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ACFAP PEDIATRIC FOOT & ANKLE SEMINAR
April 8 - 9, 2016

ACFAP
American College of Foot and Ankle Pediatrics

is proud to present the

2nd Annual ACFAP

PEDIATRIC FOOT & ANKLE SEMINAR

to be held at

TENAYA LODGE
AT YOSEMITE NATIONAL PARK
FISH CAMP, CA

The American College of Foot & Ankle Pediatrics is excited and proud to announce its 2nd Annual ACFAP Pediatric Foot & Ankle Seminar. The Seminar will take place at Tenaya Lodge, Yosemite National Park on Saturday April 9, 2016.

This CME event will feature leading authorities on pediatric foot & ankle conditions. It will cover topics ranging from pediatric H&P, flatfoot, equinus, sports medicine, surgery, and rotational conditions. The meeting will be preceded on Friday April 8 by a one day national park excursion.

Featured at this meeting will be spectacular Yosemite National Park.

At the Conclusion of this meeting, the attendee shall be able to:

- Develop an effective History & Physical procedure for treating the pediatric patient.
- Effectively evaluate surgical vs. non-surgical options for many common Pediatric foot & ankle pathologies.
- Improve patient outcomes in the pediatric patient for common conditions such as flatfeet, juvenile HAV, and Equinus.

For Conference details or to register online: please go to acfap.org/events.html

Approved for 8 CE Contact Hours

No commercial interest provided financial support for this continuing education activity

Lecture Schedule

7:00-7:40am	**Registration, Breakfast & Visit Exhibitors**
7:40-7:50am	**Louis J. DeCaro, DPM, FACFAP** Welcome Address
7:50-8:30am	**Louis J. DeCaro, DPM, FACFAP** The Pediatric H&P
8:30-9:10am	**Doug Murdoch, DPM, FACFAS** Tarsal Coalitions
9:10-9:50am	**Stephen Silvani, DPM** Pediatric Flatfoot Surgery
9:50-10:20am	**Visit Exhibitors**
10:20-11:00am	**Jeff Siegel, DPM, FACFAS** Met. Adductus & Clubfoot: Practical approaches & tx. protocols
11:00-11:40am	**Ron Valmassy, DPM, FACFOAM** Eval. & Tx. of Pediatric Hip Dysplasia
11:40-12:20pm	**Patrick Deheer, DPM, FACFAS, FACFAP** The role of Equinus in the Pediatric Flatfoot
12:20-1:15pm	**Lunch & Visit Exhibitors**
1:15-1:55pm	**Onyx Reyes-Martinez, MD** The Role of EOTTS in the Treatment of RTTJD
1:55-2:35pm	**Russell Volpe, DPM, DABPM** Torsion: Why it matters and how to manage it

Lecture Schedule (cont.)

2:35-3:15pm	**Patrick Agnew, DPM, FACFAS** Juvenile HAV & Collagen Diseases
3:15-4:00pm	**Break & Visit Exhibitors**
4:00-4:40pm	**Larry Huppin, DPM** Practical Approaches & Troubleshooting of Orthotic Therapy
4:40-5:20pm	**Paul Scherer, DPM, MS** Childhood Obesity and Hyper Mobile Flatfoot; a pathological relationship
5:20-6:00pm	**Nick Pagano, DPM, FACFAS, FACFAP** Pediatric Sports Medicine

This conference is intended for podiatric physicians and other medical specialties dealing with the pediatric lower extremity. No prerequisite levels of skill, knowledge, or experience required of learners.

This activity has been planned and implemented in accordance with the standards and requirements for approval of providers of continuing education in podiatric medicine through a joint provider agreement between the William L. Goldfarb Foundation as a provider of continuing education in podiatric medicine. The William L. Goldfarb Foundation has approved this activity for a maximum of 8 continuing education contact hours

In the event of cancellation ACFAP is unable to assume risk or responsability for the exhibitor's and/or registrants time or expenses should an act of God, government action, disaster, weather or other force beyond ACFAP's control make it inadvisable or impossible to conduct this event. The exhibitor and/or registrant may wish to consider purchasing personal travel insurance to insure their expenses.

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www.apma.org/KCF

Features:

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Layout Editor Andrew Gromada

Contributing Editor Sara Gromada

THURSDAY, NOVEMBER 5, 2015 | 8:00 AM – 11:30 AM

The American College of Foot & Ankle Pediatrics (ACFAP) along with AAPPM are proud to announce an exclusive podopediatrics track which will be taking place during the AAPPM Fall Conference on November 5, 2015. We have assembled a panel of podopediatric specialists to help guide you through the workshop. Attendees will learn the ins and outs of the art and science of running a successful podopediatric practice.

8:00 AM– 8:30 AM *NICK PAGANO, DPM*
MANAGING KIDS—FROM PARENTS TO PAIN
This lecture talks about no only how to deal with pediatric patients but also how to easily and effectively deal with the dreaded "parents". The practitioner will learn ways to conduct and reconstruct an office to make it a welcoming place for kids and their parents alike!

