmail.com

Practice/Company/Residency Program:

Northern California Reconstructive Foot and Ankle Fellowship, Shasta Orthopedics

Authors

Author 1: scott schleunes DPM

Author 2: Helene Cook DPM

Author 3: Jason Nowak DPM, AACFAS

Author 4: Garrett Strand, DPM, AACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

In total ankle arthroplasty (TAA), current patient specific instrumentation (PSI) is based on the mechanical axis of the tibia (MAT) through below knee to mid-foot CT scans. Utilizing the (MAT) is likely sufficient in most cases, but could lead to implant mal-position in patients with proximal deformity, previous trauma, previous hip or knee arthroplasty. Previous studies have shown differences between MAT and mechanical axis of the limb (MAL), but not in the context of TAA.

Methodology

Procedures

In this case study, we present three patients who underwent TAA with current PSI techniques based on the MAT. Both pre-operative and post-operative long leg alignment radiographs were obtained in each patient. MAT and MAL were measured in each patient, and compared to pre-operative surgical plans and postoperative final implant placement in respect to the mechanical axis. Previous literature (Najefi 2020, Bemasconi 2021) has shown significant difference between MAT and MAL pre-operatively, but have not described this in relation to post-operative TAR positioning.

Results

All three patients with implants deviated from the MAL greater than 3 degrees, though aligned with the MAT.

Discussions

PSI has provided potential benefits in terms of TAA. Alignment with the MAT is thought to decrease mechanical forces across the implant increasing longevity and outcomes, but limiting evaluation to below the knee fails to account for any axis deviation in the proximal aspect of the kinetic chain. In the future, implant placement in regards to the MAL may allow for less mechanical shear forces across the implant.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
scott schleunes DPM	sschleunespod@gmail.com	I/We have nothing to disclose	
Helene Cook DPM	helenecook@ucla.edu	I/We have nothing to disclose	
Jason Nowak DPM, AACFAS	jnowak@shastaortho.com	Consultant/Advisor/Speaker (List all affiliations) Intellectual Property rights owned	Enovis Enovis, Redpoint medical
Garrett Strand, DPM, AACFAS	gstrand@shastaortho.com	I/We have nothing to disclose	

Title Bone Invading Kaposi Sarcoma Lesion of the Foot**Submit Date** 08/27/2023**Correspondent**

Last Name: Luu
 Full Name: Sandra J. Luu, MBS, DPM Email: sandra.luu@luhs.org
 Practice/Company/Residency Program: Loyola University Medical Center

Authors

Author 1: Sandra J. Luu, MBS, DPM Author 2: John J. Kim, DPM
 Author 3: Katherine Dux, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This case study examines an unusual presentation of Kaposi Sarcoma (KS) as a bone eroding, non-ulcerative, solitary lesion of the hallux. We hope to inform the reader of this potential differential diagnosis when presented in the foot.

Methodology**Procedures**

Kaposi Sarcoma is a virus caused by the human herpesvirus 8 (HHV-8) which causes uncontrolled growth of spindle cells in the endothelium of blood vessels. KS can occur on any part of the body, however, there is a propensity for involvement in the lower extremities, ranging 28-50% of KS presentations. The incidence of KS lesions specifically in the foot is rarely reported. We report a 72-year-old male with a history of HIV who presented with a painful solitary lesion to the left hallux. MRI revealed a bone-eroding lesion underlying the mass.

Results

Surgical excision of the lesion was performed with positive bony margins. Subsequent full body PET-CT scan was negative for metastasis. Patient proceeded to be treated with 30Gy in 10 fractions of radiation therapy and has no recurrence of lesion was noted at 12-month post-surgical excision follow up.

Discussions

Kaposi sarcoma commonly appear as violaceous patches or nodules. They usually do not cause necrotic changes of the overlying skin or underlying structures. However, this case reports a solitary KS lesion that was non-discolored and was found to be invading the underlying bone. Knowledge of this atypical presentation in the foot and ankle is important for a physician to keep in mind as a differential diagnosis.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Soft Tissue/Tumor

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sandra J. Luu, MBS, DPM	sandra.luu@luhs.org	I/We have nothing to disclose	
John J. Kim, DPM	jkim5874@gmail.com	I/We have nothing to disclose	
Katherine Dux, DPM	kdux1@lume.edu	I/We have nothing to disclose	

Title

Navicectomy with Primary Medial Column Fusion in the Setting of Navicular Fracture: A 1-Year Follow-Up

Submit Date

08/27/2023

Correspondent

Last Name: Sweeney
 Full Name: Michael R. Sweeney, DPM Email: mrswee03@louisville.edu
 Practice/Company/Residency Program: University of Louisville

Authors

Author 1: Michael R. Sweeney, DPM Author 2: Thomas S. Poynter, DPM
 Author 3: Anthony J. Brando, DPM Author 4: Nicholas Laco, DPM
 Author 5: David Seligson, MD Author 6:
 Author 7: Author 8:

Purpose

This poster presents a case report with a 1-year follow-up on primary medical column fusion with navicectomy using cancellous auto-graft from the proximal tibia in the setting of navicular fracture.

Methodology

Procedures

Fractures of the navicular are uncommon, with fractures of the midfoot accounting for 5% of all foot injuries and navicular fractures comprising 35.5% of these. They rarely occur in isolation and are more commonly seen in conjunction with other fractures and dislocations within the midfoot. The extensive articular cartilage around the bone limits its blood supply and these anatomic and functional features make the navicular bone vulnerable, so that injuries may have serious consequences and sequelae. Limited data on these types of injuries have been published with few reports on the outcomes of these complex injuries [reference]. This poster presents a case report with a 1-year follow-up on primary medical column fusion with navicectomy using cancellous

Results

At the 13-month follow-up original surgery radiographs were obtained which showed consolidation at the fusion site. The made was noted to be very happy having undergone surgical intervention. The patient was noted to be ambulating in regular tennis shoes with no pain and able to return to all normal activities as he could prior to the injury.

Discussions

Little literature is represented on primary medial column fusion with navicectomy for navicular fractures. We present a 13 month follow-up with hardware removal after fusion. Patient ambulating pain free with no assistance.

Format

Case Study

Case Rpt Followup

14

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michael R. Sweeney, DPM	mrswee03@louisville.edu	I/We have nothing to disclose	
Thomas S. Poynter, DPM	tspoynTE@gmail.com	I/We have nothing to disclose	
Anthony J. Brando, DPM	ajbrando97@gmail.com	I/We have nothing to disclose	
Nicholas Laco, DPM	nicholas.laco@louisville.edu	I/We have nothing to disclose	
David Seligson, MD	david.seligson@louisville.edu	I/We have nothing to disclose	

Title **A Rare Case of Iatrogenic Avascular Necrosis of the Navicular Salvaged using Bone Grafting**

Submit Date 08/27/2023

Correspondent

Last Name: Young
 Full Name: Jennifer K. Young, DPM Email: jenniferyoungdpm@gmail.com
 Practice/Company/Residency Program: Podiatry Associates of Indiana

Authors

Author 1: Jennifer K. Young, DPM Author 2: Hendik Ryan Tan, DPM, MHA
 Author 3: Khawar Malik, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose This case examines a rare instance of iatrogenic avascular necrosis (AVN) of the navicular from multiple failed attempts at talonavicular fusion and how the authors were able to salvage the foot using bone grafting.

Methodology

Procedures A 57 year old presented for a second opinion regarding foot pain from two previously failed attempts at talonavicular fusion for a flatfoot deformity. On presentation there was evidence of avascular necrosis of the navicular and minimal bone remaining. After failing conservative treatments the patient underwent repeat attempt at fusion with complete excision of the navicular replaced by a custom molded tricortical bone graft. Following the procedure, bone graft consolidated and stable fusion was achieved. Patient was able to ambulate pain free without further complications at final follow up.

Results Bone grafting for salvage of navicular AVN provides reliable outcomes for fusion in the case of revisional surgery.

Discussions There have been few reported cases of treatment for non-spontaneous AVN of the navicular following failed attempts at talonavicular fusion. While rare, lack of blood supply to the navicular from multiple previous surgeries can lead to AVN. When this occurs, treatment options consist of core decompression, replacement, or fusion with viable bone. Implants have become a recent advance for the navicular but are costly and have unknown long term outcomes. Additional cases have shown vascularized bone grafting to be a viable option but this requires extensive specialized training. The authors present their successful reconstruction of this difficult condition using a custom molded bone graft to achieve stable fusion.

Format Case Study

Case Rpt Followup 13

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jennifer K. Young, DPM	jenniferyoungdpm@gmail.com	I/We have nothing to disclose	
Hendik Ryan Tan, DPM, MHA	tan.hendrikryan@gmail.com	I/We have nothing to disclose	
Khawar Malik, DPM	kmalikdpm@gmail.com	I/We have nothing to disclose	

Title

3D Printing with Intramedullary Nailing for Significant Bone Loss of the Distal Tibia: A 1-Year Follow-Up

Submit Date 08/27/2023

Correspondent

Last Name: Sweeney
 Full Name: Michael R. Sweeney, DPM Email: mrswee03@louisville.edu
 Practice/Company/Residency Program: University of Louisville

Authors

Author 1: Michael R. Sweeney, DPM Author 2: Blake E. Pritchett, DPM
 Author 3: Kaitlyn J. Loesel, DPM Author 4: Victor Anciano, MD
 Author 5: Author 6:
 Author 7: Author 8:

Purpose This poster documents a case in which a TTC arthrodesis with a custom 3D cage nail construct was utilized in the setting of severe bone loss following an open tibial plafond fracture.

Methodology

Procedures

49-year-old intoxicated male presented to the emergency department after a 6-foot fall from a ladder while attempting to change a light bulb. Radiographs obtained in the emergency department showed a Pilon fracture with significant bone loss to the distal tibia (Image 1). Physical exam was positive for a 12 cm laceration to the medial ankle, and the patient was discovered to be lying on top of a 6-8 cm remnant of extruded tibia. The decision was made to perform a tibiotalar calcaneal arthrodesis using a cage nail construct with intramedullary bone graft using the Reamer-Irrigator-Aspirator (RIA) system. A CT was obtained of both the injured limb and contralateral limb to design the implant for reconstruction (Images 3 and 4).

Results At the 1-year follow-up, radiographs (Image 8) were obtained showing bridging callus/bone across the implant. Patient was ambulating short distances without assistance and noted to be pain free at the ankle. The patient filled out a post-operative AOFAS sheet with a score of 49 and a VAS score of 6.

Discussions Use of 3D printed implants in the setting of severe bone loss is increasing as technology progresses. The above patient shows the usage of 3D implants with a 18 month follow-up with the patient ambulating short distances with minimal pain.

Format Case Study

Case Rpt Followup 18

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michael R. Sweeney, DPM	mrswee03@louisville.edu	I/We have nothing to disclose	
Blake E. Pritchett, DPM	bpritchett17@gmail.com	I/We have nothing to disclose	
Kaitlyn J. Loesel, DPM	678kate@gmail.com	I/We have nothing to disclose	
Victor Anciano, MD	victor.anciano@uoflhealth.org	I/We have nothing to disclose	

Title **Pyogenic Granuloma: A Nobel Treatment and Case Review**

Submit Date 08/27/2023

Correspondent Last Name: Platt
Full Name: Russell, L, Platt III, DPM
Practice/Company/Residency Program: The Ohio State University Wexner Medical Center
Email: russell.platt@osumc.edu

Authors Author 1: russell Platt
Author 2: Said, Atway, DPM
Author 3: Deana, Lewis, DPM
Author 4: Isaac, Korb, DPM
Author 5:
Author 6:
Author 7:
Author 8:

Purpose The Pyogenic Granuloma can be associated chronic wound with delayed healing leaving patient susceptible to infection in the foot and ankle. In this case study, we present an unusual and challenging case of pyogenic granuloma presenting as a large chronic wound in the left medial heal. This case documents treatment a pyogenic granuloma that had failed surgical and other conservative treatments and successfully responded to more novel treatment of a topical beta-blockers.

Methodology

Procedures We present the case of a large complex ulcer to the medial heal which was worked up as a chronic ulcer unresponsive to conservative care. Previous treatment and work up of Pyogenic granuloma complicated by osteomyelitis. The follow up of the patient was 13 months with treatment of beta- blocker beginning in month 8.

Results Topical Beta-block treatment to pyogenic granuloma with 63.6% improvement wound surface area with wound length, width and depth measured (n=13). Wound Assessment with greater than 75% granulation with pink moist wound bed, Serosanguineous drainage, Peri-wound borders calloused scarred tissue absent of local signs of acute infection at time of last follow-up.

Discussions The patient in this study had undergone topical and surgical treatment for pyogenic granuloma located to the posterior aspect of the foot unsuccessfully. Once patient began treatment with varying daily topical beta-blocker applications significant improvement to wound healing was observed. This interests for debate for whether topical beta-blocker treatment to pyogenic granuloma lesion to the foot ankle should be considered more frequently to our other first line treatments for these lesions.

Format Case Study

Case Rpt Followup 13

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include russell Platt, Said, Atway, DPM, Deana, Lewis, DPM, and Isaac, Korb, DPM.

Title **Fibroma of the Tendon Sheath at the Anterior Ankle: A Case Study**

Submit Date 08/27/2023

Correspondent Last Name: Brown
Full Name: Joseph R Brown, DPM
Practice/Company/Residency Program:
Email: joey.brown2@ohiohealth.com
OhioHealth Grant Medical Center

Authors Author 1: Joseph R Brown, DPM
Author 2: Nevin Joseph, DPM
Author 3: Amanda Quisno, DPM, FACFAS
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose Fibroma of tendon sheath (FTS) is a benign neoplasm, most commonly presenting in the upper extremities of young adult males. Scant literature is available on this tumor pathology in the foot and ankle. We present a rare case of FTS at the anterior ankle joint arising from the tibialis anterior (TA) tendon sheath.

Methodology

Procedures A 90-year-old male presented with a soft tissue mass at the anterior ankle. Physical exam was overall unremarkable. Magnetic resonance imaging (MRI) revealed a 6.0 x 5.8 x 3.1 cm mass at the anterior ankle in close relation to the TA tendon. He underwent open excision of the soft tissue mass, with intraoperative images revealing a similar sized mass. The mass was sent to pathology and histological slides were consistent with FTS. His postoperative course was unremarkable.

Results Uneventful postoperative course with no recurrence of soft tissue tumor at 12-month follow-up.

Discussions FTS is a benign neoplasm that most commonly affects the upper extremities in patients between the 2nd and 5th decades. It is rarely found in large joints and is especially rare around the ankle. Of large joints, it is more commonly described intra-articularly. Our case is unique in that the mass was located extra-articular at the ankle joint in a 90-year-old male. MRI and histopathologic examination are useful for diagnosing FTS. Marginal resection of the mass is sufficient for treatment. FTS should be included in the differential in cases with similar presentation.

Format Case Study

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Joseph R Brown, DPM; Nevin Joseph, DPM; and Amanda Quisno, DPM, FACFAS.

Title

Flexor Hallucis Longus Transfer through a Supine Approach: A novel technique

Submit Date

08/27/2023

Correspondent

Last Name: Sohail
 Full Name: Asad Sohail Email: asadsohail360@gmail.com
 Practice/Company/Residency Program: University Hospitals

Authors

Author 1: Asad Sohail , DPM Author 2: Brandon Kitchens , DPM
 Author 3: Parmvir Deo, BS Author 4: Mark Mendezsoon, DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Access to posterior anatomic structures is often achieved while patient is in a prone position on the surgical table. However, physiologic changes with increased pressure to anterior structures can lead to unforeseen complications, especially in immunocompromised patients. Flexor Hallucis Longus transfers have been historically achieved via a posterior approach while patient is prone. This case study provides a rationale and technique guide for Flexor Hallucis Longus transfer through a supine approach.

Methodology

Procedures

5 patients undergoing Flexor Hallucis Longus transfer while supine for acute-on-chronic Achilles pathology have been included in this cases series. Primary success outcomes were determined by ambulatory status, infections rates, anesthesia-related complications, and surgical case times.

Results

All 5 patients undergoing Flexor Hallucis Longus transfer while supine were able to achieve successful post operative outcomes. Anesthesia related complications were significantly diminished via supine positioning and 0 patients demonstrated superficial or deep infection. Surgical case times were comparable to that of conventional techniques.

Discussions

Complications related to prone positioning have been well-established and can be avoided via supine positioning. Flexor Hallucis Longus transfers while patient is supine has demonstrated to be of similar efficacy than of the conventional approach. This novel technique of FHL transfers can assist in avoidance of unnecessary complications while also providing similarly efficacious surgical outcomes compared to conventional techniques. Furthermore, surgical case times were comparable to that of conventional techniques, further decreasing probability of anesthesia-related complications to occur.

Format

Case Study

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Asad Sohail , DPM	asadsohail360@gmail.com	I/We have nothing to disclose	
Brandon Kitchens , DPM	bpkitchens86@gmail.com	I/We have nothing to disclose	
Parmvir Deo, BS	pdeo@kent.edu	I/We have nothing to disclose	
Mark Mendezsoon, DPM	drmarkmendezsoon@gmail.com	I/We have nothing to disclose	

Title Effects of Parallax and Distortion in Total Ankle Arthroplasty**Submit Date** 08/27/2023**Correspondent**

Last Name: Brown

Full Name: Joseph R Brown, DPM

Email: joey.brown2@ohiohealth.com

Practice/Company/Residency Program:

OhioHealth Grant Medical Center

Authors

Author 1: Joseph R Brown, DPM

Author 2: Zachary P Hill, DPM

Author 3: Ross Groeschl, DPM

Author 4: Brian Steginsky, DO

Author 5: Robert Mendicino, DPM, FAFAS

Author 6:

Author 7:

Author 8:

Purpose

The purpose of this study was to evaluate the degree of parallax/distortion in intraoperative fluoroscopic images during total ankle arthroplasty (TAA).

Methodology

A retrospective review of all total ankle arthroplasties performed at a level 1 trauma center by two surgeons (R.M. and B.S.) were reviewed. Intraoperative fluoroscopic images were printed, and the anteroposterior ankle views were evaluated for any obvious parallax image distortion. Cases with obvious parallax distortion were included for evaluation. The tibia was marked at 2-centimeter intervals from the proximal stem of the implant, and the anatomical axis of the tibia (AAT) was drawn at the mid-diaphysis. The lateral distal tibial angle (aLDTA) and anatomic axis deviation (AAD) were measured for each segment.

Procedures**Results**

A total of 22 TAAs were performed. 4 cases were excluded due to inadequate imaging. 6/18 (33.3%) of cases had obvious parallax distortion. We found the average aLDTA was 90.6 (84 to 100) degrees. At the most proximal tibial zone, the average aLDTA was 93.8 (91-100) degrees. We found the average AAD was 4.6 (0.5 to 17.3) millimeters. The AAD ranged from 0.5 to 17.3mm lateral, to 0.8 to 8.2mm medial.

Discussions

Parallax can distort the appearance of the tibia on intraoperative fluoroscopic images. As the normal aLDTA is 89 degrees and the anatomic axis should be centered within the ankle joint, deviation from this can cause difficulty with implant placement. Surgeons should be aware of the potential impact of parallax/distortion on TAA and ways to mitigate these deleterious effects.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joseph R Brown, DPM	joey.brown2@ohiohealth.com	I/We have nothing to disclose	
Zachary P Hill, DPM	zph1582@gmail.com	I/We have nothing to disclose	
Ross Groeschl, DPM	rgroe726@gmail.com	I/We have nothing to disclose	
Brian Steginsky, DO	brian.steginsky@gmail.com	I/We have nothing to disclose	
Robert Mendicino, DPM, FAFAS	rmendicino@faiwp.com	I/We have nothing to disclose	

Title

Incidence of Deep Infection with Ankle Open Reduction With Internal Fixation Infection Rates and Associated Risk Factors

Submit Date

08/30/2023

Correspondent

Last Name: Zhang
 Full Name: Huaitao Email: huaitao.x.zhang@kp.org
 Practice/Company/Residency Program: Kaiser Santa Clara

Authors

Author 1: Huaitao Zhang, DPM Author 2: Khanh Phuong Tong, DPM
 Author 3: Melinda Bowlby, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

To identify the incidence of deep infection and the associated risk factors associated with deep infection in patients undergoing open reduction with internal fixation (ORIF) for traumatic ankle fracture.

Methodology

This is a retrospective cohort study of KPNC members over the age of 18 that aims to identify individuals who underwent ankle ORIF between 1/1/2010 and 9/30/2022 at NorCal Kaiser Hospitals. Patients were followed for up to 6 weeks post-surgery for returning to the operating room (OR) as a proxy for deep surgical site infection (SSI). These patient charts were then individually reviewed. We excluded patients who had concurrent open fractures or soft tissue/skin/bone infections on presentation. We compared the risks of returning to the between those who had an ambulatory HbA1c < 8% vs ≥8%, current smokers vs. former/unknown in the year prior, and duration of incision time.

Procedures

Results

Among 9,754 eligible patients who underwent ORIF, 194 (2%) returned to the OR within 6 weeks. The rate of returning to the OR was significantly higher in those with incision time >120 mins vs. ≤120 mins, 3% and 2% respectively (P-value: 0.002). There were no significant differences in returning to the OR between those with high and low A1c, 3% vs. 2% (P-value: 0.62) and between current smokers vs. not, 3% vs. 2% (P-value: 0.36).

Discussions

We have demonstrated an overall deep infection rate of approximately 2%, with a main contributing factor of total operating room time. Deep infection rate is consistent with literature review of 1.4-5.5%. Although no statistical significance was demonstrated, A1c greater than 8, and current smokers did have higher infection rate.

Format

Scientific

Case Rpt Followup

6

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Huaitao Zhang, DPM	huaitao.x.zhang@kp.org	I/We have nothing to disclose	
Khanh Phuong Tong, DPM	khanhphuong.x.tong@kp.org	I/We have nothing to disclose	
Melinda Bowlby, DPM	melinda.a.bowlby@kp.org	I/We have nothing to disclose	

Title

Talonavicular Fusion Rates with Augment: Comparing Dorsal Plate with Lag Screw versus Nitinol Staple Constructs

Submit Date

08/29/2023

Correspondent

Last Name: Kugach

Full Name: Kelly Kugach, DPM

Email: kkugach@carilionclinic.org

Practice/Company/Residency Program:

Carilion Clinic

Authors

Author 1: Kelly Kugach, DPM

Author 2: Blayne Patton, DPM, AACFAS

Author 3: John Randolph Clements, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Talonavicular arthrodesis (TNA) is indicated for many pathologies including arthritis, flatfoot, and coalitions. There are several fixation constructs including dorsal plating, lag screw, and staples. The aim of this study is to assess the fusion rates across various TNA constructs.

Methodology

A retrospective multi-surgeon study identified 19 patients with TNA utilizing various fixation constructs: dorsal plate with lag screw, nitinol staple, and nitinol staple with lag screw with the use of augment from May 2019-March 2023. Fusion rates across the talonavicular joint were obtained using AP, oblique, and lateral radiographs. Fusion was defined as presence of bony bridging and obliteration of joint space across the arthrodesis site.

Procedures

Results

All constructs achieved fusion. There was no significant difference in time to union between dorsal plate with lag screw (104.1±38.7 days) vs. all nitinol staple cohorts (130.5±53.5 days). Within the nitinol staple cohort there were 3 distinct constructs: two staples, 3 staples, and staple with lag screw. Nitinol staples with lag screw (102.7±30.1 days) had similar time to union as the dorsal plate with lag screw (104.1±38.7 days).

Discussions

Fusion will occur across the TNA site regardless of fixation construct. This study shows no statistical difference between plating and nitinol staple cohorts but shows similar fusion rates between dorsal plates and nitinol staple cohorts with lag screws. Staples are known to be easy to use and have faster application rates. Given their faster application rates and similar fusion rate to dorsal plate with lag screws, nitinol staples can be used as a viable alternative fixation construct in TNA.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kelly Kugach, DPM	kkugach@carilionclinic.org	I/We have nothing to disclose	
Blayne Patton, DPM, AACFAS	bkpatton@carilionclinic.org	I/We have nothing to disclose	
John Randolph Clements, DPM, FACFAS	jrcllements@carilionclinic.org	Consultant/Advisor/Speaker (List all affiliations) Hold more than a 2% financial interest (including stocks) in any organizations(s)	Stryker Stryker - EasyFuse

Title Associations of Lower Leg Injury Patterns in Long-Distance Runners**Submit Date** 08/31/2023**Correspondent**

Last Name: Fillar

Full Name: Taylor, M, Fillar, DPM

Email: taylor.fillar@ascension.org

Practice/Company/Residency Program:

Ascension St. John Hospital

Authors

Author 1: Taylor M. Fillar, DPM

Author 2: Donald T. McDonald, DPM, AACFAS

Author 3: Nicole M. Brouette, DPM, FACFAS

Author 4: Laura A. Owczarek, MD

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Foot and ankle issues comprise nearly 50% of all long distance running injuries with almost half of runners experiencing injury in a given period of training. The study aimed to assess lower leg injury patterns among runners with differing ability and training levels in preparation for long-distance running events.

Methodology

This is a cross-sectional survey of 803 adult long-distance runners participating in events during the 2022 Detroit Free Press Marathon (1 mile, 5k, half marathon, marathon). Inclusion criteria consisted of adults aged 18 and older. The survey data included participant demographics, training level, lower leg injury patterns, type of injury, treatment and footwear.

Procedures**Results**

Runners with previous lower leg injury were younger than those that did not (43.0 vs 45.4 respectively). On race day, odds of injury increased with running >10 hours per week, average training pace >10 minutes per mile, younger age, and previous lower leg pain preventing training. Additionally, a significantly higher proportion of participants with previous lower leg pain preventing training sustained a new injury during the race. Gender, weight, occupation type and shoe gear type were not significant predictors of injury.

Discussions

Chronic injury is commonplace in endurance sports and a significant factor in further injury risk. The outcomes underscore the importance of tailored training programs for novice, intermediate and advanced runners that considers runners' ability and gradual progression of training volume and intensity. Overall, this research contributes to a better understanding of how runners' characteristics influence their injury susceptibility and highlights the need for targeted preventive measures based on individual training and ability levels.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Taylor M. Fillar, DPM	taylor.fillar@ascension.org	I/We have nothing to disclose	
Donald T. McDonald, DPM, AACFAS	donmcdon3@gmail.com	I/We have nothing to disclose	
Nicole M. Brouette, DPM, FACFAS	nicoleb.dpm@gmail.com	I/We have nothing to disclose	
Laura A. Owczarek, MD	lowczar1@hfhs.org	I/We have nothing to disclose	

Title **Fibular Rod for Ankle Fracture Open Reduction Internal Fixation: Mini Open versus Closed Technique**

Submit Date 08/28/2023

Correspondent

Last Name: Knauer
 Full Name: Oliver Knauer, DPM Email: oliverknauer100@gmail.com
 Practice/Company/Residency Program: Virginia Mason Franciscan Health

Authors

Author 1: Oliver Knauer, DPM Author 2: Todd Chappell, DPM, FACFAS
 Author 3: Lance Nethercott, DPM Author 4: Joshua T. Smith, DPM
 Author 5: Jennifer McGorty Droll, DPM Author 6:
 Author 7: Author 8:

Purpose

Ankle fractures are a common pathology seen by foot and ankle specialists, a subset of these fractures require open reduction internal fixation (ORIF). One, increasingly popular, technique is the use of a fibular rod. There have been conflicting reports on this technique and its ability to provide adequate reduction and fixation. The aim of this study is to compare radiographic outcomes of a mini open vs closed reduction technique with the use of a fibular rod.

Methodology

Twenty Six ankles that underwent ORIF with use of a fibular rod were identified. Ten of the fractures were reduced using an all closed technique and the remaining sixteen were reduced using a mini open technique. We analyzed reduction quality, in both groups, by postoperative radiographic measurement of talocrural (TC) angle and presence of dime sign.

Procedures

Results

The average age of the closed group and mini open group was 68.2 and 63.4 years respectively. The presence of dime sign was identified in postoperative radiographs in 81.2 percent of the mini open group and 60 percent in the closed group. The average TC angle was 12.9 deg. in the mini open group and 8.5 deg. in the closed group.

Discussions

We believe that the use of a fibular rod for ankle fracture fixation is an acceptable technique. However, our results demonstrate the importance of using a mini open technique in order to properly reduce the fibula anatomically prior to the insertion of the fibular rod.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Oliver Knauer, DPM	oliverknauer100@gmail.com	I/We have nothing to disclose	
Todd Chappell, DPM, FACFAS	todd.chapps@gmail.com	I/We have nothing to disclose	
Lance Nethercott, DPM	lnethercott@footankleclinics.com	I/We have nothing to disclose	
Joshua T. Smith, DPM	jtsmith3912@gmail.com	I/We have nothing to disclose	
Jennifer McGorty Droll, DPM	jlmcgorty@gmail.com	I/We have nothing to disclose	

Title

Randomized Controlled Trial Comparing Liposomal Bupivacaine versus Bupivacaine HCL for Postoperative Pain Management of Forefoot Surgery

Submit Date 08/28/2023

Correspondent

Last Name: Walkner
 Full Name: Madeline, M, Walkner, DPM MPH Email: maddywalkner@gmail.com
 Practice/Company/Residency Program: Lenox Hill Hospital

Authors

Author 1: William Spielfogel DPM Author 2: Alexandra Black DPM
 Author 3: Michelle, Dejesus DPM Author 4: Madeline Marie Walkner, DPM, MPH
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

To determine if liposomal bupivacaine injection will significantly decrease post-operative pain and opioid dependence in the acute postoperative period (<72hrs) when compared to bupivacaine HCl.

Methodology

28 patients who underwent a forefoot procedure consisting of bunionectomy +/- digital procedure were randomized and received a post-operative local nerve block of 10ccs of bupivacaine HCl or 8ccs of liposomal bupivacaine. Post-operative pain was assessed using the VAS scoring scale at 2, 24, and 72 hour intervals. The amount of oral morphine equivalents required post-operatively and time to first use of oral morphine equivalents were recorded.

Procedures

Results

Over the first 72 hours in the post operative period, patients receiving bupivacaine HCl reported they took a mean of 8 Percocet (5/325mg) tablets while patients receiving liposomal bupivacaine took a mean of 7 tablets. The p-value was determined to be greater than .05 between the two groups.

Discussions

There was no statistical difference in total number of Percocet tablets taken between the 2 groups. On average, patients who received liposomal bupivacaine took fewer Percocet tablets than those who received bupivacaine HCl. VAS scores between the two groups were noted to be similar with the Bupivacaine HCl group reporting one point higher on average for each of the time intervals. The lack of statistical significance may be secondary to the small sample size of this study and survey reported data.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
William Spielfogel DPM	wspielfogel@northwell.edu	I/We have nothing to disclose	
Alexandra Black DPM	alexblack@gmail.com	I/We have nothing to disclose	
Michelle, Dejesus DPM	mdejesus10@northwell.edu	I/We have nothing to disclose	
Madeline Marie Walkner, DPM, MPH	mwalkner@northwell.edu	I/We have nothing to disclose	

Title

Radiographic Outcomes of Minimally Invasive Bunionectomy: A Retrospective Cohort Analysis of 66 procedures.

Submit Date 08/28/2023

Correspondent

Last Name: Alikhani
 Full Name: Amir, P., Alikhani-Koopaei, DPM Email: tuh48938@temple.edu
 Practice/Company/Residency Program: LECOM Health/Millcreek Community Hospital

Authors

Author 1: Amir, P., Alikhani-Koopaei, DPM Author 2: Anthony, D., Colonna, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose To demonstrate the effectiveness of minimally invasive bunionectomy approach in correcting Intermetatarsal angles, Hallux valgus angles, and sesamoid positions across a range of severity.

Methodology From January 2022 to May 2023, a single surgeon performed a minimally invasive bunionectomy on 58 patients, involving a total of 66 feet. The study involved the analysis of both preoperative and postoperative AP weightbearing radiographs to assess Intermetatarsal angles, Hallux valgus angles, and sesamoid positions. Furthermore, postoperative X-rays were examined to identify any patterns in the surgeon's transverse osteotomy technique.

Procedures

Results Radiographic statistical analysis revealed remarkable mean corrections for IM angle (6.91°), HV angle (18.59°), and sesamoid (3 positions). Ranging within 4° to 9° for IM angle, 11° to 25° for HV angle, and 2 to 4 for sesamoid. Maximum corrections reached an impressive 12° for IM angle, 40° for HV angle, and 6 positions for sesamoid.

Discussions In conclusion, our radiographic data analysis leaves no doubt that the MIS bunionectomy stands as a reliable and highly effective treatment for a broad spectrum of bunions, including those with severe deformities. Its remarkable success in correcting IM angle, HV angle, and sesamoid position underscores its significance as a transformative approach in triplane bunion correction surgery.

Format Scientific

Case Rpt Followup 17

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Amir, P., Alikhani-Koopaei, DPM	tuh48938@temple.edu	I/We have nothing to disclose	
Anthony, D., Colonna, DPM, FACFAS	colonnaad@gmail.com	I/We have nothing to disclose	

Title

Comparative Outcomes Between Tibio-calcaneal Arthrodesis in Charcot Patients with and without Metallic Talar Replacement.

Submit Date

08/28/2023

Correspondent

Last Name: Grant-McDonald

Full Name: Grant-McDonald

Email: lisa.m.grantmcdonald@gmail.com

Practice/Company/Residency Program:

Eastern Virginia Adult Reconstruction and Limb Salvage

Authors

Author 1: Lisa, Marie, Grant-McDonald DPM

Author 2: Zab'Di Sanchez Prada, AACFAS

Author 3: William Peter Grant DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Tibio-calcaneal (TC) arthrodesis in Charcot patients is marked with inconsistent post-operative results stemming largely from non-union. Long-term follow-up often identifies hardware failure requiring revision or below knee amputation. The aim of this study is to compare clinical and radiographic outcomes in patients with a Brodsky Type 3a collapse who underwent TC arthrodesis with and without metallic talar replacement.

Methodology

Twenty patients were identified who underwent TC fusion for the treatment of Brodsky Type 3a dislocation. Patient's clinical and radiographic data were retrospectively compared. Comparison between groups were made for co-morbidities, age, gender, radiographic union, limb length discrepancy, time to union, revision of procedure, amputation, reoccurrence of deformity, post-operative complication.

Procedures

Results

The patient populations were well matched with regard to age and comorbidities. Improvements in time to union, presence of union, return to ambulation were noted within the talar replacement group. Reoccurrence of deformity, revision, hardware failure and amputation were more common in the TC fusion without talar replacement group.

Discussions

Previous studies identify limb length discrepancies greater than 2.5cm lead to greater complications associated with arthrodesis. This study suggests that replacement of large segment bone loss may improve outcomes in this challenging patient population.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lisa, Marie, Grant-McDonald DPM	lisa.m.grantmcdonald@gmail.com	Consultant/Advisor/Speaker (List all affiliations) Member of a medical publication or editorial governing board	Orthofix, Synthes, SeaSpine Foot and ankle specialist
Zab'Di Sanchez Prada, AACFAS	zlsprada@gmail.com	I/We have nothing to disclose	
William Peter Grant DPM	charcotking@yahoo.com	Consultant/Advisor/Speaker (List all affiliations) Intellectual Property rights owned	Orthofix Gbeam

Title **Overhang, Underhang, and Everything In Between: A Retrospective Analysis of 400 CT-Based Patient-Specific TAR Plans**

Submit Date 08/28/2023

Correspondent
 Last Name: Hume
 Full Name: Donald R. Hume, PhD Email: dhume@paragon28.com
 Practice/Company/Residency Program: Paragon 28

Authors
 Author 1: Jeffrey Christensen, DPM, FACFAS Author 2: Paul Cammack, MD
 Author 3: Donald R Hume, PhD Author 4: Mathew Anderle, MPH
 Author 5: Laura Brinker, DPM Author 6:
 Author 7: Author 8:

Purpose
 Optimal fit and alignment of total ankle replacement (TAR) tibial components has been shown to affect outcomes and device survival. Excessive overhang can lead to impingement and soft tissue irritation, while underhang can lead to subsidence and aseptic loosening. The aim of this study is to quantify the fit of an anatomic TAR tibial baseplate as planned by a CT-based patient specific alignment strategy.

Methodology
 400 de-identified CT-based patient specific TAR consecutive patient plans were reviewed for this retrospective analysis. 11 patients were excluded due to existing hardware which violated the anterior or posterior cortex at the component height. To quantify underhang/overhang, measurements were made at 101 evenly spaced points along the anterior and posterior face of the component to the corresponding location on the bone. These data were averaged across the patient sample and further stratified by the six component size offerings.

Procedures

Results
 The average component fit resulted in 0.42 ± 0.93 mm of overhang (size range: -1.31 to 0.57mm) on the anterior cortex and 0.63 ± 0.87 mm of overhang (size range: -0.25 to 0.74mm) on the posterior cortex. The maximum overhang and underhang averaged across the patient sample was 1.56 ± 0.89 mm of overhang (size range: 1.20-1.75mm) and 1.28 ± 1.38 mm of underhang (size range: 1.00-3.72mm) on the anterior face, and 2.16 ± 1.71 mm of overhang (size range: 1.74-3.35mm) and 1.18 ± 1.02 mm of underhang (size range: 1.07-2.19mm) on the posterior face.

Discussions
 Optimizing TAR fit by minimizing overhang and underhang is critical to improving patient outcomes. Anatomical tibial baseplates may provide a better fit than universal implant designs.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jeffrey Christensen, DPM, FACFAS	jccdp@gmail.com	Grant/Research funding	Paragon 28, Inc.
		Consultant/Advisor/Speaker (List all affiliations)	Paragon 28, Inc.
Paul Cammack, MD	paulcammack@tcomn.com	Consultant/Advisor/Speaker (List all affiliations)	Paragon 28, Inc.; Arthrex, Inc.
		Grant/Research funding	Paragon 28, Inc.
Donald R Hume, PhD	dhume@paragon28.com	Consultant/Advisor/Speaker (List all affiliations)	Paragon 28, Inc. (employee/stock)
Mathew Anderle, MPH	manderle@paragon28.com	Consultant/Advisor/Speaker (List all affiliations)	Paragon 28, Inc. (employee/stock)
Laura Brinker, DPM	lbrinker@paragon28.com	Consultant/Advisor/Speaker (List all affiliations)	Paragon 28, Inc. (employee/stock)

Title

Glycemic and Cardiometabolic Markers in the Progression of Diabetes and Lower Extremities Complications: A Study in Mexican-Americans from Starr County

Submit Date

08/28/2023

Correspondent

Last Name: Elvin

Full Name: Peter T. Elvin

Email: peter.elvin01@utrgv.edu

Practice/Company/Residency Program:

University of Texas Rio Grande Valley SOPM; UT Dallas Erik Jonsson School of Eng

Authors

Author 1: Peter T. Elvin

Author 2: Garrett W. Edwards

Author 3: Javier La Fontaine, DPM

Author 4: Walid D. Fakhouri, PhD

Author 5: Craig L. Hanis, PhD

Author 6: Claudia C. Biguetti, DDS, PhD

Author 7:

Author 8:

Purpose

The aim is to compare levels of glycemic and cardiometabolic markers in Mexican-American cohort of diabetics with foot ulcers (DFU), diabetic controls (D), and non-diabetics (ND).

Methodology

The cohort is comprised of Mexican-Americans from Starr County in Texas. Cohort data was obtained from D (n=48), DFU (n=24) and ND(n=48). Patients were standardized by age (61.76±11.77), BMI (32.52±7.02), and sex (58% male and 42% female). Markers analyzed comprised: fasting glucose (FG), HbA1c, triglycerides, high-density-lipoproteins (HDL), and low-density-lipoproteins (LDL) levels. Data was assessed for significance ($p < 0.05$) using appropriate tests based on data distribution normality.

Procedures

N/A

Results

FG levels were elevated in DFU group (214.3±70.8 mg/dL) compared to the D (173.2±62.3 mg/dL) and ND (100.5±8.9 mg/dL) groups, ($p < 0.0001$). HbA1c levels were elevated in the DFU group (8.59%±1.6; $p < 0.0001$), compared to the D (7.7%±1.9) and ND groups (5.5%±0.3). Triglycerides were progressively elevated in D (186.0±111.2 mg/dL) and DFU groups (196.0±206.4), compared to the ND (133.2±74.55). HDL levels of ND (44.26±10.93 mg/dL) differed from both DFU (37.28±9.51 mg/dL; $p=0.01$) and D cohorts (38.76±9.56 mg/dL; $p=0.02$). LDL levels differed between the D (86.50±31.73 mg/dL) and the ND group (110.4±27.27 mg/dL; $p=0.0006$).

Discussions

Findings suggest potential disruptions in lipid metabolism and cardiometabolic health, as well as elevated glycemic markers (FG, HbA1c, and metformin), may be associated with being potential markers for diabetic progression to lower extremities complications.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Peter T. Elvin	peter.elvin01@utrgv.edu	I/We have nothing to disclose	
Garrett W. Edwards	garrett.edwards01@utrgv.edu	I/We have nothing to disclose	
Javier La Fontaine, DPM	javier.lafontaine@utrgv.edu	I/We have nothing to disclose	
Walid D. Fakhouri, PhD	walid.d.fakhouri@uth.tmc.edu	Grant/Research funding	UL1 Mechanism, National Center for Advancing Translational Sciences, National Institute of Health
Craig L. Hanis, PhD	craig.l.hanis@uth.tmc.edu	Grant/Research funding	UL1 Mechanism, National Center for Advancing Translational Sciences, National Institute of Health
Claudia C. Biguetti, DDS, PhD	claudia.biguetti@utrgv.edu	Grant/Research funding	UL1 Mechanism, National Center for Advancing Translational Sciences, National Institute of Health

Title Column Length Analysis in Midfoot Charcot Deformity**Submit Date** 08/31/2023**Correspondent**

Last Name: Kim

Full Name: Sanghyuk Kim, DPM, AACFAS

Email: sanghkimdpm@gmail.com

Practice/Company/Residency Program:

Saint Joseph's Medical Center

Authors

Author 1: Sanghyuk Kim, DPM, AACFAS

Author 2: James De Meo, DPM, FACFAS

Author 3: Fadi Aqeel, DPM

Author 4: Huma Haq, DPM

Author 5: Moriah Peoples, DPM

Author 6: Tarek Eljahmi, DPM

Author 7:

Author 8:

Purpose

Charcot foot is known to cause instability of both the medial and lateral columns. We have applied our Column Length Ration (CLR) to evaluate changes in the lateral column in Charcot foot deformity.

Methodology

A total of 45 X-ray studies from 32 patients were used for the study. The AP and lateral views were used for measurement. The primary investigator measured all radiographic measurements. Correlation between CLR and the cuboid height angle was obtained using Pearson coefficients.

Procedures**Results**

CLR did not show a correlation with the cuboid height measurement ($r=-0.11$). When evaluating Charcot progression on x-ray, column lengths did not demonstrate statistically significant changes. However, a decrease in cuboid height measurement was noted. On average, a change of 0.29 cm in cuboid height was noted, while the column lengths changed about 0.084cm on average.

Discussions

The study demonstrated that the sagittal instability of the midfoot did not directly correlate with the transverse instability. The behavior column length in the Charcot foot can be seen as independent of the sagittal instability of the midfoot. While the transverse deformities are noted due to joint instability and destruction, column lengths did not show any changes.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sanghyuk Kim, DPM, AACFAS	sanghkeym@gmail.com	I/We have nothing to disclose	
James De Meo, DPM, FACFAS	jdemeo@saintjosephs.org	I/We have nothing to disclose	
Fadi Aqeel, DPM	drfaqeel@gmail.com	I/We have nothing to disclose	
Huma Haq, DPM	huma.s.haq@gmail.com	I/We have nothing to disclose	
Moriah Peoples, DPM	dr.moriahpeoples@gmail.com	I/We have nothing to disclose	
Tarek Eljahmi, DPM	teljahmi@saintjosephs.org	I/We have nothing to disclose	

Title

How to Decrease Diabetic Foot Readmission Rates and Length of Stay Using an Integrated Multidisciplinary Approach

Submit Date

08/28/2023

Correspondent

Last Name: Baxter
 Full Name: Nicole Rachel Baxter, PGY3 Email: nbaxter459@gmail.com
 Practice/Company/Residency Program: Emory Decatur

Authors

Author 1: Nicole R Baxter, PGY3 Author 2: Kwame J Doh, DPM.
 Author 3: Jeanne Mirbey, DPM Author 4: Charles Penrose, DPM
 Author 5: David Alder, DPM Author 6:
 Author 7: Author 8:

Purpose

To examine how readmission rates for diabetic foot ulcers is impacted using a multidisciplinary approach with open communication between the teams and admitting patients prior to surgical intervention for improved outcomes.

Methodology

Using Allscripts database for inpatient information, patients in the criteria of diabetes mellitus with lower extremity foot infection leading to amputation were included from the dates of June 2019-Dec 2020. A total of 163 patients were selected from Emory Decatur and Emory Hillandale hospital.

Procedures

Results

Average Length of Stay for patients in this study was 8.31 days compared to average of 17-20.36 days found in other studies (Nather and Holscher et al). The 30-day readmission rate for our Diabetic foot patients was found to be at 7.36%, compared to 30% nation wide (Remington et al).

Discussions

Our 30-day readmission rate for all patients in the study was found to be at 7.36%, compared to 30% (Remington et al). Average length of stay 8.31 days. Admitting the patient prior to surgical intervention, reduces the risk of reoccurrence or failure of surgery due to some underlying problem such a reduced blood flow or other comorbidities. A multidisciplinary approach allows a team approach to heal the patient and prevent readmission.

Format

Scientific

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Nicole R Baxter, PGY3	nbaxter459@gmail.com	I/We have nothing to disclose	
Kwame J Doh, DPM.	novdoh@gmail.com	I/We have nothing to disclose	
Jeanne Mirbey, DPM	jeanne.m.mirbey@dmu.edu	I/We have nothing to disclose	
Charles Penrose, DPM	cpenvose@fasco.health	I/We have nothing to disclose	
David Alder, DPM	davidalder@comcast.net	I/We have nothing to disclose	

Title

Are immediate postoperative x-rays of value in foot surgery patients?

Submit Date

08/28/2023

Correspondent

Last Name: Giurini

Full Name: John Giurini, DPM, FACFAS

Practice/Company/Residency Program:

Email: jgiurini@bidmc.harvard.edu

Beth Israel Deaconess Medical Center

Authors

Author 1: Rahul Mishra, DPM

Author 3:

Author 5:

Author 7:

Author 2: John Giurini, DPM, FACFAS

Author 4:

Author 6:

Author 8:

Purpose

To evaluate the value of immediate post-operative x-rays in management of surgical patients.

Methodology

A prospective study was conducted on patients undergoing foot surgery at a single center from April 2022 thru June 2022. The study included 56 consecutive patients who had immediate post-operative x-rays taken in the post-anesthesia care unit (PACU) following foot surgery. The primary measure was to determine if immediate PACU radiographs changed postoperative management.

Procedures

Results

Of the 56 patients reviewed in this study, 0 experienced a return to the OR, had weight-bearing status changed or method of immobilization changed. Breakdown of procedures included: HAV surgery (18, 32.1%), Lesser metatarsal surgery (10, 17.9%), Midfoot bone procedure (3, 5.4%), Hindfoot bone procedure (10, 17.9%), Other (15, 26.8%).

Discussions

PACU radiographs are commonly performed following foot surgery. Yet there remain questions on their value in changing postoperative management of surgery. This study would suggest there is little value in obtaining these radiographs. Postoperative management was not affected based on PACU radiographs, e.g. no returns to the OR, no change in postoperative immobilization and no change in postoperative weight-bearing instructions. Additionally, because of surgical dressings and difficulty in positioning, PACU radiographs can be of poorer quality causing poor visualization of the surgical site. While immediate postoperative radiographs could be advantageous in specific clinical scenarios, the routine adoption of this practice should be carefully evaluated, considering additional costs with limited clinical benefits.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level I

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Rahul Mishra, DPM	jgiurini@bidmc.harvard.edu	I/We have nothing to disclose	
John Giurini, DPM, FACFAS	rmishra@bidmc.harvard.edu	I/We have nothing to disclose	

Title

Osteomyelitis Limb Salvage Using a Local Antibiotic Carrier Calcium Sulfate

Submit Date

08/28/2023

Correspondent

Last Name: Baxter

Full Name: Nicole Rachel Baxter, DPM

Email: nbaxter459@gmail.com

Practice/Company/Residency Program:

Emory Decatur

Authors

Author 1: Nicole, R, Baxter, PGY

Author 2: Alan J Block, DPM

Author 3: Kiara E Francis, PGY1

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Osteomyelitis is a devastating and limb threatening disease. The aim of this study is to examine the results of flowable calcium phosphate with heat labile antibiotics as a treatment option.

Methodology

Patients with suspected osteomyelitis undergo a bone biopsy and sent for PCR analysis. Based on results, the patient start targeted appropriate antibiotics and taken to the OR in 1-3 days. A Jamshid needle with flowable calcium phosphate product with heat stable antibiotics, is injected into the infected bone. 3 weeks later a second bone biopsy is obtained and sent for PCR. If negative, then the patient discontinues antibiotics.

Procedures

Results

51 patients with 100 clearance of infection. 80% had early intervention with a positive bone biopsy.

Discussions

Osteomyelitis can be a devastating and costly disease. Patients are typically diagnosed late in their disease. Bone biopsy is gold standard and PCR results in 24-48 hours. Our surgical approach does not disturb surrounding soft tissue/blood supply and allows targeted bone healing. This procedure is also a safer option for high risk patients (high A1C, noncompliant) due to the minimal incision and time to heal. The calcium phosphate product eludes antibiotics for over 30 days. We have 100% resolution and healing in our patients and believe our method is a viable and cost saving approach for osteomyelitis.

Format

Scientific

Case Rpt Followup

36

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Nicole, R, Baxter, PGY	nbaxter459@gmail.com	I/We have nothing to disclose	
Alan J Block, DPM	blockosu@gmail.com	I/We have nothing to disclose	
Kiara E Francis, PGY1	kiara.francis@emory.edu	I/We have nothing to disclose	

Title

Current Considerations and Trends of the Evans Calcaneal Osteotomy Among Prominent Foot and Ankle Surgeons

Submit Date

08/28/2023

Correspondent

Last Name: Bischoff

Full Name: Alex, J, Bischoff, DPM AACFAS

Email: bischoff91@gmail.com

Practice/Company/Residency Program:

Balance Foot and Ankle

Authors

Author 1: Alex, J, Bischoff, DPM AACFAS

Author 2: Zachary, Hill, DPM

Author 3: Ross, Groeschl, DPM

Author 4: Robert, Mendicino, DPM FACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

There is considerable variation concerning best surgical techniques and perioperative management for the Evans Calcaneal Osteotomy. To summarize the most up-to-date concepts currently being utilized, we developed a survey study investigating these points of debate.

Methodology

This survey was developed by the researchers and consisted of 18 questions. This was then sent to 63 prominent foot and ankle surgeons. After responses were collected, each question was assessed to determine which components around the procedure are most widely accepted.

Procedures

Results

In total, 47 participants (75% response rate) were included. There was no complete consensus among the foot and ankle surgeons on any of the questions, including topics with previous literature available. The factors most agreed upon (>75% agreement) included indications for the procedure, use of intraoperative fluoroscopy, radiographic assessment of talar head uncoverage, negligible importance of the interposed material to extend the full width of the calcaneus, and the incisional approach. The factors moderately agreed upon (50 – 75% agreement) included the interposed material composition, shape of the interposed material, non-weight bearing protocol, fixating the interposed material, location of osteotomy, and osteotomy direction. The factors least agreed upon (<50% agreement) included the length of graft material, ideal patient age, ideal patient BMI, most common complication encountered, and type of fixation utilized.

Discussions

There is extensive literature on techniques around the Evans Calcaneal Osteotomy. The findings of this survey study provide insight into the most up-to-date concepts and techniques currently being utilized by foot and ankle surgeons when performing an Evans Calcaneal Osteotomy.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alex, J, Bischoff, DPM AACFAS	bischoff91@gmail.com	I/We have nothing to disclose	
Zachary, Hill, DPM	zph1582@gmail.com	I/We have nothing to disclose	
Ross, Groeschl, DPM	rgroe726@gmail.com	I/We have nothing to disclose	
Robert, Mendicino, DPM FACFAS	rmendicino@faiwp.com	I/We have nothing to disclose	

Title

The Influence of COVID-19 on the Rate of Symptomatic Deep Venous Thrombosis Following Foot and Ankle Surgery

Submit Date

08/28/2023

Correspondent

Last Name: Bischoff
 Full Name: Alex, J, Bischoff, DPM FACFAS Email: bischoff91@gmail.com
 Practice/Company/Residency Program: Balance Foot and Ankle

Authors

Author 1: Alex, J, Bischoff, DPM FACFAS Author 2: Nevin, Joseph, DPM
 Author 3: Meghan, Roby, DPM Author 4: Sara, Judickas, DPM
 Author 5: Mallory, Faherty, PhD ATC Author 6: Ian, Barron, DPM FACFAS
 Author 7: Author 8:

Purpose

COVID-19 infection creates a prothrombotic state. However, there is a paucity of literature assessing its influence on deep venous thrombosis following surgery. This study evaluates the incidence and risk factors of deep venous thrombosis among COVID-19 positive patients undergoing foot and ankle surgery.

Methodology

A retrospective review was performed at a single institution to extract all patients who had a COVID-19 positive diagnosis and foot or ankle surgery. 472 patients met inclusion criteria. 321 patients had a COVID-19 positive diagnosis within the established perioperative period, and the remaining 151 composed the no COVID-19 group.

Procedures

Results

Overall, there were 10 DVT in the COVID-19 positive population, a rate of 3.12%. This was not significantly increased compared to the COVID-19 negative group (3.12% vs. 1.99%, p-value 0.463). No demographic or medical history variables were found to have a statistically significant influence on the rate of DVT in the COVID-19 positive patient following foot and ankle surgery. Furthermore, vaccination status, timing of COVID-19 diagnosis in relation to surgery, trauma, anatomic location of surgery, and the use of chemical prophylaxis did not demonstrate any statistical significance.

Discussions

There is no currently available literature investigating the influence COVID-19 has on DVT rates after foot and ankle surgery. In summary, this study did not find COVID-19 to increase risk of DVT following foot and ankle surgery and no specific variables were found to influence that risk. This study stands as a preliminary investigation on DVT rates in COVID-19 patients who have undergone foot and ankle surgery.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alex, J, Bischoff, DPM FACFAS	bischoff91@gmail.com	I/We have nothing to disclose	
Nevin, Joseph, DPM	njoseph1212@gmail.com	I/We have nothing to disclose	
Meghan, Roby, DPM	meghan1510roby@gmail.com	I/We have nothing to disclose	
Sara, Judickas, DPM	sarajudickas@gmail.com	I/We have nothing to disclose	
Mallory, Faherty, PhD ATC	mallory.faherty@ohiohealth.com	I/We have nothing to disclose	
Ian, Barron, DPM FACFAS	barronim13@gmail.com	I/We have nothing to disclose	

Title

Correlation between Socioeconomic Status and Severity of Amputation in COVID Positive Diabetic Patients: A Retrospective Study

Submit Date 08/30/2023

Correspondent

Last Name: Negron
 Full Name: Nelson Negron DPM Email: nenegron@montefiore.org
 Practice/Company/Residency Program: Montefiore Medical Center

Authors

Author 1: Michael Masi DPM Author 2: Nelson Negron DPM
 Author 3: Janet J. Park DPM Author 4: Dominic J. Catanese DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This study aimed to determine whether a correlation existed between the socioeconomic status of diabetic patients who tested positive for COVID-19 and the extent of amputation required during the COVID-19 pandemic.

Methodology

This is a retrospective study that analyzed 1366 patients from Montefiore Medical Center between March 2019 and May 2023. Inclusion criteria consisted of patients exposed to COVID-19 confirmed by nasal swab/PCR, those with EMR-diagnosed Type 2 diabetes mellitus, and individuals who underwent foot/ankle amputation or had skin manifestation during admission. Excluded were non-COVID-19 admissions, non-diabetic cases, and those lacking residence details. Patients' zip codes were subsequently utilized to classify socioeconomic status, as indicated by the median household income.

Procedures

Results

58 patients were included in this study. 19 of the 58 patients (32.8%) underwent partial 1st ray amputation. Of these patients, 8 were (13.79%) in lower socioeconomic regions. Among these, surgeries comprised of 1 ulcer, 1 partial ray amputation, 2 transmetatarsal amputations (TMA), 1 below knee amputation (BKA), and 1 above knee amputation (AKA). There was statistical significant difference in below knee amputation outcomes.

Discussions

Results showed that there is no statistical significant difference in diabetic patients' amputation levels, as determined by their ZIP code-based socioeconomic status and COVID-19 infection rate. With the limited dataset, with only 2 instances of BKA, likely contributed to the lack of statistical significance in BKA data. While this study provides valuable insights into the relationship between COVID-19-positive diabetic patients' socioeconomic circumstances and amputation levels, further research with a larger dataset is warranted to validate and expand upon these findings.

Format

Scientific

Case Rpt Followup

0

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michael Masi DPM	m.masi90@gmail.com	I/We have nothing to disclose	
Nelson Negron DPM	nenegron@montefiore.org	I/We have nothing to disclose	
Janet J. Park DPM	park.janetj@gmail.com	I/We have nothing to disclose	
Dominic J. Catanese DPM, FACFAS	dcatanes@montefiore.org	I/We have nothing to disclose	

Title

Long-Term Functional Outcomes of Surgical Treatment of Insertional Achilles Tendinopathy Augmented with Human Acellular Dermal Matrix Without the Use of Suture Anchors

Submit Date 08/29/2023

Correspondent

Last Name: Corlee
 Full Name: Bryce A. Corlee, DPM AACFAS Email: brycecorlee@gmail.com
 Practice/Company/Residency Program: Foot & Ankle Center of Oklahoma

Authors

Author 1: Bryce A Corlee, DPM AACFAS Author 2: Mitchell L Bloomquist, DPM AACFAS
 Author 3: Branden J Brantley, DPM Author 4: Curtis D Hamilton, DPM
 Author 5: Vytautas M Ringus, MD FAAOS Author 6:
 Author 7: Author 8:

Purpose Insertional Achilles tendinopathy is a pathology which affects approximately 6% of the general population. The aim of this study was to evaluate the long-term outcomes of several patients who underwent surgical treatment for Insertional Achilles tendinopathy which augmented the Achilles tendon repair with acellular dermal allograft matrix but without employing suture anchors.

Methodology A retrospective review of an initial total of 42 patients with insertional Achilles tendinopathy who underwent surgical treatment consisting of partial detachment (50-75%) of the Achilles tendon, excision of retrocalcaneal exostosis, debridement and repair of Achilles tendon with augmentation using human acellular dermal matrix allograft by a single surgeon was performed. A total of 20 patients were available for final follow up greater than one year. Primary outcomes assessed included time to weightbearing, visual analog scale, major and minor complications. The effect of comorbidities including diabetes, hypertension and tobacco usage were reviewed.

Procedures

Results Mean time to weight bearing for these 20 patients was 4.25 weeks. The VAS scores improved from a mean of 5.1 to a mean of 1.75 at final follow up. No patients had postoperative infection. Two (10%) patients had delayed wound healing while one patient (5%) required surgical wound debridement. No Achilles tendon ruptures were noted in this study.

Discussions This protocol for surgical treatment of insertional Achilles tendinopathy with the use of human acellular dermal matrix resulted in promising outcomes with earlier time to weightbearing while eliminating the need for supplemental fixation devices.

Format Scientific

Case Rpt Followup 36

Student Club Not a Student Club Poster

Classification Soft Tissue/Tumor

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Bryce A Corlee, DPM AACFAS	brycecorlee@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	TRX Biosurgery
Mitchell L Bloomquist, DPM AACFAS	bloomquistm1@gmail.com	I/We have nothing to disclose	
Branden J Brantley, DPM	brandenbrantley24@yahoo.com	I/We have nothing to disclose	
Curtis D Hamilton, DPM	curtisham55@gmail.com	I/We have nothing to disclose	
Vytautas M Ringus, MD FAAOS	vringus@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	TRX Biosurgery, Enovis, Restor3D, One Surgical, Flower Orthopedics
		Member of a medical publication or editorial governing board	Past reviewer for Foot and Ankle Specialist and abstracts for AOFAS

Title

The Learning Curve of a Hybrid Total Ankle Arthroplasty Combining a Stemmed Intramedullary Tibial Component With Chamfer-Cut Talar Dome

Submit Date

08/29/2023

Correspondent

Last Name: Miner

Full Name: Samantha A. Miner, DPM AACFAS

Email: dr.sam.miner@gmail.com

Practice/Company/Residency Program:

Upperline Health Inc

Authors

Author 1: Samantha A. Miner, DPM, AACFAS

Author 2: Philip Basile, DPM, FACFAS

Author 3: Keith Crenshaw, DPM, MS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Total ankle arthroplasty (TAA) is regarded as a technically demanding surgical procedure. While a viable alternative to ankle arthrodesis, the steep learning curve associated with TAA has been a barrier to its widespread use. Prior studies have demonstrated a learning curve of approximately 30 cases. We have previously described our hybrid technique combining an intramedullary tibial component with a minimal resection chamfer-cut talar component. The purpose of the present study is to compare our early and late outcomes, and therefore address the learning curve associated with our hybrid technique.

Methodology

We performed a comparative study of 60 consecutive patients undergoing primary TAA using this hybrid implant by a single surgeon from October 2018 to September 2022. Intraoperative characteristics, clinical outcomes, complications, and component alignment on postoperative radiographs were assessed and compared between the first and last 30 cases.

Procedures

Results

There were no differences in patient characteristics between the two groups. Mean surgery time decreased from 130 (85-170) to 91 (68-152) minutes ($p < 0.001$). There were less overall complications (12 vs 4, $p = 0.03$), and specifically less wound complications in the later group. Radiographic alignment was similar between the groups. No significant difference in AOFAS ($p = 0.158$) or VAS ($p = 0.329$) scores was found.

Discussions

We found that our hybrid technique is not exempt from the learning curve associated with TAA implantation with regard to intraoperative characteristics. While there was a mild statistically insignificant difference in complications, there was overall no difference in patient-reported clinical nor radiographic outcomes between the groups.

Format

Scientific

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Samantha A. Miner, DPM, AACFAS	dr.sam.miner@gmail.com	I/We have nothing to disclose	
Philip Basile, DPM, FACFAS	drphilbasile@gmail.com	I/We have nothing to disclose	
Keith Crenshaw, DPM, MS	keithcrenshaw32@gmail.com	I/We have nothing to disclose	

Title

Comparison of First Metatarsal Phalangeal Joint Arthrodesis Rates with and without use of interfragmentary screw fixation

Submit Date 08/29/2023

Correspondent

Last Name: Kugach
 Full Name: Kelly Kugach, DPM Email: kkugach@carilionclinic.org
 Practice/Company/Residency Program: Carilion Clinic

Authors

Author 1: Jennifer Wentz, DPM Author 2: Jessica Katzer, DPM
 Author 3: Kelly Kugach, DPM Author 4: Jason Naldo, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Current fusion rates for first metatarsophalangeal joint (MPJ) are quoted ~90% in the literature. Biomechanical studies have shown the plate with interfragmentary screw construct to be about 3x more stable than a lag screw alone and 10x stronger than a plate alone. The aim of this study is to determine if the decreased stability in a plate alone construct places a patient at increased risk for post-operative complications or elongated recovery time by evaluating time to weight bearing, fusion rates and complication rates.

Methodology

50 patients underwent 1st MPJ arthrodesis without addition of a lag screw by a single provider for treatment of hallux limitus/rigidus or hallux valgus. The minimum follow-up time was 1 year. Time to weightbearing, fusion rates, complications, adjunctive procedures, and patient demographics were evaluated.

Procedures

Results

50 patients underwent 1st MPJ arthrodesis without use of a lag screw with average age of 59 (range 32-81). Average time to radiographic fusion was 48 days. Average time to protected weightbearing was 13.5 days and time to unprotected weightbearing was 48 days. Three patients experienced complications, including nonunion or delayed union, resulting in a 94% union rate. Four (8%) patients had difficulty with hardware irritation/pain and underwent subsequent hardware removal.

Discussions

Although a plate only construct lacks stability biomechanically when compared to the standard screw/plate construct, we determined patient outcomes and recovery times are not affected by omission of the lag screw. This information is beneficial to surgeons, as performing 1st MPJ arthrodesis without an interfragmentary screw could cut down OR time, patient anesthesia, and implant costs.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jennifer Wentz, DPM	jwentz@carilionclinic.org	I/We have nothing to disclose	
Jessica Katzer, DPM	jkatzer@carilionclinic.org	I/We have nothing to disclose	
Kelly Kugach, DPM	kkugach@carilionclinic.org	I/We have nothing to disclose	
Jason Naldo, DPM, FACFAS	jvnaldo@carilionclinic.org	I/We have nothing to disclose	

Title

Non-Prep Tibiotalocalcaneal Nailing in the Diabetic Ankle Fracture as Limb Salvage Procedure

Submit Date

08/30/2023

Correspondent

Last Name: Poynter
 Full Name: Thomas S. Poynter Email: tspoyn01@louisville.edu
 Practice/Company/Residency Program: University of Louisville

Authors

Author 1: Thomas S. Poynter DPM Author 2: Alexander Schultz DPM
 Author 3: Michael R. Sweeney DPM Author 4: Garrett P. Wireman DPM
 Author 5: David Seligson MD Author 6: Nicholas Laco DPM
 Author 7: Author 8:

Purpose

In this single center retrospective study, we attempt to determine the utility of non-prepped hindfoot nailing in the complicated diabetic population. We believe the comorbidities and increased complication risks seen in the diabetic population with ankle fractures warrant tibiotalocalcaneal stabilization using retrograde intramedullary nailing in a non-prepped fashion. This fixation can be a safe and viable option compared to open reduction internal fixation of the diabetic ankle fracture.

Methodology

Retrospective chart review on patients with complicated diabetes presenting to the University of Louisville orthopedic department who underwent tibiotalocalcaneal nailing of their ankle fracture as primary treatment without formal joint preparation in the following time frame: 1/1/2014 to 12/31/2020.

Procedures

Results

Results shows a total of 34 patients with diabetes were treated with tibiotalocalcaneal nailing and a total of 36 TTC nails placed. 3 total below knee amputations recorded from the sample size with a total of 21 patients who met follow up criteria. A limb salvage rate of 86.4% found. The only statistically significant factor related to below knee amputation was hemoglobin A1c > 7.0%. Further, we noted an average length of stay in the hospital setting equalling 6 days.

Discussions

Our findings suggest that TTC nailing in a non-prep fashion can adequately allow for limb salvage in the DM ankle fracture patient. We show a limb salvage rate of 86.4%. Further we believe this non-prep nailing of the tibiotalocalcaneus allows for faster return to WB of baseline and reduces overall hospitalization.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Thomas S. Poynter DPM	tspoyn01@louisville.edu	I/We have nothing to disclose	
Alexander Schultz DPM	alexanderschultzdpm@gmail.com	I/We have nothing to disclose	
Michael R. Sweeney DPM	michael.sweeney.2@louisville.edu	I/We have nothing to disclose	
Garrett P. Wireman DPM	garrett.wireman@louisville.edu	I/We have nothing to disclose	
David Seligson MD	david.seligson@louisville.edu	I/We have nothing to disclose	
Nicholas Laco DPM	nicholas.laco@louisville.edu	Consultant/Advisor/Speaker (List all affiliations)	Cerament

Title

Distally Based Peroneus Brevis Muscle Flap for Treatment of Distal Third Lower Extremity Defects in the Multimorbid Patient Population

Submit Date

08/29/2023

Correspondent

Last Name: Groeschl
 Full Name: Ross T Groeschl, DPM Email: rgroe726@gmail.com
 Practice/Company/Residency Program: Grant Medical Center

Authors

Author 1: Ross Groeschl, DPM Author 2: Ryan Stone, DPM, AACFAS
 Author 3: Alexandra T. Black, DPM, AACFAS Author 4: Amanda Quisno, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to evaluate the utility of the distal based peroneus brevis muscle flap augmented with external fixation for coverage of distal-third lower extremity defects in high-risk, multimorbid patients.

Methodology

A retrospective review of four consecutive patients who underwent a distal based peroneus brevis muscle flap for coverage of a distal-third lower extremity defect between January 2018 and July 2022 was performed. Patients with a minimal follow-up of 12 months were included. Surgical technique, perioperative data, and complications were recorded. Patient satisfaction was recorded via survey at final follow-up.

Procedures

Results

Demographics including comorbidities, prior intervention, defect size (cm²), time to healing, adjunctive procedures, complications and patient satisfaction are illustrated. Average follow-up was 38.25 months (range, 13 - 60). Limb preservation was achieved in 4/4 patients at final follow-up.

Discussions

Chronic distal lower extremity defects are difficult to manage given their multifactorial etiology, limited available reconstructive options and incidence in the multimorbid patient population. Multimorbidity is defined as the simultaneous presence of several (three or more) chronic conditions. The authors' find value in attempting orthoplastic-type limb reconstruction to ultimately achieve limb preservation in select multimorbid patients. The orthoplastic approach to limb reconstruction should be aimed at improving overall patient quality of life. This case series demonstrates the utility of orthoplastic reconstruction techniques including a distally based peroneus brevis flap augmented with external fixation to achieve limb preservation in multimorbid patients who would otherwise be at high risk for post-amputation mortality.

Format

Scientific

Case Rpt Followup

38.25

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ross Groeschl, DPM	rgroe726@gmail.com	I/We have nothing to disclose	
Ryan Stone, DPM, AACFAS	ryan.stone177@gmail.com	I/We have nothing to disclose	
Alexandra T. Black, DPM, AACFAS	alexblack@gmail.com	I/We have nothing to disclose	
Amanda Quisno, DPM, FACFAS	aquisno@fasco.health	I/We have nothing to disclose	

Title

Risk Factors that Predict Loss of Ambulation and Wound Healing after Midfoot Amputation

Submit Date 08/31/2023

Correspondent

Last Name: Ply
 Full Name: Christopher M. Ply, BS Email: cmp334@georgetown.edu
 Practice/Company/Residency Program: Georgetown University School of Medicine

Authors

Author 1: Christopher M. Ply, BS Author 2: Umayr R. Shakih, MPH
 Author 3: John R. Dibello, MS Author 4: Craig J. Verdin, DPM, AACFAS
 Author 5: Christopher E. Attinger, MD Author 6: Karen K. Evans, MD
 Author 7: John S. Steinberg, DPM, FACFAS Author 8: Jayson N. Atves, DPM, FACFAS

Purpose

The purpose of this study is to investigate how preoperative clinical risk factors predict time to wound healing and return to ambulation after a midfoot amputation. Understanding clinical risk factors can help guide decision-making and treatment recommendations for this highly comorbid patient population requiring a midfoot amputation.

Methodology

58 adult patients undergoing a midfoot amputation at a single tertiary wound care center were included in the study. The cohort is composed of 31 transmetatarsal amputations, 11 Lisfranc amputations, and 16 Chopart amputations. Data was obtained through retrospective chart review and was analyzed using regression analysis with significance defined as $p < 0.05$.

Procedures

Results

Linear regression revealed that time to wound healing was directly associated with BMI ($\beta=3.66$, $p=0.022$) and LDL ($\beta=0.621$, $p=0.045$), but inversely associated by age ($\beta=-2.05$, $p=0.007$). Simple logistic regression revealed that postoperative return to ambulation was predicted by BMI (OR=1.12, $p=0.015$), hemoglobin A1c (OR=1.54, $p=0.010$), CCI (OR=0.748, $p=0.0047$), and age (OR=0.945, $p=0.0098$).

Discussions

Increase in BMI and decrease in age predicted longer time to wound healing and higher likelihood of return to ambulation. Patients more likely to bear weight and ambulate, such as those with a higher BMI or younger age, might utilize their partially amputated foot more and delay the wound healing process.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Christopher M. Ply, BS	cmp334@georgetown.edu	I/We have nothing to disclose	
Umayr R. Shakih, MPH	urs3@georgetown.edu	I/We have nothing to disclose	
John R. Dibello, MS	jrd150@georgetown.edu	I/We have nothing to disclose	
Craig J. Verdin, DPM, AACFAS	cverdin@kent.edu	I/We have nothing to disclose	
Christopher E. Attinger, MD	christopher.attinger@medstar.net	I/We have nothing to disclose	
Karen K. Evans, MD	karen.k.evans@medstar.net	I/We have nothing to disclose	
John S. Steinberg, DPM, FACFAS	John.Steinberg@medstar.net	I/We have nothing to disclose	
Jayson N. Atves, DPM, FACFAS	jayson.atves@medstar.net	I/We have nothing to disclose	

Title

Analyzing Gait Irregularities in Diabetic Peripheral Neuropathy: A Multidisciplinary Approach

Submit Date

08/29/2023

Correspondent

Last Name: Kavanaugh
 Full Name: Marian, R, Kavanaugh, DPM Email: marian.kavanaugh@medstar.net
 Practice/Company/Residency Program: MedStar Health

Authors

Author 1: Marian, R, Kavanaugh, DPM Author 2: Ademide, Young, BS
 Author 3: Holly, D, Shan, BS Author 4: Samuel, Huffman, BS
 Author 5: Firras, Garada, DPM Author 6: Christopher, E, Attinger, MD
 Author 7: John, S, Steinberg, DPM Author 8: Jayson, N, Atves, DPM

Purpose

The primary aim of this study is to collect quantitative data to characterize kinematic gait parameters amongst diabetic adults with and without neuropathy. This data was used to determine the effects of peripheral neuropathy on proprioception and identify the specific spatiotemporal gait parameters that are significantly affected.

Methodology

Diabetic adults ambulating unassisted, pain-free, without open wounds or lower extremity surgery ninety days prior participated. Data included demographics, comorbidities, previous lower extremity surgeries, and gait parameters. Participants underwent standardized protocols using Opal sensors for 120-second walk and 30-second Romberg tests. Software analyzed cadence, gait speed, elevation midswing, single limb support, double limb support, sway. Data were analyzed ($p < 0.05$) with unpaired t-tests.

Procedures

Results

141 patients (mean age 63.8 ± 10.7 years, BMI 31.9 ± 8.8 kg/m²). PN had reduced gait speed (0.82 vs. 1.02 m/s, $p < 0.001$), increased elevation midswing (1.52 vs. 1.06 cm, $p = 0.002$), prolonged step duration (0.63 vs. 0.58 s, $p = 0.003$), reduced cadence (97.54 vs. 105.05 steps/min, $p = 0.001$), increased double limb support (28.39 vs. 24.36%, $p < 0.001$), decreased single limb support (35.8 vs. 37.7%, $p = 0.001$). Multivariate linear regression showed PN significantly predicted gait speed ($\beta = -0.331$, $p < 0.001$), elevation midswing ($\beta = 0.333$, $p = 0.001$), step duration ($\beta = 0.302$, $p = 0.004$), cadence ($\beta = -0.321$, $p = 0.002$), single limb support ($\beta = -0.228$, $p = 0.023$), double limb support ($\beta = 0.282$, $p = 0.004$).

Discussions

Our study showed notable gait mechanic differences between DM patients with and without PN, including cadence, gait speed, midswing elevation, single/double limb support, and sway. By focusing on interventions that address biomechanical imbalances caused by neuropathy, limb salvage specialists could potentially mitigate the risk of end-stage complications, preserving the patient's mobility and QoL.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level I

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Marian, R, Kavanaugh, DPM	marian.kavanaugh@medstar.net	I/We have nothing to disclose	
Ademide, Young, BS	aoy3@georgetown.edu	I/We have nothing to disclose	
Holly, D, Shan, BS	hs730@georgetown.edu	I/We have nothing to disclose	
Samuel, Huffman, BS	marian.kavanaugh@my.rfums.org	I/We have nothing to disclose	
Firras, Garada, DPM	marian.kavanaugh@my.rfums.org	I/We have nothing to disclose	
Christopher, E, Attinger, MD	marian.kavanaugh@my.rfums.org	I/We have nothing to disclose	
John, S, Steinberg, DPM	john.steinberg@medstar.net	I/We have nothing to disclose	
Jayson, N, Atves, DPM	jayson.atves@medstar.net	I/We have nothing to disclose	

Title

Rate of Recurrent Osteomyelitis after Partial Foot Amputation in Diabetics

Submit Date

08/29/2023

Correspondent

Last Name: Saley
 Full Name: Isabella Saley Email: isaley@carilionclinic.org
 Practice/Company/Residency Program: Virginia Tech Carilion

Authors

Author 1: Isabella Saley, DPM Author 2: Jessica Katzer, DPM
 Author 3: David Calderwood, DPM Author 4: Kelly Kugach, DPM
 Author 5: Blayne Patton, DPM, AACFAS Author 6:
 Author 7: Author 8:

Purpose

Per IDSA guidelines, treatment for diabetic foot osteomyelitis is surgical debridement with 2 weeks of antibiotics or 6 weeks of IV antibiotics for residual soft tissue or bone infection, respectively. This is deemed a weak recommendation due to low evidence. The aim of this study is to evaluate re-amputation rates in patients with negative vs positive (residual OM) margins subsequently treated with 6 weeks of IV antibiotics following amputation.

Methodology

Data was collected for 116 patients who underwent digital, partial ray, or transmetatarsal amputations for osteomyelitis secondary to diabetic foot infections at a single institution. The data included demographics, laboratory findings, diagnosis method, pathology results, antibiotic treatment, and subsequent procedures. Power analysis estimated the required sample size using an alpha level of 5% and power level of 0.8. The association between having histologically positive margins and the risk of returning to the OR within 1 year was tested using Chi-Square analysis.

Procedures

Results

99 of the 116 patients had negative margins for osteomyelitis and 17 patients had positive margins and 6 weeks of IV antibiotics. 33% (33/99) of patients with negative margins had a more proximal amputation within 1 year. 64% (11/17) of patients with positive margins and IV antibiotics returned for re-amputation. We found a statistically significant association between positive margins and the risk of re-amputation despite the recommended 6 weeks of IV antibiotic therapy. (p-value of 0.04635)

Discussions

Often, limb salvage surgeons strive to remove as minimal bone as possible; however, this study shows aggressive resection for removal of all bone infection is advantageous to preventing further infection and improving patient prognosis.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Isabella Saley, DPM	isaley@carilionclinic.org	I/We have nothing to disclose	
Jessica Katzer, DPM	jkatzer@carilionclinic.org	I/We have nothing to disclose	
David Calderwood, DPM	dcalderwood@carilionclinic.org	I/We have nothing to disclose	
Kelly Kugach, DPM	kkugach@carilionclinic.org	I/We have nothing to disclose	
Blayne Patton, DPM, AACFAS	bkpatton@carilionclinic.org	I/We have nothing to disclose	

Title

Staged Treatment of the Infected Hindfoot and Ankle: An Algorithmic Approach to Septic Fusion

Submit Date

08/29/2023

Correspondent

Last Name: Stone

Full Name: Ryan, J, Stone, Stone, DPM, AACFAS

Email: Ryan.stone177@gmail.com

Practice/Company/Residency Program:

Virginia Mason Franciscan Advanced Foot and Ankle
Reconstructive Fellowship

Authors

Author 1: Ryan J Stone

Author 2: Trevor Page, DPM

Author 3: Samuel Caine, DPM, AACFAS

Author 4: Byron Hutchinson, DPM, FACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The aim of this study is to evaluate outcomes of staged septic fusion in patients with severe deformity of the hindfoot/ankle and peri-talar infection.

Methodology

A retrospective chart review of 16 consecutive patients who underwent staged septic fusion of the hindfoot/ankle between 2016-2022 was performed. Patients with a minimum of 12 month follow-up and previously recommended a below knee amputation were included. Demographics, perioperative reconstructive data and complications were recorded. The reconstructive algorithm for septic fusion is illustrated in diagram format and described.

Procedures

Results

Demographics including indications and prior surgical procedures are illustrated. Reconstructive stages and complications are outlined for each patient. Average follow-up was 28.5 months (range, 13 - 58). 7/16 patients presented with talar collapse. 9/16 patients underwent tibiotalar fusion, 7/16 patients underwent tibio-calcaneal fusion. 9/16 patients achieved septic fusion with external fixation alone. Delayed wound healing was the most common complication, occurring in 6/16 patients. At final follow-up, limb preservation was achieved in 12/16 patients. All patients who achieved limb preservation were able to ambulate independently.

Discussions

Non-traumatic lower extremity amputation is directly associated with high mortality, poor quality of life and loss of independence. Stabilization of the hindfoot/ankle in the setting of severe deformity and peri-articular infection is paramount to limb preservation. Using the aforementioned algorithm, salvage of a functional limb was achieved in 75% of patients. Ultimately, this study provides a reproducible approach to treating limb-threatening deformities with concomitant infection of the hindfoot and ankle.

Format

Scientific

Case Rpt Followup

28

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ryan J Stone	Ryan.stone177@gmail.com	I/We have nothing to disclose	
Trevor Page, DPM	tspageaz@gmail.com	I/We have nothing to disclose	
Samuel Caine, DPM, AACFAS	samuel.caine@commonspirit.org	I/We have nothing to disclose	
Byron Hutchinson, DPM, FACFAS	byron.hutchinson@commonspirit.org	Consultant/Advisor/Speaker (List all affiliations)	Paragon consultant

Title

Optimal Calcaneal and Distal Tibial Autograft Harvest Trajectory: A Computed Tomography Analysis of Regional Bone Density

Submit Date

08/30/2023

Correspondent

Last Name: Casciato
 Full Name: Dominick J, Casciato, DPM AACFAS Email: dominickcasciato@gmail.com
 Practice/Company/Residency Program: Orlando VA Medical Center

Authors

Author 1: Colton K Hansen DPM Author 2: Nigel S Morris DPM
 Author 3: Danielle M Pesavento DPM Author 4: Sara Mateen DPM AACFAS
 Author 5: Dominick J Casciato DPM AACFAS Author 6: Jacob Wynes DPM MS FACFAS
 Author 7: Author 8:

Purpose

From supplementing arthrodeses to filling bone voids, bone grafting remains a useful adjunct procedure. With a low complication rate, harvesting with a trephine-like device provides a quick means to obtain graft. The purpose of this study is to compare the bone density of harvesting trajectories from standard lateral calcaneal and medial distal tibial trephine sites.

Methodology

A retrospective analysis of 30 adults with normal foot and ankle CT scans was performed. Demographic data was recorded. Indirect bone mineral density using CT-derived Hounsfield units (HU) of calcaneal and distal tibial autograft sites, at three frontal plane (anterior, central, posterior) and transverse plane (superior, midline, and inferior) positions, were collected. An Analysis of Variance test followed by post-hoc testing was used to compare the densities.

Procedures

Results

The average age was 44.87±13.34 years across 12 male and 18 females. The posterior (228.6±84.70HU; p = 0.009) and superior (247.01±72.08HU; p < 0.001) orientations maintained the greatest density among the frontal and transverse calcaneal planes, respectively. The posterior (291.17±107.7HU; p < 0.001) and inferior (274.1±106.9HU; p < 0.001) orientations maintained the greatest density among the frontal and transverse distal tibial planes, respectively. The posterior-superior calcaneus (268.10±70.64HU) and posterior-inferior distal tibia (325.61±106.67HU) maintained the densest bone.

Discussions

To obtain the greatest density of autograft from the calcaneus, surgeons should orient harvesters in the posterior and superior direction. Moreover, when harvesting autograft from the distal tibia, orientation should be directed in the posterior and inferior direction.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Colton K Hansen DPM	COLTON.HANSEN@VA.GOV	I/We have nothing to disclose	
Nigel S Morris DPM	nigel.morris@va.gov	I/We have nothing to disclose	
Danielle M Pesavento DPM	danielle.pesavento@va.gov	I/We have nothing to disclose	
Sara Mateen DPM AACFAS	sara.mateen8@gmail.com	I/We have nothing to disclose	
Dominick J Casciato DPM AACFAS	dominickcasciato@gmail.com	I/We have nothing to disclose	
Jacob Wynes DPM MS FACFAS	jwynes@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Smith & Nephew/ Paragon 28

Title

Cost Efficacy Comparison and the Clinical Importance of Sequencing Lateral Ankle Stabilization Techniques: A Comparative Study

Submit Date

08/30/2023

Correspondent

Last Name: Babu

Full Name: Sriya, S, Babu, DPM, AACFAS

Email: sriyabudpm@gmail.com

Practice/Company/Residency Program:

WVU Medicine Wheeling Hospital Foot And Ankle Advanced Surgical Fellowship

Authors

Author 1: Sriya, S, Babu, DPM, AACFAS

Author 2: Austin, W, Vonasek, DPM, AACFAS

Author 3: Paulina Piekarska, DPM, AACFAS

Author 4: Mark, H, Hofbauer, DPM, FAFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Lateral ankle instability can be treated surgically via traditional Broström-Gould repair but newer techniques like augmentation anchoring kits (with/without arthroscopy) have emerged. This study aims to compare the cost efficacy, review the clinical outcome of a traditional method with these alternatives and explore the economic advantages of adopting a sequenced approach.

Methodology

We retrospectively analyzed the costs for: Group A (10 2-polyester-nonabsorbable sutures), Group B (augmentation kits), and Group C (augmentation kits with arthroscopy) done in a single facility between 2021-2022. We compared procedure-related material costs, hospital charges, operating room and ancillary costs and considered operating room time. AOFAS scores were recorded preoperatively and at 12 months postoperatively for Group A (N = 32).

Procedures

Results

Group A material cost is \$450.80 per case. Group B material cost is \$1495.00, reaching upto \$4260.75 with hospital charges. Group C material cost was the same as Group B, however, incurred higher total charges due to longer operating room use. Group A had a significant increase in AOFAS scores ($p < 0.05$).

Discussions

This study emphasizes the cost efficacy of a traditional Broström-Gould while significantly improving lateral ankle instability. Balancing material costs, hospital charges, and operating room time is essential for cost-effectiveness evaluation. Moreover, the study underscores the importance of avoiding the “last procedure first” approach by advocating for sequenced intervention strategy. Beginning with the traditional method, allow surgeons to have revisional options, safeguarding against unforeseen complications during the recovery process. Further research is needed to better understand the correlation between clinical effectiveness and economic factors in lateral ankle stabilization procedures.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sriya, S, Babu, DPM, AACFAS	sriyabudpm@gmail.com	I/We have nothing to disclose	
Austin, W, Vonasek, DPM, AACFAS	austinvonasek@gmail.com	I/We have nothing to disclose	
Paulina Piekarska, DPM, AACFAS	paulinapiecarska@gmail.com	I/We have nothing to disclose	
Mark, H, Hofbauer, DPM, FAFAS	hofdude30@gmail.com	I/We have nothing to disclose	

Title **A Comparative Retrospective Analysis: Mini Open Vs Percutaneous Incisional Methodology for Ankle Open Reduction with Internal Fixation When Utilizing Fibular Intramedullary Rod Fixation**

Submit Date 08/30/2023

Correspondent
Last Name: Dong
Full Name: Johnny Email: johnnydong101@gmail.com
Practice/Company/Residency Program: Cooperman Barnabas Medical Center

Authors
Author 1: Elias Logothetis Author 2: Jay Bhuta
Author 3: Aamir Ahmed Author 4: Jayson Choi
Author 5: Andre Ross Author 6:
Author 7: Author 8:

Purpose Ankle fractures are common injuries of the lower extremity. The aim of this study is to assess the fracture patterns and incisional approaches for fibular fractures treated with intramedullary rod fixation in order to establish standard of care.

Methodology A cohort comprising 11 fibular fractures treated with intramedullary rod fixation that were performed between 2022-2023 at two hospital institutions. The investigated parameters included the incisional approach, fracture pattern and age.

Procedures

Results The investigatory cohort comprised of 3 male and 8 female. 2/11 individuals underwent a percutaneous approach while 9/11 individuals underwent a mini-open approach. 5/9 patients had unsuccessful percutaneous reduction attempts that required mini open approach. The ankle fractures were classified: 5/11 as SER 4, 4/11 as SER 2, 1/11 as SAD 2, and 1/11 as PER 4.

Discussions Fibular rods are a great option for fibula ORIF as they maintain length while providing stability comparable to plate and screw fixation. Semi-long term functional outcomes in patients who underwent fibular rod ORIF are positive. Due to elevated incidence rate of unsuccessful percutaneous reductions, we recommend the mini open reduction approach be formally instituted as the prevailing standard of care when performing fibular ORIF procedures employing the fibular nail.

Format Scientific

Case Rpt Followup
Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Elias Logothetis	eliaslogo93@gmail.com	I/We have nothing to disclose	
Jay Bhuta	jbhta1@gmail.com	I/We have nothing to disclose	
Aamir Ahmed	aahmeddpm@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Arthrex
Jayson Choi	jayson.k.choi@gmail.com	I/We have nothing to disclose	
Andre Ross	aross@smgnj.com	I/We have nothing to disclose	

Title

A Retrospective Comparative Analysis of In-Office vs. Operating Room Percutaneous Tendo-Achilles Lengthening: A study of 65 Limbs

Submit Date 08/30/2023

Correspondent

Last Name: Karman
 Full Name: Robert G Karman, DPM Email: rkarman39@gmail.com
 Practice/Company/Residency Program: New York Presbyterian Queens/ Weill Cornell Medical College

Authors

Author 1: Robert Karman, DPM Author 2: Nakia Sarad, DO
 Author 3: Navdeep Bains, DPM Author 4: Alexander Malek, DPM MPH
 Author 5: HyunJi Boo, DPM Author 6: Deena Horn, DPM FAFAS
 Author 7: Nicholas Salerno, DPM FAFAS Author 8: John Doolan, DPM FAFAS

Purpose Percutaneous Tendo-Achilles lengthening is an effective procedure for reducing forefoot pressure, preventing and healing forefoot ulcerations as well as trans metatarsal stump ulcerations. The aim of this study is to provide insight into the effectiveness, safety and feasibility of percutaneous tendo-achilles lengthening in both an in-office and operating room setting.

Methodology 65 limbs from 64 patients undergoing percutaneous tendo-achilles lengthening from 2018-2022 at a large New York City teaching hospital were included in this retrospective comparative study. The average follow up time was 24 months. Patients were divided into an in-office and operating room cohort. Using non-parametric statistical analysis, demographics, comorbidities, ASA classification, indication for surgery, post-operative pain/functional status, post-op device use, intraop/postop complication, need for revision, readmission rate, and mortality rate were analyzed.

Procedures

Results Overall surgical success rate was 93.8% (61), with 4 Post operative complications in the inpatient group. Post op complications included achilles rupture (n=1), hematoma (n=1), plantar heel ulcer (n=1), wound dehiscence (n=1). Mortality rates between both groups at 1 year follow up were equal at 0%. Demographics, comorbidities, surgical indications, and ASA levels were similar in distribution across both cohorts

Discussions Based on our results, we conclude that in-office tendo-achilles lengthening can be considered a safe and effective alternative than performing this procedure inpatient. Our study shows similar outcomes in terms of morbidity, complications and need for revisional surgery with comparable demographics, comorbidities, ASA classifications and indication for surgery among the two cohorts.

Format Scientific

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Robert Karman, DPM	rkarman39@gmail.com	I/We have nothing to disclose	
Nakia Sarad, DO	nas9168@med.cornell.edu	I/We have nothing to disclose	
Navdeep Bains, DPM	nab9145@nyp.org	I/We have nothing to disclose	
Alexander Malek, DPM MPH	alm9340@nyp.org	I/We have nothing to disclose	
HyunJi Boo, DPM	hyunji.boo@gmail.com	I/We have nothing to disclose	
Deena Horn, DPM FAFAS	deh9091@med.cornell.edu	I/We have nothing to disclose	
Nicholas Salerno, DPM FAFAS	nds4002@med.cornell.edu	I/We have nothing to disclose	
John Doolan, DPM FAFAS	jod9114@med.cornell.edu	I/We have nothing to disclose	

Title

Hindfoot Alignment Effect on Midfoot Charcot Reconstruction Outcomes

Submit Date

08/30/2023

Correspondent

Last Name: Parkman
 Full Name: Liliya, M Email: liliya.parkman@medstar.net
 Practice/Company/Residency Program: MedStar

Authors

Author 1: Liliya M Parkman, DPM Author 2: Thomas Milisits, DPM, MPH
 Author 3: Eshetu Tefera, MS Author 4: Caitlin Zarick, DPM, FAFAS
 Author 5: John S. Steinberg, DPM, FAFAS Author 6: Christopher E. Attinger, MD
 Author 7: Jacob Wynes, DPM, MS, FAFAS Author 8: Nicole K. Cates, DPM, AACFAS

Purpose

To evaluate the effect of hindfoot alignment on 210 patients with midfoot Charcot neuroarthropathy that underwent Charcot reconstruction.