8:30 AM– 9:30 AM *LOUIS DECARO, DPM*
THE ART & SCIENCE OF PEDIATRIC PRACTICE MANAGEMENT
This lecture keys in two important practice management tools with regards to podopediatrics. It focuses on ways to utilize existing adult patients and link the genetics of their conditions to their kids. It also explains the evolution of "the look" and presentation of a particular foot as it evolves from childhood to adult stature.

9:30 AM– 10:00 AM *CHAD SCHWARZ*
DEVELOPING A PODOPEDIATRIC CENTER OF EXCELLENCE
How can you create a "Podopediatric Center of Excellence" within your practice so the medical and non-medical community understands and utilizes you for podiatric care for children of all ages. Here in lies something powerful; opportunity! In this presentation, we will discuss components of your practice to highlight or integrate to appeal to local pediatricians, businesses and organizations focused on children and of course, the parents who are making all of the decisions relative to their child or children's health and wellness. Along with this, we will discuss marketing and public relation strategies to create strong awareness for your "Podopediatric Center of Excellence" in and around your community.

10:00 AM– 10:15 AM
BREAK AND VISIT EXHIBITORS

10:15 AM– 11:00 AM *ROBERTA NOLE, PT*
GAIT VIDEO ANALYSIS: PREVENTING PEDIATRIC GROWING PAINS & SPORTS INJURIES
Learn to identify 6 functional foot groups using an easy to learn 4-step method of gait assessment. Learn specific pathologies and sports related injuries common to each of the 6 functional groups. Learn the best biomechanical orthotic designs to optimally manage each functional group. Learn that it is important to biomechanically manage the adolescent athlete-before the injury happens!

11:00 AM– 11:30 AM *TRACEY TOBACK, DPM*
PEDIATRIC PATIENTS AND CUSTOM FUNCTIONAL ORTHOTICS: HOW AND WHY IT IS ESSENTIAL TO YOUR PRACTICE
Review the effective pathologies in which custom functional orthotics have successful outcomes in the pediatric patient. Learn to effectively discuss with parents how their investment in custom orthotics will benefit their child. Establish the pediatric patient into your practice long term to effectively reach long term goals of conservatively achieving best possible foot function.

American Academy of Podiatric Practice Management | 1000 West St. Joseph Hwy,Suite 200 | Lansing, MI 48915 | 517-484-1930

Presidents Message

2015 has been a banner year for ACFAP. We've experienced a membership & corporate sponsorship explosion, as well as hosted a very successful inaugural meeting with almost 100 members present. Well friends, as C.S. Lewis once said, "There are far, far better things ahead than any we leave behind." 2016 is about to bring bigger and better things for ACFAP. We are all part of something very exciting. An ever-growing push to get the education of pediatric podiatry to everyone! Continue to join this mission, and help me recruit your colleagues to come along for the ride

So let's look ahead!

As you are all well aware ACFAP 2016 Annual Scientific Meeting is fully ready to go. We have advertised the meeting as "THE can't miss meeting of 2016" for a reason! Because it is! We have an amazing lineup of speakers, topics, and vendors. The scientific portion of the meeting will take place at Tenaya Lodge at Yosemite National Park on April 9, 2016. We will be offering 8 CME's at a conference registration rate of $149 for members and $299 for non-members. We are also continuing the National Park "tradition." Preceding the one-day educational conference on the 8th there will be a group outing in Yosemite Park. That is a great time to "hang out" with your colleagues who share a similar passion for pediatrics and learn from each other.

This meeting is for everyone and all skill levels. We have gathered not only top speakers but also a full array of exhibiting companies which allow the attendee to get a "one stop pediatric shopping experience of sorts". The Yosemite attendee will experience: camaraderie amongst others who specialize in pediatrics, companies that feature solutions for all aspects of the pediatric foot and ankle practice, and an amazing place to do it at!

By the way one more thing about the meeting. IT ISN'T AS REMOTE OF A PLACE AS YOU THINK! It could have been worse. We could have chosen a national park in Tanzania (hmmm 2017? - only kidding) I know you all can make it there if you really try! Yosemite National Park is an amazing place. Not only is it absolutely surreal in its beauty, but it's a great family destination as well. Arriving is not as daunting as one would think. There are two airports, both with major airport connections available, within two hours driving distance of the park.

2016 will also feature more ACFAP exposure at national conferences including: SAM, Midwest, and APMA national just to name a few. We have also lined up corporate grants enabling us to work with and help grow the ACFAP college student chapters!

I personally assure you that your membership dollars are hard at work and being used to grow pediatric foot and ankle education!

Thank you to each and every one of you for making this all possible and see you in Yosemite! Expect my call if you don't register soon!

Louis J. DeCaro, DPM
President, ACFAP
www.acfap.org

Pediatric Diabetic Peripheal Neuropathy:

An under diagnosed foot complication

Todd O'Brien, DPM

The global burden of diabetes is currently estimated at 382 million diagnosed cases and rising [1]. Unfortunately, this well-documented increase in diabetes among adults is mirrored by a similar trend in the pediatric population [2, 3, 4.] Further analysis reveals a disturbing increase in Type 2 diabetes among these patients which some have linked to a rise in childhood obesity [5].