Methodology

Inclusion criteria encompassed adults over 18 with midfoot Charcot, who underwent midfoot Charcot reconstruction from 2004- 2021. Preoperative hindfoot alignment was categorized into valgus, neutral, and varus using the Saltzman view. Hindfoot alignment was based on the most distal part of the calcaneus location in relation to the longitudinal axis of the tibia, neutral is in line, varus is medial, and valgus is lateral. Patients' hindfoot alignment was assessed for its effects on midfoot Charcot reconstruction. Multivariate logistic regression evaluated the effect of hindfoot alignment on reconstructive outcomes.

Procedures

Results

In patients with valgus position, the odds of pin tract infection was 4.2 times higher (4.237, 95% 1.165 to 15.406), new site of Charcot collapse was 4.9 times higher (4.920, 95% 1.093 to 22.156), hardware failure was 3.5 times higher (3.454, 95% X 1.260 to 9.468) than neutral position. The odds of osteomyelitis was 5.3 times higher (5.319, 95% 1.156 to 24.390) for patients in valgus position than varus position. In patients with varus position, the odds of pin tract infection were 5.8 times higher (5.750, 95% 1.538 to 21.496), osteomyelitis was 2.8 times higher (2.758, 95% 1.017 to 7.477) than neutral position.

Discussions

Varus and valgus hindfoot alignment propagated worse complications than neutral position in patients with midfoot Charcot. Hindfoot malalignment in patients who underwent reconstruction may stimulate further Charcot breakdown and post-operative infection including hardware failure, pin tract infections, and osteomyelitis. Evaluation of hindfoot alignment is important to mitigate postoperative complications in midfoot Charcot reconstruction.

Format

Scientific

Case Rpt Followup

54.36

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Liliya M Parkman, DPM	liliya.parkman@medstar.net	I/We have nothing to disclose	
Thomas Milisits, DPM, MPH	thomas.milisits@medstar.net	I/We have nothing to disclose	
Eshetu Tefera, MS	Eshetu.Tefera@medstar.net	I/We have nothing to disclose	
Caitlin Zarick, DPM, FAFAS	Caitlin.S.Zarick@medstar.net	I/We have nothing to disclose	
John S. Steinberg, DPM, FAFAS	john.steinberg@medstar.net	Consultant/Advisor/Speaker (List all affiliations)	Integra Consultant
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ACFAS Past President
		Member of a medical publication or editorial governing board	Editorial board for Podiatry today
Christopher E. Attinger, MD	christopher.attinger@medstar.net	Consultant/Advisor/Speaker (List all affiliations)	KSI consultant, Integra Consultant
Jacob Wynes, DPM, MS, FAFAS	jwynes@som.umaryland.edu	Consultant/Advisor/Speaker (List all affiliations)	Smith & Nephew and Paragon
Nicole K. Cates, DPM, AACFAS	nkates@gmail.com	I/We have nothing to disclose	

Title **Incidence of knot irritation of Arthrobrostrom technique for management of chronic lateral ankle instability**

Submit Date 08/30/2023

Correspondent
 Last Name: Adam
 Full Name: Abraham
 Practice/Company/Residency Program: Henry Ford Macomb
 Email: abraham.z.adam@gmail.com

Authors
 Author 1: Abraham Z Adam
 Author 2: Brian G Loder DPM FACFAS CWS
 Author 3:
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose
 Ankle sprains continue to be one of the most common sports injuries with nearly 20% leading to chronic lateral ankle instability. While the majority of symptoms subside with conservative management consisting of functional rehabilitation with peroneal muscle strengthening, proprioception training and bracing, approximately 10% will continue to have persistence of instability necessitating the need for surgical correction. Several surgical techniques have been described, consisting open and arthroscopic repairs. Recently, knotless anchors have been advocated in arthroscopic repair due to the incidence of irritable knots. Presented here is incidence of knot irritation with arthroscopic modified brostrom-Gould repair.

Methodology
 46 patients undergoing arthroscopic modified brostrom-gould repair were included in this study from 2016 to 2021. Patients were assessed and included based on positive talar tilt, anterior translation and lateral ankle instability. Postoperatively, patients were kept non-weight bearing for 2-3 weeks and then transitioned to CAM boot. At 6 weeks postoperatively, patients were transitioned to an ankle brace in normal shoe gear. Patients were followed post operatively in clinic and PROMIS scores were recorded and incidence of irritable knots. Retrospective chart review, Arthroscopic modified brostrom-gould via Arthrobrostrom using 17 DePuy Mitek Gryphon, 29 Arthrex Suture pushlock

Procedures

Results PROMIS and patient reported surveys. 0.022% (1/46) reported irritable hardware requiring hardware removal.

Discussions Arthroscopic modified brostrom-gould with knotted repair is a safe, and reliable treatment option for CLAI with very low incidence of knot irritation.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Arthroscopy

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Abraham Z Adam	abraham.z.adam@gmail.com	I/We have nothing to disclose	

Brian G Loder DPM FACFAS CWS	bloder1@hfhs.org	Consultant/Advisor/Speaker (List all affiliations)	Treace, Enovis, and Legacy
		Intellectual Property rights owned	Enovis
		Member of a medical publication or editorial governing board	Reviewer JFAS, Editorial board FASTRAC

Title

Comparing Intra-Operative and Post-Operative Radiographic Measurements in Congenital Flexible Flatfoot Deformity

Submit Date

08/30/2023

Correspondent

Last Name: Lobos
 Full Name: Emily A. Lobos, DPM Email: emily.lobos11@gmail.com
 Practice/Company/Residency Program: West Penn Hospital/Allegheny Health Network

Authors

Author 1: Emily Lobos, DPM Author 2: Matthew Diamond, DPM
 Author 3: Alan Catanzariti, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Congenital flexible flatfoot (CFF) is a condition that often requires multiplanar surgical reconstruction. Intra-operative radiography is critical in assessing adequate deformity correction. However, the inability to reliably simulate weight bearing radiographs in an intra-operative setting has the potential to lead to suboptimal correction. The purpose of this study was to quantify differences between intra-operative and first weight bearing post-operative radiographic measurements in patients undergoing joint-sparing CFF reconstruction.

Methodology

A retrospective radiographic review of consecutive CFF reconstructive procedures from a single surgeon were reviewed. Intra-operative simulated weight bearing radiographs were compared to first post-operative weight bearing radiographs. Radiographic measurements assessed included talo-navicular coverage angle (TNCA), anterior-posterior (AP) talus-1st metatarsal angle (T-1MT), calcaneocuboid angle (CCA), calcaneal inclination angle (CIA), and Meary's angle.

Procedures

Results

A total of 11 feet were included in our study. Mean time to first post-operative weight bearing radiographic imaging was 61.46 days. There were no statistically significant differences found between intra- and post-operative radiographs for all measurements assessed: (1) TNCA (-0.1 vs 1.327 deg, $p = 0.230$), (2) T-1MT (7.273 vs 7.40 deg, $p = 0.948$), (3) CCA (6.336 vs 8.391 deg, $p = 0.194$), (4) CIA (22.77 vs 21.28 deg, $p = 0.168$), and (5) Meary's angle (4.418 vs 1.168 deg, $p = 0.056$).

Discussions

There were no significant differences in any radiographic measurements when comparing intra- and post-operative imaging in joint-sparing CFF reconstructive surgery suggesting possible reliability of intra-operative radiography.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Emily Lobos, DPM	emily.lobos11@gmail.com	I/We have nothing to disclose	
Matthew Diamond, DPM	matthew.diamond@ahn.org	I/We have nothing to disclose	
Alan Catanzariti, DPM, FACFAS	alan.catanzariti@ahn.org	I/We have nothing to disclose	

Title

Assessing the Prevalence, Nature, and Trends of Physician-Industry Financial Ties Among Foot and Ankle Surgery Key Opinion Leaders

Submit Date

08/30/2023

Correspondent

Last Name: Casciato
 Full Name: Dominick J Casciato DPM AACFAS Email: dominickcasciato@gmail.com
 Practice/Company/Residency Program: Orlando VA Medical Center

Authors

Author 1: Dominick J Casciato DPM AACFAS Author 2: Christopher F Hyer DPM MS FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Foot and ankle surgery key opinion leaders (KOLs) maintain the authority and following to influence surgeons. Members of the American College of Foot and Ankle Surgeons (ACFAS) board of directors (BOD) and Annual Scientific Conference (ASC) share this responsibility as KOLs when planning educational content. The purpose of this investigation is to describe the relationship between these KOLs and industry.

Methodology

A review of CMS Open Payments consulting fee data among ACFAS BOD and ASC committee members from 2015-2021 was performed. Citations from peer-reviewed publications were recorded for each member following a PubMed search. The threshold for statistical significance was set at $p \leq 0.05$.

Procedures

Results

Among the 44 KOLs assessed, the total CMS payment value paid was \$20,182,794.29. The greatest proportion of payment value prior and following KOLs serving on committees or boards belonged to consulting fees (31%) and royalty/licensing (45%), respectively. There existed a statistically significant change in the proportion of KOLs receiving at least one payment after serving in the royalty or license ($p=0.002$) and education ($p<0.001$) and acquisitions ($p=0.01$) groups. There existed a statistically significant difference between consulting fee value between both periods ($p=0.008$), with 64% of KOLs who received payments before and after committee appointment receiving a 50% increase in average consulting payment value compared to before serving on a BOD/committee.

Discussions

Foot and ankle surgery KOLs share a variety of financial ties with industry. To maintain an ethical governance, consideration should be given to situations where an elected position discloses compensatory benefits where none existed prior.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dominick J Casciato DPM AACFAS	dominiccasciato@gmail.com	I/We have nothing to disclose	
		Consultant/Advisor/Speaker (List all affiliations)	Artelon, Stryker, Ossio
Christopher F Hyer DPM MS FACFAS	thatcher@orthofootankle.com	Intellectual Property rights owned	Stryker, Artelon, Smith & Nephew, Ossio, Zimmer-Biomet

Title

Cost of Hospitalization for Proximal Lower Extremity Amputation versus Charcot Arthropathy

Submit Date 08/31/2023

Correspondent

Last Name: Kim
 Full Name: Hye R Kim, DPM Email: hearin86@gmail.com
 Practice/Company/Residency Program: Penn Presbyterian Medical Center

Authors

Author 1: Hye R. Kim, DPM Author 2: Nicholas Perfetti, DPM
 Author 3: Lauren M. Christie, DPM Author 4: Avery M. Thomson, MS, DPM
 Author 5: Yolanda R. Marshall, DPM, JD Author 6: D. Scot Malay, DPM, MSCE, FACFAS
 Author 7: Author 8:

Purpose To ascertain the difference between total hospital admission charges for major lower extremity amputation (MLEA = amputation through the tibia, femur, or hip disarticulation) versus MLEA with Charcot foot versus patients admitted for Charcot foot arthrodesis. The secondary aim was to identify risk factors that could explain any observed difference in costs.

Methodology We used 2019 National Inpatient Sample data and ICD-10 diagnosis and procedure codes to identify patients that underwent MLEA and those with Charcot arthropathy that underwent isolated or combined fusion of the ankle, intertarsal, or tarsometatarsal joints. Statistical analyses were used to describe and compare the cohorts.

Procedures

Results The MLEA cohort included 14,064 patients, the Charcot foot cohort included 9,758 patients, 299 (3.1%) of which underwent arthrodesis. Average total charges for the MLEA cohort were \$164,656.55, those for the Charcot foot cohort were \$146,212.88 ($p = 0.13$), and those for Charcot arthrodesis were \$118,319.14 ($p < 0.01$). The MLEA cohort was hospitalized 7.7 days longer than the overall Charcot cohort ($p < 0.01$), and 4.2% of the MLEA cohort died during the hospitalization compared to 1.0% of the overall Charcot cohort ($p < 0.01$).

Discussions Our findings indicate statistically significant cost differences between admission charges, length of stay, and mortality, associated with MLEA and Charcot foot and Charcot foot reconstruction. An advantage of this cohort study is that the dataset represents 97% of the US inpatient population, whereas limitations include those related to coding differences, and it is possible that some procedures were conducted prior to the admission.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hye R. Kim, DPM	hearin86@gmail.com	Grant/Research funding	Marlinz Pharma
Nicholas Perfetti, DPM	Nicholas.Perfetti@Pennmedicine.upenn.edu	I/We have nothing to disclose	
Lauren M. Christie, DPM	Laur.m.Christie@gmail.com	I/We have nothing to disclose	
Avery M. Thomson, MS, DPM	avery.thomson@penmedicine.upenn.edu	I/We have nothing to disclose	
Yolanda R. Marshall, DPM, JD	yrmarshall@gmail.com	I/We have nothing to disclose	
D. Scot Malay, DPM, MSCE, FACFAS	d.malay@penmedicine.upenn.edu	Grant/Research funding	Marlinz Pharma

Title**Diabetes-related major and minor amputation risk during the COVID-19 pandemic****Submit Date**

08/30/2023

Correspondent

Last Name: Dadkhah

Full Name: Armin, Dadkhah, DPM

Email: armindadkhah@gmail.com

Practice/Company/Residency Program:

White Memorial Medical Center

Authors

Author 1: Armin, Dadkhah, DPM

Author 2: Salem, Lebada, DPM

Author 3: Stanley, Mathis, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Due to our large populations of diabetic patients, who have an increased risk of worse outcomes with the effects of COVID-19, it is important to analyze the relationship between the two. The aim of this study is to assess the effects of the pandemic on amputation rates.

Methodology

We conducted a 2-year retrospective cohort study of all diabetic patients admitted for a foot lesion at a 353-bed teaching hospital in East Los Angeles. Amputation during admission was the main outcome measure, with level of amputation as an additional outcome measure.

Procedures**Results**

A total of 849 consults were identified for use in the study: 356 consults during 2019 and 493 consults during 2021. Amputation rates have fallen from 37.08% to 32.45% from 2019 to 2021. Rates of minor amputations decreased from 22.75% to 19.07%, rates of moderate amputations decreased from 5.06% to 4.87%, and rates of major amputations decreased from 9.27% to 8.52% from 2019 to 2021, respectively.

Discussions

The effect of the pandemic on the health-care system has been correlated with a deleterious effect on diabetes-related foot problems resulting in more severe infections and amputations. In our specific population, amputation rates have decreased. Our results highlight the importance of close podiatric evaluation in management of diabetic foot ulcers.

Format

Scientific

Case Rpt Followup

Not a Student Club Poster

Student Club

Diabetic Foot

Classification**Level of Evidence**

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Armin, Dadkhah, DPM	armindadkhah@gmail.com	I/We have nothing to disclose	
Salem, Lebada, DPM	salemlebada@gmail.com	I/We have nothing to disclose	
Stanley, Mathis, DPM	podiatricri@yahoo.com	I/We have nothing to disclose	

Title

Iatrogenic Medial Malleolar Fracture and Stress Fracture Considerations in Total Ankle Joint Replacement: A Multicenter Retrospective Study

Submit Date

08/31/2023

Correspondent

Last Name: Ekladios

Full Name: Joshua M. Ekladios DPM MS

Email: josh.eklad76@gmail.com

Practice/Company/Residency Program:

Florida Orthopedic Foot & Ankle Center

Authors

Author 1: Joshua M. Ekladios DPM MS

Author 2: James M. Cottom DPM FACFAS

Author 3: Karl W. Dunn DPM FACFAS

Author 4: Jay S. Badell DPM MS AACFAS

Author 5: Jason R. Miller DPM FACFAS

Author 6: Lawrence A. DiDomenico DPM FACFAS

Author 7:

Author 8:

Purpose

Total ankle replacement (TAR) is a challenging but rewarding treatment option for primary or post-traumatic tibiotalar osteoarthritis. Acute and latent postoperative stress fractures of the medial malleolus, however, pose a common potential complication that may arise during joint resection, especially during implantation of the tibial component. This is a multicenter retrospective study highlighting considerations for iatrogenic medial malleolar fractures during and after TAR surgery by assessing relationships between fractures, medial malleolus width (MMW), and prophylactic tibial fixation.

Methodology

159 patients undergoing primary TARs from 2016-2022 were selected from multiple institutions. MMW (mm) was measured as the distance between the tibial tray component placement and the medial malleolus' outer cortex using standard AP ankle radiographs intraoperatively and postoperatively. Demographics included BMI, age, and implant type. Prophylactic medial malleolar screw fixation was also recorded.

Procedures

Results

Average MMW of the 148 patients without fracture was 11.12 mm. Average MMW was 9.43 mm in the 11 patients who suffered intraoperative medial malleolus fracture (n = 7) or developed postoperative stress fracture (n = 4). This difference in MMW between the two groups was statistically significant ($p < 0.05$). Prophylactic tibial screw fixation was also associated with a lower complication rate. 23% of all Cadence TAR systems developed either a latent stress fracture or more commonly, intraoperative acute fracture of the medial malleolus. Mean follow-up, age, and BMI were 20.9 months, 64.4 years, and 30.4, respectively.

Discussions

Our data demonstrates that a shorter MMW may predispose TAR patients to higher probability of intraoperative or postoperative stress fracture of medial malleoli, which can effectively be combated and prevented with prophylactic tibial screw fixation.

Format

Scientific

Case Rpt Followup

21

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joshua M. Ekladios DPM MS	josh.eklad76@gmail.com	I/We have nothing to disclose	
James M. Cottom DPM FACFAS	jamescottom300@hotmail.com	I/We have nothing to disclose	
Karl W. Dunn DPM FACFAS	josh.eklad76@gmail.com	I/We have nothing to disclose	
Jay S. Badell DPM MS AACFAS	jaybadell@gmail.com	I/We have nothing to disclose	
Jason R. Miller DPM FACFAS	jrmiller1371@gmail.com	I/We have nothing to disclose	
Lawrence A. DiDomenico DPM FACFAS	ld5353@aol.com	I/We have nothing to disclose	

Title

Predictors of Amputation in Native Americans Presenting with Critical Limb Ischemia

Submit Date

08/30/2023

Correspondent

Last Name: Tarricone

Full Name: Arthur

Email: tarria01@outlook.com

Practice/Company/Residency Program:

University of Texas Southwestern

Authors

Author 1: Arthur Tarricone DPM MPH

Author 2: Karla De La Mata

Author 3: Allen Gee

Author 4: Mehmet Suludere MD

Author 5: Lawrence A. Lavery DPM MPH

Author 6:

Author 7:

Author 8:

Purpose

Determine predictors of amputation and mortality for Native Americans presenting with critical limb threatening ischemia

Methodology

Consecutive patients with critical limb threatening ischemia who received endovascular intervention at a single center between January 2021 and December 31 2022 were included. Patients were included in the study if they self-identified as Native American and presented with ischemic gangrene. Patients were followed for 1 year following ischemic presentation at pre-defined increments of 1, 3, 6 months and 1 year. Amputations were divided into minor (below ankle) and major (above ankle). Death as determined through social security index or through chart review.

Procedures

Results

287 patients presented with ischemic gangrene. The amputation rate 15.6% (45/287) with 32 Major amputation (n=32) and minor amputation (n=13). The mortality rate 17% (49/287). The participants were separated based on amputation, mortality status, and binary wound closure. Baseline characteristics were similar between groups. Univariate analysis revealed significant differences in the following variables for amputations: coronary artery disease (OR:2.25 [CI:1.15,4.39], p=0.01), Zero Arteries to the foot (OR=4.04 [CI:1.70,9.60], p=.01), and Wagner 5 (OR:3.04 [CI:1.58,5.84], p=0.006). Univariate analysis for Mortality revealed significant differences in the following variables: Severe lung disease (OR:3.76 [CI:1.64,8.65], p=.002), Prior Heart failure (OR 5.35 [CI:2.78,10.41], p=.01), Hemodialysis (OR=2.20 [CI:1.11,4.35], p.02). Multiple Regression for amputation revealed significant association between: CAD(OR:2.3, 1.03-6.23, p=0.04), runoff 0 (OR: 3.7, 1.5-9.4 p=.006), and Wagner 5(OR=3.2, 1.6-6.33, p=.001). Multiple Regression for mortality revealed Severe Lung disease (OR: 2.5, 1.03-6.23, p=.04) and Prior HF(OR:4.6, 2.3-9.1, p=.001).

Discussions

Predictors of amputations native and include CAD, Run off arteries, and Wagner classification 5. Risk factors for mortality include Severe lung disease and heart failure

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Arthur Tarricone DPM MPH	tarria01@outlook.com	I/We have nothing to disclose	
Karla De La Mata	karladelamata@gmail.com	I/We have nothing to disclose	
Allen Gee	allen.gee97@gmail.com	I/We have nothing to disclose	
Mehmet Suludere MD	mehmet.suludere@utsouthwestern.edu	I/We have nothing to disclose	
Lawrence A. Lavery DPM MPH	larry.lavery@utsouthwestern.edu	I/We have nothing to disclose	

Title

Anterior Talofibular and Calcaneofibular Ligament Reconstruction with Augmentation: A Novel Technique and Retrospective Case Series in the Active-Duty Military Population

Submit Date

08/30/2023

Correspondent

Last Name: Parkman
 Full Name: Liliya M Parkman, DPM
 Practice/Company/Residency Program: MedStar
 Email: liliya.parkman@medstar.net

Authors

Author 1: Collin Mizuo, DPM, FACFAS
 Author 2: Liliya M Parkman, DPM
 Author 3: Haoning Hu, DPM
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

The primary aim is to present a new surgical technique for repairing the ATFL and CFL with augmentation in a manner that emphasizes anatomical fidelity. This technique aims to restore ligament stability by repairing the ATFL and CFL, while preserving joint biomechanics and minimizing over-constraining risk. A secondary aim is to compare preoperative talar tilt with intraoperative talar tilt after ATFL repair and augmentation. We hypothesized that under anesthesia when inherent guarding during stress exam is removed, laxity to the lateral ankle secondary to CFL compromise may persist.

Methodology

Chart review of 36 patients who underwent lateral ankle ligament reconstruction (LALR) were retrospectively analyzed. Patients had a preoperative MRI to assess ligament damage and other ancillary injuries. Preoperative and intraoperative talar tilt was documented. The LALR and ancillary procedures were performed by a single surgeon, between November 2020 and October 2022, at a single center. The patients followed the same post-operative protocol.

Procedures

Results

28 patients with significant improvement ($p < 0.001$) self-reported outcomes including pain, functionality, alignment, activities of daily living and sports subscale. 71% of patients had returned to active duty and 21% had separated for reasons unrelated to their injury. Nearly half of patients demonstrated increased talar tilt preoperatively. Intraoperative varus tilt was present in 76% of patients.

Discussions

Lateral ankle reconstruction with the described technique is a promising procedure in the active-duty military. This novel technique will offer a measurable and reproducible method to address ankle instability in the general and athletic population.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Collin Mizuo, DPM, FACFAS	cmm0297@gmail.com	I/We have nothing to disclose	
Liliya M Parkman, DPM	liliya.parkman@medstar.net	I/We have nothing to disclose	
Haoning Hu, DPM	haoning.hu@medstar.net	I/We have nothing to disclose	

Title

Intramedullary Use of Antibiotic Coated Threaded Rods in Cases of Lower Extremity Osteomyelitis

Submit Date 08/30/2023

Correspondent

Last Name: John
 Full Name: Melody John, DPM Email: melodyyau1@gmail.com
 Practice/Company/Residency Program: St. Mary's General Hospital

Authors

Author 1: Melody John, DPM Author 2: Henna Akbarzai, DPM
 Author 3: Rachel Gerber, DPM, AACFAS Author 4: HyunJi Boo DPM, AACFAS
 Author 5: Michael Subik, DPM, FACFAS Author 6:
 Author 7: Author 8:

Purpose

The treatment of osteomyelitis in the lower extremity continues to challenge surgeons. Masquelet technique has been successfully used in the treatment of osteomyelitis through the concept of induced membrane. Our study showcases the use of antibiotic coated intramedullary threaded rods to treat lower extremity osteomyelitis by locally delivering antibiotics to the infected bone, and promoting bone and wound healing.

Methodology

Seven consecutive patients who had tibiotalar calcaneal fusions with retrograde placement of an antibiotic coated threaded rod were identified. All patients were placed in vertical weight-bearing external fixators.

Procedures

Results

Average age of patients 50.4 years old (31-64 years old). 2/7 were female. Average time in external fixator was 95.57 days (56 to 147) and nail swap was attempted around 97.57 days status-post application of the antibiotic coated threaded rod. Average follow up was 595.14 days. All limbs were without wounds and present at final follow-up.

Discussions

The use of an intramedullary antibiotic coated threaded rod as a means of offering stabilization while treating an infection has shown promise in promoting the formation of an induced membrane, allowing for fusion, and eradicating the infection. In cases of infected ankle joint nonunions, the induced membrane can improve vascularity, stimulate bone regeneration and adjacent tissue healing. Our long term functional and clinical outcomes, along with our rate of limb salvage support the use of antibiotic coated rods as a reliable limb salvage technique.

Format Scientific

Case Rpt Followup 19

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Melody John, DPM	melodyyau1@gmail.com	I/We have nothing to disclose	
Henna Akbarzai, DPM	hakbarzai@gmail.com	I/We have nothing to disclose	
Rachel Gerber, DPM, AACFAS	rachel.gerber.dpm@gmail.com	I/We have nothing to disclose	
HyunJi Boo DPM, AACFAS	Hyunji.boo@gmail.com	I/We have nothing to disclose	
Michael Subik, DPM, FACFAS	drsubik@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Stryker, Orthofix, BD, Trice

Title

Comparative Study of Intraoperative Findings versus Radiographic Findings of Metatarsophalangeal Joint Arthritis

Submit Date 08/30/2023

Correspondent

Last Name: Yazhari
 Full Name: Kayla N. Yazhari, DPM, PGY-2 Email: kayla.vandenhoeck@baptisthealth.net
 Practice/Company/Residency Program: Bethesda Hospital East

Authors

Author 1: Kayla N. Yazhari, DPM, PGY-2 Author 2: Kaina A. Louis-Charles, DPM, PGY-2
 Author 3: Julio C. Ortiz, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose There is a paucity of studies correlating radiographic findings with visualized intraoperative joint damage in the first metatarsophalangeal joint. Clinical presentation and physical exam may differ from radiographic findings. A comparison of intraoperative findings relative to the Coughlin-Shumas classification was performed to determine relevance of the classification system. When deciding between joint-salvage and joint-destructive procedures, relying on physical examination findings is crucial. Inconsistencies between radiographic findings and intraoperative presentation highlight the need for a fresh approach to address hallux rigidus.

Methodology Fourteen patients who underwent first metatarsophalangeal joint fusion were selected. All surgeries were performed by one surgeon. Standard radiographic imaging and intraoperative photographs of the metatarsal heads were collected for each patient. Hallux rigidus severity was assessed per radiograph according to the Coughlin-Shumas classification. The extent of articular degeneration was calculated by comparing chondral injury area to the metatarsal head's total area.

Procedures

Results Articular degeneration ranged from 1.2% to 100% amongst the patients. Seven were classified as stage two, five as stage one, and two as stage three and four. Stage one had a degeneration range of 1.4% to 85.2%, stage two ranged from 1.2% to 100%, and stages three and four ranged from 8.13% to 75.5%.

Discussions The current study suggests that radiographs may not reliably determine the extent of clinical arthrosis in the first metatarsophalangeal joint, necessitating the need for a novel classification system which places less of an emphasis on radiographic findings and instead favors thorough clinical examination and advanced diagnostic imaging.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kayla N. Yazhari, DPM, PGY-2	kayla.vandenhoeck@baptisthealth.net	I/We have nothing to disclose	
Kaina A. Louis-Charles, DPM, PGY-2	kaina.louischarles@baptisthealth.net	I/We have nothing to disclose	
Julio C. Ortiz, DPM, FACFAS	jcortizdpm@gmail.com	I/We have nothing to disclose	

Title

Inter-Metatarsal Angle Correction with Minimally Invasive Bunion Correction Surgery

Submit Date 08/31/2023

Correspondent

Last Name: Alland
 Full Name: LeAnn, E, Alland, DPM Email: leann.alland@dhha.org
 Practice/Company/Residency Program: Denver Health Medical Center

Authors

Author 1: LeAnn Alland, DPM Author 2: Hannah Mayo, DPM
 Author 3: Matthew Gorski, DPM Author 4: Kristine Hoffman, DPM
 Author 5: Morgan Jerabek, DPM Author 6:
 Author 7: Author 8:

Purpose The purpose of our study is to investigate the initial and maintained reduction of the inter-metatarsal angle after minimally invasive bunion correction among 24 surgical patients.

Methodology Our study looks at a total of 24 patients who all underwent minimally invasive bunionectomy procedures. All procedures were done by a single provider at one hospital system. The cases were all done between the dates of November 2021 and December 2022. All patients have a minimum of 2 to 3 month follow up. The inter-metatarsal angle of each patient was measured on radiographs pre-operatively, immediately post-operatively, and again at most recent follow up.

Procedures

Results We found that the inter-metatarsal angle was significantly reduced with the use of minimally invasive bunionectomy procedure as seen on the the immediate post operative films as well as on the final follow up imaging for each patient.

Discussions We conclude that the minimally invasive bunion surgical procedure consistently shows significant and maintained inter metatarsal angle correction. Because maintained inter-metatarsal angle correction is one of the pillars of bunion correction, we conclude that minimally invasive bunion correction procedures are a viable and appropriate option for inter-metatarsal angle reduction.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
LeAnn Alland, DPM	hgreen81632@gmail.com	I/We have nothing to disclose	
Hannah Mayo, DPM	leann.alland@gmail.com	I/We have nothing to disclose	
Matthew Gorski, DPM	Matthew.gorski@dhha.org	I/We have nothing to disclose	
Kristine Hoffman, DPM	kristine.hoffman@dhha.org	I/We have nothing to disclose	
Morgan Jerabek, DPM	morgan.jerabek@dhha.org	I/We have nothing to disclose	

Title

Functional Comparison of Controversial Levels of Midfoot Amputation Relative to the Below-Knee Amputation: Does Length Preservation Always Equate to Function Maximization?

Submit Date 08/30/2023

Correspondent

Last Name: Verdin
 Full Name: Craig, J, Verdin, DPM AACFAS
 Email: cverdin@kent.edu
 Practice/Company/Residency Program: The University of Texas Health Science Center at San Antonio

Authors

Author 1: Craig, J, Verdin, DPM AACFAS
 Author 2: Christopher, M, Ply, BS
 Author 3: Christian, X, Lava, BS
 Author 4: Holly, D, Shan, BS
 Author 5: Christopher, E, Attinger, MD
 Author 6: Karen, K, Evans, MD
 Author 7: John, S, Steinberg, DPM FACFAS
 Author 8: Jayson, N, Atves DPM FACFAS

Purpose

Despite allowing for a significant amount of length preservation which, in principle, allows for increased use of the residual foot, the Chopart and Lisfranc amputations are controversial and, as a result, the below-knee-amputation has been proposed as a more predictable level of amputation. We seek to evaluate the functional benefits of length preservation in midfoot amputation, despite the perceived controversies that are associated with their use.

Methodology

We performed a comparative retrospective analysis of 79 unilateral ambulatory amputees (5 Lisfranc, 10 Chopart, 64 transibial) who were evaluated at Georgetown University Hospital between June 2021 to June 2023. Outcomes were defined as complications (major and minor), rates of limb salvage, assessment of residual function and quality of life using validated patient reported outcome measures. Appropriate statistical analysis were used and significance was determined a priori as $p \leq 0.05$.

Procedures

Results

The average age of our cohort was 60.6 ± 13.2 years with an average Charlson Comorbidity Index of 5.0 ± 2.8 . At a mean follow-up duration of 844.9 days (range, 27-4967), a higher incidence of minor complications within Chopart amputations was noted ($p=0.02$), but not major complications ($p=0.07$). Patient reported outcomes pertaining to functionality and quality of life demonstrated Chopart and Lisfranc amputations are equivalent and, in some instances, superior to proximal amputation ($p>0.05$).

Discussions

Based on our analysis and contrary to dogmatic beliefs, Chopart and Lisfranc amputations are justified in terms of functionality and are equivalent with respect to access to reasonable quality of life, suggesting that length preservation is worthwhile and should be attempted when reasonable, especially considering below-knee amputation morbidity.

Format

Scientific

Case Rpt Followup

70

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Craig, J, Verdin, DPM AACFAS	cverdin@kent.edu	I/We have nothing to disclose	
Christopher, M, Ply, BS	cmp334@georgetown.edu	I/We have nothing to disclose	
Christian, X, Lava, BS	cl1449@georgetown.edu	I/We have nothing to disclose	
Holly, D, Shan, BS	hs730@georgetown.edu	I/We have nothing to disclose	
Christopher, E, Attinger, MD	Christopher.Attinger@medstar.net	Consultant/Advisor/Speaker (List all affiliations)	Integra
Karen, K, Evans, MD	Karen.K.Evans@medstar.net	I/We have nothing to disclose	
John, S, Steinberg, DPM FACFAS	John.Steinberg@medstar.net	Consultant/Advisor/Speaker (List all affiliations)	Integra
Jayson, N, Atves DPM FACFAS	Jayson.Atves@medstar.net	I/We have nothing to disclose	

Title

Radiographic Outcomes Regarding Hardware Failure in Midfoot Charcot Neuroarthropathy Reconstruction

Submit Date 08/30/2023

Correspondent

Last Name:	Jain	Email:	akshayjaindpm@gmail.com
Full Name:	Akshay		
Practice/Company/Residency Program:			University Of Pittsburgh Medical Center Mercy Hospital

Authors

Author 1:	Akshay, Jain, DPM	Author 2:	Aaron, M, Rathsam, DPM
Author 3:	Patrick, R, Burns, DPM	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Isolated surgical correction of midfoot Charcot neuroarthropathy is associated with high failure rates. The aim of this study is to radiographically visualize morbidity in the post operative course following surgical corrections of midfoot Charcot.

Methodology 22 reconstructions with isolated midfoot Charcot neuroarthropathy in a single staged approach were retrospectively identified. Inclusion criteria consisted of isolated fixation of the deformity, minimum follow-up time of 1 year with routine post operative evaluations. Radiographs were reviewed preoperatively and at 3,6,9, and 12 months. Lateral talar-1st metatarsal angle, cuboid drop height and hardware failure, with comparison between fixation types (intramedullary fixation, internal fixation, combination) were assessed. Hardware failure was defined as having breakage, loosening, and/or removal. Age, sex, body mass index, laterality, comorbidities, post-operative complications, hardware type, and time to failure were collected.

Procedures

Results 20/22 reconstructions resulted in hardware failure, with average post-operative failure occurring at 10.9 months. When evaluating lateral talar-1st metatarsal angle and cuboid drop height, both showed statistically significant improvement between pre-operative and 3-month post-operative values ($p = 0.02, 0.006$). There was no statistical significance between fixation types or pre-operative and 12-month post-operative values ($p = 0.53, 0.35$). The average time to weight bear was 3.5 months with failure occurring ~7.5 months later ($p=0.026$).

Discussions Radiographic outcomes demonstrate 90% of isolated midfoot Charcot neuroarthropathy reconstructions fail within 11 months regardless of internal midfoot fixation. Most hardware failure complications were preceded by weightbearing. Further research is warranted to determine if alternative surgical procedures including staging, external fixation, or hindfoot arthrodesis can help mitigate the morbidity associated with isolated midfoot Charcot surgery.

Format Scientific

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Akshay, Jain, DPM	akshayjaindpm@gmail.com	I/We have nothing to disclose	
Aaron, M, Rathsam, DPM	rathsamam2@upmc.edu	I/We have nothing to disclose	
Patrick, R, Burns, DPM	patrick.burns1@wvumedicine.org	I/We have nothing to disclose	

Title

Utility or Futility of Calcaneus Retention in the Treatment of Heel Ulcerations in Nonambulatory Patients: A Retrospective Analysis of Total and Partial Calcaneotomies in Palliative Limb Salvage

Submit Date 08/30/2023

Correspondent

Last Name: Verdin
 Full Name: Craig, J, Verdin, DPM AACFAS
 Practice/Company/Residency Program:
 Email: cverdin@kent.edu
 The University of Texas Health Science Center at San Antonio

Authors

Author 1: Craig, J, Verdin, DPM AACFAS
 Author 2: Christopher, M, Ply, BS
 Author 3: Sami, Alahmadi, MSc
 Author 4: Tiffanie, Liu, DPM
 Author 5: Christopher, E, Attinger, MD
 Author 6: Karen, K, Evans, MD
 Author 7: John, S, Steinberg, DPM FACFAS
 Author 8: Jayson, N, Atves, DPM FACFAS

Purpose

In nonambulatory individuals, the nonfunctional calcaneus protuberance can continue to be a continuous point of failure due to the persistent pressure, poor soft tissue envelope, and underwhelming vascularity. With this in mind, we posit total removal of the calcaneus is a worthwhile intervention as opposed to retaining the problematic bone, especially considering it reduces bony pressure, allows for increased rates of primary closure due to the availability of more tissue, and increases heel soft tissue-bone interface.

Methodology

Patients who underwent total or partial calcaneotomy at Georgetown University Hospital were retrospectively identified. Demographic, preoperative, intraoperative, and post operative data were collected. Primary outcomes were defined as complications, rates of limb salvage and proximal amputation, and mortality. Data was analyzed and significance was set aprior as $p < 0.05$.

Procedures

Results

63 patients (33 males, 30 females) were identified. 76% (48/63) and 23.8% (15/63) has a partial and total calcaneotomy, respectively. Average age was 63.7 ± 14 . There were no differences ($p > 0.05$) in terms of preoperative vascular, hematologic, and microbiological characteristics. Operatively, there was no difference in number of debridement or frequency or type of closure ($p > 0.05$). Postoperatively, outcomes and complication profiles were not noted to be significantly different ($p > 0.05$).

Discussions

While there does not appear to be a significant difference in retaining the problematic calcaneus in nonambulatory patients, we conclude that total resection of the calcaneus should be considered a safe alternative to a partial calcaneotomy, especially considering that is may result in increased soft tissue availability and increased rate of primary closure, which has been documented to be significantly associated with positive outcomes.

Format Scientific

Case Rpt Followup 15

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Craig, J, Verdin, DPM AACFAS	cverdin@kent.edu	I/We have nothing to disclose	
Christopher, M, Ply, BS	cmp334@georgetown.edu	I/We have nothing to disclose	
Sami, Alahmadi, MSc	sga53@georgetown.edu	I/We have nothing to disclose	
Tiffanie, Liu, DPM	Tiffanie.Liu@medstar.net	I/We have nothing to disclose	
Christopher, E, Attinger, MD	Christopher.Attinger@medstar.net	Consultant/Advisor/Speaker (List all affiliations)	Integra
Karen, K, Evans, MD	Karen.K.Evans@medstar.net	I/We have nothing to disclose	
John, S, Steinberg, DPM FACFAS	John.Steinberg@medstar.net	Consultant/Advisor/Speaker (List all affiliations)	Integra
Jayson, N, Atves, DPM FACFAS	Jayson.Atves@medstar.net	I/We have nothing to disclose	

Title **Outcomes of Transmetatarsal Amputation with a Modified Technique Utilizing Muscle for Closure**

Submit Date 08/31/2023

Correspondent
 Last Name: Ennis
 Full Name: Hayley, A, Ennis, DPM, PGY3 Email: hayley.ennis5@gmail.com
 Practice/Company/Residency Program: New Mexico VA and Kaiser Foundation Sacramento

Authors
 Author 1: Hayley, A, Ennis, DPM Author 2: Haywan, Chiu, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose The purpose of this study is to compare results of transmetatarsal amputations in patients with and without peripheral vascular disease utilizing a novel closure method involving muscle to cover the metatarsal stumps.

Methodology Retrospective comparative study. Inclusion criteria: subjects who underwent TMA by a single surgeon from September 2019 to June 2021. Exclusion criteria: subjects who were lost to follow-up and subjects who had a TMA for emergent source control with plan for BKA during the same hospitalization. Group 1 consisted of patients who received vascular intervention whereas Group 2 did not. Following TMA with dissection method preserving plantar soft tissue between the metatarsal bones (Terashi et al, 2011), the foot was closed in a layered fashion using plantar intrinsic muscles to cover the metatarsal stumps.

Procedures

Results 49 feet were identified and eleven were excluded. Group 1 included 20 feet and Group 2 included 18 feet. 50% of subjects in Group 1 healed compared to 72% in Group 2. 35% of Group 1 remained healed at 1 year compared to 66% in Group 2. 35% of Group 1 went on to receive a major amputation in the form of below or above-the-knee amputation compared to 6% in Group 2.

Discussions The results of this study show a higher percentage of healing for transmetatarsal amputations using this novel method in patients without peripheral vascular disease than previously reported in literature. This study shows promising results for this method for TMA, specifically in patients without PVD.

Format Scientific

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hayley, A, Ennis, DPM	hayley.ennis5@gmail.com	I/We have nothing to disclose	
Haywan, Chiu, DPM, FACFAS	haywanchiu@gmail.com	I/We have nothing to disclose	

Title

The Chopart Amputation with Double Tendon Transfer as a Functional Amputation for High-Risk Limb Salvage

Submit Date

08/30/2023

Correspondent

Last Name: Caldera

Full Name: Airam

Email: airam.caldera@westernu.edu

Practice/Company/Residency Program:

Western University of Health Sciences, College of Podiatric Medicine

Authors

Author 1: Airam Caldera

Author 2: Neil Trivedi, DPM

Author 3: Tanzim Khan, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of this study is to evaluate the functionality of the chopart amputation with a transfer of both the anterior tibial tendon (AT) and the extensor hallucis longus tendon (EHL). We hypothesize, that the Chopart amputation, with appropriate tendon balancing, is a durable option for limb salvage in those with infection and significant tissue loss.

Methodology

A retrospective chart review was conducted for seventeen Chopart amputation patients from November 2019 to December 2021 at a single center, performed by a single surgeon. Binary logistic regression analysis was conducted to assess the preoperative characteristics associated with minor complications, major complications, and progression to above-the-knee or below-the-knee amputation. In addition, the post-operative functional status was compared to preoperative levels in the amputees.

Procedures

Results

In this cohort, 9/17 patients (52.94%) experienced minor wound dehiscence, while 7/19 patients (41.18%) required repeat operating room debridement or hospital admission. Only 3/17 Chopart amputees progressed to a BKA/AKA (82% limb salvage rate). All patients with successful Chopart amputations maintained their preoperative ambulatory status. Post-operatively, for every unit increase in HbA1c, the odds of a minor complication increased by 78.8%. A history of peripheral arterial disease/ critical limb ischemia and revascularization showed a statistically significant association of progression to BKA/AKA ($P=0.015$, $P=0.042$, respectively).

Discussions

This retrospective study suggests that a Chopart amputation, with appropriate tendon balancing, is a durable and functional level of amputation. Those with a history of PAD/CLTI appear to be at a higher risk for limb loss.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Airam Caldera	airam.caldera@westernu.edu	I/We have nothing to disclose	
Neil Trivedi, DPM	NeilNTrivedi@gmail.com	I/We have nothing to disclose	
Tanzim Khan, DPM	TKKhan01@gmail.com	I/We have nothing to disclose	

Title

Analysis of Vitamin D Levels in the Veteran Population who Underwent Podiatric Surgical Intervention

Submit Date

08/31/2023

Correspondent

Last Name: Mohiuddin

Full Name: Hiba Mohiuddin, DPM

Email: hiba_mohiuddin@yahoo.com

Practice/Company/Residency Program:

Baltimore VAMC/ Sinai Foot & Ankle Surgical Residency Program

Authors

Author 1: Hiba Mohiuddin, DPM

Author 2: Nabih Masri, DPM

Author 3: Yehonadav Kadosh, DPM

Author 4: Hummira Abawi, DPM, FACFAS, DABPM

Author 5: Emily Durrance, DPM, FACFAS

Author 6:

Author 7:

Author 8:

Purpose

We present a retrospective study comparing Vitamin D levels in the Veteran population prior to osseous and ligamentous surgical intervention.

Methodology

A retrospective analysis of Vitamin D levels obtained from 71 Veteran's prior to osseous and ligamentous surgical intervention. Standards set by the American Association of Clinical Endocrinologists were used to determine appropriate levels. Data was collected from 2020-2022. For Vitamin D value under 30, a short course of Vitamin D supplementation was prescribed.

Procedures

Results

In the Veteran population of 71 patients who had osseous and ligamentous procedures, 48 Veterans had their Vitamin D checked prior to surgery and 31% of those individuals were found to have suboptimal Vitamin D levels. These patients were prescribed a short course of Vitamin D supplementation to take in the interim prior to surgery. After optimization, there were no major complications noted post operatively.

Discussions

It is appreciated that Vitamin D plays an important role in all phases of fracture healing. In this retrospective study we present that low pre-operative Vitamin D levels that are treated with proper Vitamin D supplements are correlated with fewer complications. Proper vitamin D Supplementation depending on patient's pre-operative vitamin D levels can promote stronger callus formation, superior biomechanical properties of bone and decreased rates of delayed/ non-union.

Format

Scientific

Case Rpt Followup

25

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hiba Mohiuddin, DPM	hiba_mohiuddin@yahoo.com	I/We have nothing to disclose	
Nabih Masri, DPM	masri_nabih@yahoo.com	I/We have nothing to disclose	
Yehonadav Kadosh, DPM	Yehonadav.kadosh@umm.edu	I/We have nothing to disclose	
Hummira Abawi, DPM, FACFAS, DABPM	habawi@som.umaryland.edu	I/We have nothing to disclose	
Emily Durrance, DPM, FACFAS	edurranace@som.umaryland.edu	I/We have nothing to disclose	

Title

Peri-operative Pain Management with Locally Injected Dexamethasone Phosphate in Foot and Ankle Surgery

Submit Date

08/30/2023

Correspondent

Last Name: Ferrise

Full Name: Thomas D Ferrise, DPM AACFAS

Email: thomas.ferrise@gmail.com

Practice/Company/Residency Program:

Silicon Valley Rearfoot and Ankle Reconstruction Fellowship

Authors

Author 1: Thomas D Ferrise DPM AACFAS

Author 2: Tung V Dao, DPM AACFAS

Author 3: Chandler Ligas, DPM AACFAS

Author 4: Samantha Wiliams, DPM AACFAS

Author 5: Meagan Jennings, DPM AACFAS

Author 6:

Author 7:

Author 8:

Purpose

The aim of this investigation is to report the immediate post-operative subjective visual analog scale (VAS) scores, opioid consumption, and complication rates of patients who received pre-surgical site injections with local anesthetic and 4 mg of Dexamethasone sodium phosphate in foot and ankle surgeries.

Methodology

A retrospective case review was performed from May 2019 to May 2023. After surgery, patients were asked to record their pain and dose/type of medication consumed on a post-operative protocol sheet during the immediate (0-72 hour) post-operative period.

Procedures

Results

Eight hundred twenty-one patients were enrolled in the study, of which 40 patients met inclusion criteria. At 0-24 hours post-operatively, VAS scores averaged 2.75; 24-48 hours VAS scores averaged 2.25; and at 48-72 hours VAS scores averaged 1.65. One hundred twenty-one total oxycodone pills were reported to be taken throughout the first 72-hours post operatively; this averaged to 3 oxycodone pills consumed per patient. Rearfoot and ankle procedures accounted for 29% (35) versus forefoot and midfoot procedures accounted for 71% (86) of total oxycodone pills taken. There were 3 minor complications observed in the post-operative course.

Discussions

Our study demonstrates that Dexamethasone sodium phosphate as an adjunct in local anesthetic is efficacious in lowering pain scores and opioid consumption in the immediate post-operative period without increasing complication rates in foot and ankle surgery.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Thomas D Ferrise DPM AACFAS	thomas.ferrise@gmail.com	I/We have nothing to disclose	
Tung V Dao, DPM AACFAS	tungvdao@gmail.com	I/We have nothing to disclose	
Chandler Ligas, DPM AACFAS	chandler.ligas19@gmail.com	I/We have nothing to disclose	
Samantha Wiliams, DPM AACFAS	samanthawilliamsdpm@gmail.com	I/We have nothing to disclose	
Meagan Jennings, DPM AACFAS	mmjfootankle@gmail.com	I/We have nothing to disclose	

Title **Statistical comparison between the numbers of diabetic-related minor and major amputations, before and after the State lock-down due to the COVID-19 Pandemic: A regional study**

Submit Date 08/30/2023

Correspondent

Last Name: Vaishnav

Full Name: Kairavi V Vaishnav, DPM

Practice/Company/Residency Program:

Email: kvaishnav99@midwestern.edu

Tucson Medical Center

Authors

Author 1: Lily Nguyen, DPM

Author 3: Erika TC Huston, DPM FACFAS

Author 5:

Author 7:

Author 2: Kairavi V Vaishnav, DPM

Author 4:

Author 6:

Author 8:

Purpose

Compare the numbers of diabetic-related major (above knee and below knee) and minor (toe and transmetatarsal) amputations monthly at a nonprofit regional hospital, before and after the state lock-down due to the COVID-19 pandemic. We hypothesize that there will be a statistically significant increase in amputations after the lockdown given the delayed care.

Methodology

We compared the number of diabetic patients who had minor and major amputations at Tucson Medical Center, before and after the mayor announced a local emergency (3/17/2020). The time period included in the study was was 4/1/2018 to 3/31/2022. Data was collected and processed through the EMR Epic Slicer Dicer program. The pre and post lockdown numbers were analyzed using a paired T-test, correlation, and regression coefficient.

Procedures

Results

We found that the overall number of minor amputations did increase after the lockdown. However, the p-value was 0.41 which demonstrated that this increase was not statistically significant. The number of major amputations decreased after the lockdown, but this was also not statistically significant with a p-value of 0.15. The correlation and regression also showed that the trend of the number of major and minor amputations remained steady from 2018 to 2022.

Discussions

Although there was an interruption to the medical care of patients with diabetes during the COVID-19 pandemic, our study showed no significant difference in the number of amputations before and after the lockdown in the setting of a local hospital. It may be beneficial to incorporate multiple hospitals in future studies in order to obtain more diverse and robust samples.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lily Nguyen, DPM	anhthy.nguyen@westernu.edu	I/We have nothing to disclose	
Kairavi V Vaishnav, DPM	kvaishnav99@midwestern.edu	I/We have nothing to disclose	
Erika TC Huston, DPM FACFAS	erika.tc.huston@gmail.com	I/We have nothing to disclose	

Title

Defining the Clinically Significant Low Lying Peroneus Brevis Muscle Belly

Submit Date

08/31/2023

Correspondent

Last Name: Ahmed
 Full Name: Ali, S, Ahmed, DPM Email: dkaliahmed@gmail.com
 Practice/Company/Residency Program: Kentucky Indiana Foot and Ankle Specialists

Authors

Author 1: Hans, Humrick, DPM Author 2: Paul, Klutts, DPM
 Author 3: Amanda, Denzik, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The low-lying peroneus brevis muscle belly (LLPBMB) is an anatomical variation in which the myotendinous junction of the peroneus brevis descends lower than its typical position along the lateral aspect of the fibula, sometimes extending the level of the ankle joint. Many studies have been published on the potential of LLPBMB leading to further lateral ankle pathology, however none have shown an exact measured cut off point for surgical resection in the symptomatic patient. The authors aim to propose a cut-off point for resection of the muscle belly based on a review of existing literature.

Methodology

Existing literature consisted of clinical and anatomic studies examining normal and pathologic peroneal tendons, with a total of 20 studies reviewed. Studies discuss various peroneal tendon pathology and their relationship to the LLPBMB.

Procedures

Results

Upon review of the literature, it was determined that there has been no documented anatomic cut-off point for the LLPBMB. From the literature, the authors propose that a peroneus brevis muscle belly should be considered for surgical resection if the myotendinous junction is within 3 cm of the distal tip of the lateral malleolus if symptomatic and in the presence of other lateral ankle pathology.

Discussions

Various authors have suggested that there is little to no correlation between the presence of the LLPBMB because many are asymptomatic and undiagnosed. However, other studies have shown that it can exacerbate other lateral ankle pathology, furthering the over-crowding phenomenon that occurs within the superior peroneal retinaculum, which may lead to peroneal subluxation and tearing

Format

Scientific

Case Rpt Followup

0

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hans, Humrick, DPM	hans.humrick@outlook.com	I/We have nothing to disclose	
Paul, Klutts, DPM	dpm2007@yahoo.com	I/We have nothing to disclose	
Amanda, Denzik, DPM	adenzik@kyinfas.com	I/We have nothing to disclose	

Title

Hindfoot Position Correction Effect on Exit Velocity in Collegiate Baseball Players

Submit Date

08/31/2023

Correspondent

Last Name: Ahmed
 Full Name: Ali, S, Ahmed, DPM Email: dkaliahmed@gmail.com
 Practice/Company/Residency Program: Kentucky Indiana Foot and Ankle Specialists

Authors

Author 1: Hans, Humrick, DPM Author 2: Paul, Klutts, DPM
 Author 3: Amanda Denzik, DPM Author 4: Chad Miller
 Author 5: Heather Keepers Author 6:
 Author 7: Author 8:

Purpose

The biomechanics of baseball have been well documented including the role of the posterior kinetic chain. However the specifics of the role of the subtalar joint, further, the use of corrective hindfoot devices have not been examined. The authors hypothesize that the use of corrective shoe gear which promotes a neutral hindfoot will have an effect on exit velocity.

Methodology

A baseline hindfoot position of 38 collegiate level baseball players was evaluated on the field using a pressure mat system (RAPID-Sports, Cleveland, OH, USA) along with the corresponding exit velocity (YakkerTech, Phoenix, AZ, USA) of an average of three swings with no corrective shoe gear. The players then took another three swings with the hindfoot position in a corrected position using the corrective shoe gear (SQUAIRZ, Windham, NH, USA), and the corrected exit velocity was also measured. A t-test was conducted with the obtained data to determine the statistical significance between the data sets.

Procedures

Results

38 collegiate level baseball players were examined. 60.5% of players (n=23) experienced a statistically significant improvement to their exit velocity with corrective shoe gear ($p=0.007$).

Discussions

The nature of the posterior chain has been examined, however under the confine of baseball, the literature is sparse. This study has shown there is a correlation between a neutral hindfoot with batting exit velocity, which has implications about the role of the subtalar joint in the various phases of the baseball swing. From this data, the position of the hindfoot joint should be considered when training athletes for improved performance.

Format

Scientific

Case Rpt Followup

0

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hans, Humrick, DPM	hans.humrick@outlook.com	I/We have nothing to disclose	
Paul, Klutts, DPM	dpm2007@yahoo.com	I/We have nothing to disclose	
Amanda Denzik, DPM	adenzik@kyinfas.com	I/We have nothing to disclose	
Chad Miller	cmiller@sluggerscience.com	Hold more than a 2% financial interest (including stocks) in any organizations(s)	Louisville Slugger Hitting Science Center
Heather Keepers	hkeepers@sluggerscience.com	Hold more than a 2% financial interest (including stocks) in any organizations(s)	Louisville Slugger Hitting Science Center

Title

Incidence of patients that receive intercuneiform screw fixation while undergoing first metatarsal-cuneiform arthrodesis

Submit Date 08/31/2023

Correspondent

Last Name: Somma
 Full Name: Jessica, M, Somma, DPM Email: jsomma07@gmail.com
 Practice/Company/Residency Program: Phoenixville Hospital Residency

Authors

Author 1: Jason, Miller, DPM, FACFAS Author 2: John Marshall, DPM, Fellow
 Author 3: Brady Biscorner, DPM, PGY3 Author 4: Jessica Somma, DPM, PGY2
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to compare the incidence of intercuneiform instability and the percentage of patients that undergo a first metatarsal-cuneiform arthrodesis which also require intercuneiform fixation. A secondary purpose of our study is to compare if there is any loss of correction without intercuneiform fixation vs with. To our knowledge, there is no other study comparing these results.

Methodology

Retrospective clinical analysis from 8/2018-2/2023 with the CPT codes 28730, 28740, 28297 resulted in 343 patients. After exclusion criteria, 287 underwent a first TMTJ arthrodesis utilizing multiple systems from 8/2018-2/2023. Pre-operative and post-operative radiographs were compared.

Procedures

Results

Within our sample 23% of patients who underwent a first TMTJ arthrodesis required intercuneiform fixation. Secondly, there is no statistically significant difference in maintenance of correction with or without intercuneiform fixation.

Discussions

Patients who undergo a first TMTJ arthrodesis most often have a component of hypermobility. We aimed to answer the question of how many patients remain unstable in the tarsal joints without intercuneiform fixation. Our retrospective study shows only 20% of patients are stable with first TMTJ fixation alone. Interestingly, bilateral cases did not always require the same intercuneiform fixation bilaterally. Our findings suggest that the standard technique of first TMTJ fixation alone may not be a stable enough construct for many hypermobile patients. There may be a decreased incidence of intercuneiform fixation in patients that would benefit from fixation.

Format

Scientific

Case Rpt Followup

60

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jason, Miller, DPM, FACFAS	jrmiller1371@gmail.com	I/We have nothing to disclose	
John Marshall, DPM, Fellow	dr.john.marshalliv@gmail.com	I/We have nothing to disclose	
Brady Biscorner, DPM, PGY3	bbiscorner@gmail.com	I/We have nothing to disclose	
Jessica Somma, DPM, PGY2	jsomma07@gmail.com	I/We have nothing to disclose	

Title

Comparison of clinical outcomes in acute ankle fracture open reduction internal fixation with and without ankle arthroscopy: Preliminary Case Series

Submit Date

08/31/2023

Correspondent

Last Name: Abergel
 Full Name: Paz Abergel, DPM, AACFAS, MPH Email: pabergel93@gmail.com
 Practice/Company/Residency Program: Orthopaedic Institute Brielle Orthopaedics

Authors

Author 1: Paz Abergel, DPM, AACFAS, MPH Author 2: Sara Yancovitz DPM, AACFAS
 Author 3: Shane Hollawell, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Ankle arthroscopy in management of acute ankle fractures is not routine, though it is a useful tool for addressing intra-articular pathology. Our study aims to assess the clinical outcomes of patients who underwent ankle open reduction internal fixation (ORIF) with and without adjunctive ankle arthroscopy. To our knowledge, there are no studies directly comparing patients outcomes of these two groups.

Methodology

A retrospective review of 50 patients who underwent ankle fracture ORIF, 25 of which also had arthroscopy, and 25 without arthroscopy. Variables evaluated include tourniquet time, post-operative pain management, time to initiate physical therapy (PT), time to transition to normal shoe gear, and complications.

Procedures

Results

When comparing the two groups, the arthroscopy group initiated PT on average 5 days earlier than the non-arthroscopy group (52.44 v. 57.52 days, $p = 0.249$), had an average lower morphine milligram equivalent (MME) per day (55.20 v. 58.16, $p = 0.737$), and transitioned into normal shoe gear on average 11 days earlier than the non-arthroscopy group (55.20 v. 65 days, $p = 0.737$).

Discussions

The preliminary results of this study demonstrates shorter time to initiate physical therapy and transitioning into normal shoe gear as well as less use of post-operative opioids in the ORIF with arthroscopy group in comparison to those who did not have the adjunctive procedure. While this study demonstrates statistical significance in only one of the our variables, time to transition into normal shoe gear, this can be attributed to the small sample size and further research is needed to validate significance.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Arthroscopy

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Paz Abergel, DPM, AACFAS, MPH	pabergel93@gmail.com	I/We have nothing to disclose	
Sara Yancovitz DPM, AACFAS	sarayancovitz@gmail.com	I/We have nothing to disclose	
Shane Hollawell, DPM, FACFAS	shollawell@oibortho.com	I/We have nothing to disclose	

Title **Chronic Post Traumatic Compartment Syndrome in the Lower Extremity: a novel diagnosis**

Submit Date 08/31/2023

Correspondent

Last Name: Acciani
 Full Name: Alyse L Acciani, DPM, MPH Email: alyse.acciani@gmail.com
 Practice/Company/Residency Program: Hennepin Healthcare

Authors

Author 1: Alyse L Acciani, DPM MPH Author 2: Lance M Silverman, MD
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose This retrospective review looks at a novel diagnosis and approach to treatment of chronic pain in patients with a history of a trauma. A patient population has been identified with elevated compartment pressures not exacerbated by exertion.

Methodology A retrospective review via ICD-10 codes was completed. Patients were included if they had a history of lower extremity trauma, subsequent chronic lower extremity pain, and that had a compartment and fascial release by one surgeon. Patients with mal-reductions, and neuromas were excluded. A post surgical survey was performed no earlier than 12 months after surgery. Minimal and open compartment and fascial release in lower extremities were performed.

Procedures

Results Pre-fasciotomy pressures measured at rest varied from 15-47 mmHg. Of the 20 patients, 17 reported 100% symptomatic relief with daily activity; 16 reported 100% relief with activity, including high intensity exercise. Good to excellent results were reported in a patient survey conducted, and 100% of the patients report willingness to have the surgery again given their relief in symptoms.

Discussions Patients in this review presented with intractable pain that seems to be recalcitrant to standard medical interventions, and besides being labeled as chronic pain, did not fall into a clear category of exertional compartment syndrome. The common theme among this population was the history of lower extremity trauma with chronic pain at rest and with activity. The initial results exhibit promising improvement in chronic pain, and the quality of symptom relief did not seem to degrade over time in the postoperative period and on the final outcome survey.

Format Scientific

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alyse L Acciani, DPM MPH	alyse.acciani@gmail.com	I/We have nothing to disclose	
Lance M Silverman, MD	alyse.acciani@gmail.com	I/We have nothing to disclose	

Title

Prevention of major amputations at hospitals with a podiatric hospitalist on staff

Submit Date

08/31/2023

Correspondent

Last Name: Acciani

Full Name: Alyse L Acciani, DPM, MPH

Email: alyse.acciani@gmail.com

Practice/Company/Residency Program:

Hennepin Healthcare

Authors

Author 1: Alyse L Acciani, DPM, MPH

Author 2: Maren Elze, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

This retrospective review looked to quantify the reduction in major amputations (above or below knee amputation) at a major hospital system with a podiatric hospitalist (PH) on staff.

Methodology

There were 191 patients treated by a PH during January 1 and December 31 in 2019, for a total of 270 surgeries. These patient charts were reviewed in the 3.5 years following and assessed for major amputation and/or death. Diabetes, renal disease, peripheral vascular disease, gangrene, and tobacco use were evaluated. Above and below knee amputation rates were evaluated in the year prior (2018) to a full time PH and the years following (2019-2020). Limb salvage procedures versus major amputations were reviewed.

Procedures

Results

There were 270 limb salvage procedures performed by one PH during the 12 month period on 191 patients. Prior to a full time PH on staff there were 57 major amputations in 2018, followed by 60 in 2019, and 50 in 2020.

Discussions

Though the PH is a relatively new concept, limb salvage programs are becoming more commonplace throughout the US, in particular with a multidisciplinary team approach. The benefits of a multidisciplinary approach to limb salvage, are continuously demonstrated through peer reviewed research and outcomes data. Despite this, there continues to be major amputations that result in loss of function and independence, and subsequently increased morbidity and mortality. The data presented here demonstrates a 17% reduction in major amputations once a full time PH was on staff and their approach to limb salvage was implemented, providing quantitative support for this role in major hospital systems.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alyse L Acciani, DPM, MPH	alyse.acciani@gmail.com	I/We have nothing to disclose	
Maren Elze, DPM, FACFAS	maren.elze@allina.com	I/We have nothing to disclose	

Title

Rates of Nonunion Following Tibiotalocalcaneal Arthrodesis using 3D-Printed Titanium Implants with Intramedullary Nail Fixation and Proposed Novel Grading System for Fusions

Submit Date 08/31/2023

Correspondent

Last Name: Kalil
 Full Name: Nathan J Kalil, DPM Email: nathankalildpm@gmail.com
 Practice/Company/Residency Program: The Reconstruction Institute at The Bellevue Hospital

Authors

Author 1: Ryan Lerch, DPM, AACFAS Author 2: Nathan Kalil, DPM
 Author 3: Peter Highlander, DPM, MS, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Reconstruction of severe talus pathology often requires either talectomy and tibiotalcaneal (TC) arthrodesis or tibiotalocalcaneal (TTC) arthrodesis through the diseased talus. When excision or replacement of the talus is required, advancements in 3D-printed implants allows this to be completed with potentially better success compared to bulk allograft. The purpose of this study is to more clearly define and propose a fusion criterion based grading system and apply it to a series of 3D-printed titanium cages.

Methodology

Data was collected from 10 patients with severe talar pathology who underwent TTC fusion with a custom 3D-printed implant and IM nail fixation. Implant type, fixation, adjunctive procedures, comorbidities, complications, time to healing, and time to weightbearing were recorded. We then proposed a grading system based on spinal fusion literature which was used to predict long-term outcomes.

Procedures

Results

Average follow up was 18.7 months. Primary outcome measure was successful fusion. The proposed grading system was used to assign levels of fusion from radiographs and CT obtained at an average 3 months of follow up. 7 of 10 patients achieved Level 1 or 2 fusion based on these criteria and deemed successful.

Discussions

There is currently no guidance to determine adequate fusion when using 3D printed implants for osseous deficits. The proposed grading system is the first to define fusion criteria when using 3D implants. When applied to our series, it demonstrated 3D printed talar cages with IM nail fixation for complex talar pathology is reliable and reproducible with acceptable fusion rates. Larger studies are required for validation.

Format

Scientific

Case Rpt Followup

18.7

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ryan Lerch, DPM, AACFAS	doc.lerch37@gmail.com	I/We have nothing to disclose	
Nathan Kalil, DPM	nathankalildpm@gmail.com	I/We have nothing to disclose	
Peter Highlander, DPM, MS, FACFAS	peterhighlander@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Restor3d (Durham, NC)

Title MLS and REMY laser to augment proven nail therapy regimen**Submit Date** 08/31/2023**Correspondent**

Last Name: Shao

Full Name: Zhisheng

Email: tug01966@temple.edu

Practice/Company/Residency Program:

One Brooklyn Health, Foot and Ankle Surgery

Authors

Author 1: Zhisheng Shao, DPM

Author 2: Emily Seo

Author 3: Muhannah Hossain, BS

Author 4: Malika Kaderali, BS

Author 5: Julia Firestone, BS

Author 6: Kristin Titko, DPM

Author 7: Peter Mollica, DPM

Author 8:

Purpose

The purpose of this study is to compare MLS and REMY lasers for their efficacy in treating fungal nails while being augmented with proven nail treatment regimen.

Methodology

Thirty candidates in each laser treatment category were obtained over the past 4 years (6/2019-6/2023). Twenty-three REMY and 17 MLS laser treatment patients were deemed suitable based on pre- and post-treatment nail morphology. Elimination criteria includes loss to follow-up, slow growth of nails, or an inability to assess due to extenuating factors. Each nail was evaluated based on the scale 1-3 (1, <50% of nail appears fungal; 2, =50% appears fungal; 3, >50% appears fungal). Therefore, 30/30 represent a complete recovery or completely normal appearance of nails. Unpaired student t test was applied to analyze the statistical differences based on percent change.

Procedures**Results**

All patients reported improvements in nail morphology. Those with the poorest initial evaluations reported the greatest improvements overall, with the best improvements of 15/30 from the initial (0/30). Nearly all patients (85%) agreed to continue with proven nail treatment regimen and noted general satisfaction to extreme satisfaction of results. Clinical significance is strongly noted across use of both lasers, with little noted difference between the two types ($p=0.262$).

Discussions

Clinical relevance remains strong for the use of either MLS or REMY laser with proposed nail treatments, and statistical analysis does not reveal relevant differences between the two. Future studies may be aim at comparing these treatments with more traditional single oral or topical treatments as an internal control to validate.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Zhisheng Shao, DPM	zhisheng.shao@obhny.org	I/We have nothing to disclose	
Emily Seo	emily.seo@outlook.com	I/We have nothing to disclose	
Muhannah Hossain, BS	muhannah.hossain@temple.edu	I/We have nothing to disclose	
Malika Kaderali, BS	malikakaderali@gmail.com	I/We have nothing to disclose	
Julia Firestone, BS	firestone.julia@gmail.com	I/We have nothing to disclose	
Kristin Titko, DPM	ktitko@cinci.rr.com	I/We have nothing to disclose	
Peter Mollica, DPM	PMollica@kingsbrook.org	I/We have nothing to disclose	

Title

The Effect on Podiatric Surgery before, during, and after the COVID-19 Pandemic

Submit Date

08/31/2023

Correspondent

Last Name: Coker
 Full Name: David
 Practice/Company/Residency Program: Boston Medical Center

Email: David.coker@bmc.org

Authors

Author 1: David L Coker
 Author 2: Hau Pham
 Author 3:
 Author 4:
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

Social distancing and lockdown restrictions instituted during the COVID-19 pandemic in 2020 were essential to saving lives and preventing hospital overflow. At our institution, starting from March 2020 to March 2021, all patient clinic visits and elective surgeries were postponed. As a result, it is noted that more wound-related surgeries were performed during and after the pandemic. We reviewed surgeries three years before and three years after the pandemic to evaluate the effect of COVID-19 on surgeries at this level-one trauma hospital.

Methodology

We reviewed all surgeries at our institution from March 2017 through March 2023. We included elective and wound-related surgeries: Toe Amputations, Transmetatarsal Amputations, Chopart and Lisfranc Amputations, Wound debridement, and Incision and drainage.

Procedures

Results

The Department of Podiatry performed 4390 surgeries from April 1, 2017, to March 31, 2023. There were 2379 surgeries from April 2017 to March 2020 (pre-COVID-19), while there were 2011 surgeries from April 2020 to March 2023 (post-COVID-19) (15.5% decrease). The number of wound-related surgeries increased from 845 to 898 (35.5% to 44.7%) when comparing pre and post-COVID-19. There was a jump in wound-related surgery in 2020; it went down in 2021 but jumped back in 2022.

Discussions

The fluctuation in wound-related surgery affects the COVID-19 lockdown. It affected wound care and continues to affect wound care and limb salvage years after the beginning of the pandemic.

Format

Scientific

Case Rpt Followup

0

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
David L Coker	dleecoker@yahoo.com	I/We have nothing to disclose	
Hau Pham	Hau.pham@bmc.org	I/We have nothing to disclose	

Title

Prevalence of Non-traumatic Lower Extremity Amputation by Geographical Location and Seasonal Variation in the United States: A Population Study

Submit Date

08/31/2023

Correspondent

Last Name: Kim
 Full Name: Hye R. Kim, DPM Email: hearin86@gmail.com
 Practice/Company/Residency Program: Penn Presbyterian Medical Center

Authors

Author 1: Hye R. Kim, DPM Author 2: Cindy H. Duong, DPM
 Author 3: Hamidat Momoh, DPM Author 4: Nicholas J. Perfetti, DPM
 Author 5: D. Scot Malay, DPM, MSCE, FACFAS Author 6:
 Author 7: Author 8:

Purpose

To ascertain population-based incidence of lower extremity amputation in the United States by geographical location and seasonal variation.

Methodology

2019 National Inpatient Sample (NIS) data and ICD-10 procedure codes were used to identify patients that underwent lower extremity amputation (LEA). The prevalence of NTLEA was compared by the nine U.S. Census Bureau Divisions and by season of the year. Comorbidities were identified using ICD-10 diagnosis codes. Descriptive and inferential statistical analyses were undertaken.

Procedures

Results

The NIS included 35,915 LEA patients, including 21,762 patients minor and 14,153 major amputations. The prevalence of LEA in the U.S. was 0.51% for all LEAs, 0.31% for minor and 0.20% for major amputation. The highest prevalence (0.63%) of amputation was observed in the East South Central region, 0.35% for minor and 0.28% for major amputation. The lowest prevalence (0.41%) was observed in the North East, 0.27% for minor and 0.15% for major amputation. The highest seasonal prevalence (OR: 1.045, $p < 0.001$) was observed in the summer for all amputations, with OR: 1.06, $p < 0.001$ for minor amputation. The lowest seasonal prevalence (OR: 1.045, $p < 0.001$) for all amputations was observed in winter, and no statistically significant difference was noted for major LEA by season.

Discussions

Statistically significant prevalence differences for LEA were observed between geographic regions and seasons. An advantage of this study is that it represents 97% of the US inpatient population, whereas limitations include those related to coding biases. The information can be used to develop future cohort studies.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hye R. Kim, DPM	hearin86@gmail.com	Grant/Research funding	Marlinz Pharma
Cindy H. Duong, DPM	cindyd.714@gmail.com	I/We have nothing to disclose	
Hamidat Momoh, DPM	hamidat.0525@gmail.com	I/We have nothing to disclose	
Nicholas J. Perfetti, DPM	nicholas.perfetti@pennteam.upenn.edu	I/We have nothing to disclose	
D. Scot Malay, DPM, MSCE, FACFAS	malaydsm@gmail.com	Grant/Research funding	Marlinz Pharma

Title

Syndesmotic Stabilization as an Adjunct to Total Ankle Replacement and its Impact on Correction and Stability

Submit Date

08/31/2023

Correspondent

Last Name: abigail
 Full Name: hannah, C, Abigail, DPM Email: hannah.c.abigail@gmail.com
 Practice/Company/Residency Program: NOMS Ankle and Foot Care Centers

Authors

Author 1: Hannah, C, Abigail, DPM AACFAS Author 2: Holly, N, Zucchero DPM
 Author 3: Lawrence, D, Didomenico, DPM, FACFAS, Author 4: FACFAOM, CWS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Total Ankle Arthroplasty (TAR) has been a mainstay for the treatment of end-stage ankle arthritis. While traditionally this is done as a standalone procedure, the authors hypothesize that the addition of syndesmotic stabilization will allow for a more stable prosthesis and increased degree of correction at the ankle joint. This study aims to evaluate the radiographic results of TAR with stabilization of the syndesmosis.

Methodology

Retrospective analysis was performed on 20 patients who underwent total ankle replacement using fixed bearing TAR via a lateral transfibular approach and syndesmotic stabilization using two fully threaded 4.0mm screws. Radiographic outcomes were used to determine rate of complications including prosthetic fracture, gutter impingent, aseptic loosening, subsidence, and revision as well as to determine correction and affirm appropriate bone, joint, and prosthetic alignment.

Procedures

Results

Preliminary results demonstrate the addition of syndesmotic fixation allows for greater stabilization of the prosthetic and a higher degree of correction of pre-operative deformities.

Discussions

This study demonstrates that performing concomitant syndesmotic stabilization with TAR enhances stability of the prosthetic. This adjunct allows for TAR to be used as a surgical option for higher levels of ankle arthritis, as defined by Takakura, and higher degree of pre-operative coronal plane deformity correction.

Format

Scientific

Case Rpt Followup

24

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hannah, C, Abigail, DPM AACFAS	hannah.c.abigail@gmail.com	I/We have nothing to disclose	
Holly, N, Zucchero DPM	H.zucchero@comcast.net	I/We have nothing to disclose	
Lawrence, D, Didomenico, DPM, FACFAS, FACFAOM, CWS	ld5353@aol.com	Consultant/Advisor/Speaker (List all affiliations)	MTF, In2bones

Title

Renal Failure and Impact on 30-day Complication Rates for Ankle Fracture ORIF

Submit Date

08/31/2023

Correspondent

Last Name: Corley

Full Name: Kristina Corley, DPM

Email: kristina.corley@wei4feet.com

Practice/Company/Residency Program:

Weil Foot & Ankle

Authors

Author 1: Kristina Corley, DPM

Author 2: Jonathan Hook, DPM, FACFAS

Author 3: Rachel Albright, DPM, MPH, FACFAS

Author 4: Adam Fleischer, DPM, MPH, FACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

To determine the relationship between renal status and postoperative complications following ankle fracture open reduction internal fixation

Methodology

The ACS-NSQIP database was utilized to identify patients undergoing ankle fracture ORIF between 2014 and 2019 using CPT codes. Renal disease was defined as Cr >2.0 or dialysis. The primary outcome variable was wound infection. Secondary outcome variables included wound dehiscence, venous thromboembolism, reoperation and readmission. Demographic data, patient health characteristics, and operative factors were obtained and compared between groups.

Procedures

Results

A total of 33,293 patients underwent ankle ORIF. A high proportion of patients on dialysis experienced wound complications including wound infection (12% vs. 3%) and wound dehiscence (1% vs. 0.3%). However, in the multivariable analysis, dialysis was not associated with risk of wound complications. The significant risk factors for wound dehiscence included age (OR 1.02; 95% CI 1.01-1.04), current smoker (OR 1.87; 95% CI 1.21-2.90), and diabetes (OR 1.64; 95% CI 1.04-2.61). The significant risk factors for wound infection included age (OR 1.01; 95% CI 1.00-1.02), outpatient surgery (OR 0.74; 95% CI 0.57-0.97), current smoker (OR 1.58; 95% CI 1.20-2.08) and black race (OR 1.96; 95% CI 1.05-3.65).

Discussions

Patients with renal disease were not associated with increased 30 day complication rates following ankle fracture open reduction internal fixation. End stage renal disease patients are known for having a unique profile of wounds given the presence of proteinuria, peripheral edema, low serum albumin levels, and abnormal electrolyte abnormalities. However, in the acute setting with ankle fractures, no association was noted.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kristina Corley, DPM	corley.kristina@gmail.com	I/We have nothing to disclose	
Jonathan Hook, DPM, FACFAS	jhookdpm@gmail.com	I/We have nothing to disclose	
Rachel Albright, DPM, MPH, FACFAS	albrightrh@gmail.com	I/We have nothing to disclose	
Adam Fleischer, DPM, MPH, FACFAS	adam.e.fleischer@gmail.com	I/We have nothing to disclose	

Title

Prevalence of Peri-Articular Cyst Formations and Associated Outcomes prior to Total Ankle Arthroplasty with Average 4 Year Follow- Up

Submit Date 08/31/2023

Correspondent

Last Name: Connolly
 Full Name: Elizabeth Connolly DPM Email: tay.bergstrom@gmail.com
 Practice/Company/Residency Program: JFK Medical Center

Authors

Author 1: James Clancy DPM, FACFAS Author 2: Taylor Bergstrom DPM
 Author 3: Elizabeth Connolly DPM Author 4: JiHae Kim DPM
 Author 5: Spencer Stringham DPM Author 6:
 Author 7: Author 8:

Purpose Purpose: This is a prevalence study aimed to predict the incidence of peri-articular bone cysts and associated outcomes in the setting of total ankle arthroplasty.

Methodology Retrospective review of 81 limbs prior to total ankle arthroplasty were identified. The minimum follow-up time for inclusion was 1 year. Patient demographics, complications, revisions, zone affected, resection margins, ancillary procedures, cyst location, number of cysts, and follow up time were evaluated.

Procedures

Results The average patient age was 66.2 years. Cysts were found in 89% of limbs, 5 out of 81 limbs under went revision with the common zones being 1,2,5,9. Resection margins were affected by cysts in 57% of limbs, 43% of resection margins were unaffected by cysts, average time to revision was 25 weeks, average follow up was 4 years with a range of 1 - 10 years

Discussions Preoperative planning in the setting of total ankle replacement is imperative to avoid complications. CT imaging with 3D reconstruction can better identify problematic cysts that leads to revision surgery and/or ancillary procedures. This study identified the most common zones predictive of revision surgery in total ankle arthroplasty.

Format Scientific

Case Rpt Followup 48

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
James Clancy DPM, FACFAS	james.clancy@ocpbc.com	I/We have nothing to disclose	
Taylor Bergstrom DPM	tay.bergstrom@gmail.com	I/We have nothing to disclose	
Elizabeth Connolly DPM	econn429@gmail.com	I/We have nothing to disclose	
JiHae Kim DPM	jhkimdpm@gmail.com	I/We have nothing to disclose	
Spencer Stringham DPM	sdsme2018@gmail.com	I/We have nothing to disclose	

Title

A Predictive Model for Amputation at 30 Days In the Setting of Chronic Limb-Threatening Ischemia Following Peripheral Vascular Intervention

Submit Date 08/31/2023

Correspondent

Last Name: Cheung
 Full Name: Timothy P Cheung, DPM, PhD, CPT
 Practice/Company/Residency Program: Yale New Haven Hospital
 Email: timothy.cheung@yale.edu

Authors

Author 1: Timothy P Cheung, DPM, PhD, CPT
 Author 2: Steven Vyce, DPM, FACFAS
 Author 3: Peter Blume, DPM, FACFAS
 Author 4: Gaelle Romain, PhD
 Author 5: Kim, Smolderen, PhD, FAHA, FACC
 Author 6: Carlos Mena-Hurtado, MD, FAHA, FACC, FSCAI, FSVSM
 Author 7: Author 8:

Purpose The purpose of this study is to develop a predictive model for amputation at 30 days in the setting of chronic limb-threatening ischemia (CLTI) following peripheral vascular intervention (PVI).

Methodology Patients undergoing PVI for CLTI in 2017 and 2018 in the Medicare-linked Vascular Quality Initiative (VQI) were included. Sixty-three preprocedural variables were included in random survival forest (RSF) models. RSF models were constructed for 30-day outcomes in the training sample (80%) and evaluated in the testing sample (20%). Predictive variables were ranked based on frequency that caused branch splitting nearest to the root node.

Procedures

Results A total of 10,114 patients (mean age 72 +/- 11, 59% male, 74% white) were included. The amputation rate was 6.8% at 30 days while the death rate without an amputation was 4.2%, and 0.4% of the patients were lost to follow up. The major amputation rate at 30 days was 3.0%, while the rate of death without major amputation was 4.3%, and 0.4% of the patients were lost to follow up. The RSF model identified a prior major amputation, chronic kidney disease stage 5, and an urgent PVI procedure as the most important variables for predicting 30-day amputation following PVI.

Discussions Using data from the Medicare-linked VQI registry, our group identified the most important variables for predicting amputation at 30-days following a PVI using RSF models. The most important variables for predicting major amputations at 30-day were prior major amputations, CKD stage 5, and an urgent PVI procedure. Our work provides a foundation for determining important considerations in determining the risk for a major amputation within 30 days following a PVI.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Epidemiology/Population Study

Level of Evidence Level I

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Timothy P Cheung, DPM, PhD, CPT	timothy.cheung@yale.edu	I/We have nothing to disclose	
Steven Vyce, DPM, FACFAS	steven.vyce@ynhh.org	I/We have nothing to disclose	
Peter Blume, DPM, FACFAS	peterb@ctfootandanklesurgery.com	I/We have nothing to disclose	
Gaelle Romain, PhD	gaelle.romain@yale.edu	I/We have nothing to disclose	
Kim, Smolderen, PhD, FAHA, FACC	kim.smolderen@yale.edu	Consultant/Advisor/Speaker (List all affiliations)	Consult for Optum Labs, Abbott, Tegus, Happify, and Cook
		Grant/Research funding	unrestricted grant funding from Johnson & Johnson, Merck, Shockwave, and Philips
Carlos Mena-Hurtado, MD, FAHA, FACC, FSCAI, FSVSM	carlos.mena-hurtado@yale.edu	Grant/Research funding	Shockwave and Philips
		Consultant/Advisor/Speaker (List all affiliations)	Consult for Abbott and COOK

Title Minimally Invasive Zadek Osteotomy: Structures at Risk**Submit Date** 08/31/2023**Correspondent**

Last Name: Schwab

Full Name: Anthony J Schwab, DPM, MS

Email: anthonyjschwab7@gmail.com

Practice/Company/Residency Program:

Inova Fairfax Medical Campus

Authors

Author 1: Anthony, J Schwab, DPM, MS

Author 2: Miriam Niktash, DPM

Author 3: Corine Creech, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The Minimally Invasive Zadek osteotomy has been described for use in the treatment of Haglund's deformity and Achilles tendinopathy without the burden of Achilles tendon transection. The aim of this study is to identify safe zones for placement and execution of the Minimally Invasive Zadek osteotomy.

Methodology

A Minimally Invasive Zadek osteotomy was performed on 10 cadaveric specimens. The osteotomy was performed at a 45 degree angle perpendicular to the calcaneal tuberosity while ensuring an apex of 5-10 mm dorsal to the plantar cortex of the calcaneus. Distance (in mm) from the posterior and anterior hinge was measured from the most superior and inferior wing of the osteotomy to the following: sural nerve, peroneal tendon sheath, tibialis posterior tendon, flexor digitorum longus tendon, tibial nerve/artery/vein, and flexor hallucis longus tendon.

Procedures**Results**

Average distance to the sural nerve and peroneal tendon sheath from the most inferior aspect of the posterior wing was 6.65 mm mm (range 5.4-13.2) and 23.26 mm (range 20.3-25.7) with no injury to either structure. No medial neurovascular or tendinous structures was injured as a result of this osteotomy with the tibial nerve being closest to the posterior wing at an average of 24.34 mmm (range 20.2-28.3).

Discussions

Given the above results, the Minimally Invasive Zadek osteotomy proves to be a safe procedure without significant trauma to adjacent tendinous and neurovascular structures at both the medial and lateral aspect of the osteotomy. To our knowledge, this is the first study to establish a safe zone for the minimally invasive approach to Zadek osteotomy.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Anthony, J Schwab, DPM, MS	anthonyjschwab7@gmail.com	I/We have nothing to disclose	
Miriam Niktash, DPM	mniktash1@gmail.com	I/We have nothing to disclose	
Corine Creech, DPM, FACFAS	creecher17@me.com	I/We have nothing to disclose	

Title

The Incidence of Wound Healing Complications Following Use of a Vertical versus Transverse Incision for Strayer Gastrocnemius Recession: A Retrospective Comparative Study

Submit Date 08/31/2023

Correspondent

Last Name: Christie
 Full Name: Lauren M. Christie, DPM, AACFAS Email: laur.m.christie@gmail.com
 Practice/Company/Residency Program: Orthopedic Foot and Ankle Center

Authors

Author 1: Lauren M. Christie, DPM, AACFAS Author 2: Avery Thomson, MS, DPM
 Author 3: Cindy H. Duong, DPM Author 4: Andrew B. Peacock, DPM, FACFAS
 Author 5: D. Scot Malay, DPM, MSCE, FACFAS Author 6:
 Author 7: Author 8:

Purpose A retrospective cohort study with the primary aim of comparing the incidence of wound complications following Strayer gastrocnemius recession (SGR) using either a vertical or transverse incision, was conducted. The secondary aim was to explain complications in terms of patient exposures.

Methodology 33 consecutive patients that underwent SGR were analyzed after a minimum 3-month follow up. Outcomes included wound dehiscence and sural nerve injury. Exposures included demographic, comorbidity, and surgical risk factors. Descriptive and inferential statistical analyses were undertaken.

Procedures

Results The cohort's median age was 51 years, BMI 29.1, and 54.6% were female. No sural nerve injuries were observed. Use of a thigh tourniquet protected against dehiscence, whereas 57.1% that did not use a tourniquet experienced dehiscence ($p = 0.0002$). None of the horizontal incisions showed dehiscence, whereas 28.6% of the vertical incisions did ($p = 0.0144$). A Greenland sensitivity analysis revealed the effect estimate for the horizontal incision to resist (the odds ratio [OR] did not change >10%) the potential influence of a hypothetical variable up to an OR of nearly 7 for the unmeasured confounder by the outcome.

Discussions The transverse incision was not associated with sural nerve injury and protected against wound dehiscence. This effect was likely related to orientation of the incision parallel to relaxed skin tension lines. The protective effect of the tourniquet could be related to less intraoperative hemorrhage and reduced operative time. These findings could be used to develop prospective cohort studies and randomized controlled trials.

Format Scientific

Case Rpt Followup

Not a Student Club Poster

Student Club

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lauren M. Christie, DPM, AACFAS	laur.m.christie@gmail.com	I/We have nothing to disclose	
Avery Thomson, MS, DPM	avethomson@gmail.com	I/We have nothing to disclose	
Cindy H. Duong, DPM	cindyd.714@gmail.com	I/We have nothing to disclose	
Andrew B. Peacock, DPM, FACFAS	andrewbpeacock@gmail.com	I/We have nothing to disclose	

D. Scot Malay, DPM, MSCE, FACFAS malaydsm@gmail.com Grant/Research funding

Co-author D. S. Malay receives research funding from the National Institutes of Health, The American College of Foot & Ankle Surgeons, and Marlinz Pharma, Houston, Texas.

Title

Utility of Neutrophil to Lymphocyte Ratio in Predicting 30-Day Readmissions in Patients with Diabetic Foot Infections

Submit Date 08/31/2023

Correspondent

Last Name:	Tirabassi	
Full Name:	Nathan C Tirabassi, DPM	Email: nathan.tirabassi@rochesterregional.org
Practice/Company/Residency Program:	Rochester General Hospital	

Authors

Author 1:	Nathan C Tirabassi, DPM	Author 2:	Anjni P Patel, DPM
Author 3:	Garrett L LaMontagne, DPM	Author 4:	Taylor A Thomas, DPM
Author 5:	Juan A Castillo, DPM	Author 6:	Tyler L Coye, DPM
Author 7:		Author 8:	

Purpose This study investigated the predictive value of the neutrophil-to-lymphocyte ratio (NLR) in relation to 30-day readmission rates among patients with diabetic foot infections (DFI). Being able to identify high-risk patients and predict outcomes based on the patient's immunity prior to intervention may lead to decreased rates of readmission.

Methodology The study utilized electronic health records to investigate a cohort of 139 patients who were admitted for DFIs between May, 1, 2019, and June, 1, 2022. The area under the curve (AUC) was calculated to quantify the discriminatory power of the NLR in distinguishing between patients who were readmitted within 30 days and those who were not. Furthermore, multivariate logistic regression analysis was conducted to assess whether the NLR could independently predict 30-day readmission after adjusting for other potential confounding variables.

Procedures

Results Out of the initial cohort of 139 patients, 24 (17.3%) patients were readmitted within 30 days of their initial admission for DFIs. An AUC value of 0.562 was observed. The results of the multivariate analysis revealed the NLR did not retain its significance as a predictor of 30-day readmission ($p>0.05$).

Discussions In conclusion, this study found that the NLR ratio had limited predictive value for 30-day readmission among patients admitted with diabetic foot infections. The AUC of 0.562 indicated that the NLR had only marginal ability to discriminate between patients who were readmitted within 30 days. Further research with larger sample sizes and consideration of additional predictive markers, including NLR, is warranted to enhance the accuracy of readmission risk prediction in this patient population.

Format Scientific

Case Rpt Followup 14

Student Club Not a Student Club Poster

Classification Epidemiology/Population Study

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Nathan C Tirabassi, DPM	nathan.tirabassi@rochesterregional.org	I/We have nothing to disclose	
Anjni P Patel, DPM	Anjni.Patel@rochesterregional.org	I/We have nothing to disclose	
Garrett L LaMontagne, DPM	Garrett.LaMontagne@rochesterregional.org	I/We have nothing to disclose	
Taylor A Thomas, DPM	Taylor.Thomas@rochesterregional.org	I/We have nothing to disclose	
Juan A Castillo, DPM	Juan.Castillo@rochesterregional.org	I/We have nothing to disclose	
Tyler L Coye, DPM	tylerlc6@gmail.com	I/We have nothing to disclose	

Title

Minimally Invasive Subtalar and Talonavicular Joint preparation for Hindfoot Arthrodesis: Structures at Risk

Submit Date 08/31/2023

Correspondent

Last Name: Schwab
 Full Name: Anthony J Schwab, DPM Email: anthonyjschwab7@gmail.com
 Practice/Company/Residency Program: Inova Fairfax Medical Campus

Authors

Author 1: Anthony J Schwab, DPM, MS Author 2: David Siegel, DPM
 Author 3: Tara McElroy, DPM, MPH Author 4: Corine Creech, DPM , FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Minimally invasive joint preparation for hindfoot arthrodesis can be advantageous in regard to operative time, post operative pain, and a smaller incision throughout the procedure leading to decreased rates of incisional dehiscence. The aim of this cadaveric study is to define at risk anatomic structures in MIS subtalar and talonavicular joint prep so that safe zones may be created in the future.

Methodology Talonavicular (TN) joints in 10 cadaveric specimens were denuded of cartilage with a 3x30 mm Shannon burr at portals 1 cm medial and 1 cm lateral to the dorsal aspect of talonavicular joint. Additionally, the posterior subtalar joint (STJ) was denuded of cartilage through a portal adjacent to the sinus tarsi with the aforementioned Shannon burr directed posteriorly. Distance (in mm) to the sural nerve and peroneal tendon sheath were measured laterally and distance to the dorsalis pedis artery, medial dorsal cutaneous nerve, and deep peroneal nerve dorsally.

Procedures

Results After STJ prep, average distance to the sural nerve and peroneal tendon sheath from burr entry site was 34.21 mm (range 32.96-36.56) and 14.123 mm (range 12.97-14.99) respectively. After TN joint prep from medial and lateral portals, the average distance to the dorsalis pedis artery, medial dorsal cutaneous/deep peroneal nerve were 13.31 mm (range 12.44-14.01), 11.54 mm (range 9.11-12.57), and 17.14 (range 14.43-20.21), respectively. No structures were transected after dissection.