This combination of diabetes and obesity in adulthood can lead to devastating foot complications including lower extremity amputations. Another one of the essential precursors on the path to limb loss is diabetic peripheral neuropathy (DPN). Although neurological screening for DPN is routine in adults, pediatric patients often are not assessed for this complication. Despite the fact that up to 25% of pediatric diabetic patients have neuropathy, the majority are subclinical possibly explaining this oversight [6]. Furthermore, widely accepted guidelines for neurological screening in this patient population have not been established. Although several studies have evaluated the efficacy of screening tools currently in use, consensus has not been reached on a standardized approach [7]. A summary of relevant research on this topic is found in Table 1.

Evidence-based Recommendations

In light of the known potential complications in adulthood, most experts recommend routine screening for early neuropathy in pediatric diabetic patients even when the condition is subclinical. Research has shown NCVs to be the gold standard for neurological assessment in adult and pediatric patients. Unfortunately, this test is invasive, painful, expensive and time-consuming. A more practical screening method is assessment of vibration perception thresholds (VPTs) with a biothesiometer (Fig. 1.). Although this method is painless and non-invasive, most clinicians have not purchased the device. Additionally, the test can take several minutes to perform properly and usually requires a dedicated space as the biothesiometer is

Table 1. Selected studies evaluating DPN testing methods in pediatric patients

Method	Study	Findings
10 Gram Semmes-Weinstein Monofilament	Hirschfeld[8] (Systematic Review)	Low diagnostic utility
128 Hz Tuning Fork	Hirschfeld (Systematic Review)	Low diagnostic utility
Biothesiometer	Hirschfeld (Systematic Review) Olsen [9]	Acceptable diagnostic utility
Nerve Conduction Velocity	Hasani[5]	Highest diagnostic utility

Fig. 1. Biothesiometer (Bio-Medical Instrument Co. Newbury, OH)

large and relies on a wall outlet for power.
Another alternative is the newly available ETF[128] (Fig. 2). This portable, point-of-care instrument combines the standardization of the biothesiometer with the ease of use and speed of the traditional tuning fork test. An integrated timer allows clinicians to perform accurate timed vibration tests to rapidly gauge large fiber nerve function [10,11]. The numerical value obtained from this test can be used to track nerve function over time.
A scale on the device provides guidance on levels of neuropathy present. Although new to the market, it is ideally suited to the assessment of diabetic neuropathy in adult and pediatric patients.

Fig.2. ETF128 (O'Brien Medical, LLC Orono, Maine)

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Todd O'Brien, DPM graduated from the Scholl College of Podiatric Medicine in 1990 and completed his residency at VAMC Palo Alto. Following his residency training, Dr. O'Brien was employed at a small biomedical start-up based in San Jose, CA. He eventually returned to the full-time practice of podiatry until founding O'Brien Medical, LLC in 1999. He has since divided his time between running a podiatry practice and developing medical products. He has successfully licensed six surgical products and holds six issued patents. Writing credits include several articles in peer-reviewed journals, a chapter in a surgical text and a book on entrepreneurship for inventors. He is a past-president of the medical staff at Penobscot Valley Hospital as well as the Maine Podiatric Medical Association. He currently serves on the Maine Board of Licensure in Podiatric Medicine.

Generalized Pain in a Pediatric Patient Representing an Enchondroma:

a case presentation

Alecia Y. Williams. DPM, DABPM

A 9 y/o male presents with parents complaining about pain in the feet as well as the lower extremity. In asking to differentiate laterality, the left was greater than the right. No trauma, no consistent precipitating factor, only that the pain was worse at night. The parents stated that the pain was so bad; the patient would keep them up crying because of the pain. Children's Tylenol was taken to help alleviate the pain. The PMH was unremarkable. Physical exam showed a pes planus foot type, RCSP -2 degrees for both going to 0 on toe raise. No transverse plane dominance was found in the forefoot OWB. Gait exam showed mild pronation throughout the Stance phase with minimal early heel off. No other asymmetry was noted. No ligamentous laxity. No limitation in hip rotation, no frontal plane abnormality found about the hip or the knee. No trigger point tenderness, no discernable localized pain on palpation or on ROM. Mild gastroc equinus, but no Achilles discomfort at exertion. No enthesopathy about any other insertion points known for osteochondridities. Bilateral X-ray views of the feet showed skeletally immature bone, but otherwise negative. The lateral view of the left foot is shown in Figure 1.

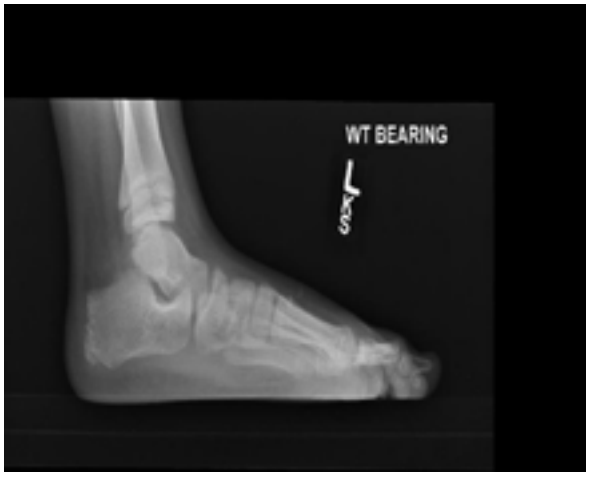
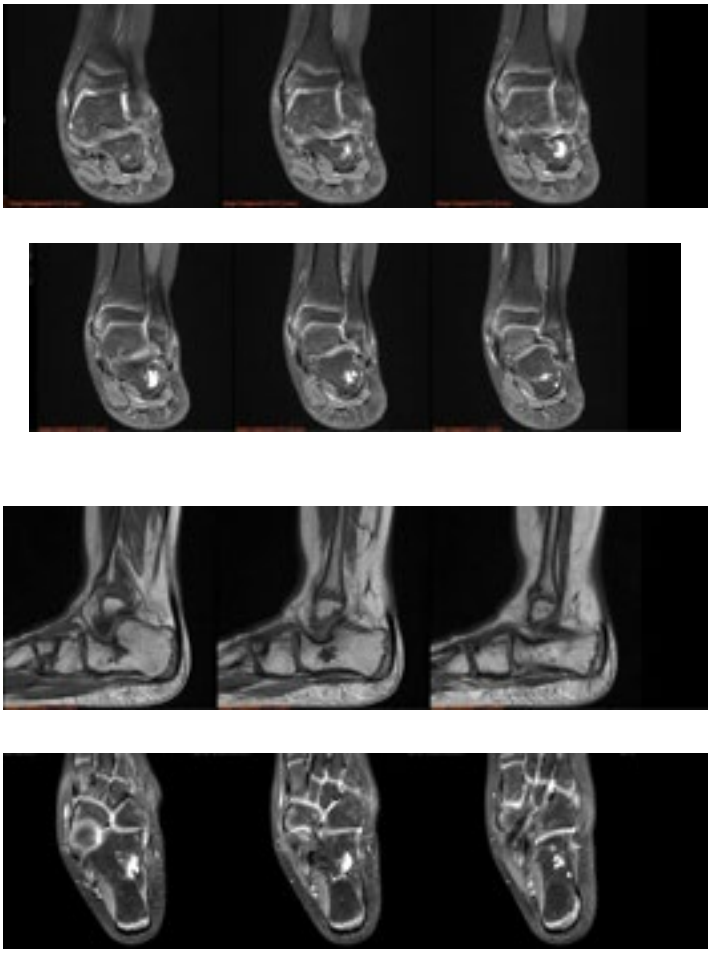
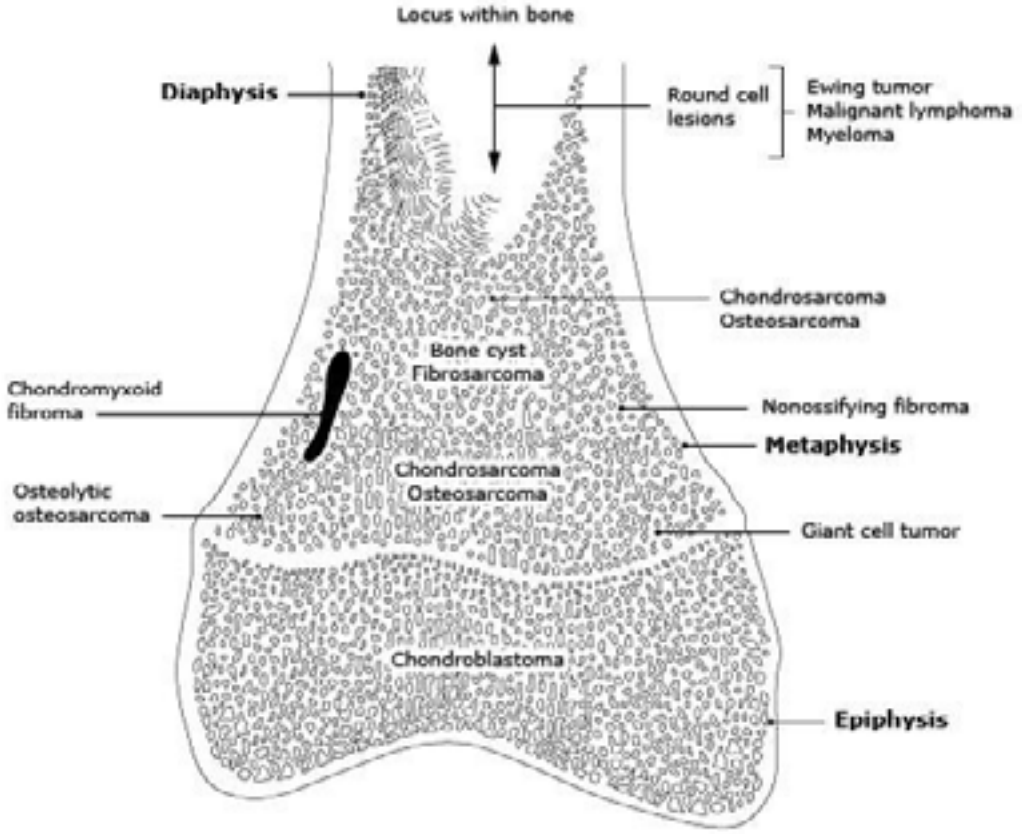