Discussions Minimally invasive hindfoot joint preparation is a safe alternative to traditional open joint preparation and spares soft tissue trauma to vital neurovascular and tendinous structures. To our knowledge this is the first study looking into structures at risk for this specific procedure.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Anthony J Schwab, DPM, MS	anthonyjschwab7@gmail.com	I/We have nothing to disclose	
David Siegel, DPM	dsiegel55@gmail.com	I/We have nothing to disclose	
Tara McElroy, DPM, MPH	tmcelroy2021@gmail.com	I/We have nothing to disclose	
Corine Creech, DPM , FACFAS	creecher17@me.com	I/We have nothing to disclose	

Title

A Comparative Radiographic Analysis of Lapidus Bunionectomy Procedures: Traditional Plate and Screws vs. Instrument-Guided System

Submit Date

08/31/2023

Correspondent

Last Name: Sato
 Full Name: Shane T Sato, DPM Email: stsato@challiance.org
 Practice/Company/Residency Program: Cambridge Health Alliance

Authors

Author 1: Shane Sato, DPM Author 2: Jennifer Buchanan, DPM, MS, FACFAS
 Author 3: Harry Schneider, DPM, FACFAS Author 4: Michael Theodoulou, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The Lapidus bunionectomy is a well-established surgical technique for treating moderate to severe hallux valgus. Recently, there has been growing interest in utilizing instrument-guided systems to perform this procedure, aiming to enhance precision and minimize complications. This study aims to compare the radiographic outcomes of Lapidus bunionectomy procedures using a traditional plate and screws technique with those using an instrument-guided system.

Methodology

Retrospective analysis included patients undergoing Lapidus bunionectomy from January 2017 to December 2021. Groups were traditional plate and screws (Group A) and instrument-guided system (Group B). Radiographs were assessed for hallux valgus angle, intermetatarsal angle, and tibial sesamoid position. Statistical tests included paired t-tests and independent t-tests

Procedures

Results

A total of 88 patients were included in the study, with 50 in Group A and 38 in Group B. The mean follow-up period was 4 months. Radiographic analysis demonstrated a statistically significant reduction in hallux valgus angle (p-value <0.001), intermetatarsal angle (p-value <0.001) as well as change in tibial sesamoid position (p-value <0.001) in both groups postoperatively. Additionally, there was a statistically significant difference in intermetatarsal angle between the two groups (p-value 0.005). However, there was no statistically significant difference in radiographic outcomes between the two groups for hallux valgus angle (p-value 0.42) or change in tibial sesamoid position (p-value 0.17).

Discussions

Lapidus bunionectomy procedures using both techniques effectively corrected hallux valgus deformity. The instrument-guided system showed a slight advantage in achieving optimal intermetatarsal angle correction. Further research is needed for comprehensive assessment of complications, functional outcomes, and patient satisfaction.

Format

Scientific

Case Rpt Followup

4

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Shane Sato, DPM	stsato@challiance.org	I/We have nothing to disclose	
Jennifer Buchanan, DPM, MS, FACFAS	jbuchanan@challiance.org	I/We have nothing to disclose	
Harry Schneider, DPM, FACFAS	hschneider@challiance.org	Consultant/Advisor/Speaker (List all affiliations)	Smith and Nephew
Michael Theodoulou, DPM, FACFAS	mtheodoulou@challiance.org	Consultant/Advisor/Speaker (List all affiliations)	Treace, Avitus Orthopedics

Title Efficacy of Radiofrequency Ablation of Inter-metatarsal Neuromas**Submit Date** 08/31/2023

Correspondent

Last Name: Jensen
 Full Name: Preston, M, Jensen, DPM Email: preston.m.jensen@gmail.com
 Practice/Company/Residency Program: UPMC Central PA Podiatric Medicine and Surgical Residency

Authors

Author 1: Preston M. Jensen, DPM Author 2: Megan F. Kimmel, DPM
 Author 3: Jeffrey A. Marks, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to determine the long term efficacy of radiofrequency ablation for treatment of inter-metatarsal neuromas. Using a minimally invasive procedure with few risks and a very short recovery. Prior studies are limited with the majority of the current literature having a limited number of participants, varying techniques and short follow up.

Methodology

The dorsal-interdigital approach was used for 67 patients receiving treatment from 2011-2022. Inclusion criteria required no prior procedures or treatments including nerve sclerosing injections. Target nerves were located anatomically and confirmed with direct nerve stimulation. Treatment was administered by one provider in office. Onset and duration of relief post procedure, as well as patient's current pain was recorded utilizing the VAS scale. Complications, further treatment, and overall patient satisfaction were recorded. Satisfaction was measured by asking if the patient would recommend this treatment to a friend or family member.

Procedures

Results

Of the 67 patients who met the inclusion criteria, 50 participated in the follow up. Fourteen (28%) male, 36 (72%) female, mean age 54.4 (30-75 years). Follow-up time mean 80.7 months (12-135 months).

Discussions

Radiofrequency ablation has been shown to be an effective technique with fewer complications and minimal recovery compared to open surgical excision for the treatment of interdigital neuromas. Our study attempted to evaluate a larger patient population using long-term follow-up and patient satisfaction with treatment. Of 50 participants, 41 (82%) had complete resolution of their pain (0 out of 10 on VAS) after undergoing one treatment of RFA. Overall satisfaction with treatment was 94% (47 out of 50 participants). No complications documented or reported.

Format Scientific**Case Rpt Followup** 60**Student Club** Not a Student Club Poster**Classification** Neurological/Peripheral Nerve Disorders**Level of Evidence** Level III**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Preston M. Jensen, DPM	preston.m.jensen@gmail.com	I/We have nothing to disclose	
Megan F. Kimmel, DPM	kimmelm4@upmc.edu	I/We have nothing to disclose	
Jeffrey A. Marks, DPM	footjmarks@verizon.net	I/We have nothing to disclose	

Title The Use of Polycaprolactone and Polyurethane-urea for Plantar Plate Repair**Submit Date** 08/31/2023**Correspondent**

Last Name: Heidtmann
 Full Name: Alexandra Heidtmann, DPM Email: alexandraa.hn@gmail.com
 Practice/Company/Residency Program: Highlands-Presbyterian/ St. Luke's Podiatric Surgical Residency

Authors

Author 1: ALEXANDRA HEIDTMANN Author 2: Ronnie Pollard, DPM, FACFAS
 Author 3: Brett Sachs, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Plantar plate repair is a challenging procedure that often leads to suboptimal postoperative outcomes. The aim of this study is to assess the surgical outcome in patients who underwent plantar plate reconstruction with the use of a combination of polycaprolactone and polyurethane-urea polymers.

Methodology 10 feet were identified to have lesser metatarsophalangeal plantar plate tears confirmed by magnetic resonance imaging. All patients underwent soft tissue reconstruction using a combination of polycaprolactone and polyurethane-urea polymers. Minimum follow-up was 12 months. Body mass index, comorbidities, ipsilateral surgical procedures, follow-up time, and complications were evaluated and recorded.

Procedures

Results 8 out of 10 feet had at least one concomitant surgical procedure in addition to plantar plate reconstruction. All patients reported pain improvement with minimal pain at 1-year follow-up. Prolonged edema and stiffness at the second metatarsophalangeal joint were the most common complications.

Discussions The utilization of a novel approach involving the combination of polycaprolactone and polyurethane-urea polymers for plantar plate reconstruction has shown promising results in addressing the challenges associated with this intricate surgical procedure. The study outcomes underscore the potential benefits of this technique, as evidenced by satisfactory postoperative pain levels and position of the joint at a one-year follow-up period.

Format Scientific**Case Rpt Followup** 13**Student Club** Not a Student Club Poster**Classification** Forefoot Reconstruction**Level of Evidence** Level III**Authors/Financial Disclosures**

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
ALEXANDRA HEIDTMANN	alexandraa.hn@gmail.com	I/We have nothing to disclose	
Ronnie Pollard, DPM, FACFAS	alexandraa.hn@gmail.com	I/We have nothing to disclose	
Brett Sachs, DPM, FACFAS	alexandraa.hn@gmail.com	I/We have nothing to disclose	

Title

Comparing Clinical Characteristics and Short-Term Outcomes Between Geriatric and Non-Geriatric Patients Undergoing Charcot Reconstruction

Submit Date 08/31/2023

Correspondent

Last Name: Casciato
 Full Name: Dominick, J, Casciato, DPM AACFAS Email: doinickcasciato@gmail.com
 Practice/Company/Residency Program: University of Maryland Medical Center

Authors

Author 1: Dominick Joseph Casciato DPM AACFAS Author 2: Shehryar Raja DPM
 Author 3: Gregory Aubertin DPM Author 4: Karen Kirkham MD
 Author 5: Robert Mendicino DPM FACFAS Author 6: Jacob Wynes DPM MS FACFAS
 Author 7: Author 8:

Purpose

Maintaining an acceptable quality of life following a lifetime of chronic diseases and resulting physiologic effects poses a challenge when treating an aging population. In those with Charcot neuroarthropathy, wounds and infection complicate decision making when considering limb preservation versus amputation. The purpose of this investigation is to describe the clinical characteristics and short-term outcomes of geriatric patients undergoing Charcot reconstruction.

Methodology

A retrospective chart review of patients who underwent Charcot reconstruction from 2016-2022 was conducted. Demographics, medical history, deformity type, surgical intervention, discharge planning and short-term complications were collected. Descriptive statistics were calculated, and clinical characteristics and short-term outcomes were compared between the non-geriatric (N) and geriatric (G) cohorts using Student's t-test or Chi-squared test with odds ratios (OR).

Procedures

Results

Overall, 103 patients were reviewed for final analysis. Charcot deformity type ($p=0.48$), incidence of wounds ($p=0.47$) and osteomyelitis ($p=0.15$) did not significantly differ between groups. Prolonged admission was independent of geriatric status ($p=0.31$), though the geriatric group showed age-related pathology including delirium and urinary tract infections. While discharge to nursing facilities did differ between groups (G 45% versus N 17%; OR: 3.99, $p=0.01$), baseline function did not ($p=0.12$). The 30-day emergency-visit/readmission (G 23% versus N 6%; OR 4.47, $p=0.03$) and mortality rates (G 9% versus N 0%; $p=0.05$) did differ between groups.

Discussions

Prior to geriatric Charcot reconstruction, consideration should be given to age-related comorbidities. Risks versus benefits of reconstruction and subsequent hospitalization and complications should be discussed at length.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dominick Joseph Casciato DPM AACFAS	dominickcasciato@gmail.com	I/We have nothing to disclose	
Shehryar Raja DPM	Shehryar.raja@gmail.com	I/We have nothing to disclose	
Gregory Aubertin DPM	gregory.aubertin@gmail.com	I/We have nothing to disclose	
Karen Kirkham MD	KARENKIRKHAM@OHIOHEALTH.NET	I/We have nothing to disclose	
Robert Mendicino DPM FACFAS	ROBERTMENDICINO@GMAIL.COM	I/We have nothing to disclose	
Jacob Wynes DPM MS FACFAS	jwynes@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Smith & Nephew/ Paragon 28

Title

Hallux Interphalangeal Joint Arthrodesis Complication Rates in the Diabetic Population

Submit Date

08/31/2023

Correspondent

Last Name: Yang

Full Name: Guang Yan, DPM, AACFAS

Email: graspace05@gmail.com

Practice/Company/Residency Program:

Emory Midtown Foot & Ankle Surgical Fellowship

Authors

Author 1: Guang Yang, DPM AACFAS

Author 2: Marina R. Tony, DPM AACFAS

Author 3: Mohammad A. Sharif, DPM FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Arthrodesis of the hallux interphalangeal joint (IPJ) is a reliable procedure to address hallux abductus or malleus deformity, as well as arthritis. Diabetes poses many difficult potential complications for any foot and ankle surgeon, however. Complication rates for 1st MPJ fusions in diabetics is well documented, however to our knowledge, research lacks that of 1st IPJ fusions. This study aims to assess the success and complication rates of 1st IPJ arthrodesis in the diabetic population compared to nondiabetics.

Methodology

39 patients were included from a multicenter clinic. 16 patients were diabetic and 23 were nondiabetic. Patient demographics included HbA1c levels, BMI, tobacco use, and peripheral neuropathy. Fusion was determined radiographically at 6 months with X-rays with follow-up of at least 12 months.

Procedures

Results

Of the 16 diabetics undergoing a 1st IPJ fusion, 9 had postoperative complications (56.30%). Only 2 of the 23 non-diabetics had complications (8.70%). In our total patient pool, there was an average complication rate of 23.10% and 5.13% in the diabetic and non-diabetic population, respectively.

Discussions

Although performing elective foot and ankle procedures in diabetics has its own risks well known to the surgeon, some are to relieve a chronic non-healing wound. A 1st IPJ fusion can eliminate recurring hallux pressure ulceration that could potentially lead to a more serious complication, such as osteomyelitis. Standard open approach was performed in all patients for joint prep. Given our results, alternative treatment options should be considered to treat chronic ulceration of the hallux, such as a minimally invasive approach to accomplish a similar surgical outcome.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Guang Yang, DPM AACFAS	graspace05@gmail.com	I/We have nothing to disclose	
Marina R. Tony, DPM AACFAS	tonymarina23@gmail.com	I/We have nothing to disclose	
Mohammad A. Sharif, DPM FACFAS	msharif@upperlinehealth.com	I/We have nothing to disclose	

Title

Three-Dimensional Navigation Assisted Pediatric Foot and Ankle Surgery: A Case Series

Submit Date

08/31/2023

Correspondent

Last Name: Sakkab
 Full Name: Ramez S. Sakkab, DPM, AACFAS Email: rasakkab@gmail.com
 Practice/Company/Residency Program: Phoenix Foot & Ankle Institute

Authors

Author 1: Hafsah Dean, DPM Author 2: Ramez Sakkab, DPM, AACFAS
 Author 3: Ryan O'Shea, MD Author 4: Scott Shoemaker, MD
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Computer-assisted surgery (CAS) is a technology that provides three-dimensional navigation (TDN) to optimize intraoperative visualization and guidance. CAS via cone beam computed tomography (CBCT) has progressed in orthopedic surgery, including the foot and ankle. The aim of this study is to demonstrate a series of TDN for pediatric foot and ankle pathology.

Methodology

Thirty five patients were identified and 15 met inclusion and exclusion criteria including a minimum of 1 year follow-up. Age, body mass index (BMI), comorbidities, previous surgery, follow up, satisfaction score, time to return to sport, and radiation exposure dose and time was obtained.

Procedures

Results

Eight patients underwent TDN for talus osteochondral defect retrograde drilling, and 7 for tarsal coalition resection. Mean age was 12.6 years (Range: 7-18). Average follow-up was 13.7 months (Range: 12- 24). Patients were 73.3% very satisfied, 26.7 satisfied. Return to sport was at mean 10.9 weeks (Range: 9.6 - 18). Mean exposure time was 3.8 seconds (Range: 1 - 16.96), dose 1.65 milligrays (Range: 0.5 - 7.02), and fluoroscopic dose gap 365.6 mGy/cm2 (Range: 116.7 - 1545.2). Two post-operative complications (13.3%) occurred.

Discussions

The data surrounding cone beam CT use in foot and ankle surgery is lacking. Visualization of coalition resection and OCD drilling is direct and in real-time. The radiation time and dosage wherein for pediatric tarsal coalitions and talus OCDs (365 mGy/cm2) is similar to that reported in hindfoot and ankle pathology with mini-C arm (8.7 cGy/cm2, Guyonnet et al. 2017 Orthop Traumat: Surg Res). There is no exposure to operators as they are not in the operating theater during CBCT spin. More data is needed prior to regular adoption of these techniques.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Arthroscopy

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Hafsah Dean, DPM	hafshahdean@gmail.com	I/We have nothing to disclose	
Ramez Sakkab, DPM, AACFAS	rasakkab@gmail.com	I/We have nothing to disclose	
Ryan O'Shea, MD	O'Shea.X.Ryan@kp.org	I/We have nothing to disclose	
Scott Shoemaker, MD	shoemaker.scott@kp.org	I/We have nothing to disclose	

Title Validation and expansion of the Nicholson achilles tendinosis classification**Submit Date** 08/31/2023**Correspondent**

Last Name: Biscorner

Full Name: Brady N. Biscorner, DPM, PGY-3

Email: bbiscorner@gmail.com

Practice/Company/Residency Program:

Tower Health Podiatric Medicine & Surgery Residency at Phoenixville Hospital

Authors

Author 1: Jason R. Miller, DPM, FACFAS

Author 2: John E. Marshall IV, DPM, Fellow

Author 3: Brady N. Biscorner, DPM, PGY-3

Author 4: Tavin B. Morgan, DPM, PGY-2

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of the present scientific study is to validate and expand the Nicholson classification system for Achilles Tendinosis.

Methodology

The present study is a retrospective review of patients diagnosed with and treated for achilles tendinosis from June 2020 to June 2022. Over this 2 year period only patients diagnosed with achilles tendinosis with an MRI and a minimum of 1 year of follow up were included. Patients with both insertional and non-insertional achilles tendinosis were included. Patients with prior surgical intervention were excluded. Patients MRI images were reviewed and each patient was classified based on the classification system proposed by Nicholson in 2007. Patients were stratified based on type of tendinosis, Nicholson classification, and conservative vs surgical treatment. The primary outcome measure was resolution of achilles tendon pain at final follow up.

Procedures**Results**

Over the specified time period 263 patients diagnosed with achilles tendinosis were identified. Of these, 131 patients had an MRI available of acceptable quality for Nicholson grading. 55 Type 1, 33 Type 2 and 42 type 3 achilles tendons were identified. Expanded results available in poster.

Discussions

Based on our results the Nicholson classification is predictive for success of conservative versus surgical treatment in the resolution of achilles tendon pain for both insertional and non-insertional Achilles tendinosis. Patients with type 1 tendinosis are very likely to have resolution of their symptoms with conservative treatment regardless of whether their tendinosis is insertional or non-insertional. Patients with type 3 tendinosis are unlikely to have resolution of their symptoms with conservative treatment alone regardless of type of tendinosis.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jason R. Miller, DPM, FACFAS	jrmiller1371@gmail.com	I/We have nothing to disclose	
John E. Marshall IV, DPM, Fellow	dr.john.marshalliv@gmail.com	I/We have nothing to disclose	
Brady N. Biscorner, DPM, PGY-3	bbiscorner@gmail.com	I/We have nothing to disclose	
Tavin B. Morgan, DPM, PGY-2	tavinbmorgan@gmail.com	I/We have nothing to disclose	

Title **Multicenter Study of Distal Metatarsal Minimally-Invasive Osteotomy (DMMO) vs. Open Weil Osteotomy**

Submit Date 08/31/2023

Correspondent

Last Name:	Heidtman	Email:	alexandraa.hn@gmail.com
Full Name:	Alexandra	Highlands-Presbyterian/ St. Luke's Podiatric Surgical Residency	
Practice/Company/Residency Program:			

Authors

Author 1:	Alexandra Heidtmann, DPM	Author 2:	Brett Sachs, DPM, FACFAS
Author 3:	Brett Sachs, DPM, FACFAS	Author 4:	Alan Ng, DPM, FACFAS
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose This study aims to make a retrospective and multicenter comparison of the open Weil osteotomy and DMMO procedures in order to generate robust data that are capable of defending one technique over the other when functional outcomes and complications are compared.

Methodology Data was collected retrospectively from patients who underwent a Weil Osteotomy or DMMO procedure from the most recent operation and traced back until completion of 60 patients. Postoperative radiographs, complications including prolonged edema, recurrent metatarsalgia, metatarsophalangeal dislocation "floating toe", metatarsophalangeal stiffness, malunion/nonunion and wound complications were recorded.

Procedures

Results Pain improvement was statistically significant in both groups. Patient satisfaction was higher in the DMMO group. The most common complication of the Weil osteotomy was metatarsophalangeal dislocation "floating toe". The complication rate was higher in the Weil osteotomy group.

Discussions The most common procedure performed today worldwide is the weil osteotomy. Although this procedure provides a high satisfaction rate, there is also a high rate of complications including floating toe (30%), metatarsophalangeal stiffness, plantar translation of the metatarsal head and transfer metatarsalgia. With the advance of medicine started to surge in the literature. One of these modifications is the distal metatarsal minimally-invasive osteotomy (DMMO). Literature has suggested that the DMMO presents a decreased rate of complications compared to the weil osteotomy, in specific, avoiding the infamous "floating toe."

Format Scientific

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alexandra Heidtmann, DPM	alexandraa.hn@gmail.com	I/We have nothing to disclose	
Brett Sachs, DPM, FACFAS	alexandraa.hn@gmail.com	I/We have nothing to disclose	
Brett Sachs, DPM, FACFAS	alexandraa.hn@gmail.com	I/We have nothing to disclose	
Alan Ng, DPM, FACFAS	alexandraa.hn@gmail.com	I/We have nothing to disclose	

Title **Comparison of clinical and radiographic results of 1st toe nitinol staple arthrodesis when performed in conjunction with metatarsal osteotomy or tarsometatarsal fusions.**

Submit Date 08/24/2023

Correspondent

Last Name: Massa
 Full Name: Dr. Eric Massa, DPM, FACFAS Email: emassa6@yahoo.com
 Practice/Company/Residency Program: Ankle and Foot Associates

Authors

Author 1: Dr. Eric Massa, DPM, FACFAS Author 2: Mark Moldavsky, MS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Retrospective study comparing patient reported outcomes and radiographic data of metatarsal osteotomy (MO) and tarsometatarsal fusion (TMT) when performed in conjunction with 1st toe nitinol staple fixation.

Methodology

44 patients were included. Pre-op and post-op VAS FA, and fusion grade were assessed as well as pre-op and post op Hallux Valgus Angle (HVA), Intermetatarsal Angle (IMA), and Interphalangeal Angle (IPA). 1st and 2nd follow ups were 3-4 and 6-8 weeks, respectively. Student t-test assuming equal variance ($p \leq 0.05$) to determine significant differences.

Procedures**Results**

In addition to staple fixation, 22 patients underwent a 1st MO and 22 patients underwent a 1st TMT. The average age and BMI were 63.2 ± 9.3 , 29.6 ± 5.5 , 4M/18F and 57.5 ± 14.8 , 27.1 ± 5.8 , 5M/17F in the MO and TMT, respectively. VAS-FA scores had a significant improvement ($p \leq 0.05$) (MO 38.9 ± 17.6 , 17.3 ± 9.2 ; TMT 41.7 ± 20.9 , 21.1 ± 13.0). Fusion grades were $70 \pm 20\%$ and $98 \pm 4\%$ in the MO compared to $83 \pm 16\%$ and $98 \pm 5\%$ in the TMT at 1st and 2nd follow up. Both groups had a significant reduction ($p \leq 0.05$) in pre-op to post-op HVA (MO 15.8 ± 5.2 o, 3.9 ± 3.2 o; TMT 21.3 ± 13.7 o, 6.9 ± 5.2 o) and IMA (MO 13.9 ± 3.2 o, 8.7 ± 3.0 o; TMT 17.0 ± 2.2 o, 8.4 ± 2.7 o) while not showing a significant change in IPA ($p \geq 0.05$) (MO 5.4 ± 3.6 o, 5.0 ± 2.1 o; TMT 3.5 ± 3.0 o, 4.7 ± 3.0 o).

Discussions

Using nitinol staple fixation for Akin osteotomies in conjunction with metatarsal osteotomies or 1st TMT fusions, are effective in improving clinical and radiographic outcomes.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dr. Eric Massa, DPM, FACFAS	emassa6@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies
Mark Moldavsky, MS	mmoldavsky@intelivationtech.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies Employee

Title Instagram and the Podiatry Residency Match**Submit Date** 06/28/2023**Correspondent**

Last Name: Russo
 Full Name: Ashley Email: russo.ashley@gmail.com
 Practice/Company/Residency Program: NYU Long Island School of Medicine

Authors

Author 1: Ashley T. Russo, DPM, MS Author 2: Raymond G. Ferguson, Jr., DPM
 Author 3: Chinyere Okpara, MS Author 4: Shahidul Islam, DrPH, MPH
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This study aims to evaluate the presence and use of Instagram among podiatry residency programs in the tri-state area and its impact on the 2023 match process.

Methodology

Council on Podiatric Medical Education approved residency programs in the tri-state area were evaluated for the presence of an Instagram account and metrics including number of posts, number of followers, usage of highlights, usage of reels, and date of last post (to determine account activity). Programs were also analyzed for regional or national ranking (as per the U.S. News & World Report) and total number of adult hospital beds (a proxy for facility size, staff support, and resources). Programs were then evaluated to determine if they entered Match Phase II (MPII), otherwise known as "the scramble." Descriptive statistics were calculated and associations were measured using Kruskal-Wallis Rank Sum and Exact Test, Chi-Squared Test, and Fisher's Exact Test.

Procedures**Results**

Our findings reveal that podiatry residency programs with an Instagram account are less likely to enter MPII ($p = 0.006$). Individual Instagram metrics have no effect on MPII. Programs that are regionally or nationally ranked are more likely to have an Instagram account. The total number of adult hospital beds alone and regional or national ranking alone has no effect on MPII.

Discussions

Our study suggests that podiatry residency programs without an Instagram account should consider establishing one, and those with an account should keep their page current, as Instagram may be an impactful resource for prospective applicants in the match process.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ashley T. Russo, DPM, MS	russo.ashley@gmail.com	I/We have nothing to disclose	
Raymond G. Ferguson, Jr., DPM	raymond.ferguson@nyulangone.org	I/We have nothing to disclose	
Chinyere Okpara, MS	chinyere.okpara@nyulangone.org	I/We have nothing to disclose	
Shahidul Islam, DrPH, MPH	russo.ashley@gmail.com	I/We have nothing to disclose	

Title

Open Reduction Vs Closed Nailing for Geriatric Ankle Fractures

Submit Date

07/10/2023

Correspondent

Last Name: Meyer
 Full Name: Cameron Email: meycerc4@upmc.edu
 Practice/Company/Residency Program: University of Pittsburgh Medical Center

Authors

Author 1: Cameron Meyer, DPM Author 2: Krishnan Perumbala, DPM
 Author 3: Rachel Warner, DPM Author 4: Jeffrey Manway, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study is to compare outcomes of patients treated with closed intramedullary nailing to those of open reduction and internal fixation (ORIF) for management of geriatric ankle fracture.

Methodology

Formal IRB was approved through our institution. 112 geriatric ankle fractures were reviewed between 2010-2022 managed by an individual provider at our academic based medical center. Patients were included if they were 65 years or older, met desired current procedural terminology code, and minimum follow-up of 3 months and managed by single foot and ankle surgeon. Age, Sex, Fixation, time to weight bear, number of comorbidities, smoking history, revision, mortality, complication, and follow up time were evaluated.

Procedures

Results

Closed nailing cohort revealed average age 84 years, time to weightbearing 5.2 weeks, follow up 24 weeks, comorbidities 4.5, complication rate 28.5% (n=4), smoking 14.3% (n=2), revision rate 0.07% (n=1), and mortality 43.0% (n=6). Open reduction internal fixation cohort revealed average age 73 years, weightbearing time 6.5 weeks, follow up 37.7 weeks, comorbidities 4.8, complication rate 21.8% (n=21), smoking 36.7% (n=36), revision rate 0.04% (n=4), and mortality rate 12% (n=12).

Discussions

Closed nailing for geriatric ankle fractures allowed for earlier time to weightbearing compared to conventional ORIF. However, it also coincided with increased age, mortality, and greater complication rate. Despite its high complication rate both fixation types required minimal revisions. In the correct patient closed nailing can be a valuable tool for geriatric ankle fracture fixation. Larger long term functional outcomes are warranted however challenging due to this older population.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Cameron Meyer, DPM	meycerc4@upmc.edu	I/We have nothing to disclose	
Krishnan Perumbala, DPM	perumbalak2@upmc.edu	I/We have nothing to disclose	
Rachel Warner, DPM	warnrac@gmail.com	I/We have nothing to disclose	
Jeffrey Manway, DPM, FACFAS	manwayjm@upmc.edu	I/We have nothing to disclose	

Title Healthcare Disparities with Charcot Reconstruction**Submit Date** 07/10/2023**Correspondent**

Last Name: Meyer
 Full Name: Cameron Email: meycerc4@upmc.edu
 Practice/Company/Residency Program: University of Pittsburgh Medical Center

Authors

Author 1: Cameron Meyer, DPM Author 2: Amanda Marshall, DPM
 Author 3: Chase Kiefer, DPM Author 4: Rachel Warner, DPM
 Author 5: Jeffrey Manway, DPM, FACFAS Author 6:
 Author 7: Author 8:

Purpose

The purpose of this study was to compare incidence and management of charcot neuroarthropathy among minorities within the greater Pittsburgh area.

Methodology

We retrospectively reviewed 120 patients from two hospitals, as part of a major academic teaching center between 2013-2022. One hospital is located in the downtown (inner city) while the other in the suburban Pittsburgh area. Patients were managed by the same attending as referral or initial consultation for diagnosis of Charcot neuroarthropathy of the foot and ankle. Patient selection was performed via international classification of disease code 10 (ICD 10) associated with Charcot's Joint of the foot.

Procedures**Results**

Our population was comprised of 87.5% (n=105) non-minority whites, 73% (n=88) located in suburban areas. Similar demographic data were observed among racial groups. Operative management occurred equally (47%) among racial groups; however, it was greater in city (53% vs 45%) and specifically higher levels of reconstruction (78%). Staged intervention occurred 14.3% in minority groups and 7.6% in Caucasians. Among inner-city and suburban cohort there were similar distributions of gender, age, body mass index, diabetes and smoking. City cohort revealed greater hemoglobin A1C, wounds, and osteomyelitis at 8.17%, 65.6%, and 31.13% respectively. Mortality rates among suburban cohort were in fact greater than inner-city 24% vs 16% respectively.

Discussions

Race does not influence diagnosis or management of charcot foot. With the same provider, innercity treatment did appear to have a greater incidence of reconstruction and lower mortality. One influence may be access to healthcare and community education. More prospective studies are warranted to better understand the influence racial and geographic differences have on management of charcot foot.

Format

Scientific

Case Rpt Followup

Not a Student Club Poster

Student Club**Classification**

Epidemiology/Population Study

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Cameron Meyer, DPM	meycerc4@upmc.edu	I/We have nothing to disclose	
Amanda Marshall, DPM	niestera@upmc.edu	I/We have nothing to disclose	
Chase Kiefer, DPM	kieferct2@upmc.edu	I/We have nothing to disclose	
Rachel Warner, DPM	warnrac@gmail.com	I/We have nothing to disclose	
Jeffrey Manway, DPM, FACFAS	manwayjm@upmc.edu	I/We have nothing to disclose	

Title

Charcot Neuroarthropathy in Diabetic Populations in Texas

Submit Date

07/06/2023

Correspondent

Last Name: Cole

Full Name: Katelyn Alexis Cole, B.S.

Email: kaacole@utmb.com

Practice/Company/Residency Program:

UTMB John Sealy School of Medicine

Authors

Author 1: Katelyn A. Cole, B.S.

Author 2: Daniel C. Jupiter, Ph.D.

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Charcot Neuroarthropathy (CN) is a complex disease that can lead to serious and life-threatening complications. This study seeks to investigate the epidemiologic trends of diabetic Charcot Neuroarthropathy in Texas, and the impact age has on these values.

Methodology

A retrospective analysis of publicly available, deidentified data was conducted using data from the Texas Department of State Health Services. This Hospital Discharge Data Public Use Data set contains information on conditions diagnosed and procedures performed in inpatient encounters in all hospitals in Texas. Using ICD-9/ICD-10 codes we extracted data for patients who had at least one diagnosis for diabetes, and at least one for Charcot's ankle or foot. We noted if the Charcot diagnosis was the patient's primary diagnosis. Amputations were coded as either minor (ankle or below) or major (proximal to ankle) Data extracted included diagnoses, race, and gender. Rates of Charcot were estimated using counts from inpatient data, and census data. Rates were calculated per 1000 population and standardized by age. A Poisson regression of total counts per year was performed against the total population of Texas, controlling for age.

Procedures

Results

Our data show that the overall and age-standardized rates of CN increased each year from 2006-2016, with a slight downward trend from 2014-2016. The pattern of both rate and counts of Charcot closely resembles the trends in the 45-64 age group. Rates in the 18-44 group are increasing; more than doubling from 2006 to 2016. Poisson regression for all CN reinforces this trend, with significant increases in the incidence rate ratio compared to 2006 for each year from 2008-2016. When age group is included in the regression, all years, except 2007 show a significant increase relative to 2006, and all age groups have increased rates relative to the 18-44 age group. It was also observed that amputations, both major and minor, in patients with CN have increased. The major amputation rate more than doubled and minor amputation rate more than tripled from 2006-2016. Counts of amputations in people with CN from 2006-2016 have more than tripled across all categories: total, minor, and major.

Discussions

This study provides insights into trends of Diabetic Charcot neuroarthropathy in Texas. Our results highlight that in recent years there has been an overall increase in age-standardized rates of CN diagnoses. The increasing rates of CN and amputations highlight the need for further research and standardized strategies for diagnosis and management.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Katelyn A. Cole, B.S.	kaacole@utmb.edu	I/We have nothing to disclose	
Daniel C. Jupiter, Ph.D.	dajupite@utmb.edu	I/We have nothing to disclose	

Title

Effects of Deltoid release on Varus Ankle with Total Ankle Arthroplasty

Submit Date

08/28/2023

Correspondent

Last Name: Kim

Full Name: Jae Yoon

Email: jaeyoon.kim1210@gmail.com

Practice/Company/Residency Program:

Kaiser Northbay Consortium

Authors

Author 1: Jae Yoon, Kim, DPM

Author 2: Frances Svidler, DPM

Author 3: Caroline Ko, DPM

Author 4: Danny, Choung, DPM

Author 5: Shiyun Zhu, MPH

Author 6:

Author 7:

Author 8:

Purpose

The goal of the study is to quantify the effect of deltoid release during total ankle arthroplasty (TAA) for varus ankle at immediate post-op, at 1 year, and 2+ year follow-up.

Methodology

A retrospective cohort study was performed on patients who had TAA from January 2010 to December 2019 with greater than 1 year follow-up within the Kaiser database. 496 charts were reviewed, and 45 patients were included. A radiographic review was performed on weightbearing AP ankle taken pre-operatively, post-operatively, at 1 year, and 2 year follow-up. Two sample t-tests were used to evaluate the differences between non-Deltoid release and Deltoid release groups.

Procedures

Results

Before surgery, tibiotalar angles were 10.7 (SD=5.49) for non-Deltoid release group and 14.9 (SD=7.17) for Deltoid release groups, differing significantly ($p=0.04$). Post-surgery, angles were 2.8 (SD=2.83) and 2.6 (SD=0.71) with no significant difference ($p=0.4$). Reduction in tibiotalar angles was significant in both groups: non-Deltoid release group by 7.9 ($p<.001$), Deltoid release group by 12.8 ($p<.001$). Deltoid release group's angular correction exceeded non-deltoid group's reduction by -4.95 (95% CI: -9.03, -0.87), but small sample size limited confounding factors' consideration. The sole statistical difference in tibiotalar angle reduction was between Non-Deltoid and Deltoid release groups from post- to pre-surgery. There was no significant difference in tibiotalar angle measures between the two groups at other time points.

Discussions

Including deltoid release achieved statistically significant varus correction and the correction was maintained without the change in tibiotalar angle throughout 2 years follow up within our cohort.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jae Yoon, Kim, DPM	jaeyoon.kim1210@gmail.com	I/We have nothing to disclose	
Frances Svidler, DPM	frances.x.svidler@kp.org	I/We have nothing to disclose	
Caroline Ko, DPM	caroline.j.ko@kp.org	I/We have nothing to disclose	
Danny, Choung, DPM	danny.choung@kp.org	I/We have nothing to disclose	
Shiyun Zhu, MPH	zhushiy@gmail.com	I/We have nothing to disclose	

Title

A novel technique to correct varus deformity of the ankle by changing the order of osteotomies in transfibular total ankle arthroplasty: a surgical technique and case series

Submit Date 07/14/2023

Correspondent

Last Name: Yano

Full Name: Koichiro Yano, MD, PhD

Email: yano.koichiro0715@gmail.com

Practice/Company/Residency Program:

Department of Orthopedic Surgery, Tokyo Women's Medical University

Authors

Author 1: Koichiro Yano

Author 2: Katsunori Ikari

Author 3: Ayako Tominaga

Author 4: Akifumi Yamada

Author 5: Ken Okazaki

Author 6:

Author 7:

Author 8:

Purpose

Coronal plane deformity of $>15^\circ$ is a relative contraindication for total ankle arthroplasty (TAA). Authors made a novel technique to correct severe tibiotalar varus deformity of the ankle by pre-cutting the distal tibia to avoid an impingement between the tibia and talus. The aim of this study was to evaluate the radiographical and clinical outcomes after this new surgical technique.

Methodology

Among the cases in which transfibular TAA was performed using this new technique from November 2019 to October 2022, 16 cases with preoperative coronal plane varus deformity of $>15^\circ$ were selected for study. The coronal angulation of the tibiotalar joint was assessed preoperatively and postoperatively using the tibiotalar angle (TTA). The position of the talus relative to the tibia was assessed using the tibiotalar ratio (TTR). For the clinical assessment, the self-administered foot evaluation questionnaire (SAFE-Q) was used preoperatively and at the last follow-up to evaluate clinical outcomes.

Procedures

Results

The median follow-up duration was 12.4 (Interquartile range [IQR]; 6.8, 29.2) months. The preoperative median TTA (20.3 [IQR; 19.0, 24.2]) $^\circ$ decreased significantly at the latest follow-up (1.9 [IQR; 0.1, 4.3]) $^\circ$ ($p < 0.01$). Although there was no significant difference in the TTR during the study periods, the number of the cases within the normal range increased from 8 (50.0%) preoperatively to 11 (68.8%) at the latest follow-up. All subscales of SAFE-Q improved significantly at the latest follow-up.

Discussions

The new surgical technique in transfibular TAA can correct severe coronal-plane tibiotalar varus deformity without additional procedures and achieve satisfactory clinical outcomes.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Koichiro Yano	yano.koichiro0715@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Zimmer Biomet
Katsunori Ikari	ikari.katsunori@twmu.ac.jp	Consultant/Advisor/Speaker (List all affiliations)	Zimmer Biomet
Ayako Tominaga	kerokerorerori0812@gmail.com	I/We have nothing to disclose	
Akifumi Yamada	a_yamada_0405@yahoo.co.jp	I/We have nothing to disclose	
Ken Okazaki	okazaken@gmail.com	I/We have nothing to disclose	

Title

Does weight bearing status play a role in the incidence of a symptomatic VTE in patients treated surgically and conservatively for an acute Achilles tendon rupture?

Submit Date

08/11/2023

Correspondent

Last Name: Kim
 Full Name: Jae Yoon Email: jaeyoon.kim1210@gmail.com
 Practice/Company/Residency Program: Kaiser Northbay Consortium

Authors

Author 1: Jae Yoon, Kim, DPM Author 2: Christopher, Nguyen, DPM
 Author 3: Joseph, Creswell, DPM Author 4: Nina, Babu, DPM
 Author 5: Liisa, L, Lyon Author 6:
 Author 7: Author 8:

Purpose

To observe the incidence rate of a symptomatic venous embolism (VTE) after an acute Achilles tendon rupture (ATR) between patients treated with early weight-bearing (EWB) versus traditional weight-bearing (TWB).

Methodology

This retrospective case-control study identified patients with an ATR that was managed within 10 days of the initial injury in Northern California Kaiser from January 2015 to January 2021. Exclusion criteria included: final follow-up within 2 months, previous symptomatic VTE's, pregnancy, anticoagulation medication, and previously treated with ATR.

Procedures

Results

A cohort of 2776 patients was identified and a random subset of 300 patients were selected for the study. Among the 206 patients meeting the criteria, seven developed VTE; five were from the EWB group while two were from the TWB group. Additionally, 177 of the 206 patients had documented range of motion protocols with four of them developing a VTE. Two of the VTE patients were in the early range of motion group while the other two were in the traditional range of motion group. When comparing surgical versus conservative management, six of the 122 patients that were treated conservatively experienced a DVT while only one of the 84 patients that were treated surgically experienced a DVT.

Discussions

The percentage of developing symptomatic VTE after Achilles tendon was lower than the reported at 3.4%. This study did not clearly illustrate the potential influence of weight bearing and range of motion of VTE incidence. Unexpectedly, the conservatively managed group had higher number of VTE's compared to surgical group.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Physical Therapy/Rehabilitation

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jae Yoon, Kim, DPM	jaeyoon.kim1210@gmail.com	I/We have nothing to disclose	
Christopher, Nguyen, DPM	christopher.x7.nguyen@kp.org	I/We have nothing to disclose	
Joseph, Creswell, DPM	joseph.a.creswell@kp.org	I/We have nothing to disclose	
Nina, Babu, DPM	nina.babu@kp.org	I/We have nothing to disclose	
Liisa, L, Lyon	Liisa.L.Lyon@kp.org	I/We have nothing to disclose	

Title **Predictive value and utility of nasal screening for MRSA: Correlation of positive nasal screen and lower extremity wound culture results**

Submit Date 07/19/2023

Correspondent

Last Name: Harada
 Full Name: Arden M. Harada DPM Email: ardenharada@gmail.com
 Practice/Company/Residency Program: Jefferson Health Northeast

Authors

Author 1: Arden M. Harada DPM Author 2: Robert Norton DPM
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The objective of this study was to determine the predictive value of nasal swab for MRSA in screening for positive MRSA in lower extremity wound cultures. Secondly, this study aimed to identify if nasal swab could be a useful result in guiding MRSA antibiotic coverage for lower extremity wounds.

Methodology

A retrospective chart review was conducted between January 2021 to July 2022 at 3 campuses within a single hospital system servicing the Northeast Philadelphia area. Using the electronic medical record data review system (SlicerDicer), patient population was identified as final MRSA PCR and categories included active infection for MRSA and lab component of MRSA PCR. Data was separated by nasal source and lower extremity source along with abnormal (positive) and normal (negative) results. Statistical analysis was performed using Microsoft Excel to calculate the predictive values between the two groups of specimen sources.

Procedures

Results

A total of 1446 patients were identified with active MRSA infection on MRSA PCR screening from nasal source. 1133 had abnormal (positive) and 313 normal (negative) in nasal group. 90 total patients were identified for the lower extremity group with 24 abnormal and 69 normal. Positive predictive value of the nasal screening was 49.05% and negative predictive value was 46.87%.

Discussions

In this study, nasal MRSA PCR screening was helpful less than half of the time (PPV 49.05%) to predict MRSA in lower extremity sources. While nasal MRSA screening is a standard for isolation protocols, the guidance of lower extremity wound treatments including antibiotics should be based on cultures obtained from the lower extremity source.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Arden M. Harada DPM	ardenharada@gmail.com	I/We have nothing to disclose	
Robert Norton DPM	robert.norton5307@gmail.com	I/We have nothing to disclose	

Title Intraoperative Radiation Exposure During Midfoot Charcot Reconstruction**Submit Date** 08/13/2023**Correspondent**

Last Name: Raja
 Full Name: Shehryar A Raja DPM Email: Shehryar.raja@gmail.com
 Practice/Company/Residency Program: Batimore VA Medical Center

Authors

Author 1: Shehryar Raja DPM Author 2: Dominick Casciato DPM AACFAS
 Author 3: Gregory Aubertin DPM Author 4: Jacob Wynes DPM MS FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

While radiation exposure in foot and ankle surgery varies by procedure, attempts to minimize this hazard remain imperative to protect patients and surgeons. Hindfoot deformity correction employs significant radiation through intraoperative fluoroscopy, however, a paucity of data exists concerning Charcot reconstruction. This investigation describes and compares radiation exposure across varying Charcot pathology and fixation constructs.

Methodology

A retrospective chart review of patients undergoing midfoot Charcot reconstruction under large C-arm assistance from 2016-2022 was conducted. Demographics, pathology-specific, and intervention-specific variables were recorded and compared among midfoot reconstructions. The threshold for statistical significance was set at $p \leq 0.05$.

Procedures**Results**

Among 40 patients, the average midfoot radiation exposure and fluoroscopy times were 9.5 ± 5.39 mGy and 256.64 ± 130.67 seconds, respectively. There existed no statistically significant difference in radiation exposure ($p=0.32$) or fluoroscopy times ($p=0.71$) among the different midfoot constructs. There existed a statistically significant relationship between radiation exposure with weight ($p=0.01$) and body mass index ($p=0.03$) and number of stages ($p=0.04$). Similarly, a relationship existed between fluoroscopy time with weight ($p=0.02$), body mass index ($p=0.03$), and number of beams/screws ($p=0.003$).

Discussions

Due to the complexity of Charcot reconstruction coupled with multiple robust types of fixation, surgeons must remain cognizant of fluoroscopy usage, and apply the As Low as Reasonably Achievable principles when able. With such levels of sustained radiation, providers who routinely perform Charcot reconstruction should consistently practice wearing personal protective equipment to protect against radiation.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Shehryar Raja DPM	Shehryar.raja@gmail.com	I/We have nothing to disclose	
Dominick Casciato DPM AACFAS	dominickcasciato@gmail.com	I/We have nothing to disclose	
Gregory Aubertin DPM	gregory.aubertin@gmail.com	I/We have nothing to disclose	
Jacob Wynes DPM MS FACFAS	jwynes@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Paragon 28/ Smith & Nephew

Title

Implementation of a Multimodal Analgesia Pathway in Forefoot Surgery: A Retrospective Case Series

Submit Date 08/02/2023

Correspondent

Last Name: Black
 Full Name: Alexandra T. Black, DPM Email: alextblack@gmail.com
 Practice/Company/Residency Program: Foot and Ankle Specialists of Central Ohio Fellowship

Authors

Author 1: Alexandra Black Author 2: Son Tran, DPM AACFAS
 Author 3: Sara J. Hyland, PharmD, BCCCP Author 4: Amanda Quisno, DPM FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Our study evaluates the use of a multimodal analgesia pathway in patients undergoing forefoot surgery. We hypothesize that implementation will result in decreased postoperative pain intensity, reduced opioid consumption and improved patient satisfaction compared to traditional approaches.

Methodology Patients that underwent first ray surgery received Acetaminophen 975mg PO and Celecoxib 400mg PO pre-operatively. Intra-operatively, a Mayo block was administered containing 1mL Dexamethasone with 14mL 0.5% Ropivacaine prior to incision. Post-operatively, patients were prescribed Meloxicam 15mg qAM for 14 days and Acetaminophen 500mg or 650mg Q6H for 14 days. A detailed pre-operative, intra-operative and post-operative protocol was established with the assistance of a multi-disciplinary team involving pharmacy, anesthesiology and podiatry. Patients completed a questionnaire at initial post-operative visit, evaluating need for rescue medication, emergency room visits, medication side effects, and visual analogue scale scores.

Procedures

Results 7 female patients with a mean age of 47 were included. 5 patients underwent minimally invasive bunion surgery, 1 patient had a first metatarsophalangeal joint fusion, and 1 underwent a distal metatarsal cheilectomy. 0/7 patients required opioids, ED visits, or exhibited adverse effects. Reported low visual analogue scale scores (1-2/10).

Discussions The use of a multimodal analgesia pathway in forefoot surgery is favorable with regards to improving pain management and reducing opioid consumption. Further studies should investigate the implementation of opioid-sparing regimen in the management of orthopedic procedures.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alexandra Black	alexblack@gmail.com	I/We have nothing to disclose	
Son Tran, DPM AACFAS	sonhtran5@gmail.com	I/We have nothing to disclose	
Sara J. Hyland, PharmD, BCCCP	Sara.Jordan@ohiohealth.com	I/We have nothing to disclose	
Amanda Quisno, DPM FACFAS	mandyquisno@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Acumed, Vilex

Title

No Seasonal Variance Found Between Peripheral Arterial Disease and Infection-Related Transmetatarsal Amputations

Submit Date

08/03/2023

Correspondent

Last Name: Kipp
 Full Name: Jennifer A. Kipp DPM Email: jkipp@wakehealth.edu
 Practice/Company/Residency Program: Atrium Health Wake Forest Baptist

Authors

Author 1: Jennifer A Kipp DPM Author 2: Bryanna D Vesely DPM MPH
 Author 3: Madeline Fram BA Author 4: Greg Russell MS
 Author 5: Ashleigh W. Medda DPM, FACFAS Author 6:
 Author 7: Author 8:

Purpose

Peripheral arterial disease, trauma, and diabetes are all causes for lower extremity amputation. It has been reported in the literature that the most common season for diabetic-related amputations is spring, whereas non-diabetic amputations in the winter. The purpose of this study was to determine if there is a trend between the pathology necessitating a transmetatarsal amputation and the season in which the amputation occurred.

Methodology

A retrospective chart review was conducted to identify patients who underwent a transmetatarsal amputation for infection, peripheral arterial disease, or infection in the setting of peripheral arterial disease between January 1, 2020, and December 31, 2021, at a single Level 1 academic medical trauma center. 86 patients with 87 operative extremities were included in this study.

Procedures

Results

No statistical significance was found among the three categories and the season that the transmetatarsal amputations occurred ($p=0.96$). However, there was a statistically significant difference in hypertension between the seasons ($p=0.029$). Additionally, non-cardiac CRP was found to have the highest values in the fall ($p=0.0017$).

Discussions

This is the first study to our knowledge that breaks down the causes of amputations between peripheral arterial disease and infection and analyses the seasonal variance between the two. We found no statistically significant difference between peripheral arterial disease and infection related transmetatarsal amputations based on seasonal variance. Non-cardiac CRP did however have statistically significantly higher values in the fall. We recommend future studies investigate the seasonal variance in non-cardiac CRP levels.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jennifer A Kipp DPM	jkipp@wakehealth.edu	I/We have nothing to disclose	
Bryanna D Vesely DPM MPH	bdvesely@vt.edu	I/We have nothing to disclose	
Madeline Fram BA	mfram@wakehealth.edu	I/We have nothing to disclose	
Greg Russell MS	grussell@wakehealth.edu	I/We have nothing to disclose	
Ashleigh W. Medda DPM, FACFAS	aewells@wakehealth.edu	I/We have nothing to disclose	

Title

Post-Operative Magnetic Resonance Evaluation of Anterior Talofibular Ligament following Arthroscopic Brostrom Procedure: Analysis and Outcomes of 40 Repairs at 12 Months

Submit Date 08/07/2023

Correspondent

Last Name: Badell
 Full Name: Jay Email: jaybadell@gmail.com
 Practice/Company/Residency Program: Florida Orthopedic Foot & Ankle Center

Authors

Author 1: Jay S. Badell DPM AACFAS Author 2: Joshua M. Ekladios DPM MS
 Author 3: James M. Cottom DPM FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Lateral ankle sprains are one of the most common orthopedic injuries throughout the body. When conservative treatment fails, surgical correction is often performed using either open or arthroscopic techniques. We hypothesize that MRI evaluation of the arthroscopic Brostrom repair will show intact repair and normal thickness of the anterior talofibular ligament (ATFL) at 1 year, with statistically significant improvement of patient satisfaction scores.

Methodology

Post-operative MRI was utilized at minimum 1-year follow-up to evaluate the integrity of the arthroscopic brostrom repair, as well as comparison of ATFL thickness to literature validated average thickness. A musculoskeletal fellowship trained radiologist performed all MRI reads. In addition, three fellowship trained foot and ankle specialists from a single institution all performed measurements of the ATFL. Surgical satisfaction, Karlsson-Peterson (KP), and pre and post-operative Foot Function Index (FFI), American Orthopedic Foot and Ankle (AOFAS) hindfoot scores, and Visual Analog Scale (VAS) were also measured using unpaired t-tests.

Procedures

Results

All repairs were shown to be intact at minimum 1-year follow-up via MRI evaluation, with ATFL thickness of 2.11mm. Pre-operative FFI, AOFAS, and VAS were 54.9, 46.4, and 7.1 respectively. Post-Operative scores were 11.0, 91.7, and 1.3 respectively. Surgical satisfaction was 88.2, KP was 75.3. Pre and post-operative scores were shown to be statistically significant, $p < 0.05$. No significant difference in demographic data was observed at 1 year.

Discussions

The date from this study offers evidence that the arthroscopic brostrom repair provides patients with good outcomes as well as an intact ATFL with normal thickness at 1 year post-operatively.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jay S. Badell DPM AACFAS	jaybadell@gmail.com	I/We have nothing to disclose	
Joshua M. Ekladios DPM MS	josh.eklad76@gmail.com	I/We have nothing to disclose	
James M. Cottom DPM FACFAS	jamescottom300@hotmail.com	I/We have nothing to disclose	

Title

A Comparative Radiographic Analysis of Subtalar Joint Arthrodesis Fixation: Traditional Static Screw Fixation vs. Nitinol Continuous Compression Screw

Submit Date

08/16/2023

Correspondent

Last Name: Babu

Full Name: Sriya, S, Babu, DPM, AACFAS

Email: sriyabudpm@gmail.com

Practice/Company/Residency Program:

WVU Medicine Wheeling Hospital Foot And Ankle Advanced Surgical Fellowship

Authors

Author 1: Sriya, S, Babu, DPM, AACFAS

Author 2: Austin, W, Vonasek, DPM, AACFAS

Author 3: Varsha Auluru, DPM

Author 4: Mark H. Hofbauer, DPM, FACFAS

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The aim of this study is to determine a superior fixation method for subtalar joint (STJ) arthrodesis by comparing the time taken for initiation of bony union between two-screw static fixation (SSF) versus single nitinol continuous compression screw fixation (CCSF). Determining superior fixation will help optimize postoperative recovery, facilitate weight-bearing, and expedite patients' return to normal activities.

Methodology

A retrospective analysis was conducted on a cohort of 14 patients with STJ arthritis secondary to rigid rearfoot deformities (ages 30-80) who underwent STJ arthrodesis by a single surgeon, receiving two headless 7.0mm screws (SSF, n=7) or a single nitinol screw (CCSF, n=7). Postoperative radiographs were examined by the surgeon to assess time taken for signs of STJ bony union visualization.

Procedures

Results

Postoperatively, initial signs of union on radiographs were observed from 6.5 weeks to 14 weeks for the SSF group and 6 to 7 weeks for the CCSF group. The results indicate a significant difference between the two groups (t-value= 3.07959, p = 0.004773). The CCSF group exhibited a significantly narrower range in weeks required to observe radiographic bony union (p = 0.0203). The SSF group also showed radiographic signs of bone resorption and had one delayed union, and one surgical dehiscence noted.

Discussions

CCSF demonstrates shorter time to begin bony union, suggesting superiority in promoting early healing for patients undergoing STJ arthrodesis. It offers predictable healing times and greater reproducibility of union. Bone resorption from static fixation increases risk of pseudoarthrosis, which can be combated by nitinol continuous compression. Considering the cost implications of nitinol is crucial in clinical decision-making.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Sriya, S, Babu, DPM, AACFAS	sriyabudpm@gmail.com	I/We have nothing to disclose	
Austin, W, Vonasek, DPM, AACFAS	austinvonasek@gmail.com	I/We have nothing to disclose	
Varsha Auluru, DPM	varsha.atuluru@medstar.net	I/We have nothing to disclose	
Mark H. Hofbauer, DPM, FACFAS	hofdude30@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Enovis, Stryker

Title

The Impact of Weight Bearing Status on Healing Rate After First Metatarsal Phalangeal Joint Arthrodesis: A Correlation Analysis

Submit Date 08/10/2023

Correspondent

Last Name: Mosseri
 Full Name: Ashley, V, Mosseri, DPM, MS, AACFAS Email: ashley.mosseri@gmail.com
 Practice/Company/Residency Program: Ankle and Foot Associates, LLC.

Authors

Author 1: Ashley, V, Mosseri, DPM, MS, AACFAS Author 2: Lee, M, Hlad, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose The postoperative management of First Metatarsal phalangeal joint (MPJ) arthrodesis is aiming to allow patients to resume normal activities at the earliest. We present an analysis between the time of which patients began full weight bearing in a shoe (FWB) in relation to complete fusion after first metatarsal phalangeal joint (MPJ) arthrodesis (TTF).

Methodology A retrospective analysis looking at 186 feet that underwent MPJ arthrodesis were included. Patients' FWB (weeks), TTF (weeks), fixation technique, and comorbidities were evaluated. The healing rate of the joint was measured through radiographic assessments. A t-test was performed comparing the surgeon's evaluation of complete fusion as well as the primary author to avoid bias. One way ANOVA Regression test was performed to assess if there is a significant correlation between TTF and time to FWB. Statistical significance was set at the 5% ($p < 0.05$) level.

Procedures

Results Amongst the 186 feet, fixation consisted of 48 with Dorsal Plate, 93 with Dorsal plate and Interfragmentary screw, 6 with interfragmentary screw and 28 with other. No significant difference found between rate to fusion and fixation technique. Mean FWB was 7.9 weeks and mean TTF was 9.55 weeks. A moderate positive correlation between TTF and FWB (0.4469). The study suggests the correlation to be significant ($F\text{-value} = 45.93$, $p\text{-value} = 0.412$).

Discussions Early weight bearing may positively influence MPJ arthrodesis healing rate and allows patients to resume normal activities sooner. The early introduction of controlled weight bearing appears to promote bone remodeling and facilitate joint fusion, leading to quicker recovery and improved functional outcomes.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ashley, V, Mosseri, DPM, MS, AACFAS	ashley.mosseri@gmail.com	I/We have nothing to disclose	
Lee, M, Hlad, DPM, FACFAS	LeeHlad@hotmail.com	I/We have nothing to disclose	

Title

A Retrospective Analysis of Fixation Methods for First MPJ Arthrodesis: A Comparative Study on Fusion Rates in 147 Patients

Submit Date 08/10/2023

Correspondent

Last Name: Mosseri
 Full Name: Ashley, V, Mosseri, DPM, MS, AACFAS Email: ashley.mosseri@gmail.com
 Practice/Company/Residency Program: Ankle and Foot Associates, LLC.

Authors

Author 1: Ashley, V, Mosseri, DPM, MS, AACFAS Author 2: Lee, M, Hlad, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

First metatarsal phalangeal joint arthrodesis (MPJA) is a gold standard surgical treatment for hallux rigidus and it's controversial which fixation construct has the most efficacy with for fusion rate. Our aim is to compare three different constructs and assess their impact on the rate of fusion (RF) in 147 patients undergoing MPJA.

Methodology

A comprehensive review of medical records from our private practice group from July 2019 to December 2023. The study population comprised 147 patients who underwent MPJA using one of three fixation methods: (1) interfragmentary screws, (2) dorsal plate and interfragmentary screw, (3) dorsal plate. The primary outcome measure was the rate of fusion, assessed through radiographic evidence. T test was performed to assess if there is a significant correlation between time to arthrodesis and method of fixation. Statistical significance was set at the 5% ($p < 0.05$) level.

Procedures

Results

147 feet collected each group (104 female, 43 male) had an average RF of: Plate fixation (n=48) 9.02 weeks, Plate and interfragmentary screw fixation (n=93) 12.534 weeks and Interfragmentary screws (n=6) 9.833 weeks. A significant difference between the rate of fusion among the three fixation methods was not appreciated (P value 0.325).

Discussions

Findings suggest there is no significant difference in fixation technique for metatarsal phalangeal joint arthrodesis. Other factors need to be taken into consideration such as comorbidities and post operative protocol (early weight bearing). Further studies with larger sample sizes and taking into consideration other factors is warranted to corroborate and extend these findings.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ashley, V, Mosseri, DPM, MS, AACFAS	ashley.mosseri@gmail.com	I/We have nothing to disclose	
Lee, M, Hlad, DPM, FACFAS	LeeHlad@hotmail.com	I/We have nothing to disclose	

Title **Two-Year Outcomes After Total Ankle Replacement with a Novel Fixed-Bearing Implant by a Single Surgeon Non-consultant or Inventor**

Submit Date 08/16/2023

Correspondent

Last Name:	Ekladios	Email:	josh.eklad76@gmail.com
Full Name:	Joshua M. Ekladios DPM MS	Practice/Company/Residency Program:	Florida Orthopedic Foot & Ankle Center

Authors

Author 1:	Joshua M. Ekladios DPM MS	Author 2:	Jay S. Badell DPM AACFAS
Author 3:	James M. Cottom DPM FACFAS	Author 4:	
Author 5:		Author 6:	
Author 7:		Author 8:	

Purpose Total ankle arthroplasty continues to gain popularity amongst surgeons and patients as an alternative to arthrodesis. Historically the designs of early implants were plagued with complications and frequently abandoned. Since that time the procedure and materials have undergone significant advancements in both surgical approach as well as design and function of the available implants.

Methodology 40 consecutive patients who received a semi-constrained prosthesis with a unique fixed bearing polyethylene insert were identified. Minimum follow up was two years. Demographic, social, and past medical data was retrospectively reviewed. Concomitant procedures were also recorded. Radiographic analysis included lateral ankle radiograph post-operative range of motion with maximum dorsiflexion and maximum plantarflexion. Clinical outcomes included VAS, FFI and AOFAS scores.

Procedures

Results Lateral radiographs taken at minimum two year follow-up showed mean maximum dorsiflexion of 11.8 degrees and plantarflexion of 13.9 degrees. VAS, FFI, and AOFAS scores improved from 8.1, 92.9, and 44.8 to 1.4, 15.3, and 90.1 post-operatively, respectively. A total of 2.5%(n=1) required revision surgery for poly failure, 5.0%(n=2) underwent local wound care in the office setting for slow healing incisions post-operatively and healed without complication. Overall survivorship was 97.5% at the average follow up of 2 years.

Discussions Similar studies have reported survivorship from 90-100% with modern ankle implants at short to mid-term follow up. Although this is a small sample size, our data shows a 97.5% survivorship at two years post-operatively with favorable patient reported statistically significant functional outcome scores, and ankle range of motion consistent with existing literature.

Format Scientific

Case Rpt Followup 24

Student Club Not a Student Club Poster

Classification Rearfoot and Ankle Reconstruction

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joshua M. Ekladios DPM MS	josh.eklad76@gmail.com	I/We have nothing to disclose	
Jay S. Badell DPM AACFAS	jaybadell@gmail.com	I/We have nothing to disclose	
James M. Cottom DPM FACFAS	jamescottom300@hotmail.com	I/We have nothing to disclose	

Title

Incision Healing and Time to Weightbearing With and Without Use of Adhesive Retention Suture in Total Ankle Arthroplasty

Submit Date

08/30/2023

Correspondent

Last Name: Ekladios
 Full Name: Joshua M. Ekladios DPM MS Email: josh.eklad76@gmail.com
 Practice/Company/Residency Program: Florida Orthopedic Foot & Ankle Center

Authors

Author 1: Joshua M. Ekladios DPM MS Author 2: Jay S. Badell DPM AACFAS
 Author 3: James M. Cottom DPM FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Total ankle arthroplasty (TAA) is a useful treatment option for end-stage post-traumatic or primary ankle arthritis. A common complication however is dehiscence of the anterior incision. Weightbearing is also usually recommended once the incision is fully healed. Adhesive suture retention devices (ASRDs) can assist with linear closure of surgical and traumatic wounds under tension. This retrospective comparative study evaluates the use of ASRDs on TAA patients' incision healing time and time to full weightbearing.

Methodology

50 TAA patients between 2021 and 2023 were divided equally into 2 groups: with and without ASRDs. Demographics included age, BMI, implant technique, comorbidities, complications, and adjunctive soft tissue/osseous balancing procedures. Results calculated included healing time of the incision, time to full weightbearing, and incision length (cm). Preoperative and postoperative AOFAS, FFI, and VAS scores were also recorded.

Procedures

Results

Mean follow-up for the group without ASRDs was 27.7 months, and 4.3 months in the group with ASRDs. Mean incision healing time and return to weightbearing was 37.1 days (SD 4.65) in the group without ASRDs, with average incision length 9.1 cm (SD 1.995). Mean healing time was 19.9 days (SD 3.29), with average incision length 7.4 cm (SD 0.764), in the group with ASRDs. This shows a statistically significant decrease ($p < 0.05$) in incision length, healing time, and return to weightbearing in the ASRD group. There was statistically significant improvement ($p < 0.05$) of postoperative AOFAS, VAS, and FFI scores when compared to preoperative values within either group.

Discussions

Our data demonstrates utilizing ASRDs on TAA incisions can greatly help decrease time to full weightbearing and incision healing time.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joshua M. Ekladios DPM MS	josh.eklad76@gmail.com	I/We have nothing to disclose	
Jay S. Badell DPM AACFAS	jaybadell@gmail.com	I/We have nothing to disclose	
James M. Cottom DPM FACFAS	jamescottom300@hotmail.com	I/We have nothing to disclose	

Title

Chronic Heavy Alcohol Consumption Impairs the Ability of Demineralized Bone Matrix to Support Osteoinduction

Submit Date

08/16/2023

Correspondent

Last Name: Hair
 Full Name: Amida Kuah Email: amidakuah@gmail.com
 Practice/Company/Residency Program: Hospital Episcopal San Lucas Ponce

Authors

Author 1: Amida Hair Kuah DPM Author 2: Urszula T. Iwaniec PhD
 Author 3: Russell T. Turner PhD Author 4: Carlos Arroyo DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Hypothesis: alcohol consumption, a risk factor for fracture repair, can impair graft incorporation and bone healing by two non-mutually exclusive mechanisms: by lowering osteoinductive capacity, potentially by reducing deposition of growth factors into bone matrix, and by suppressing bone formation during bone healing.

Methodology

We performed 3 experiments using 2 osteoinduction models. The first was a demineralized allogeneic bone matrix model in which DBM was harvested from donor rats fed a control diet or an ethanol diet and then implanted into recipient rats fed control or ethanol diets. The second model, a critical size bone defect was created in fibula of recipient rats, and DBM implants harvested from control or ethanol-fed donors were used to close the defect.

Procedures

Results

IGF-1 was 38% lower in bone matrix harvested from ethanol-fed rats compared to control rats. DBM bone volume was 23% lower in DABM recovered 6 weeks following implantation into rats fed control diet. Bone volume was greatest in DBM from control donor rats implanted into control recipient rats, intermediate in DBM from control donor rats implanted into ethanol-consuming recipient rats and lowest in DABM from ethanol-consuming donor rats implanted into ethanol-consuming recipient rats. Ethanol consumption by donor resulted in 9% lower DBM bone volume whereas PTH treatment resulted in 35% higher DBM bone volume in the critical size defect model.

Discussions

Alcohol consumption may impair osteoinduction in allografts and this negative outcome may be worsened by alcohol intake during graft incorporation and bone healing. PTH administration acts in part by increasing skeletal production of IGF-1

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level I

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Amida Hair Kuah DPM	Amidakuah@gmail.com	I/We have nothing to disclose	
Urszula T. Iwaniec PhD	Urszula.Iwaniec@oregonstate.edu	Grant/Research funding	NIAAA (AA02689)
Russell T. Turner PhD	Russell.Turner@oregonstate.edu	Grant/Research funding	NIAAA (AA02689)
Carlos Arroyo DPM	carroyoromeu@gmail.com	I/We have nothing to disclose	

Title

Utilization of the Sesamoid Frontal Plane Angle (SFPA) for Accurate Quantification and Correction of Frontal Plane Rotation During a Lapidus Bunionectomy

Submit Date

08/24/2023

Correspondent

Last Name: Gahr
 Full Name: Kamden Email: kamdengahr22@gmail.com
 Practice/Company/Residency Program: Rush University Medical Center

Authors

Author 1: Paz Abergel, DPM, AACFAS, MPH Author 2: Howard A Stone DPM FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

To help surgeons define absolute quantitative frontal plane correction intraoperatively in patients who have halluxabductovalgus deformity during a Lapidus Bunionectomy by utilizing a newly created angle - Sesamoid Frontal Plane Angle (SFPA).

Methodology

A retrospective review of 41 patients with a total of 60 feet who did not have HAV deformity. Of the patients, 30 were female and 11 were male, totaling 42 female feet and 18 male feet. The average age was 45 years old. AP and Axial Sesamoid x-rays were evaluated. All images were taken by the same x-ray technician. Four measurements were studied: The Tibial sesamoid position, IM angle, HAV angle, and Sesamoid Frontal Plane Angle (SFPA). The SFPA measures the angle perpendicular to the bisection of the sesamoids. Inclusion criteria: patients without an HAV deformity with skeletal maturity. Exclusion criteria included any juveniles, abnormal HAV angle, IM angle, SFPA, or tibial sesamoid position (TSP).

Procedures

Results

60 total feet in 41 patients Average HAV angle- 7.72 ° Average IM Angle- 6.96 ° Average TSP- 2.88 ° Average SFPA- 86.92 °

Discussions

This study calculated the proposed Sesamoid Frontal Plane Angle (SFPA) in 60 feet without HAV deformity. We are confident this angle is an adequate representation of normal frontal plane rotation within patients without HAV. TSP, HAV, and IM angles in our patient population are within accepted degrees and positions for patients without HAV deformity. A comparison between a patients foot with HAV deformity and the accepted 87 degree SFPA angle can be used pre-operatively to quantify how much frontal plane correction is needed given this angle intraoperatively during a Lapidus procedure.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Paz Abergel, DPM, AACFAS, MPH	pabergel93@gmail.com	I/We have nothing to disclose	
Howard A Stone DPM FACFAS	drstone@nsfootankle.com	I/We have nothing to disclose	

Title CT scanographic analysis of symptomatic limb length discrepancy**Submit Date** 08/15/2023**Correspondent**

Last Name: Fleischman

Full Name: Alex,Scott,Fleischman, DPM

Email: Alex.Fleischman@stonybrookmedicine.edu

Practice/Company/Residency Program:

Stony Brook University Hospital

Authors

Author 1: Alex, S, Fleischman, DPM

Author 2: Michael, An, DPM

Author 3: Wendy, Young, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Studies suggested that most, but not a significant amount, of symptomatic limb length discrepancy (LLD) cases have a longer left limb than right limb. Such studies employed the use of a tape measure or plain radiographs instead of the more accurate CT scanogram during analysis. Therefore, this study aims to confirm the determined side dominance of patients with symptomatic LLD through CT scanogram. Additionally, this study will determine if femoral and/or tibial length is responsible for the LLD side dominance.

Methodology

400 veterans who received a CT scanogram with a diagnosis of LLD and associated symptoms between December 2007 and December 2017 were retrospectively reviewed. The length of the femur, tibia, and total length of both limbs were recorded. Scanograms were excluded if surgery to the lower extremities were performed.

Procedures**Results**

The average age of analyzed patients was 62 years old. The left femur was significantly longer than the right femur ($p < 0.05$, left=47.70cm, right=47.62cm). The left tibia was greater than, but not significantly, longer than the right tibia ($p > 0.05$, left=38.25cm, right=38.22cm). The total left limb was significantly longer than the right limb ($p < 0.05$, left=85.95cm, right=85.85cm).

Discussions

The data in this report confirms the side dominant findings reported in similar studies. Additionally, this study notes that the femoral length differential is the significant osseous component contributing to the LLD. This conclusion warrants further discussion of conservative treatment of LLD tailored to the femur.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alex, S, Fleischman, DPM	Alex.Fleischman@stonybrookmedicine.edu	I/We have nothing to disclose	
Michael, An, DPM	an.michael.s@gmail.com	I/We have nothing to disclose	
Wendy, Young, DPM	wendy.young@stonybrookmedicine.edu	I/We have nothing to disclose	

Title Clinical trial to evaluate the effectiveness of joint range of motion measurement using AI related 3D sensor

Submit Date 08/18/2023

Correspondent
 Last Name: lee
 Full Name: gioo Email: gslee1899@gmail.com
 Practice/Company/Residency Program: Chungnam national University Sejong Hospital

Authors
 Author 1: gisoo lee Author 2: Brain K. Hong
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Measurement of joint range of motion is an important area in diagnosis and treatment. However, until now, most of the measurements have been made using conventional devices. Therefore, this study measured using the 3D sensor-based artificial intelligence (AI) related device to validate that it is non-inferior compared to the conventional measurement method, Goniometer.

Methodology The range of motion of the shoulder and hip joints was measured in normal subjects. This study was conducted on 60 people who visited our hospital. One group was measured using a Goniometer device, while the other group was measured using the 3D sensor-based artificial AI-related device. The 3D sensor-based artificial AI-related device measured twice consecutively, and the values were obtained, and the values of the Goniometer device were measured once each by two medical examiners. The correlation between the two groups results was analyzed.

Procedures

Results There was no significant difference in almost results in the shoulder and hip joints in the two groups. However, while there were no significant differences between twice values by the 3D sensor-based artificial AI-related device, there were significant differences between the values measured by using the Goniometer device. However, the values of the shoulder joint by using the 3D sensor-based artificial AI-related device have errors in adduction motion.

Discussions The measurement of the range of motion of a joint using the 3D sensor-based artificial AI related device is considered a good method to make up the measurement method using conventional devices.

Format Scientific

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Biomechanics and Anatomy

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
gisoo lee	gslee1899@gmail.com	Grant/Research funding	This research was supported by National R&D Program through the National Research Foundation of Korea(NRF)

Brain K. Hong	gs1899@hanmail.net	I/We have nothing to disclose
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Title

Pain Control Methods after Ankle Fracture Surgery with a Peripheral Nerve Block

Submit Date

08/18/2023

Correspondent

Last Name: Lee

Full Name: Gisoo

Email: gslee1899@gmail.com

Practice/Company/Residency Program:

Chungnam national University Sejong Hospital

Authors

Author 1: gisoo lee

Author 2: Brian K. Hong

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

This study aimed to compare the post-operative pain control efficacy of peripheral nerve blocks with ropivacaine/lidocaine combined with dexamethasone and peripheral nerve blocks with only ropivacaine and added patient-controlled analgesia in patients with ankle fractures.

Methodology

This study included patients aged 20–70 years surgically treated for ankle fractures. The patients were divided into group A (n = 35), wherein pain was controlled using patient-controlled analgesia after lower extremity peripheral nerve block, and group B (n = 35), wherein dexamethasone was combined with the anesthetic solution during peripheral nerve block. In both groups, ropivacaine/lidocaine were used as the anesthetic solution for peripheral nerve block, and this peripheral nerve block was performed just before ankle surgery for the purpose of anesthesia for surgery. Pain (visual analog scale), patient satisfaction, and side effects were assessed and compared between the two groups.

Procedures

Results

The patients' demographic data were similar between groups. Pain scores were significantly lower in group B than in group A postoperatively. The effect of pain control due to the continuation of anesthesia was also significantly prolonged. Satisfaction scores were significantly higher in group B. There were no anesthesia-related complications in either group.

Discussions

Dexamethasone as adjuvant anesthetic solutions can effectively control pain when performing surgery using peripheral nerve blocks for patients with ankle fractures.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Neurological/Peripheral Nerve Disorders

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
gisoo lee	gslee1899@gmail.com	I/We have nothing to disclose	
Brian K. Hong	gs1899@hanmail.net	I/We have nothing to disclose	

Title

Complications Associated with a Stemmed Intramedullary Device for Minimally Invasive Bunion Surgery: Analysis of the Food and Drug Administration Manufacturer and User Facility Device Experience Database

Submit Date

08/19/2023

Correspondent

Last Name: Roukis

Full Name: Thomas S Roukis, DPM, PhD, FACFAS
Practice/Company/Residency Program:Email: Thomas.Roukis@jax.ufl.edu
UF Health Jacksonville

Authors

Author 1: Alexandra R. Szajna, DPM

Author 2: Thomas S. Roukis, DPM, PhD, FACFAS

Author 3: Jason A. Piraino, DPM, MS, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Novel stemmed intramedullary devices for minimally invasive bunion surgery have been released for use without clinical data demonstrating an acceptable incidence of complications. The FDA MAUDE database contains complications for each FDA 510k cleared device. Use of this database to explore complications associated with a stemmed intramedullary device for minimally invasive bunion surgery has not been performed. We sought to analyze these complications.

Methodology

The FDA MAUDE database was retrospectively reviewed from inception to 24 May 2023 for complications specific to the MINIBunion® 3D Minimally Invasive Bunion System.

Procedures

Results

A total of 35 unique reports were reviewed. Complications predominantly occurred during the post-operative period (77.2%). Hardware complications occurred in 77.1% and consisted of screw breakage (31.5%), mal/non-union (19.9%), and dehiscence/infection (17.1%). Revision surgery occurred in 62.9% with the most common reasons being screw/loose hardware replacement (48.6%) and hardware removal (28.6%).

Discussions

Our analysis of the FDA MAUDE database for complications specific to this device has identified consistent problems. Screw breakage, mal/non-union, and dehiscence/infection were responsible for revision surgery in nearly two-thirds of submissions. This device appears to have limited stability. The incisional approach and osteotomy techniques are likely responsible for the incision dehiscence/infections encountered. While no direct conclusions regarding this system can be drawn from the data, this study demonstrates the potential need for a number of design modifications to reduce the known complications encountered with its use.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alexandra R. Szajna, DPM	Alexandra.Szajna@jax.ufl.edu	I/We have nothing to disclose	
Thomas S. Roukis, DPM, PhD, FACFAS	Thomas.Roukis@jax.ufl.edu	I/We have nothing to disclose	
Jason A. Piraino, DPM, MS, FACFAS	Jason.Piraino@jax.ufl.edu	I/We have nothing to disclose	

Title **NSAIDs Effect on Lapidus Arthrodesis Nonunion Rate: A Retrospective Review of 101 cases**

Submit Date 08/31/2023

Correspondent

Last Name: Mason
 Full Name: Avery, J, Mason, DPM Email: avery.mason2016@gmail.com
 Practice/Company/Residency Program: Ascension St. John

Authors

Author 1: Avery, J, Mason, DPM Author 2: Kristen, L, Patterson, DPM, FACFAS, CWPS
 Author 3: Ryan, M, Murphy, DPM, FACFAS Author 4: Joshua, D, Rhodenizer, DPM, FACFAS
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Lapidus arthrodesis has been widely used in foot and ankle surgery for the treatment of hallux abductovalgus deformity. Due to an increase in opioid usage amongst Americans, the pursuit of alternative pain management options, while not affecting surgical outcomes, is priority. The goal of the present retrospective study was to analyze if using NSAIDs (ibuprofen) as postoperative analgesics increased the incidence of nonunion rates for Lapidus arthrodesis.

Methodology

A retrospective review was performed on 101 patients who underwent Lapidus arthrodesis from January 2017 to July 2022. All procedures were performed by 3 board certified surgeons using plate and screw fixation. Patients received ibuprofen for postoperative analgesic and were non weight-bearing for 6 weeks. Radiographs were reviewed by the surgeons at 6 months to determine union vs non union. Covariates included sex, age, diabetes, nicotine usage and BMI.

Procedures

Results

The overall nonunion rate observed was 6.9% or 7 patients. Of the 7 patients, all were female with four having a history of immediate or previous nicotine usage and 1 was diabetic. Two patients went onto revision due to recurrence and pain with successful arthrodesis.

Discussions

The overall nonunion rate was 6.9% or 7 patients. Patients were treated with ibuprofen as primary analgesic. Literature supports NSAIDs as a contraindication to postoperative analgesic for arthrodesis given its inhibition of prostaglandins which work as an inflammatory mediator. The retrospective study showed a nonunion rate of 6.9% which is inline with historical ranges of 3.5-12% for nonunion rates with Lapidus. The authors conclude that NSAIDs may be used for postoperative analgesic following Lapidus arthrodesis with no increase in nonunion rates.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Avery, J, Mason, DPM	Avery.mason2016@gmail.com	I/We have nothing to disclose	
Kristen, L, Patterson, DPM, FACFAS, CWPS	kpatte4@gmail.com	I/We have nothing to disclose	
Ryan, M, Murphy, DPM, FACFAS	docrmurph@gmail.com	I/We have nothing to disclose	
Joshua, D, Rhodenizer, DPM, FACFAS	joshua.rhodenizer@ascension.org	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	NBPME Executive Board Member, CPME Accreditation Committee Member, ANFAS DRG Committee Member

Title Nitinol Memory Staple System for Akin osteotomies at the Hallux: Radiographic and Patient Reported Outcome Measures

Submit Date 08/24/2023

Correspondent
 Last Name: Massa
 Full Name: Dr. Eric Massa, DPM, FACFAS Email: emassa6@yahoo.com
 Practice/Company/Residency Program: Ankle and Foot Associates

Authors
 Author 1: Dr. Eric Massa, DPM, FACFAS Author 2: Dr. Anup P. Patel, DPM, FACFAS
 Author 3: Dr. Amit Shah, DPM, FACFAS Author 4: Dr. Jason R. Miller, DPM, FACFAS, FAPWCA
 Author 5: Mark Moldavsky, M.S. Author 6:
 Author 7: Author 8:

Purpose Nitinol staples are a standard treatment option used for Akin osteotomies at the Hallux. Shape memory staples are user friendly and provide initial dynamic compression. Retrospective radiographic and patient reported VAS outcomes review of nitinol staple fixation at the hallux were evaluated.

Methodology 64 patients from three sites were included. Pre-op and post-op Foot and Ankle VAS and patient satisfaction were assessed as well as Hallux Valgus Angle (HVA), Intermetatarsal Angle (IMA), and Interphalangeal Angle (IPA). Follow up was 8 weeks post-surgery. Student t-test assuming equal variance ($p \leq 0.05$) was used to determine significant differences.

Procedures

Results 15 (23%) patients were male and 49 (77%) were female with an average BMI of 28.72 ± 7.89 . 3 patients (5%) were smokers and 7 (11%) were diabetic. 22 patients also underwent a 1st metatarsal osteotomy, 26 patients had a first TMT fusion, 1 patient had 2nd and 3rd Hammertoe fixation, 1 patient underwent a Lapidus procedure along with 2nd hammertoe fixation and a Weil osteotomy, and 14 patients had no associated procedures. All 64 patients reported post operative satisfaction with the surgery. Pre-op to Post Op VAS scores improved from 44.2 ± 19 to 21.8 ± 11.8 ($p \leq 0.05$). Pre-op and post-op HVA, IMA, and IPA angles are 18.64 ± 11.49 , 5.97 ± 4.38 ($p \leq 0.05$); 14.02 ± 4.21 , 7.53 ± 3.20 ($p \leq 0.01$); and 5.90 ± 5.40 , 5.97 ± 3.73 ($p \geq 0.05$) respectively.

Discussions Nitinol staple fixation for surgery at the Hallux was effective in restoring and maintaining radiographic parameters. There was a significant improvement of FA VAS and a 100% patient satisfaction.

Format Scientific

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dr. Eric Massa, DPM, FACFAS	emassa6@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies
Dr. Anup P. Patel, DPM, FACFAS	app022@gmail.com	I/We have nothing to disclose	
Dr. Amit Shah, DPM, FACFAS	amitdpm@gmail.com	I/We have nothing to disclose	
Dr. Jason R. Miller, DPM, FACFAS, FAPWCA	jrmiller1371@gmail.com	Consultant/Advisor/Speaker (List all affiliations) Intellectual Property rights owned	with Stryker, Metric MD, Alexion, Treace Medical Zimmer/Biomet and Kinovision
Mark Moldavsky, M.S.	mmoldavsky@intelivationtech.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies Employee

Title

Novel Cross Screw with Staple for first MTP Joint Arthrodesis Compared to Dorsal Plate fixation: Retrospective Clinical and Radiographic Evaluation

Submit Date

08/28/2023

Correspondent

Last Name: Arndt
 Full Name: Dr. Stephen R. Arndt, MD Email: arndsr01@hotmail.com
 Practice/Company/Residency Program: Southeast Orthopedic Specialists

Authors

Author 1: Stephen R. Arndt, MD Author 2: Shirin Zahra B.S.
 Author 3: Mark Moldavsky, M.S. Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Retrospective study investigating crossed screws used with a compressive nitinol staple (CS+S) for arthrodesis of the 1st MTP joint. Dorsal plating (DP) group for comparison.

Methodology

Pre- and post-op VAS were assessed as well as Hallux Valgus Angle (HVA), Intermetatarsal Angle (IMA), Interphalangeal Angle (IPA) Dorsiflexion Angle (DFA), and distance of fibular sesamoid (DFS). Student t-test assuming equal variance ($p \leq 0.05$) to determine significance.

Procedures

Results

40 patients in the DP group age 65.3 ± 8.4 , 12M (30%), 28F (70%), BMI 30.4 ± 6.2 were included. In the CS+S group 14 patients were included age 66.64 ± 8.4 , 5M (36%), 9F (64%), BMI 25.0 ± 3.8 . DP had a follow up time of 4 ± 3 months with 95% fusion rate; CS+S had 100% fusion rate at a follow up of 1.9 ± 2 months. Pre and Post-op DP and CS+S VAS scores were (7.9 ± 0.9 ; 1.3 ± 1) and (8.0 ± 0.8 ; 0.7 ± 0.9), respectively ($p \leq 0.05$). Pre and post-op HVA, IMA, IPA, DFA and DFS for DP are $19.9 \pm 11.25^\circ$, $8.32 \pm 7.19^\circ$ ($p \leq 0.05$); $11.41 \pm 4.58^\circ$, $9.09 \pm 3.23^\circ$ ($p \leq 0.05$); $9.99 \pm 4.84^\circ$, $12.95 \pm 4.12^\circ$ ($p \leq 0.05$); $22.59 \pm 9.21^\circ$, $23.71 \pm 7.41^\circ$ ($p \geq 0.05$); and 12.82 ± 2.65 mm, 12.35 ± 2.62 mm ($p \geq 0.05$) respectively. Pre and post-op HVA, IMA, IPA, DFA angles and DFS for CS+S are $21.71 \pm 10.5^\circ$, $5.57 \pm 5.08^\circ$ ($p \leq 0.05$); $10.54 \pm 4.43^\circ$, $7.98 \pm 2.79^\circ$ ($p \leq 0.05$); $11.99 \pm 6.28^\circ$, $14.47 \pm 5.22^\circ$ ($p \geq 0.05$); 22.26 ± 8.90 , $22.44 \pm 8.97^\circ$ ($p \geq 0.05$); and 13.24 ± 2.17 mm, 12.13 ± 1.56 mm ($p \geq 0.05$) respectively.

Discussions

Both CS+S and DP groups result in significant improvements in VAS scores and radiographic parameters. CS+S is a smaller incision, less hardware irritation and provides continuous compression.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Stephen R. Arndt, MD	arndsr01@hotmail.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies
Shirin Zahra B.S.	shirinzahra11@gmail.com	I/We have nothing to disclose	
Mark Moldavsky, M.S.	mmoldavsky@intelivationtech.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies Employee

Title

Complication rate of PIPJ arthrodesis utilizing bio-integrative implant fixation: a retrospective review

Submit Date

08/30/2023

Correspondent

Last Name: Adloo
 Full Name: Milad, DPM, MS Email: dr.miladadloo@gmail.com
 Practice/Company/Residency Program: University Foot and Ankle Institute

Authors

Author 1: Milad, Adloo, DPM, MS Author 2: Babak, Baravarian, DPM, FACFAS
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Hammertoe fixation has evolved from traditional Kirschner wire to include a variety of implants, however, most are still metallic with well-known disadvantages. The aim of this study is to assess the complication rate of a bio-integrative fiber-reinforced implant for proximal interphalangeal joint arthrodesis.

Methodology

83 feet with implantation of bio-integrative fixation were identified. The minimum follow-up time for inclusion was 1 year. Gender, laterality, age, follow-up time, removal, revision, and exchange were evaluated. Standard radiographs of the foot were analyzed at 6-8 weeks to assess bony union.

Procedures

Results

100% of implanted devices were retained (n=83). 70 female and 13 male patients were included. Average age was 62. No adverse effects were reported. 96% of patients had radiographic evidence of bone healing 6-8 weeks post-operatively.

Discussions

The use of a bio-integrative fiber-reinforced implant for PIPJ arthrodesis has comparable outcomes to traditional fixation or other non-integrative implants for hammertoe correction, without the associated negative risks. Use of this implant offers patients an option to minimize pin-tract infection and hardware complication risks.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Milad, Adloo, DPM, MS	dr.miladadloo@gmail.com	I/We have nothing to disclose	
Babak, Baravarian, DPM, FACFAS	BBaravarian@mednet.ucla.edu	Consultant/Advisor/Speaker (List all affiliations)	OSSIO

Title

Interim Analysis of a Prospective Multicenter Study Assessing Radiographic and Patient Outcomes Following a Mini-Open Triplanar Tarsometatarsal Arthrodesis with Early Weightbearing

Submit Date 08/21/2023

Correspondent

Last Name: McAleer
 Full Name: Jody Peter McAleer, DPM, FACFAS Email: jmcaleer@jcmg.org
 Practice/Company/Residency Program: Jefferson City Medical Group

Authors

Author 1: Jody Peter McAleer, DPM, FACFAS Author 2: Robert Santrock, MD
 Author 3: Jeffrey E. McAlister, DPM, FACFAS Author 4: Avneesh Chhabra, MD
 Author 5: Deidre Kile, BA, MS Author 6:
 Author 7: Author 8:

Purpose

This study's goal is to assess the radiographic and patient-reported outcomes of a novel instrumented triplanar 1st TMT arthrodesis system for hallux valgus (HV) correction performed through a mini-open approach with early return to weightbearing.

Methodology

This is an interim analysis of a prospective multicenter study on patients with symptomatic HV and no prior HV surgery. Patients were treated with an instrumented 1st TMT procedure through a mini-open approach (≤ 4 cm dorsal incision which is approximately 50% smaller than the standard approach) using biplanar plating with protected early weightbearing. Radiographic triplanar correction, patient-reported outcomes (VAS and MOXFQ), and forefoot circumference were assessed through 6- and 12-month follow-up.

Procedures

Results

Eighty-eight patients (mean [SD] age: 41.0 [12.4] years) underwent a mini-open 1st TMT arthrodesis. Mean (SD) primary incision length was 3.5 (0.27) cm. Mean (SD) time to weightbearing in boot (N=84) and return to unrestricted activity (N=65) were 8.1 (6.1) days and 3.5 (0.8) months, respectively. Statistically significant improvements from baseline in HVA, IMA, and TSP radiographic measures (N=81) and VAS pain score (N=82) were observed as early as 6 weeks and maintained through 6 months (N=50 and 51, respectively). Statistically significant improvements across all MOXFQ domains were observed at 6 months (N=51) post-procedure. Mean (SD) change in forefoot circumference at 6 months (N=49) and 12 months (N=12) was -0.9 (1.3) cm and -1.5 (0.9) cm, respectively.

Discussions

The results of this prospective, multicenter study on a mini-open 1st TMT system with early weightbearing demonstrated statistically significant improvements in radiographic correction, patient-reported outcomes, and forefoot circumference.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jody Peter McAleer, DPM, FACFAS	jmcaleer@jcmg.org	Consultant/Advisor/Speaker (List all affiliations)	Tracec Medical Concepts
		Member of a medical publication or editorial governing board	JFAS peer reviewer
		Grant/Research funding	Tracec Medical Concepts
Robert Santrock, MD	robert.santrock@dovetailortho.com	Consultant/Advisor/Speaker (List all affiliations)	Tracec Medical Concepts, Exactech, Vilex, Oxos, OREdMatters
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ACFAS Big West President
Jeffrey E. McAlister, DPM, FACFAS	jeff.mcalister@phoenixfai.com	Grant/Research funding	Tracec Medical Concepts
		Member of a medical publication or editorial governing board	JFAS; FASSTRAC
		Consultant/Advisor/Speaker (List all affiliations)	Tracec edical Concepts, Smith & Nephew, Medline
Avneesh Chhabra, MD	avneesh28@gmail.com	Member of a medical publication or editorial governing board	Associate Editor: European Radiology, BMC MSK disorders, JFAS, JCAT
		Grant/Research funding	IBL, Inc, Qure-AI
		Consultant/Advisor/Speaker (List all affiliations)	Tracec Medical Concepts, ICON medical, IBL, Inc.
Deidre Kile, BA, MS	dkile@actalentservices.com	Consultant/Advisor/Speaker (List all affiliations)	Tracec Medical Consultants

Title

Safety and Efficacy of Carbon-Dioxide Insufflation in Arthroscopic Cartilage Restoration Procedures of the Ankle

Submit Date

08/31/2023

Correspondent

Last Name: Arena

Full Name: Thomas C. Arena, DPM, AACFAS

Email: tom.c.arena@gmail.com

Practice/Company/Residency Program:

Rocky Mountain Reconstructive Foot and Ankle Fellowship

Authors

Author 1: Thomas C. Arena

Author 2: Alan Ng, DPM, FACFAS

Author 3:

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of this study was to examine the adverse effects, safety profile, and efficacy of utilizing carbon dioxide insufflation during arthroscopic cartilage restoration procedures in the ankle joint. Carbon dioxide insufflation provides both the dry environment and capsular distention necessary for improved visualization while performing arthroscopic cartilage resurfacing within the ankle joint.

Methodology

The study is comprised of a retrospective chart review of patients who underwent arthroscopic cartilage restoration procedures with the assistance of carbon dioxide insufflation. All procedures were performed by the senior author (AN) and all included subjects had a minimum of three-month follow up.

Procedures

Results

Our results demonstrate that patients undergoing arthroscopic cartilage restoration procedures with CO2 insufflation had primarily good to excellent results with minimal side effects over short and mid-term followup.