Figure 1:Lateral view of the left foot

The assessment of Pes planus was made. A prefabricated Spenco arch solid shell, non UCBL type orthotic was dispensed to assess any change in symptomatology as if was difficult to assess or pinpoint the origin of the pain. The patient was sent to an Orthopedist specializing in Pediatrics to assess any potential areas contributing to pain outside of the lower extremity. Pt followed up in 1 month. Parents stated that son downplayed the pain with the orthopedist, and believes the specialist did not get a good sense of the pain the patient had and thus felt more could have been done. At the urging of the parents, an MRI was done on the more symptomatic side. An MRI no contrast of the left foot was ordered. The images are shown below.





***Reproduced from Daffner RH. Clinical Radiology: The Essentials, 3rd Edition. Philadelphia: Lippincott Williams & Wilkins, 2007. Copyright © 2007 Lippincott Williams & Wilkins.**

The official report described a 1.2 cm mass with increased signal on fat saturated fluid sensitive sequences within the calcaneus inferior to the tarsal sinus.

The patient was sent to a pediatric orthopedic surgeon specializing in tumor management. An excisional biopsy of the left calcaneus was performed. The area was packed with cancellous bone chips. Observation of the tissue removed was of a cartilaginous nature. The preliminary report was a cyst. The official report was enchondroma.

The patient has since had multiple MRIs to assure the lesion was completely excised. The patient is now pain free in the Left extremity after weeks of immobilization. The issue of the pes planus is now being addressed with a UCBL.

DIFFERENTIAL DIAGNOSES

The negative x-ray made difficult compiling any differential diagnoses. No localization of symptoms made it difficult to assess if pain was myofascial, tendinous, or osseous. Even though a pes planus was observed, the symptoms of the mild- moderate flat foot did not correlate with the pain. Juvenile Idiopathic Arthritis was excluded as there were no joint pathology noted on x-rays and patient had no limited or painful ROM about any of the LE and no exhibited joint pain about areas in the body. One study also noted a higher incidence in JIA in females at a younger age relative to males.[1]

BONE TUMOR OVERVIEW

Bone tumors represent a wide range of lesions in the bone and are either a primary or secondary tumor. With primary tumors, the different types generally manifest in the same location of long bone. The diagram below shows the typical location of the different tumors.

The incidence of the tumors vary with age. There are many presenting in the pediatric popula-

tion. The benign tumors include a vast group including: osteoid osteoma, osteoblastoma, fibrous dysplasia, non-ossifying fibroma, unicameral bone cyst, aneurysmal bone cyst, giant cell tumor of bone. The cartilage forming tumors include osteochondroma, enchodroma, periosteal chondrma, chondroblastoma and chondromyxoid fibroma. The incidence of many of the cartilage forming tumors between 10-20 years. [2]

ENCHONDROMA

A solitary enchondroma has an equal incidence with males and females. Syndromes of enchondromatosis, ie Ollier and Maffuci, do have an incidence less than 10 years. There is also a risk of malignant transformation to chondrosarcoma and increased risk of nonsarcomatous neoplasms. Enchondromas may occur about the diaphysis of the long bones of any bone, but most commonly about the small tubular bones of the hands and feet (50%)[3], and large tubular bones such as femur, tibia and humerus. The location of the tumor has its origin from the growth plate. The is the reason is presents at either the metaphysis or diaphysis. An epiphysis location may present a more aggressive lesion such as a chondrosarcoma.[4] Malignant transformation occurs in less than 5% of the cases.[3]

SYMPTOMS

Enchondomas are classically asymmtomatic. The lesion can expand the cortex and present as a palpable mass. However; the presenting sign may also include a pathologic fracture in the phalanges or metatarsals. Pain may also correlate growth activity. In the absence of growth, injury or pathologic fracture, the suspicion of malignancy should be raised.[5] Again, in the setting of no radiographical findings, lesions such as an osteoid osteoma or osteoblastoma having night time pain with resolution with NSAIDs were excluded.

SUMMARY

As a lesion that did not present with any radiographical findings, this lesion was similar to other symptomatic problems not producing any finding in early stages such as an early fracture or stress fracture. The advanced imaging was justifiable based on the clinical concern. It is not known if the symptoms exhibited may have represented a rapid period of growth or early stages of an aggressive lesion. The patient will continue to be monitored post surgical excision for his pes planus .

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Lesions Chapter 6

Dr. Williams is in Private Practice in New York City. She is also board certified by the American Board of Podiatric Medicine.

Polydactyly:
What happens to the sixth little piggy?

Patrick A. DeHeer, DPM

Aaron Leshikar, DPM PGY-2

Polydactyly, which is the most common congenital hand anomaly[1], is a condition in which a person has more than five fingers on one hand or more than five toes on one foot. The earliest recorded documentation of hand polydactyly dates back to 1670, although American Southwest rock art depictions of six fingered hands suggest an even earlier documentation[2, 3]. Polydactyly is ubiquitous in nature and has been reported in other species, including cats, horses, pigs, and chickens[4].

Some things to consider when identifying this condition are that it can occur on its own. That is to say other diseases or symptoms do not necessarily need to be present in order to confirm diagnosis. It has also been linked to a trait[5], involving only one gene, that has multiple variations within itself. The trait may be passed down in families as an isolated, benign condition, like having a hitchhiker's thumb or being double jointed, which would be considered non-syndromic. When looking at certain ethnic groups, there are some that show up more often than others. African Americans can inherit this supernumerary digit without genetic disease and is most commonly found as post axial polydactyly[6].

Polydactyly can also occur with some genetic diseases and often the trait may exist as part of a syndrome, which is a group of several recognizable clinical features that often occur together. Some syndromes that might present with polydactyly include Greig Cephalopolysyndactyly Syndrome (GCPS) or Bardet-Biedl Syndrome (BBS).

Polydactyly can be broadly classified as:

-pre-axial polydactyly: extra digit(s) towards 1st digit (medial)

-post-axial polydactyly: extra digit(s) towards 5th digit (lateral)

-central polydactyly : middle three digits are involved

Epidemiology

Estimated incidence is different for pre and post axial polydactyly[7]:

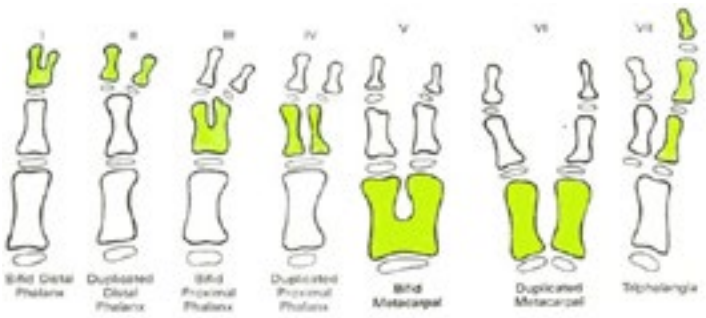
-post-axial: ~1 in 3000

-pre-axial: ~1 in 7000

Central polydactyly is the most rare case. There are different presentations of this extra digit:

- skin and soft tissue
- skin, soft tissue and bone without joint
- skin, soft tissue and bone with joint

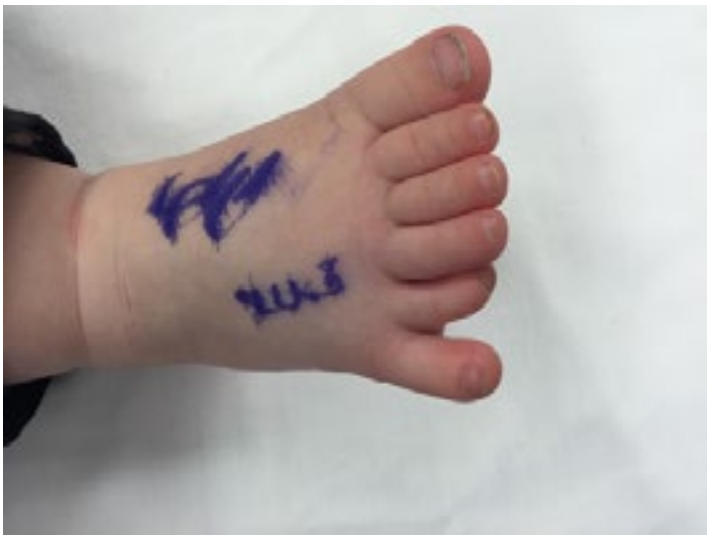
Wassel proposed the most widely used and accepted classification system of preaxial polydactyly in 1969 (Fig. 1)[8]. The seven groups are classified based on the level of the bifurcation. Starting from distal to proximal, types I, III, and V refer to bifid phalanges, and types II, IV, and VI refer to complete phalangeal duplications.



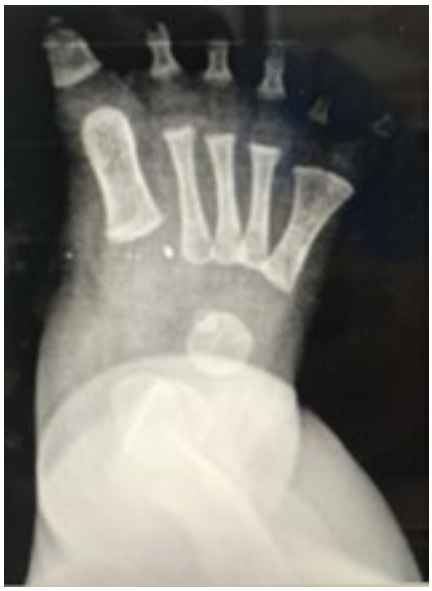
Case Presentation:

A 14 month old Caucasian female presents to the office with an extra toe on her right foot. The mother states that many males in her family have this lucky digit but since she is a little girl would rather have it removed. The toddler is healthy and does not take any medications. History is unremarkable for genetic diseases and syndromes.