Discussions

To the author's knowledge, no prior studies have examined the safety profile and efficacy of utilizing carbon dioxide insufflation in arthroscopy of the ankle joint. This technique is widely used in laparoscopic surgery with minimal concern for adverse effects to the patient. Scant literature exists documenting this technique in joint arthroscopy, however the few prior studies examining CO2 insufflation in knee and shoulder arthroscopy have yielded positive results with minimal concerns for patient safety. Our study demonstrates that use of CO2 insufflation in the ankle is safe and efficacious, and can help yield better results in cartilage restoration procedures where visualization and a dry environment is paramount.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Arthroscopy

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Thomas C. Arena	tom.c.arena@gmail.com	I/We have nothing to disclose	
Alan Ng, DPM, FACFAS	alan.ng@occ-ortho.com	Consultant/Advisor/Speaker (List all affiliations)	Zimmer Biomet

Title

Functional Outcomes of Total Talus Replacements with Custom 3D Printed Metallic Implants

Submit Date

08/31/2023

Correspondent

Last Name: Arena

Full Name: Thomas C. Arena, DPM, AACFAS

Email: tom.c.arena@gmail.com

Practice/Company/Residency Program:

Rocky Mountain Reconstructive Foot and Ankle Fellowship

Authors

Author 1: Kevin Nguyen, DPM, AACFAS

Author 2: Thomas C. Arena, DPM, AACFAS

Author 3: Alan Ng, DPM, FACFAS

Author 4: Keith Jacobson, DPM, FACFAS

Author 5: David Hahn, MD

Author 6:

Author 7:

Author 8:

Purpose

Our goal is to delineate the efficacy of total talus replacement and examine if there are any differences or benefits to performing total talus replacements with or without adjuvant procedures such as a total ankle replacement and concomitant subtalar joint fusion.

Methodology

This study consisted of a retrospective case series from 12/2018 - 7/2023 reviewing TTRs for patients considered good surgical candidates following talar damage/bone loss who had exhausted standard treatment options besides amputation or ankle fusion. The patient series consisted of patients receiving a naked total talus, total talus + total ankle arthroplasty, naked total talus + subtalar fusion, and total talus + total ankle arthroplasty + subtalar fusion.

Procedures

Results

19 procedures performed from 12/2018 - 12/2022 were included. Improvements were observed in ambulatory status, activity, pain, and range of motion in the majority of patients.

Discussions

The described total talus surgery and surgical combination are shown to be a safe and effective treatment option following damage to the talus for improving mechanical stability, range of motion, and decreased pain. Though this new technology provides a compelling alternative to more traditional surgical treatments such as amputation or ankle arthrodesis, further studies are required to optimize outcomes in these challenging cases.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Kevin Nguyen, DPM, AACFAS	knn.dpm@gmail.com	I/We have nothing to disclose	
Thomas C. Arena, DPM, AACFAS	tom.c.arena@gmail.com	I/We have nothing to disclose	
Alan Ng, DPM, FACFAS	alan.ng@occ-ortho.com	Consultant/Advisor/Speaker (List all affiliations)	Zimmer Biomet
Keith Jacobson, DPM, FACFAS	keith.jacobson@occ-ortho.com	I/We have nothing to disclose	
David Hahn, MD	david.hahn@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Paragon 28

Title

Second-Look Arthroscopy Following Arthroscopic Cartilage Restoration with a Cartilage Allograft

Submit Date

08/31/2023

Correspondent

Last Name: Arena
 Full Name: Thomas C. Arena, DPM, AACFAS Email: tom.c.arena@gmail.com
 Practice/Company/Residency Program: Rocky Mountain Reconstructive Foot and Ankle Fellowship

Authors

Author 1: Thomas C. Arena, DPM, AACFAS Author 2: Alan Ng, DPM, FACFAS
 Author 3: Kira Cramer, DPM Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This study looks to characterize in a qualitative manner the incorporation and morphology of juvenile particulated allograft cartilage in short-term followup of patients undergoing second-look arthroscopy. The study secondarily evaluates patient-reported outcome measures after arthroscopic cartilage restoration procedures.

Methodology

This study consists of a retrospective chart review of patients who underwent second-look arthroscopy for a myriad of reasons after undergoing primary arthroscopic cartilage restoration procedures with juvenile particulated allograft cartilage. Visual appearance of osteochondral lesions was scored using the modified Outerbridge classification systems. Patient-reported outcome measures were reported using post-operative VAS scores and whether or not the patient would undergo the same procedure again.

Procedures

Results

The majority of patients examined demonstrated an improvement in visual appearance of osteochondral lesions as per the modified Outerbridge classification systems. Most patients reported an improvement in post-operative VAS scores and would undergo the same procedure again.

Discussions

Traditional open methods of treating osteochondral lesions of the talus can result in significant patient morbidity, as they require a malleolar osteotomy to access the lesion. Arthroscopic resurfacing procedures offer less patient morbidity with similar ability to debride the lesion and resurface with cartilage allograft. Prior studies have demonstrated efficacy of arthroscopic OCL resurfacing in regards to patient-reported outcome measures. However, there is a paucity of literature available describing morphology of cartilage allograft after arthroscopic resurfacing. Our study demonstrates a significant improvement in lesion morphology and patient outcomes following arthroscopic debridement and resurfacing with a juvenile particulated allograft cartilage.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Arthroscopy

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Thomas C. Arena, DPM, AACFAS	tom.c.arena@gmail.com	I/We have nothing to disclose	
Alan Ng, DPM, FACFAS	alan.ng@occ-ortho.com	Consultant/Advisor/Speaker (List all affiliations)	Zimmer Biomet
Kira Cramer, DPM	kira.cramer@gmail.com	I/We have nothing to disclose	

Title

Retrospective comparison of Standard Wound Care vs Amniotic Membrane for treatment of Diabetic Foot Ulcers

Submit Date

08/30/2023

Correspondent

Last Name: Murphy
 Full Name: Dr. David Murphy, DPM, FACFAS Email: david.murphy19@gmail.com
 Practice/Company/Residency Program: Ankle and Foot Associates

Authors

Author 1: Dr. Gregory Kramer, DPM, FACFAS Author 2: Dr. David Murphy, DPM, FACFAS
 Author 3: Dr. Eric Massa, DPM, FACFAS Author 4: Dr. Todd Becker, DPM, FACFAS
 Author 5: Mark Moldavsky, M.S. Author 6:
 Author 7: Author 8:

Purpose

The healing rate of diabetic foot ulcers when treated with standard wound care (SWC) compared to amniotic membrane (AM).

Methodology

A retrospective chart review of patients with type II diabetes was performed. SWC was defined as debridement of the wound associated with CPT codes 11042, 11043, 11045, 97597 or 97610. AM treatment was defined when CPT code 15275 was used in conjunction with an AM graft code. Wound surface area measurements were taken after debridement. The average change in ulcer surface area / week is reported. Mann-Whitney U-test was used to determine significance.

Procedures

Results

10 patients were included (3M, 7F) with an average BMI of 33.23±6.73. 10 ulcers were treated with SWC and AM; 9 ulcers were treated with SWC alone for a total of 19 ulcers. The average age of the patients when treatment began was 66.74±10.56. 18 of the ulcers were non-pressure while 1 was a pressure ulcers. 17 were on the forefoot, 2 on the hindfoot. The average change in ulcer surface area for the SWC and AM groups is -0.68 ± 0.94cm²/week and -0.09 ± 0.49cm²/week (p≤0.05).

Discussions

In the multisite retrospective study, AM group showed a significantly better healing rate than SWC. Both groups have a large standard deviation which highlights the difficulty of treating diabetic foot ulcers. Larger sample sizes are needed to better understand the efficacy of AM on diabetic foot ulcers.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dr. Gregory Kramer, DPM, FACFAS	kramer@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies
Dr. David Murphy, DPM, FACFAS	david.murphy19@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies
Dr. Eric Massa, DPM, FACFAS	emassa6@yahoo.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies
Dr. Todd Becker, DPM, FACFAS	tbecker@gmail.com	I/We have nothing to disclose	
Mark Moldavsky, M.S.	mmoldavsky@intelivationtech.com	Consultant/Advisor/Speaker (List all affiliations)	Intelivation Technologies Employee
	mmoldavsky@intelivationtech.com	I/We have nothing to disclose	

Title

Vacuum Assisted Bone Marrow Curettage with Implantation of Antibiotic Bone Substitute for Treatment of Osteomyelitis and Limb Salvage

Submit Date 08/30/2023

Correspondent

Last Name: Amjad
 Full Name: Uzair
 Practice/Company/Residency Program: Yale New Haven Health
 Email: Uzair.amjad00@gmail.com

Authors

Author 1: Uzair Amjad
 Author 2: Alexander Fried, DPM
 Author 3: Grant Yonemoto, DPM
 Author 4: Steven D. Vyce, DPM, FACFAS
 Author 5: Michael I. Gazes, DPM, MPH, FACFAS
 Author 6:
 Author 7: Author 8:

Purpose

To showcase a limb salvage technique utilizing an “egg-shell” type debridement of various bones with application of antibiotic impregnated calcium sulfate and calcium phosphate bone substitute allowing full preservation of the foot.

Methodology

A retrospective cohort study was performed focusing on patients with osteomyelitis treated at a single institution from January 2017- January 2021. The inclusion criteria included patients with foot ulcers and osteomyelitis who underwent surgical cancellous bone resection with vacuum assisted bone windowing with application of antibiotic impregnated calcium sulfate and phosphate and at least 12 months of follow up after interventions in the tibia, calcaneus, talus, navicular, and cuneiforms. Exclusion criteria consisted of patients with severe peripheral vascular disease (occlusion of 3 vessels PT, AT, PR) who were unable to be revascularized.

Procedures

Results

6 patients were followed in this case series. With an average follow up of 12 months. Upon final post-op follow up all patients were ambulating wound free and cleared of osteomyelitis of their respective limbs.

Discussions

This innovative technique of debridement removes infected osteomyelitic cancellous bone while preserving the cortical bone. This technique can be particularly useful in the setting of osteomyelitis and attempts at limb salvage. This approach is especially beneficial in cases of osteomyelitis where cortical integrity is not compromised. Preserving the calcaneus, a primary weight-bearing bone, allows for entire foot preservation without the requirement for proximal amputation or prosthesis.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Uzair Amjad	Uzair.amjad00@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Hamden
Alexander Fried, DPM	alexander.fried@yale.edu	I/We have nothing to disclose	
Grant Yonemoto, DPM	gyonemotodpm@gmail.com	I/We have nothing to disclose	
Steven D. Vyce, DPM, FACFAS	steven.vyce@yale.edu	I/We have nothing to disclose	
Michael I. Gazes, DPM, MPH, FACFAS	Michael.gazes@yale.edu	I/We have nothing to disclose	

Title

Comparative study of rheumatoid arthritis and non-rheumatoid arthritis forefoot deformities

Submit Date 08/28/2023

Correspondent

Last Name: Ikari
 Full Name: Katsunori Ikari Email: ikari.katsunori@twmu.ac.jp
 Practice/Company/Residency Program: Tokyo Women's Medical University: Tokyo Joshi Ika Daigaku

Authors

Author 1: Ayako Tominaga Author 2: Katsunori Ikari
 Author 3: Koichiro Yano Author 4: Akihumi Yamada
 Author 5: Minaka Suzuki Author 6: Ken Okazaki
 Author 7: Author 8:

Purpose

Despite being described as a digital deformity, the morphological characteristics of forefoot deformities induced by rheumatoid arthritis (RA) and non-rheumatoid arthritis (non-RA) exhibit substantial distinctions. Nevertheless, only a few studies have undertaken a comparative analysis between the two. To ascertain an appropriate treatment strategy for toe deformities, we meticulously examined the distinctive attributes of both types of foot deformities.

Methodology

A total of 293 cases who underwent surgical intervention for forefoot deformities at our medical facility and its affiliated hospitals from 2013 to 2019 were encompassed in this study. 139 cases comprised patients afflicted with RA, while 154 cases comprised non-RA patients. Our assessment encompassed variables such as gender, age, preoperative load-bearing foot X-ray, and the Self-Administered Foot Evaluation Questionnaire (SAFE-Q) administration.

Procedures

Results

The non-RA cases demonstrated a significantly advanced age compared to the RA cases. Furthermore, the prevalence of Lesser's metatarsophalangeal joint dislocation was significantly higher among the RA cases. The Hallux valgus angle (HVA) exhibited a substantial increase in RA cases, whereas the intermetatarsal angle displayed a significant increase in non-RA cases. Moreover, RA patients exhibited a reduction in the calcaneal pitch angle. The SAFE-Q outcomes did not exhibit any variations between the two groups.

Discussions

The RA cases exhibited a significantly higher incidence of Lesser's dislocations and a greater HVA. The longitudinal arch of the foot was notably impaired among the RA cases, while the transverse arch was significantly compromised in the non-RA cases.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ayako Tominaga	tominaga.ayako@twmu.ac.jp	I/We have nothing to disclose	
Katsunori Ikari	ikari.katsunori@twmu.ac.jp	I/We have nothing to disclose	
Koichiro Yano	yano.koichiro0715@gmail.com	I/We have nothing to disclose	
Akihumi Yamada	a_yamada_0405@yahoo.co.jp	I/We have nothing to disclose	
Minaka Suzuki	minaka.s.orth@gmail.com	I/We have nothing to disclose	
Ken Okazaki	okazaken@gmail.com	I/We have nothing to disclose	

Title

Bedside Deep Bone Biopsy: A Pilot Study to Determine Safety and Efficacy

Submit Date

08/23/2023

Correspondent

Last Name: Wynn

Full Name: Lindsay Wynn, DPM

Email: shortmlindsay@gmail.com

Practice/Company/Residency Program:

University of Florida College of Medicine- Jacksonville

Authors

Author 1: Lindsay M. Wynn, DPM

Author 2: John S. Anderson, DPM, FACFAS

Author 3: Teddy M. Musselman, DPM, FACFAS

Author 4: Jason A. Piraino, DPM, MPH, FACFAS

Author 5: Thomas S. Roukis, DPM, PhD, FACFAS

Author 6:

Author 7:

Author 8:

Purpose

The gold standard for diagnosing osteomyelitis is a deep bone biopsy. This procedure is most commonly performed in the operating room. Unfortunately, many patients with suspected osteomyelitis are too medically ill to allow for procurement of deep bone biopsies in the operating room. Since the steps involved in obtaining deep bone biopsies are straightforward, we sought to determine if these procedures could instead be safely obtained at bedside.

Methodology

We performed an electronic medical records review to identify all patients who underwent deep bone biopsy from the foot for concern of osteomyelitis at our level 1 trauma center. Only patients who underwent deep bone biopsy at bedside were included. The technique involved a sterile skin preparation, isolation of the foot from the bedding with sterile drapes, infiltration of local anesthesia, and a Jamshidi needle to obtain the bone biopsy which was sent for histopathological and microbiological analyses.

Procedures

Results

A total of 10 patients (14 bones) met our inclusion criteria. Bones biopsied included the calcaneus, metatarsals, and proximal phalanges. Pathogens grown included *Corynebacterium*, *Candida lusitanae*, *Enterococcus*, *Proteus vulgaris*, and Coagulase negative staphylococcus. Complications (n=1) included fracture during the procedure.

Discussions

Our pilot study data supports the safety and efficacy of performing a bedside deep bone biopsy to confirm osteomyelitis in patients unsafe to undergo this procedure in the operating room. The ability to definitively confirm osteomyelitis and the causative organism makes this approach an attractive alternative to magnetic resonance imaging.

Format

Scientific

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Lindsay M. Wynn, DPM	shortmlindsay@gmail.com	I/We have nothing to disclose	
John S. Anderson, DPM, FACFAS	john.anderson@jax.ufl.edu	I/We have nothing to disclose	
Teddy M. Musselman, DPM, FACFAS	teddy.musselman@jax.ufl.edu	I/We have nothing to disclose	
Jason A. Piraino, DPM, MPH, FACFAS	jason.piraino@jax.ufl.edu	I/We have nothing to disclose	
Thomas S. Roukis, DPM, PhD, FACFAS	thomas.roukis@jax.ufl.edu	I/We have nothing to disclose	

Title

The Incidence of Occult Osteomyelitis Confirmed via Bone Biopsy at the Time of Elective Ankle Fracture Hardware Removal

Submit Date 08/23/2023

Correspondent

Last Name: Wilmot
 Full Name: Isaac, M, Wilmot, DPM
 Practice/Company/Residency Program: University of Florida Health Jacksonville

Email: isaac.wilmot@jax.ufl.edu

Authors

Author 1: Isaac M. Wilmot, DPM
 Author 2: Thomas S. Roukis, DPM, PhD, FACFAS
 Author 3: John S. Anderson, DPM, FACFAS
 Author 4: Teddy M. Musselman, DPM, FACFAS
 Author 5: Jason A. Piraino, DPM, MS, FACFAS
 Author 6:
 Author 7: Author 8:

Purpose

Elective hardware removal following open reduction with internal fixation (ORIF) of ankle fractures is commonplace. One potential cause for painful hardware is occult osteomyelitis. The gold standard for diagnosing osteomyelitis remains bone biopsy with histopathological and microbiological analyses. We sought to determine the incidence of occult osteomyelitis following ORIF of closed ankle fractures.

Methodology

We performed an electronic medical records review of all deep hardware removals following ORIF of closed ankle fractures at our level 1 trauma center between July 2014 and July 2023. Current procedural terminology codes were used to isolate cases that underwent both ankle hardware removal and deep bone biopsy. All clinical and operative notes, radiographic imaging studies, pathology reports, and microbiology results were reviewed for each patient. Only patients who had previously undergone ORIF of a closed ankle fracture without infectious indications at the time of hardware removal were included.

Procedures

Results

A total of 510 patients were reviewed with 25 meeting our inclusion criteria. Three patients (12%) had a biopsy proven diagnosis of osteomyelitis.

Discussions

Our results are disconcerting and suggest that providers should routinely obtain deep bone biopsies at the time of elective ankle hardware removal regardless of concern for underlying infection. This is especially true if staged surgeries are planned, since occult osteomyelitis can result in devastating complications if not identified and promptly treated.

Format Scientific

Case Rpt Followup
Student Club Not a Student Club Poster

Classification Trauma

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Isaac M. Wilmot, DPM	isaac.wilmot@jax.ufl.edu	I/We have nothing to disclose	
Thomas S. Roukis, DPM, PhD, FACFAS	Thomas.Roukis@jax.ufl.edu	I/We have nothing to disclose	
John S. Anderson, DPM, FACFAS	John.Anderson@jax.ufl.edu	I/We have nothing to disclose	
Teddy M. Musselman, DPM, FACFAS	Teddy.Musselman@jax.ufl.edu	I/We have nothing to disclose	
Jason A. Piraino, DPM, MS, FACFAS	Jason.Piraino@jax.ufl.edu	I/We have nothing to disclose	

Title

Minimally Invasive Chevron/Akin Complications: Analysis of the MAUDE Database

Submit Date

08/24/2023

Correspondent

Last Name: Szajna
Full Name: Aleksandra
Practice/Company/Residency Program:
Email: Aleksandra.Szajna@my.rfums.org
UF Health Jacksonville

Authors

Author 1: Aleksandra, R, Szajna, DPM
Author 2: Thomas, S, Roukis, DPM PhD FAFAS
Author 3: Jason, A, Piraino, DPM FAFAS
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose

The Minimally Invasive Chevron/Akin (MICA) technique has received much attention for surgical correction of hallux valgus. Although many publications exist, few focus on complications encountered. The Manufacturer and User Facility Device Experience (MAUDE) database contains complications for each FDA 510k cleared device. Use of this database to explore complications associated with the industry leading MICA system has not been performed. We sought to analyze these complications.

Methodology

The MAUDE database was reviewed from inception to August 21, 2023 for complications specific to the Stryker Corporation PROstep™ MICA® system.

Procedures

Results

A total of 49 unique reports were identified between September 2017 and December 2022. Most complications occurred intra-operatively (80%), with the most common being burr breakage (51%), screw head breakage (22.5%) and missing instrumentation/unsterile packaging (12.2%). Reports were submitted at a median of 28 days by either the Wright Medical Group (77.5%) or Stryker Corporation (22.5%).

Discussions

We have identified consistent intra-operative and manufacturing problems with this system. It is concerning that no MAUDE reports have been submitted since December 27, 2022 because manufacturers are required to submit complications to the MAUDE within 30 days of becoming aware of the event. It is unlikely that all intra-operative complications have been resolved given the frequency and volume they were occurring at between 2017 and 2022. While no direct conclusions regarding this system can be drawn from the data, this study demonstrates the potential need for product changes to reduce the complications identified in the MAUDE database.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Aleksandra, R, Szajna, DPM; Thomas, S, Roukis, DPM PhD FAFAS; Jason, A, Piraino, DPM FAFAS.

Title

Time to Weightbearing in Weber B Ankle Fractures Fixated With and Without an Interfragmentary Screw

Submit Date 08/25/2023

Correspondent

Last Name: Barbe
 Full Name: Madeleine, DPM Email: madeleine.barbe@penmedicine.upenn.edu
 Practice/Company/Residency Program: University of Pennsylvania Health System

Authors

Author 1: Christopher Berkelbach, DPM Author 2: Madeleine Barbe, DPM
 Author 3: Spencer Monaco, DPM, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Weber B ankle fractures have traditionally been fixated with an interfragmentary screw with a neutralization plate, but some newer evidence has shown that plate alone fixation has not been inferior and has some benefits, such as better bony contact and less potential irritation of the peroneal tendons. We aim to determine if there are significant differences between these groups in time to protected weightbearing, time to beginning physical therapy, and time to weightbearing in a sneaker.

Methodology

This retrospective comparative study found 53 patients since May 2019 who underwent surgical correction of a Weber B ankle fracture with interfragmentary screw + neutralization plate (n =22) vs. plate alone (n =31). Other characteristics analyzed included sex, age, time of follow up, comorbidities, ASA status, race, cause and timing of injury, and use of syndesmotic fixation.

Procedures

Results

The interfragmentary screw + plate group progressed slightly faster than the plate alone group did in time to protected weightbearing (5.7 days), time to beginning physical therapy (4.2 days), and time to weightbearing in a sneaker (5.2 days), although none of these differences were statistically significant. The plate alone group had significantly more obese patients (p = 0.016), as well as higher incidence of SER IV fractures (p = 0.011) and fractures requiring syndesmotic fixation (p = 0.008).

Discussions

While a small difference was detected in time to weightbearing between the groups, this difference was not statistically significant. The delay in weightbearing and delay in beginning physical therapy in the plate alone group may be explained by the higher incidence of obesity and higher incidence of fractures requiring syndesmotic fixation in this group.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Christopher Berkelbach, DPM	christopher.berkelbach@penmedicine.upenn.edu	I/We have nothing to disclose	
Madeleine Barbe, DPM	madeleine.barbe@penmedicine.upenn.edu	I/We have nothing to disclose	
Spencer Monaco, DPM, FACFAS	smonaco@premierortho.com	Consultant/Advisor/Speaker (List all affiliations)	Vilex, DJO

Title

The Role of Computed Tomography in the Surgical Management of Ankle Fractures

Submit Date

08/25/2023

Correspondent

Last Name: Ivey

Full Name: Jacob Ivey, DPM

Email: jacob.ivey011@gmail.com

Practice/Company/Residency Program:

AdventHealth East Orlando Residency Program

Authors

Author 1: Jacob Ivey, DPM

Author 2: Christopher Reeves, DPM, FACFAS

Author 3: Amber M. Shane, DPM, FACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

This study aims to demonstrate whether preoperative CT scans should be considered for malleolar fractures or if radiographs alone are sufficient for appropriate preoperative planning.

Methodology

This survey-based study asked participants to choose their preferred method of fixation for any lateral malleolar, medial malleolar, and posterior malleolar fractures based on blinded images of radiographs and CT scans of the same ankle fractures. The surveys also asked surgeons if any syndesmotic or deltoid repair would be indicated based on the images alone. The answers given for each radiograph were compared to those given for the corresponding CT scan to see what preferred methods of fixation changed, if any.

Procedures

Results

There was no statistical difference of preferred fixation methods for lateral or medial malleolar fractures. There was a difference in fixation methods for posterior malleolar fractures. There was no statistical difference between radiographs and CT scans for syndesmotic repair or primary deltoid repair.

Discussions

Optimal utilization of preoperative CT scans for management of malleolar fractures has remained incompletely defined. Although a CT certainly provides "more detail" about the fracture morphology, it is unclear how often these additional details concretely change surgical management, especially the type of internal fixation. In that light, demonstrating the impact of x-rays vs CT imaging in preoperative planning and surgical management can be valuable to practicing surgeons. This survey study highlights that most ankle fractures can be appropriately treated with radiographs alone. However, when a posterior malleolar fracture is present, a CT scan might aid in preoperative planning.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jacob Ivey, DPM	jacob.ivey011@gmail.com	I/We have nothing to disclose	
Christopher Reeves, DPM, FACFAS	christopher.reeves.dpm@adventhealth.com	I/We have nothing to disclose	
Amber M. Shane, DPM, FACFAS	ambershanereeves@yahoo.com	I/We have nothing to disclose	

Title

Inter- and Intra-rater reliability of the Plumline: A novel radiographic method of metatarsus adductus assessment

Submit Date

08/25/2023

Correspondent

Last Name: McAleer
 Full Name: Jody Peter McAleer, DPM, FACFAS Email: jmcaleer@jcmg.org
 Practice/Company/Residency Program: Jefferson City Medical Group

Authors

Author 1: Jody Peter McAleer, DPM, FACFAS Author 2: Caitlin DiGeorgio, BS, MS
 Author 3: Paul Dayton, DPM, MS FACFAS Author 4: William T DeCarbo, DPM, FACFAS
 Author 5: Robert Santrock, MD Author 6: Daniel J Hatch, DPM, FACFAS
 Author 7: Mark Easley, MD Author 8: W.Bret Smith, DO, MS, FAOAO

Purpose

Sgarlato's angle (SA) is a measurement used to assess metatarsus adductus (MTA). The 'PlumbLine' (PL) is a new method that attempts to correlate the presence of MTA with the need to correct it in conjunction with hallux valgus (HV). Our purpose is to determine the intra- and inter-rater reliability of the PL and secondarily if it is easily interpreted by surgeons.

Methodology

Seven surgeons assessed 20 unique weightbearing preoperative AP radiographs; of which three assessed them at two timepoints four weeks apart. Inter-rater reliability for PL and SA measurements were calculated using a mixed effects model with restricted maximum likelihood estimation. Intra-rater reliability for PL and SA measurements were calculated using the Pearson correlation coefficient.

Procedures

Results

Inter-rater reliability is considered excellent (>0.90) for both techniques, with reliability for SA being slightly higher than for the PL (0.96 vs 0.95, respectively). All surgeons agreed on the presence or absence of MTA based upon the PL. The intra-rater reliability is considered excellent (>0.90) for both PL and SA within each reader, with intra-rater reliability for SA being slightly higher than that for PL (a range of 0.95 to 0.99 versus a range of 0.92 to 0.96, respectively).

Discussions

The PL is a useful clinical tool to guide surgeons to correction of MTA with HV. Our dataset confirms that the technique provides a high level of intra- and inter-rater reliability. It predicts the need for MTA correction when HV correction is planned and is easily interpreted.

Format

Scientific

Case Rpt Followup

0

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Jody Peter McAleer, DPM, FACFAS	jmcaleer@jcmg.org	Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts
		Member of a medical publication or editorial governing board	JFAS Peer Reviewer
		Grant/Research funding	Tracee Medical Concepts
Caitlin DiGeorgio, BS, MS	cdigeorgio@treace.net	I/We have nothing to disclose	
		Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ACFAS
Paul Dayton, DPM, MS FACFAS	daytonp@me.com	Member of a medical publication or editorial governing board	JFAS Section editor
		Grant/Research funding	Tracee Medical Concepts
		Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts
William T DeCarbo, DPM, FACFAS	wtdecarbo@yahoo.com	Grant/Research funding	Tracee Medical Concepts
		Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts; Exactech, Vilex, OXOS, and OREdMatters
Robert Santrock, MD	robert.santrock@dovetailortho.com	Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts
		Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts
Daniel J Hatch, DPM, FACFAS	dhatch@facrockies.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Speaker IFAF
		Grant/Research funding	Tracee Medical Concepts
		Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts; Exactech
Mark Easley, MD	mark.e.easley@duke.edu	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	Leadership Team - Foot innovate; Pres elect - Int'l
		Consultant/Advisor/Speaker (List all affiliations)	Tracee Medical Concepts; Exactech

			Fed of foot and ankle societies
		Member of a medical publication or editorial governing board	Associate Editor - JBJS Reviews
		Grant/Research funding	Exactech
W.Bret Smith, DO, MS, FAOAO	wbsmithdo@gmail.com	Consultant/Advisor/Speaker (List all affiliations)	Treace Medical Concepts; Extremity medical; Orthofix; Restor3D

Title

Investigating the Effect of Preoperative Vitamin D Levels on Incision Healing Following Elective Foot and Ankle Surgery

Submit Date

08/25/2023

Correspondent

Last Name: Lalani
Full Name: Mahak
Email: mahak.lalani@luhs.org
Practice/Company/Residency Program: Loyola University Medical Center - Maywood, IL UNITED STATES - Maywood, IL

Authors

Author 1: Mahak Lalani
Author 2: Christina Staskiewicz, DPM
Author 3: Katherine Dux, DPM
Author 4:
Author 5:
Author 6:
Author 7:
Author 8:

Purpose

This study aims to describe the relationship between preoperative vitamin D levels and post-operative incision healing outcomes for patients undergoing elective foot and ankle surgery.

Methodology

This retrospective review analyzed patient data obtained from the Loyola University Medical Center Electronic Medical Record from January 2010 until August 2023. Inclusion criteria included elective foot and ankle surgeries where clinicians obtained preoperative vitamin D levels in patients older than 18 years old. Exclusion criteria included diabetic patients with HbA1c >7%; patients with pedal ulcerations present at time of surgery; a diagnosis of peripheral arterial disease, end-stage renal disease, peripheral neuropathy, and emergent surgeries. Data were analyzed by t-tests and ANOVA; statistical significance was defined as p<0.05.

Procedures

Results

This study demonstrated that higher than normal preoperative vitamin D levels had a positive correlation with incision healing and patients with lower preoperative vitamin D levels were more likely to have wound healing complications significant for wound dehiscence.

Discussions

Based on this retrospective case series over 13 years, it is recommended foot and ankle surgeons check preoperative vitamin D levels prior to elective foot and ankle surgery, as a deficient vitamin D level may influence postoperative outcomes.

Format

Scientific

Case Rpt Followup

156

Student Club

Not a Student Club Poster

Classification

Epidemiology/Population Study

Level of Evidence

Level IV

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, Disclosed Organisation(s). Rows include Mahak Lalani, Christina Staskiewicz, DPM, and Katherine Dux, DPM.

Title

Dynamic Screw-Suture Stabilization System for SyndesmotiC Repair: An Analysis of Complications in the FDA MAUDE Database

Submit Date

08/25/2023

Correspondent

Last Name: Katmeh
 Full Name: Firas Katmeh DPM, MSH Email: firas.g.katmeh@gmail.com
 Practice/Company/Residency Program: UF College of Medicine - Jacksonville

Authors

Author 1: Firas Katmeh, DPM, MSH Author 2: Thomas S. Roukis, DPM, PhD, FACFAS
 Author 3: Jason A. Piraino, DPM, MS, FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The optimum technique to address disruption of the distal-tibiofibular syndesmosis associated with ankle fractures remains elusive. Modern fixation systems attempt to replicate the natural balance between mobility and stability afforded by the native syndesmotiC complex. Unfortunately, complications associated with newer systems available for use remain unknown. We reviewed the FDA MAUDE (Manufacturer and User Facility Device Experience) database for complications associated with a specific dynamic screw-suture construct for syndesmotiC stabilization that remains in clinical use.

Methodology

The FDA MAUDE database was analyzed for submissions denoting complications submitted for the Depuy Synthes Inc. FIBULINK™ Syndesmosis Repair System.

Procedures

Results

One hundred unique reports were identified. The most reported complication was hardware failure (47%). The most frequent failures involved intra-operative breakage of device components (15%) followed by post-operative failure to maintain syndesmotiC reduction (12%). The individual components of the system responsible for hardware failure were associated with the suture (29%), drill (13%), tensioning cap (10%) and tibial screw (9%). Revision was reported to be 15% which consisted of loss of syndesmotiC reduction, device incompatibility with the fibular side plate, and post-operative pain.

Discussions

Our analysis of the FDA MAUDE database for complications of the FIBULINK™ Syndesmosis Repair System has identified consistent hardware failure related problems with each component of the device. The findings suggest that further studies are necessary to evaluate ways of reducing such complications associated with this dynamic screw-suture stabilization system.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Firas Katmeh, DPM, MSH	firas.g.katmeh@gmail.com	I/We have nothing to disclose	
Thomas S. Roukis, DPM, PhD, FACFAS	thomas.roukis@jax.ufl.edu	Member of a medical publication or editorial governing board	Foot and Ankle Surgery: Techniques, Reports and Cases (FASTRAC)
Jason A. Piraino, DPM, MS, FACFAS	jason.piraino@jax.ufl.edu	Intellectual Property rights owned	Temple university
		Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ACFAS Board Member

Title **Intraoperative use of fluorescence imaging for amputation in acute frostbite of the foot: A Technique Guide and Case Series**

Submit Date 08/26/2023

Correspondent

Last Name: Wireman
 Full Name: Garrett Email: gwireman5@gmail.com
 Practice/Company/Residency Program: University of Louisville Health

Authors

Author 1: Alex Schultz DPM Author 2: Garrett P Wireman DPM ATC
 Author 3: Blake E Pritchett DPM Author 4: Nicholas J Laco DPM
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The use of indocyanine green angiography (ICGA) has been utilized in general surgery, vascular surgery, plastic surgery, and wound care to help improve decision making and aid surgeons in the intra-operative setting. Specifically, ICGA has been shown to aid in the assessment of tissue perfusion and vascular trauma guiding therapy and aiding in decision making for efforts in limb salvage and amputation. There is paucity in the literature regarding using ICGA for determining level of amputation for frostbite patients.

Methodology

Eight total patients including 12 total feet were subject to frostbite. Majority of the patients were subject to housing insecurities during colder months. This study is a retrospective study of the outcomes of using indocyanine green angiography in an acute frostbite setting to determine the level of amputation versus waiting on demarcation. Each patient underwent the indocyanine green angiography preoperatively to establish the level of perfusion. This level was marked and amputated at that level. In each case osseous tissue was resected to allow for primary skin closure.

Procedures

Results

Nine out of the 12 feet healed without revision or complication. Three feet in two patients returned for more proximal revision which went on to heal.

Discussions

In conclusion we believe that ICGA can be used to determining the level of severe frostbite, which traditionally could take days/weeks for final demarcation and. ICGA can decrease hospital burden, infection risk and increased timing of finite patient treatment.

Format

Scientific

Case Rpt Followup

15

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Alex Schultz DPM	garrett.wireman@louisville.edu	I/We have nothing to disclose	
Garrett P Wireman DPM ATC	ajschu13@louisville.edu	I/We have nothing to disclose	
Blake E Pritchett DPM	bpritchdpm@gmail.com	I/We have nothing to disclose	
Nicholas J Laco DPM	nicholas.Laco@louisvill.edu	I/We have nothing to disclose	

Title **Intramedullary Use of an Antibiotic Synthetic Bone Filler after Metatarsal Resection in the Setting of Osteomyelitis**

Submit Date 08/27/2023

Correspondent

Last Name:	Hale	
Full Name:	Taylor M Hale DPM	Email: haletaylor@gmail.com
Practice/Company/Residency Program:	University of Louisville	

Authors

Author 1:	Michael Sweeney DPM	Author 2:	Brandon Kitchens DPM
Author 3:	Alden Simmons DPM	Author 4:	Taylor Hale DPM
Author 5:	Nicholas Laco DPM AACFAS	Author 6:	
Author 7:		Author 8:	

Purpose In this paper we describe the technique of applying an intramedullary antibiotic synthetic bone void filler (ASBVF) after a metatarsal or transmetatarsal amputation with the intention of treating residual osteomyelitis and preventing infection recurrence and its consequences.

Methodology This technique guide provides a reproducible way to apply an antibiotic delivery system to a transmetatarsal amputation at the time of initial surgical intervention.

Procedures

Results Antibiotic delivery systems are a well researched and highly affective. The flowable and injectable nature of the ASBVF allows for application directly to the infected region.

Discussions The technique described above for introducing antibiotic synthetic bone void filler into a potential colonized intramedullary canal of a metatarsal is to prevent reoperation secondary to residual osteomyelitis. Further studies will be needed to fully elucidate the effectiveness of this technique and its role in helping prevent diabetic infection and amputation.

Format Scientific

Case Rpt Followup 12

Student Club Not a Student Club Poster

Classification Diabetic Foot

Level of Evidence Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Michael Sweeney DPM	sweeney2013@gmail.com	I/We have nothing to disclose	
Brandon Kitchens DPM	brandon.kitchens@louisville.edu	I/We have nothing to disclose	
Alden Simmons DPM	dr.simmons.dpm@gmail.com	I/We have nothing to disclose	
Taylor Hale DPM	haletaylor@gmail.com	I/We have nothing to disclose	
Nicholas Laco DPM AACFAS	nicholasjlaco@gmail.com	I/We have nothing to disclose	

Title

The effect of minimally invasive hallux valgus osteotomy and fixation techniques on proximal first metatarsal position following surgical correction.

Submit Date

08/27/2023

Correspondent

Last Name: Meyr
 Full Name: Andrew J. Meyr, DPM FACFAS Email: ajmeyr@gmail.com
 Practice/Company/Residency Program: Temple University

Authors

Author 1: Isana Fils-Aime, DPM Author 2: Shaun Novoshelski, DPM
 Author 3: Salvatore Fazio, DPM Author 4: Kwasi Y. Kwaadu, DPM FACFAS
 Author 5: Andrew J. Meyr, DPM FACFAS Author 6:
 Author 7: Author 8:

Purpose

Minimally invasive osteotomy and fixation techniques for the hallux valgus deformity have grown in contemporary prevalence. Although the capital fragment is unquestionably lateralized during the procedure, the aim of this study is to investigate any unintended medialization of the proximal first metatarsal shaft and base.

Methodology

The radiographs of a consecutive series of minimally invasive hallux valgus surgical corrections were reviewed (n=30). Standard transverse plane radiographic parameters were investigated (first intermetatarsal angle, hallux valgus angle, tibial sesamoid position) in addition to several measurements relative to the stationary 2nd metatarsal bisection (hallux proximal phalanx distance, medial tibial sesamoid distance, first metatarsal shaft proximal to the osteotomy) and 2nd metatarsal-medial cuneiform diastasis.

Procedures

Results

Statistically significant decreases were observed with the first intermetatarsal angle (12.11 vs. 6.56; p<0.001), hallux valgus angle (24.72 vs. 8.71; p<0.001) and sesamoid position (4.34 vs. 2.245; p<0.01). A significant decrease was observed of the 2nd metatarsal – hallux proximal phalanx distance (34.96 vs. 32.34; p<0.001) but not the 2nd metatarsal – tibial sesamoid distance (31.56 vs. 30.99; p=0.433). A significant increase was observed in the distance between the 2nd metatarsal and the proximal 1st metatarsal at the level of the osteotomy (19.85 vs. 21.50; p=0.003), but not with diastasis between the 2nd metatarsal and medial cuneiform (3.08 vs. 2.94; p=0.614).

Discussions

Results of this investigation uniquely demonstrate resultant medialization of the proximal first metatarsal following minimally invasive hallux valgus correction. As medial cuneiform diastasis did not correspondingly increase, this motion might likely be compensated at the first metatarsal-medial cuneiform articulation.

Format

Scientific

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Isana Fils-Aime, DPM	isana.filsaime@tuhs.temple.edu	I/We have nothing to disclose	
Shaun Novoshelski, DPM	shaun.novoshelski@tuhs.temple.edu	I/We have nothing to disclose	
Salvatore Fazio, DPM	salvatore.fazio@tuhs.temple.edu	I/We have nothing to disclose	
Kwasi Y. Kwaadu, DPM FACFAS	kwasi.kwaadu@temple.edu	Consultant/Advisor/Speaker (List all affiliations)	Arthrex
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Andrew J. Meyr, DPM FACFAS	ajmeyr@gmail.com	Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s)	ACFAS, ABFAS, AACPM, APMA, COTH, CPME
		Member of a medical publication or editorial governing board	JFAS

Title Parallax and Distortion in Fluoroscopy Units**Submit Date** 08/27/2023**Correspondent**

Last Name: Brown

Full Name: Joseph R Brown, DPM

Email: joey.brown2@ohiohealth.com

Practice/Company/Residency Program:

OhioHealth Grant Medical Center

Authors

Author 1: Joseph R Brown, DPM

Author 2: Zachary P Hill, DPM

Author 3: Ross Groeschl, DPM

Author 4: Robert Mendicino, DPM, FACFAS

Author 5: Brian Steginsky, DO

Author 6: Joshua Houser, MD

Author 7:

Author 8:

Purpose

The purpose of this study was to investigate the prevalence and degree of parallax/distortion in large fluoroscopy units at a level 1 trauma center.

Methodology

Two types of C-arm models were evaluated, including: 1) round image intensifiers and 2) flat plate detectors (FPD). A square plexiglass grid with embedded wire at ½ inch intervals was created, with a round metal washer secured centrally. The grid was placed 16 inches from the image intensifier. A metal BB was secured to the center of the X-ray tube. Fluoroscopic images were obtained until the BB and washer were “center-center”. A straight blade served as a fiducial marker to ensure there was no off-axis angulation. Standard anterior-posterior and lateral views were obtained. Several variables and scenarios were tested to rule out any extrinsic influences. Images were printed and the patterns of parallax were identified.

Procedures**Results**

All 11/11 (100%) of fluoroscopy units had some degree of parallax/distortion. We noted three different patterns of parallax, including: sigmoidal, converging, and diverging patterns. FPD units had less apparent parallax/distortion, however 2/3 (66%) were off-axis in relation to the fiducial marker.

Discussions

All fluoroscopy units had varying degrees and patterns of parallax/distortion. We noted less overall distortion in FPDs. However, some of these units may produce images that are off-axis. This research has important implications for improving the accuracy of intraoperative fluoroscopy. Surgeons should understand the limitations of fluoroscopy and how to combat parallax/distortion to improve surgical outcomes and reduce patient morbidity.

Format

Scientific

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Biomechanics and Anatomy

Level of Evidence

Level V

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joseph R Brown, DPM	joey.brown2@ohiohealth.com	I/We have nothing to disclose	
Zachary P Hill, DPM	zph1582@gmail.com	I/We have nothing to disclose	
Ross Groeschl, DPM	rgroe726@gmail.com	I/We have nothing to disclose	
Robert Mendicino, DPM, FACFAS	rmendicino@faiwp.com	I/We have nothing to disclose	
Brian Steginsky, DO	brian.steginsky@gmail.com	I/We have nothing to disclose	
Joshua Houser, MD	joshua.houser@ohiohealth.com	I/We have nothing to disclose	

Title

Comparison of Akin osteotomy prevalence performed between the Lapidus arthrodesis and minimally invasive osteotomy and fixation techniques.

Submit Date

08/28/2023

Correspondent

Last Name: Meyr
 Full Name: Andrew J. Meyr, DPM FACFAS Email: ajmeyr@gmail.com
 Practice/Company/Residency Program: Temple University

Authors

Author 1: Shaun Novoshelski, DPM Author 2: Isana Fils-Aime, DPM
 Author 3: Andrew J. Meyr, DPM FACFAS Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

The objective of this systematic review was to compare the prevalence of Akin performance between the Lapidus procedure and minimally invasive osteotomy and fixation techniques.

Methodology

A standardized review of the published literature was performed with the following selection criteria: prospective and retrospective cohort analyses, published after the year 2000, peer-reviewed, including at least 100 subjects, non-duplicated data sets, and including an objective reporting of the performance of additional procedures. One search was performed of the Lapidus procedure and a separate search was performed of minimally invasive osteotomy and fixation techniques.

Procedures

Results

Six investigations of the Lapidus procedure met selection criteria to include 1201 procedures and 474 (39.5%) Akin osteotomies. Four investigation of minimally invasive osteotomy and fixation techniques met selection criteria to include 1616 procedures and 614 (38.0%) Akin osteotomies. This difference was not found to be statistically significant with a two-tailed chi-squared test ($p=0.4341$).

Discussions

Results of this investigation do not demonstrate a difference in performance of the Akin osteotomy between the Lapidus procedure and minimally invasive osteotomy and fixation techniques. This might indicate that comparable metatarsal correction might be achieved between the two procedure types. With that said, critical readers might recognize the potential for considerable selection bias across included methodologies, highlighting the importance of independent results analysis within this type of study design.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Forefoot Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Shaun Novoshelski, DPM	shaun.novoshelski@tuhs.temple.edu	I/We have nothing to disclose	
Isana Fils-Aime, DPM	isana.filsaime@tuhs.temple.edu	I/We have nothing to disclose	
Andrew J. Meyr, DPM FACFAS	ajmeyr@gmail.com	Intellectual Property rights owned Serve in an official capacity (elected or appointed) for any other medical or podiatric organization(s) Member of a medical publication or editorial governing board	UptoDate, PodArt, Barnes&Noble ACFAS, ABFAS, AACPM, APMA, COTH, CPME JFAS

Title

Analyzing Novel Treatment Modalities for Recurrent and Resistant Pyoderma Gangrenosum

Submit Date

08/30/2023

Correspondent

Last Name: Boyle

Full Name: Madeline J Boyle, DPM

Email: madelinejboyle@gmail.com

Practice/Company/Residency Program:

Emory University School of Medicine Podiatric Medicine and Surgery Residency

Authors

Author 1: Madeline J Boyle, DPM

Author 2: Nicole Baxter, DPM

Author 3: Neil Upadhyay, DPM

Author 4: Joshua Magno, DPM

Author 5: Lauren Hill, DPM

Author 6:

Author 7:

Author 8:

Purpose

Pyoderma gangrenosum (PG) is a challenging inflammatory skin disease with varied presentations and patient courses. Current initial treatment relies on immunosuppressants, with corticosteroids being the cornerstone; however, recurrence and resistance with corticosteroid treatment alone is common. Our purpose is to identify efficacious treatment options of recurrent and resistant PG.