Initial exam:

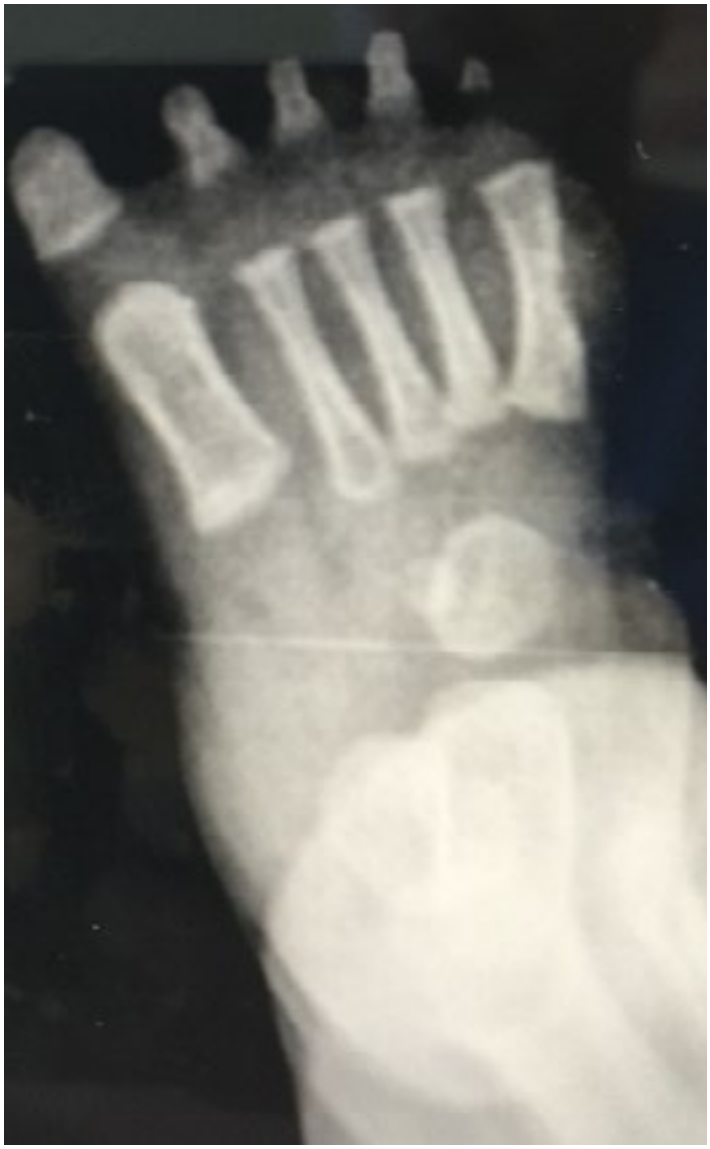


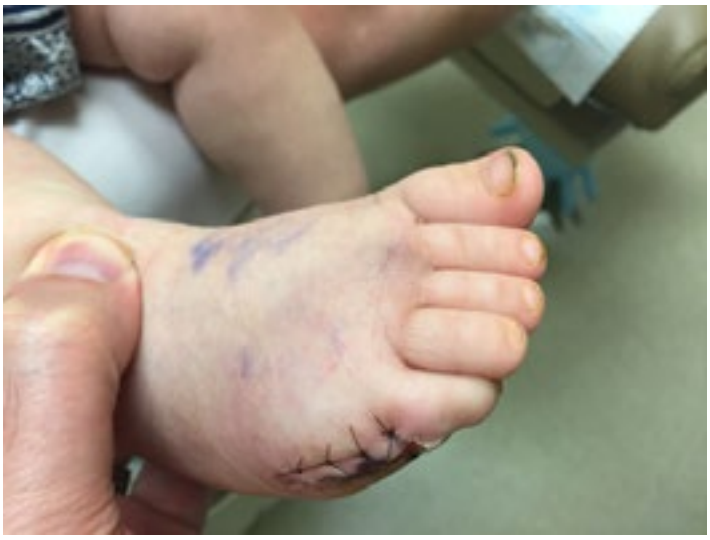
An AP radiograph of the right foot



X-rays indicate a bifid metacarpal, type V in the Wassel Classification. Once identified, the surgery was scheduled and consent was discussed with the mother. The surgical plan involved the resection of the supernumerary digit as well as the lateral bifid head of the 5th metatarsal. This would ensure adequate skin for closure and a normal contour to the lateral aspect of the foot.

Post-op x-ray





7 days post-op

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Acute Treatment of Neurogenic Clubfoot

Eric So, DPM
Lee M. Hlad, DPM

Introduction:

The equinovarus deformity may be classified as congenital or acquired. The congenital deformity can be further divided into idiopathic and non-idiopathic types, and the acquired deformity classified into neurogenic and vascular causes [1]. Peripheral and central nerve damage can lead to spasticity and paralysis, which results in muscle imbalance [2]. The most common foot and ankle deformity from injury to the nervous system is equinovarus. This deformity is manifested as a combination of equinus, cavus, varus, and adduction of the forefoot. This leads to pain and poor stability in stance phase during ambulation [2,3]. Treatment for this condition is difficult due to the paucity of literature regarding the management of the neurogenic equinovarus.