Methodology

A systematic review of studies published in Pubmed, Medline, and CINHAL databases from 2018 to 2022 was used to identify articles. We followed standard methodology for performing a systematic review using PRISMA guidelines. Studies that did not focus on the lower extremity were excluded.

Procedures

Results

92 articles were initially found and 16 total were included. All studies were clinical level of evidence 4.

Discussions

Based on our review, there is sufficient data on novel treatment options for recurrent and resistant PG. There is no set treatment algorithm, particularly in high level evidence settings; therefore, there is no gold-standard treatment for recurrent and resistant PG. There are promising results with second-line treatments using TNF- α inhibitor or IL-17 inhibitor. High level evidence studies and comparisons geared toward treatment algorithms would be beneficial in future studies for further evaluation.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Madeline J Boyle, DPM	madelinejboyle@gmail.com	I/We have nothing to disclose	
Nicole Baxter, DPM	nbaxter459@gmail.com	I/We have nothing to disclose	
Neil Upadhyay, DPM	neilupadhyay1834@gmail.com	I/We have nothing to disclose	
Joshua Magno, DPM	joshua.magno@emory.edu	I/We have nothing to disclose	
Lauren Hill, DPM	mlukasz@emory.edu	I/We have nothing to disclose	

Title

Does surgical excision of infected bone with clear margins improve clinical outcomes in diabetic foot osteomyelitis: A Systematic Review and Meta-Analysis

Submit Date

08/31/2023

Correspondent

Last Name: Reyes
 Full Name: Mario C. Reyes, DPM Email: mario.reyes2@utsouthwestern.edu
 Practice/Company/Residency Program: University of Texas Southwestern Medical Center

Authors

Author 1: Mario C. Reyes, DPM, MS Author 2: Mehmet A. Suludere, MD
 Author 3: Tehreem Sajjad, DPM Author 4: Arthur A. Tarricone, DPM, MPH
 Author 5: Tyler L. Coye, DPM Author 6: Lawrence A. Lavery, DPM, MPH
 Author 7: Author 8:

Purpose

Investigate the differences between positive and negative bone margins in the treatment of the diabetic foot and the associated clinical outcomes.

Methodology

We performed a meta-analysis and searched PubMed, Scopus, and Google Scholar to identify peer reviewed papers published from database inception. We followed standard methodology for performing meta-analysis using PRISMA guidelines. Case reports, small case series, review articles, abstracts, and non-English articles were excluded.

Procedures

Results

Eleven citations were initially assessed for eligibility. Seven studies that used pathology of bone margins were included in our review. This represented 512 patients with DFO. 311 had clean bone margins and 201 had dirty bone margins. The primary outcome was defined as healing rate and secondary outcomes were defined as amputation, re-ulceration, reinfection, and antibiotic duration. Data was analyzed using a random-effects model.

Discussions

There was no difference in healing (OR 0.51 95% CI 0.114-2.247, P=0.29) or re-infection (OR=1.97, 95% CI 0.86-4.54, p = 0.086) based on the presence of residual bone infection. People with residual bone infection had longer antibiotic treatment (32.5+/- 21.7 vs. 20.05+/- 21.4 days, 95% CI=3.62-22.52, P=0.0271), and were more likely to have amputation (OR =3.91 95% CI=2.82-5.43, P=0.0001). Our results suggest that the presence of residual bone infection does not impact wound healing or re-infection in patients with diabetic foot osteomyelitis.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level II

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Mario C. Reyes, DPM, MS	mario.reyes2@utsouthwestern.edu	I/We have nothing to disclose	
Mehmet A. Suludere, MD	mehmet.suludere@utsouthwestern.edu	I/We have nothing to disclose	
Tehreem Sajjad, DPM	tehreem.sajjad@utsouthwestern.edu	I/We have nothing to disclose	
Arthur A. Tarricone, DPM, MPH	arthur.tarricone@utsouthwestern.edu	I/We have nothing to disclose	
Tyler L. Coye, DPM	tylerlc6@gmail.com	I/We have nothing to disclose	
		Consultant/Advisor/Speaker (List all affiliations)	Integra, Polarityte, Uluru, Medela
Lawrence A. Lavery, DPM, MPH	larry.lavery@utsouthwestern.edu	Grant/Research funding	Osiris, Integra, Cardinal, Medimmune, Pace, Kent Medical, Smith & Nephew, TissueTech, Polarityte

Title

Post Treatment Pes Planus in Setting of Lisfranc Injury: A Systematic Review

Submit Date

08/30/2023

Correspondent

Last Name: Webb

Full Name: Brady, M, Webb, DPM

Email: bradymwebb71@yahoo.com

Practice/Company/Residency Program:

Rochester General Hospital

Authors

Author 1: Frederic, Z, Oddone, DPM

Author 2: Brady, M, Webb, DPM

Author 3: Paul, J, Merkel, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of this study is to perform a systematic analysis to identify the incidence of pes planus with different types of interventions regarding Lisfranc injuries. Patient treatment outcomes will also be investigated.

Methodology

A systematic review of studies published in PubMed, Google Scholar and Cochrane library through July 2023 was conducted to identify articles that evaluated pes planus as a complication following treatment of a Lisfranc injury. We followed standard methodology for performing a systematic review using PRISMA guidelines. Individual case reports, literature reviews and studies that did not discuss pes planus as a complication were excluded.

Procedures

Results

1701 articles were identified and five studies were included representing 97 patients and 98 feet. One study was a level III retrospective comparative study while the others were level IV case series. Thirty-eight percent (37/98) of the examined feet were found to have post traumatic pes planus after treatment. In studies that recorded pain and foot deformity outcomes, there was a calculated VAS score of 6.7 (n=14) for patients with acquired pes planus compared to 3.5 (n=10) in patient's without.

Discussions

As illustrated by patient follow up scores, patients with post treatment pes planus reported worse outcomes according to average VAS scores compared to their peers. Evaluation of the patient's medial longitudinal arch should be considered prior to choosing interventions in treatment of Lisfranc injuries.

Format

Systematic Review

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Frederic, Z, Oddone, DPM	zoddone@gmail.com	I/We have nothing to disclose	
Brady, M, Webb, DPM	bradymwebb71@yahoo.com	I/We have nothing to disclose	
Paul, J, Merkel, DPM	paul.merkel@rochesterregional.org	I/We have nothing to disclose	

Title **Gunshot Wounds to the Forefoot in a Level 1 Trauma Center: A Retrospective Cohort Analysis**

Submit Date 08/30/2023

Correspondent

Last Name: Qadri
 Full Name: Ali A. Qadri, DPM Email: tug84712@temple.edu
 Practice/Company/Residency Program: Detroit Medical Center

Authors

Author 1: Ali A. Qadri, DPM Author 2: Rahul Vaidya, M.D.
 Author 3: Author 4:
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

This study aims to assess the morbidity/epidemiology of GSW's to the forefoot at a level 1 trauma hospital.

Methodology

Emergency department visits at Detroit Receiving Hospital from 2000-2019 were analyzed isolating GSW's to the forefoot; defined as the anatomical region distal to the tarsometatarsal joints (inclusion criteria). Data derived included sample size meeting inclusion criteria, gender, ethnicity, age, and length of stay (4 ranges/with or without surgical intervention).

Procedures

Results

47 individuals were included, (44 males (93.62%)/3 females (6.38%)). 39 represented African American (82.98%), 7 represented White (14.89%), and 1 represented Other (2.13%). Ages ranged from 15-64 (average 28.68/median 26). Of the 47 individuals, 24 spent 0-1 days at the hospital (51.1%) (5 required surgical intervention 20.83% and 19 did not 79.17%). 14 stayed 2-3 days (29.79%). 7 stayed 4-7 days (14.89%). Lastly, 2 patients stayed >8 days (4.26%). All patients that stayed over 2 days required intervention. The average length of stay was 2.43 days (median 1 day).

Discussions

While GSW's to the foot/ankle can be potentially debilitating, this study shows that forefoot injuries have a significant chance of non-operative management (40.43%) requiring a length of stay between 0-1 days (51.1%). Young (mean age 28.68) males (93.62%) represented the largest demographic of individuals affected by GSW's to the forefoot. Further studies are warranted to assess the morbidity of injuries in the midfoot/hindfoot.

Format

Systematic Review

Case Rpt Followup

228

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Ali A. Qadri, DPM	tug84712@temple.edu	I/We have nothing to disclose	
Rahul Vaidya, M.D.	RahulVaid@dmc.org	I/We have nothing to disclose	

Title

Total Ankle Arthroplasty in the Varus & Valgus ankle: A Systematic Review of Current Concepts

Submit Date

08/30/2023

Correspondent

Last Name: Chauhan

Full Name: Dhavel Chauhan, DPM

Email: dhavelc@gmail.com

Practice/Company/Residency Program:

HCA Westside Regional Medical Center

Authors

Author 1: Dhavel Chauhan, DPM

Author 2: Ohm Raj, B.S.

Author 3: Dr. Steven Spinner, DPM

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

We aim to review recent literature on total ankle arthroplasty with varus or valgus malalignment beyond 15 degrees, assessing its feasibility and effectiveness. While a 15-degree deformity was considered the limit, newer evidence indicates surgeons are operating on alignments surpassing this threshold.

Methodology

18 articles referencing total ankle arthroplasty and total ankle replacement were gathered. For the systematic review, 10 articles were chosen that discussed TAA in Varus and valgus deformities, 5 of which highlighted malalignments exceeding 15 degrees. Inclusion criteria involved articles with multiple cohort comparisons and no content over a decade old.

Procedures

Results

In general, the P value indicating differences in cohorts comparing minor malignment or no deformity to greater degrees of deformity yielded no significant difference. Parameters measuring patient-reported outcomes and clinical evaluation yielded significant improvement in larger deformities with varying levels of reoperation rates.

Discussions

Results show the efficacy of performing TAA on patients with greater >15 degrees of deformity as being a feasible primary option. Though some papers indicate that concomitant procedures may be indicated, those who undergo TAA with large malalignments still show improvement post-operatively and do well in the short-to-medium-term follow-up.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Dhavel Chauhan, DPM	dhavelc@gmail.com	I/We have nothing to disclose	
Ohm Raj, B.S.	rajohmc10@gmail.com	I/We have nothing to disclose	
Dr. Steven Spinner, DPM	spinner@prontomail.com	I/We have nothing to disclose	

Title

Importance of Early Diagnosis of Necrotizing Fasciitis caused by Streptococcus Pyogenes

Submit Date 08/30/2023

Correspondent

Last Name: Baxter
 Full Name: Nicole R Baxter, DPM PGY3 Email: nbaxter459@gmail.com
 Practice/Company/Residency Program: Emory Decatur

Authors

Author 1: Nicole R Baxter Author 2: Neil S Upadhyay, DPM
 Author 3: Angela S Moon, DPM Author 4: Kush H Patel, DPM
 Author 5: Emily A Hermes, DPM Author 6: Robin H Dretler, MD
 Author 7: Author 8:

Purpose To emphasize the importance of prompt diagnosis and treatment of streptococcus pyogenes induced necrotizing fasciitis. Understanding the clinical symptoms and effects of delayed diagnosis on morbidity and mortality rates.

Methodology A systematic review of studies published in Medline and CINAHL databases from 2017 to June 2023 was used to identify articles discussing streptococcus pyogenes NF. We followed standard methodology for performing a systematic review using PRISMA guidelines. Studies that did not focus on the lower extremity were excluded.

Procedures

Results A total of 559 articles were identified and 12 were included representing 336 lower extremity NF by streptococcus pyogenes. Most studies were clinical levels with a few retrospective studies. The time to diagnosis and outcomes (debridement, amputation, death) were analyzed.

Discussions There is a focus on combined clinical and laboratory results for the prompt diagnosis of NF by streptococcus pyogenes. Most cases with poor outcomes had either delayed diagnosis or a compromised host. Timely diagnosis using clinical, labs and pathology results leads to an improved outcome for patients with NF. Prompt therapy of IV antibiotics and debridement are essential. Mortality rates used to be as high as 70-80%; analyzing the results of the studies, mortality rate has decreased to 24.11%, which is significant. Rapid diagnosis is key.

Format Systematic Review

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Wound Care/Infectious Diseases

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Nicole R Baxter	nbaxter459@gmail.com	I/We have nothing to disclose	
Neil S Upadhyay, DPM	neilupadhyay1834@gmail.com	I/We have nothing to disclose	
Angela S Moon, DPM	Amoon22@emory.edu	I/We have nothing to disclose	
Kush H Patel, DPM	kushpatel@emory.edu	I/We have nothing to disclose	
Emily A Hermes, DPM	emily.hermes@emoryhealthcare.org	I/We have nothing to disclose	
Robin H Dretler, MD	rdretler@gmail.com	I/We have nothing to disclose	

Title

Bisphosphonate and Teriparatide use for Lower Extremity Stress Fractures and Nonunions: A Systematic Review

Submit Date

08/31/2023

Correspondent

Last Name: Patel

Full Name: Anjni P. Patel, DPM

Email: anjni.patel@rochesterregional.org

Practice/Company/Residency Program:

Rochester Regional Health

Authors

Author 1: Anjni P. Patel, DPM

Author 2: Brady M. Webb, DPM

Author 3: David C. Onyenma, DPM

Author 4: Paul J. Merkel, DPM

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

Our aim for this study is to evaluate the effects of acute use of bisphosphonates and teriparatide to treat nonunions and stress fractures of the lower extremities.

Methodology

A systematic review of studies published in Pubmed, Google Scholar and Cochrane library through July 2023 was conducted to identify articles that evaluated the use of bisphosphonates or teriparatide to treat nonunions and stress fractures. PRISMA guidelines utilized. Studies that evaluated bisphosphonate or teriparatide use as treatments for injuries not related to the lower extremity were excluded.

Procedures

Results

Of the 11,028 articles identified, 10 studies were included representing 3546 nonunions and stress fractures. Studies evaluating bisphosphonates (levels III and IV) found increased bone mineral density with significant reduction of bone turnover markers. Teriparatide studies (levels II, III and IV) found statistically significant reductions in healing time in both surgical and non-surgical groups.

Discussions

The use of bisphosphonate and teriparatide both illustrate unique benefits in the acute treatment of nonunions and stress fractures of the lower extremity, with few documented negative side effects. Bone quality assessment is reasonable to determine if the use of bisphosphonate is warranted. Teriparatide has been shown to be effective in conjunction with conservative or surgical treatment. The use of bisphosphonates and teriparatide in the acute setting is an effective intervention in nonunions and stress fractures of the lower extremity.

Format

Systematic Review

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Anjni P. Patel, DPM	anjni.patel@rochesterregional.org	I/We have nothing to disclose	
Brady M. Webb, DPM	brady.webb@rochesterregional.org	I/We have nothing to disclose	
David C. Onyenma, DPM	david.onyenma@rochesterregional.org	I/We have nothing to disclose	
Paul J. Merkel, DPM	paul.merkel@rochesterregional.org	I/We have nothing to disclose	

Title

Calcaneal Tuberosity Avulsion Fractures: A Systematic Review of Fixation Techniques & Surgical Management

Submit Date

08/31/2023

Correspondent

Last Name: Badillo
 Full Name: Karissa J. Badillo, DPM
 Practice/Company/Residency Program: University of Pittsburgh Medical Center
 Email: badillokj2@upmc.edu

Authors

Author 1: Karissa Badillo, DPM
 Author 2: Emily Zink, DPM
 Author 3: Julianne Vesce, DPM
 Author 4: Jeffrey Manway, DPM
 Author 5:
 Author 6:
 Author 7:
 Author 8:

Purpose

There is currently no established consensus regarding the optimal fixation construct and surgical approach for calcaneal tuberosity fractures. The purpose of this systematic review is to assess different fixation methods and how they relate to complication and surgical outcomes.

Methodology

A systematic review of studies published in PubMed/Medline and Cochrane databases was conducted to identify articles that evaluated fixation constructs of calcaneal tuberosity fractures. PRISMA guidelines were followed. Studies using cadaver or animal models, had patients under the age of 18, intra-articular fractures, or patients who had concomitant fractures or achilles tendon ruptures were excluded. Summary estimates for mean visual analog scale (VAS), mean AOFAS scores, and overall complications rates were generated from the included studies.

Procedures

Results

We identified 31 studies including 208 patients (200 surgically treated calcaneal tuberosity fractures). 19/31 (61%) of authors utilized screw fixation as primary or part of their fixation construct. Regarding surgical complication rate, 45.1% of studies reported a post-operative complications. Only 32.2% of studies reported postoperative AOFAS Scores, the average was 86.44.

Discussions

Despite fixation method, these fractures continue to demonstrate significantly high complication rates.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Karissa Badillo, DPM	badillokj2@upmc.edu	I/We have nothing to disclose	
Emily Zink, DPM	zinke@upmc.edu	I/We have nothing to disclose	
Julianne Vesce, DPM	Vescej2@upmc.edu	I/We have nothing to disclose	
Jeffrey Manway, DPM	Manwayjm@upmc.edu	I/We have nothing to disclose	

Title

Efficacy of Peripheral Nerve Stimulation in Lower Limb Peripheral Neuropathy Compared to Efficacy of Gabapentin in Lower Limb Peripheral Neuropathy: A Systematic Review

Submit Date 08/31/2023

Correspondent

Last Name: Abraham
 Full Name: David, P, Abraham, MS Email: david.abraham@mymail.barry.edu
 Practice/Company/Residency Program: Barry University School of Podiatric Medicine

Authors

Author 1: David, P, Abraham, MS Author 2: Faraazullah, Quadri, BS
 Author 3: Riley, Westover, BS Author 4: Antonio, Fernandez, MD
 Author 5: Author 6:
 Author 7: Author 8:

Purpose Compare the efficacy of Peripheral Nerve Stimulation vs the standard of care (gabapentin) when treating peripheral neuropathy.

Methodology A structured search was executed on the PubMed database from 2013 to 2023. Terms like "Peripheral neuropathy Peripheral nerve stimulation", "Peripheral neuropathy PNS", "Peripheral Neuropathy Gabapentin", and "Peripheral Neuropathy Gabapentin Enacarbil" were included. Data point that were evaluated were design, patient details, outcomes, and efficacy.

Procedures

Results 395 articles were identified, with 8 included in this study, representing approximately 1929 cases of peripheral neuropathy defined as having generalized peripheral neuropathy to having specific post-amputation or diabetic neuropathy.

Discussions There is a noticeable difference in the effectiveness of PNS versus gabapentin in treating lower limb peripheral neuropathy. PNS offers a more effective approach for chronic peripheral neuropathy than gabapentin. PNS appears to have an edge over gabapentin in treating lower limb peripheral neuropathy. Its consistent positive outcomes position PNS as a potentially preferred long-term treatment option, though further research is recommended.

Format Systematic Review

Case Rpt Followup 0

Student Club Not a Student Club Poster

Classification Neurological/Peripheral Nerve Disorders

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
David, P, Abraham, MS	david.abraham@mymail.barry.edu	I/We have nothing to disclose	
Faraazullah, Quadri, BS	faraazullah.quadri@mymail.barry.edu	I/We have nothing to disclose	
Riley, Westover, BS	riley.westover@mymail.barry.edu	I/We have nothing to disclose	
Antonio, Fernandez, MD	anfernandez@barry.edu	I/We have nothing to disclose	

Title

Rate of Periprosthetic Cyst Formation in Fourth-Generation Fixed-Bearing Total Ankle Replacements: A Systematic Review

Submit Date

08/31/2023

Correspondent

Last Name: Miner

Full Name: Samantha A. Miner, DPM AACFAS

Email: dr.sam.miner@gmail.com

Practice/Company/Residency Program:

Upperline Health Inc

Authors

Author 1: Samantha A. Miner, DPM, AACFAS

Author 2: Marina R. Tony, DPM, AACFAS

Author 3: John A. Martucci, DPM, AACFAS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

The purpose of this systematic review was to identify the rate of periprosthetic cyst formation in the newest generation of TARs.

Methodology

An extensive search strategy via an electronic database initially captured 118 citations that were evaluated for relevance. Abstract screening produced 10 articles to be read in entirety, of which, 6 articles studying 569 implants met inclusion criteria for analysis. Prevalence of periprosthetic cyst formation was recorded for each study and a weighted average was obtained. Progression to osteolysis and need for revision were also collected when available.

Procedures

Results

Of 569 fourth-generation implants, 84 developed periprosthetic lucency (14.8%). Rates of periprosthetic cyst formation in the Infinity, Cadence, and Vantage implants was 16.9%, 12.9%, and 12.6%, respectively. Need for revision and progression to osteolysis were not reported similarly amongst studies.

Discussions

Our review demonstrates similar rates of periprosthetic lucency in patients with fourth-generation fixed-bearing TARs overall when compared to earlier implant systems. Despite the evolution of TAR implants over the past decade, periprosthetic cyst formation remains an impending risk for failure. In an effort to improve survivorship, future studies must strive to understand risk factors associated with the development of periprosthetic cysts.

Format

Systematic Review

Case Rpt Followup

12

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Samantha A. Miner, DPM, AACFAS	dr.sam.miner@gmail.com	I/We have nothing to disclose	
Marina R. Tony, DPM, AACFAS	tonymarina23@gmail.com	I/We have nothing to disclose	
John A. Martucci, DPM, AACFAS	john.a.martucci@gmail.com	I/We have nothing to disclose	

Title**Efficacy of 3D Implanted Bone Models for Reconstructive Surgery****Submit Date**

08/31/2023

Correspondent

Last Name: keane

Full Name: Spencer, L, Keane, DPM

Email: slkeane@emory.edu

Practice/Company/Residency Program:

Emory University School of Medicine

Authors

Author 1: Spencer Keane, DPM

Author 2: Adrienne Ross, DPM

Author 3: Shivani Patel, DPM

Author 4: Justin Carney, DPM

Author 5: Peter Talisse, DPM

Author 6:

Author 7:

Author 8:

Purpose

3D printed implants have made great advances in foot and ankle reconstructive surgery and may prove beneficial for further surgical implications.

Methodology

Systematic review was conducted to evaluate the efficacy and different modalities of use for 3D implanted bone models. Per PRISMA guidelines, research was conducted on this new technology. Cadaveric studies were excluded. Statistical analysis of patients who would need secondary surgery following a 3D implant were included.

Procedures**Results**

A retrospective analysis and multiple case studies were included. Indications for implant included bone loss, nonunion, avascular necrosis, Charcot arthropathy, failed total ankle replacement, osteomyelitis, osteonecrosis and congenital deformities. The retrospective analysis included 39 patients who received 3D printed implants with minimum follow up of 1 year. 74% of the 3D implants remained in vivo and provided successful patient outcomes. 13 of 39 patients required secondary surgery. Neuropathy was a statistically significant risk factor for subsequent surgery. Case studies utilized custom 3D printed implants for salvage after navicular, calcaneal and ankle fractures. All included studies show positive patient outcome scores.

Discussions

Exploring the benefits, risks and complications of 3D printed implants is valuable for potential in Podiatric Reconstructive surgery. Positive patient outcomes and decreased rates of secondary surgery have been seen and warrant further study.

Format

Systematic Review

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Spencer Keane, DPM	slkeane@emory.edu	I/We have nothing to disclose	
Adrienne Ross, DPM	jinling0716@gmail.com	I/We have nothing to disclose	
Shivani Patel, DPM	sjpatel0010@gmail.com	I/We have nothing to disclose	
Justin Carney, DPM	car07062@gmail.com	I/We have nothing to disclose	
Peter Talisse, DPM	ptalisse@gmail.com	I/We have nothing to disclose	

Title **Efficacy of Nerve Transfers in Improving Function in Patients with Common Peroneal Nerve Palsy**

Submit Date 08/31/2023

Correspondent
 Last Name: Hogan
 Full Name: Steven
 Practice/Company/Residency Program: Emory University School of Medicine
 Email: steven.michael.hogan@gmail.com

Authors
 Author 1: Steven Hogan
 Author 2: Gifferd Ko, DPM
 Author 3: Maddy Boyle, DPM
 Author 4: Ayanda Dube, DPM
 Author 5: Shivani Patel, DPM
 Author 6: Neil Upadhyay, DPM
 Author 7:
 Author 8:

Purpose The purpose of this review aims to explore nerve transfers as an alternative to conservative treatment or solitary tendon transfers in patients with common Peroneal nerve palsy.

Methodology A systematic review was conducted to evaluate the efficacy of tibial nerve transfers for restoring ankle dorsiflexion in cases of common Peroneal nerve palsy. PRISMA guidelines were followed for this review. Animal model and cadaver studies were excluded. Studies were included that used BMRC standard for dorsiflexion and listed time to surgical intervention. All patients included had at least 6 months follow up.

Procedures

Results 61 patients were included in the analysis. Average age was 38.5 years. Average time to surgery was 7.1 months. 27/61 patients achieved a functional status of M3 or above. 4/61 were graded as M2. 11/61 were graded as M1. 19/61 did not regain any motor function.

Discussions Nerve transfers in isolation for common Peroneal nerve palsy provide inconsistent ankle dorsiflexion. Time to surgery and mechanism of injury may play a critical role in restoration of ankle dorsiflexion in patients undergoing tibial nerve transfer. Further study is warranted, and nerve transfer with concomitant tendon transfer may be of interest in restoring functional ankle dorsiflexion.

Format Systematic Review

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Neurological/Peripheral Nerve Disorders

Level of Evidence Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Steven Hogan	steven.michael.hogan@gmail.com	I/We have nothing to disclose	
Gifferd Ko, DPM	gifferdko@gmail.com	I/We have nothing to disclose	
Maddy Boyle, DPM	madelinejboyle@gmail.com	I/We have nothing to disclose	
Ayanda Dube, DPM	ayanda_dube@yahoo.com	I/We have nothing to disclose	
Shivani Patel, DPM	sjpatel0010@gmail.com	I/We have nothing to disclose	
Neil Upadhyay, DPM	neilupadhyay1834@gmail.com	I/We have nothing to disclose	

Title

Assessing the Potential Noninferiority of Oral Antibiotics in the Treatment of Osteomyelitis: A Systematic Review

Submit Date

08/31/2023

Correspondent

Last Name: Pham

Full Name: Vi Xuan Pham, BS, MS

Email: vi.pham@samuelmerritt.edu

Practice/Company/Residency Program:

Samuel Merritt University College of Podiatric Medicine

Authors

Author 1: Vi Xuan Pham, BS, MS

Author 2: Zaria St. Lawrence, BS

Author 3: Gil Paiz, BS

Author 4:

Author 5:

Author 6:

Author 7:

Author 8:

Purpose

This study examines the literature on the inferiority or lack thereof of using oral antibiotics to treat osteomyelitis in comparison to intravenous.

Methodology

A systematic review was conducted in July 2023 utilizing Pubmed to identify articles pertaining to oral antibiotics and intravenous antibiotics for the treatment of osteomyelitis. PRISMA guidelines were used and the GRADE score was implemented to assess for bias. Cadaver and animal studies were excluded.

Procedures

Results

6094 articles were populated in the initial search with 65 articles being deemed eligible based on inclusion criteria based on filters. Upon review of the abstracts, 3 articles were included representing approximately 1,416 cases of osteomyelitis.

Discussions

The field would benefit from more RCTs reviewing the potential noninferiority of oral antibiotics as well as determining the time period in which taking oral antibiotics may be as effective as IV. The literature does support that oral antibiotics may result in similar outcomes after discharge for patients with osteomyelitis; however, more data is needed to establish a treatment regimen.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Wound Care/Infectious Diseases

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Vi Xuan Pham, BS, MS	vi.pham@samuelmerritt.edu	I/We have nothing to disclose	
Zaria St. Lawrence, BS	zaria.stlawrence@mymail.barry.edu	I/We have nothing to disclose	
Gil Paiz, BS	gil.paiz@my.rfums.org	I/We have nothing to disclose	

Title

Limb Salvage with Partial Calcaneotomy Procedures and Use of External Fixator Devices: A Systematic Review and Meta-Analysis

Submit Date 08/31/2023

Correspondent

Last Name: McElroy
 Full Name: Tara, Clare, McElroy, DPM, MPH Email: tmcelroy2021@gmail.com
 Practice/Company/Residency Program: Inova Fairfax Medical Campus

Authors

Author 1: Tara, McElroy, DPM, MPH Author 2: Gregory, Rose, DPM
 Author 3: Anthony, Schwab, DPM Author 4: David, Siegel, DPM
 Author 5: Hozaifa, Anjum, DPM Author 6: Lauren, Weisel, DPM
 Author 7: Pyrsi, Sara, DPM Author 8: Creech, Corine, DPM, FACFAS

Purpose

The purpose of this study is to determine the efficacy of partial calcaneotomy procedures in limb salvage and the role external fixation plays in improving limb salvage rates.

Methodology

A systematic review was conducted under PRISMA guidelines of studies published in Pubmed and Google Scholar from January 2004 to date. Inclusion criteria entailed partial calcaneotomy procedures in randomized controlled trials, retrospective studies, and case series. Exclusion criteria entailed patients under 18, articles not in English, and total calcaneotomy. A Fischer exact test was used to compare salvageability rates with and without the use of the external fixator.

Procedures

Results

1026 articles were identified for partial calcaneotomy procedures. A total of 11 studies were included, 3 with external fixator use. Overall limb salvage rate was 79.52%, with 91.4% before 2 years versus 77.97% at 3 years or after. With the addition of an external fixator device, limb salvage rate was 96% compared to 79.8% without (p<0.05).

Discussions

Long term limb salvage rates for partial calcaneotomy procedures are less promising after three years; however, the addition of an external fixation devices appears to improve limb salvage rates.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tara, McElroy, DPM, MPH	tmcelroy2021@gmail.com	I/We have nothing to disclose	
Gregory, Rose, DPM	gwrose2012@gmail.com	I/We have nothing to disclose	
Anthony, Schwab, DPM	anthonyjschwab7@gmail.com	I/We have nothing to disclose	
David, Siegel, DPM	dsiegel55@gmail.com	I/We have nothing to disclose	
Hozaifa, Anjum, DPM	anjum.hozaifa6@gmail.com	I/We have nothing to disclose	
Lauren, Weisel, DPM	laurenweisel@yahoo.com	I/We have nothing to disclose	
Pyrsi, Sara, DPM	pryisaraelizabeth@gmail.com	I/We have nothing to disclose	
Creech, Corine, DPM, FACFAS	creecher17@me.com	I/We have nothing to disclose	

Title **Investigating Early Functional Weight Bearing Following Achilles Tendon Rupture Repair: A Systematic Review**

Submit Date 08/31/2023

Correspondent Last Name: Sandhu
Full Name: Amrit, Sandhu, B.S Email: amrit.sandhu@mymail.barry.edu
Practice/Company/Residency Program: Barry University School of Podiatric Medicine

Authors Author 1: Amrit, Sandhu, B.S Author 2: Zaria, St. Lawrence, B.S
Author 3: Ana, Manriquez, B.S Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose The study aims to explore early functional weight bearing rehabilitation following achilles tendon rupture repair in comparison to the standard of care.

Methodology A systematic review of PubMed was conducted in July 2023 to identify articles that discussed early functional weight bearing following achilles tendon repair from January 2013 to July 2023. The standard methodology of doing a systematic review with PRISMA guidelines was used. Cadaver studies and animal studies were excluded.

Procedures

Results Upon initial search, there were 105 articles with 6 articles selected for the systematic review. There are approximately 1672 patients represented in this study.

Discussions Although early functional weight bearing rehabilitation appears promising, there may be limitations to the studies such as age, athletic background, and severity of rupture. Functional weight bearing has shown benefits in healing acute achilles tendon ruptures, but there is a need for more research to determine how early is appropriate.

Format Systematic Review

Case Rpt Followup Not a Student Club Poster

Student Club Soft Tissue/Tumor

Classification Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Amrit, Sandhu, B.S	amrit.sandhu@mymail.barry.edu	I/We have nothing to disclose	
Zaria, St. Lawrence, B.S	zaria.stlawrence@mymail.barry.edu	I/We have nothing to disclose	
Ana, Manriquez, B.S	ana.manriquez-hurtado@mymail.barry.edu	I/We have nothing to disclose	

Title

Screw Characteristics for Intramedullary Fixation of the Jones Fractures and Associated Outcomes: A Systematic Review.

Submit Date 07/17/2023

Correspondent

Last Name: Lowe
 Full Name: Daniel Lowe, DPM Email: lowe.da34@gmail.com
 Practice/Company/Residency Program: St. Mary's Livonia

Authors

Author 1: Daniel D Lowe Author 2: Sean Grambart, DPM, FACFAS
 Author 3: Sam Wier, DPM Author 4: Vanessa Adelman, DPM
 Author 5: Ronald Adelman, DPM Author 6:
 Author 7: Author 8:

Purpose This systematic review assess screw diameter and properties on outcomes in intramedullary fixation of the Jones fracture. We examined complication rates for different screw diameters and cannulated versus solid screws. Also, we measured average time to return to play (RTP) based on screw diameter.

Methodology Following PRISMA guidelines, we used the keywords "Jones fracture" to search relevant databases, resulting in 4,376 initial results from Cochrane, EBSCO, Scopus, and PubMed. After evaluation, 8 studies were included in the review.

Procedures

Results All studies included 233 subjects with 23 complications. Screw diameter sizes ranged from 4.0mm-6.5mm. Comparing smaller screws (4.0mm & 4.5mm) to larger diameter screws (5.0mm, 5.5mm, & 6.5mm), no significant difference was found in complication rates (p=.226). Comparison between cannulated and solid screws involved 149 cannulated and 84 solid screws, with 12 complications for cannulated and 11 for solid screws, and no significant difference in complication rates (p=.214). The mean time to RTP for all screw sizes was 8.3 weeks, with 7.7 weeks for 4.0mm, 7.9 weeks for 4.5mm, 9.2 weeks for 5.0mm, 9.4 weeks for 5.5mm, and 7.1 weeks for 6.5mm. No significant difference was found comparing each screw diameter and time to RTP.

Discussions Screw diameter size and cannulation versus solid screws are not associated with complication rate or early RTP. Nonetheless, surgeons should still select the largest screw, based on torque during taping, ensuring osseous purchase

Format Systematic Review

Case Rpt Followup

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Daniel D Lowe	lowe.da34@gmail.com	I/We have nothing to disclose	
Sean Grambart, DPM, FACFAS	Sean.grambart@dmu.edu	I/We have nothing to disclose	
Sam Wier, DPM	sam.wier@trinity-health.org	I/We have nothing to disclose	
Vanessa Adelman, DPM	vanessaadelman@yahoo.com	I/We have nothing to disclose	
Ronald Adelman, DPM	ronald_adelman@ihacares.com	I/We have nothing to disclose	

Title

Accuracy and Precision Reporting in Diabetic Foot Osteomyelitis Biomarker Diagnostic Literature: A Systematic Review and Meta-Analysis

Submit Date 07/22/2023

Correspondent

Last Name: Coye
 Full Name: Tyler L. Coye Email: tylerlc6@gmail.com
 Practice/Company/Residency Program: University of Texas Southwestern

Authors

Author 1: Tyler L. Coye, DPM Author 2: Elizabeth Ansert, DPM
 Author 3: Mehmet Suludere Author 4: Andrew Crisologo, DPM
 Author 5: Lawrence Lavery, DPM Author 6:
 Author 7: Author 8:

Purpose

The primary purpose of this study was to assess the measures of accuracy used for reporting results of diagnostic accuracy studies in diagnosing osteomyelitis in the diabetic foot. Secondly, we examined variations in precision reporting of these summary measures.

Methodology

Relevant diagnostic accuracy studies were selected from MEDLINE, Scopus, and Cochrane databases. We examined only studies reporting results for biomarkers in diagnosing diabetic foot osteomyelitis. The structured abstracts of these studies were screened and information on accuracy measures and precision were extracted from the full texts of 19 relevant studies reporting results for 50 biomarkers. We examined

Procedures

Results

Sensitivity or specificity was used for reporting the results in 49/50 (98%) biomarkers. Predictive values were reported for 36/50 (72%) biomarkers and likelihood ratios in 19/50 (38%). Area under the curve (AUC) was reported in 35/50 (70%). Diagnostic odds ratios were reported in none of the studies. Regarding precision estimates, confidence intervals were reported for sensitivity for 33/50 (66%) of biomarkers, 9/50 (18%) for specificity, and 23/50 (46%) for AUC.

Discussions

There is a significant amount of variability in how results are reported and summarized in diagnostic accuracy studies for biomarkers in diagnosing osteomyelitis in the diabetic foot. It is crucial to establish a consensus regarding the most effective approaches for reporting test accuracy study results in this research area.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Diabetic Foot

Level of Evidence

Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Tyler L. Coye, DPM	tylerlc6@gmail.com	I/We have nothing to disclose	
Elizabeth Ansert, DPM	eansert@gmail.com	I/We have nothing to disclose	
Mehmet Suludere	mehmet.suludere@utsouthwestern.edu	I/We have nothing to disclose	
Andrew Crisologo, DPM	Andrew.Crisologo@utsouthwestern.edu	I/We have nothing to disclose	
Lawrence Lavery, DPM	larry.lavery@utsouthwestern.edu	I/We have nothing to disclose	

Title **Incidence of Complications After Minimally Invasive Lapidus Surgery: A Systematic Review**

Submit Date 08/14/2023

Correspondent Last Name: Thompson
Full Name: Rosemary, J, Thompson, DPM Email: rosie.thompson@gundersenhealth.org
Practice/Company/Residency Program: Gundersen Health System

Authors Author 1: Taylor Fullmer, DPM Author 2: Rosemary J. Thompson, DPM
Author 3: Andrew D. Elliott, DPM, JD Author 4:
Author 5: Author 6:
Author 7: Author 8:

Purpose Determine the incidence of complications currently reported in minimally invasive Lapidus procedure.

Methodology A systematic review of electronic databases and relevant peer-reviewed sources as outlined by the Preferred Reporting Items for systematic Reviews and Meta-Analyses guidelines. Studies that included MIS technique of Lapidus (or tarsometatarsal fusion), used fixation, had a minimum average follow up of 6 months, and included complications were considered. Some of the studies included patients with concomitant procedures. The included studies did not report on comorbidities. Cadaveric studies and non-English studies were excluded.

Procedures

Results 5 studies were identified with a total of 162 feet included. Total incidence of complications was 12.3% (n=20) and the most commonly reported complications included hardware pain (n=9), non-union (n=5), deformity recurrence (n=3), and neurovascular injury (n=3).

Discussions This updated minimally invasive approach provides a safe and reproducible surgical option to correct deformities of the first ray requiring tarsometatarsal fusion with an incidence of complications lower than what is currently reported in the literature for the open variations of the procedure. The minimally invasive approach should be taken into consideration when planning surgery of the first ray.

Format Systematic Review

Case Rpt Followup 0

Student Club Not a Student Club Poster

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Taylor Fullmer, DPM	taylor.fullmer@gundersenhealth.org	I/We have nothing to disclose	
Rosemary J. Thompson, DPM	rosie.thompson@gundersenhealth.org	I/We have nothing to disclose	
Andrew D. Elliott, DPM, JD	adelliot@gundersenhealth.org	I/We have nothing to disclose	

Title

Outcomes and Complications Associated With Lateral Column Lengthening Using Porous Titanium Wedges for Flexible Flatfoot Deformity Correction: A Systematic Review

Submit Date 08/24/2023

Correspondent

Last Name: Hill
 Full Name: Zachary P. Hill, DPM
 Practice/Company/Residency Program: Grant Medical Center
 Email: zph1582@gmail.com

Authors

Author 1: Zachary P. Hill
 Author 2: Joseph R. Brown, DPM
 Author 3: Ross T. Groeschl, DPM
 Author 4: Alex Bischoff, DPM, AACFAS
 Author 5: Alexa T. Bykowski, DPM
 Author 6: Robert W. Mendicino, DPM, FACFAS
 Author 7:
 Author 8:

Purpose

This systematic review aims to describe functional outcomes and complications associated with lateral column lengthening (LCL) using porous titanium wedges (PTWs).

Methodology

A standard methodology for performing a systematic review was followed using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines. PubMed, Google Scholar, OVID, Enbase, and Cochrane were searched. Publications with at minimum 1-year follow-up, and LCLs performed with PTWs were included. Non-English articles and those that did not perform LCL with PTWs were excluded. 508 articles were identified. 7 studies met the inclusion criteria following review by the authors.

Procedures

Results

246 LCLs (236 patients) using PTWs were reported. The FAAM Activities of Daily Living (ADL) score measured at 80.45 (80.0-80.9) post-operatively. FAAM Sports subscale measured post-operatively at 58.5 (50.0-66.9). VAS pain score decreased from 5.45 (5.0-5.9) pre-operatively to 2.43 (1.6-3.0) post-operatively. Major complications including non-union, reoperation, deep infection, chronic regional pain syndrome (CRPS) was 2.1% (5/236). A total complication rate was found to be 15.2% (36/236).

Discussions

The evidence from this systematic review suggests that LCL with PTWs can be an effective and viable option for correcting flexible flatfoot deformities. The use of PTWs appears to offer comparable functional results and complication rates to traditional allograft or autograft wedges.

Format

Systematic Review

Case Rpt Followup

Student Club

Not a Student Club Poster

Classification

Rearfoot and Ankle Reconstruction

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Zachary P. Hill	zph1582@gmail.com	I/We have nothing to disclose	
Joseph R. Brown, DPM	jrbrowndpm@gmail.com	I/We have nothing to disclose	
Ross T. Groeschl, DPM	rgroe726@gmail.com	I/We have nothing to disclose	
Alex Bischoff, DPM, AACFAS	bischoff91@gmail.com	I/We have nothing to disclose	
Alexa T. Bykowski, DPM	alexabykowski36@gmail.com	I/We have nothing to disclose	
Robert W. Mendicino, DPM, FACFAS	rmendicino@faiwp.com	I/We have nothing to disclose	

Title **Outcomes of Surgical Management of Hallux Abductovalgus with Concomitant Metatarsus Adductus Deformity: A Systematic Review with Meta-Analysis**

Submit Date 08/27/2023

Correspondent Last Name: Brown
Full Name: Joseph R Brown, DPM
Practice/Company/Residency Program: OhioHealth Grant Medical Center
Email: joey.brown2@ohiohealth.com

Authors Author 1: Joseph R Brown, DPM
Author 2: Nevin Joseph, DPM
Author 3: Bryan R Blacka
Author 4: Ian Barron, DPM, FACFAS
Author 5:
Author 6:
Author 7:
Author 8:

Purpose To evaluate the literature on the outcomes, complications, and treatment strategies of hallux abductovalgus (HAV) with concomitant metatarsus adductus (MA).

Methodology A systematic review of studies published in Pubmed, Medline, Cochrane, and OVID databases between January 2003-June 2023 was performed. Standard PRISMA guidelines were followed. Studies with a minimum of 1 year follow-up and operative management of HAV with MA were included. The mean radiographic outcomes, patient reported outcome measure scores, and complication rates were calculated.

Procedures

Results 279 articles were initially identified. 8 articles met the inclusion criteria, for a total of 237 feet. 5 studies were level 3, while 3 studies were level 4 evidence. Procedures undertaken exhibited substantial heterogeneity across studies, revealing the lack of a standardized approach. The intermetatarsal, hallux valgus, and metatarsus adductus angles were all statistically significantly improved. Recurrence occurred in 12.2% of patients, necessitating revision in 1.7%. Total complication rate was 7.2%, with nonunion as the primary complication (1.7%). The mean AOFAS score improved from 53.4 preoperatively to 88.8 postoperatively (p<0.00001) in 5 studies (n=117 feet). The mean postoperative VAS score was 1.4 in 3 studies (n=108 feet).

Discussions No "gold standard" treatment exists for surgical management of HAV with MA. However, favorable functional outcomes with a low reoperation rate can be expected. HAV with concomitant MA can be successfully treated with a combination of arthrodesis and osteotomy procedures.

Format Systematic Review

Case Rpt Followup Not a Student Club Poster
Student Club

Classification Forefoot Reconstruction

Level of Evidence Level III

Authors/Financial Disclosures

Table with 4 columns: Full Name, Email, Disclosure(s) selected, and Disclosed Organisation(s). Rows include Joseph R Brown, DPM; Nevin Joseph, DPM; Bryan R Blacka; and Ian Barron, DPM, FACFAS.

Title Outcomes of Pantalar Dislocations: A Systematic Review**Submit Date** 08/27/2023**Correspondent**

Last Name: Brown
 Full Name: Joseph R Brown, DPM Email: joey.brown2@ohiohealth.com
 Practice/Company/Residency Program: OhioHealth Grant Medical Center

Authors

Author 1: Joseph R Brown, DPM Author 2: Zachary P Hill, DPM
 Author 3: Tucker Peabody, DO Author 4: Benjamin C Taylor, MD
 Author 5: Author 6:
 Author 7: Author 8:

Purpose

Limited literature is available on outcomes in pantalar dislocations.

Methodology

A systematic review of studies published in Pubmed, Medline, Cochrane, and OVID databases between January 2003-April 2023 was performed to identify articles evaluating outcomes following treatment of pantalar dislocations. Standard PRISMA guidelines were followed. Studies with a minimum of 1 year follow-up, patient reported outcome measures (PROMs), and mention of complications were included. The mean complication rate, secondary operation rate, and PROM scores were calculated based on the included articles.

Procedures**Results**

203 articles were initially identified. 15 articles met the inclusion criteria, for a total of 62 pantalar dislocations. All studies were level 4 evidence. Open dislocations (40/62; 65%) were more common. The most common treatment was open reduction with external fixation (n=12). Complications included 30.6% (19/62) osteonecrosis, 17.7% (11/62) arthritis, and 11.3% (7/62) infections. 19.4% (12/62) required a secondary operation. The pooled mean AOFAS score was 75.8 (66.7 to 100) in 10 studies (n=19 patients). The pooled mean FFI score was 37.5 (25.3 to 45.0) in 2 studies (n=37 patients).

Discussions

Surgeons managing lower extremity trauma should be aware of pantalar dislocations, the management of these injuries and the outcomes to appropriately counsel patients prior to intervention. Although high complication rates can be expected with pantalar dislocations, functional outcomes are acceptable at short term follow-up.

Format

Systematic Review

Case Rpt Followup**Student Club**

Not a Student Club Poster

Classification

Trauma

Level of Evidence

Level IV

Authors/Financial Disclosures

Full Name:	Email:	Disclosure(s) selected:	Disclosed Organisation(s):
Joseph R Brown, DPM	joey.brown2@ohiohealth.com	I/We have nothing to disclose	
Zachary P Hill, DPM	zph1582@gmail.com	I/We have nothing to disclose	
Tucker Peabody, DO	TuckerPeabody@gmail.com	I/We have nothing to disclose	
Benjamin C Taylor, MD	drbentaylor@gmail.com	I/We have nothing to disclose	