The Ponseti technique for the treatment of congenital clubfoot has been well documented . However, the acquired equinovarus deformity has a propensity to manifest as a rigid contracture; therefore, its efficacy for this type of deformity is unknown. Soft tissue release has been described as a viable intervention for clubfoot [4]. However, avascular necrosis of the talus, flat-top talus, and recurrence are not infrequent complications [5,6].

There have been other treatments proposed . Oral and intrathecal medications have been reported to reduce spasticity , though these modalities have frequently lead to muscle weakening [7,8,9,10]. Tibial nerve neurotomy has been shown to have promising results but should only be performed before the development of musculo-tendinous contractures and the percentage of the motor nerve that should be sectioned has not been precisely defined. Rehabilitation requires intensive daily stretching for at least 2 years to avoid recurrence[10, 11].

Talectomy has been described for treatment for neurogenic clubfoot [12.] Though this technique does provide the laxity to correct the deformity, this often leads to a significant limb length deformity and distorted anatomy . Ilizarov distraction and dynamic correction using a hinged-distraction apparatus has been described as a successful mode of treatmen[13,14,15,16]. After a ten-year follow-up from dynamic correction , a good or satisfactory result was achieved in 95% of patients16. The remaining patients received a good result after arthrodesis was performed.

Repetitive trauma with the lack of motion in an insensate foot often results in destruction of joint cartilage . Unlike its congenital counterpart, the acquired clubfoot is more common in skeletally mature patients, thus eliminating the concern of growth plate arrest with joint destructive procedures. Thus, triple arthrodesis has been described as an effective treatment [17,18,19,20].

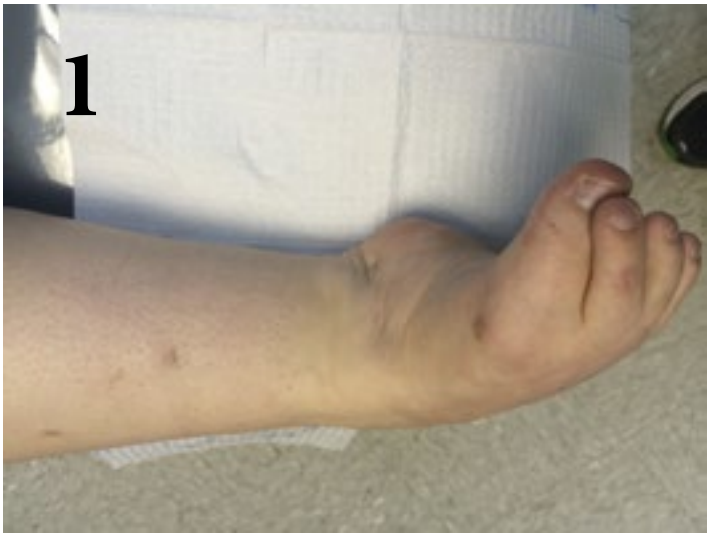
The equinus component of the equinovarus deformity is the most challenging. Treatment of equinus with tendo-Achilles lengthening or tenotomy is difficult because only partial correction may be attained due to the talar dome deformity, which produces a mechanical block to dorsiflexion. A modification of the classic Lambrinudi triple arthrodeses, originally described for polio equinus , is an expeditious way to address a severe equinus deformity[20]. The correction obtained in the Lambrinudi arthrodesis is created in the osteotomy . The osteotomy excises the head and a portion of the neck of the talus. The resection begins at the dorsal aspect of the talar head and extends obliquely towards the posterior facet of the subtalar joint , thus excising an anteriorly based wedge from the head and a portion of the neck of the talus.

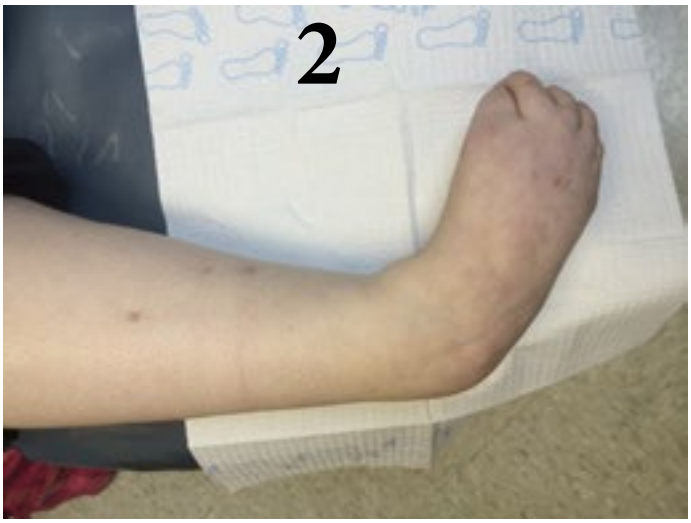
Surgical correction of the acquired neurogenic equinovarus deformity is necessary to achieve a plantigrade and functionally acceptable foot. This case report describes the utilization of the modified Lambrinudi triple arthrodesis intended to treat equinovarus deformity with neurogenic origin.

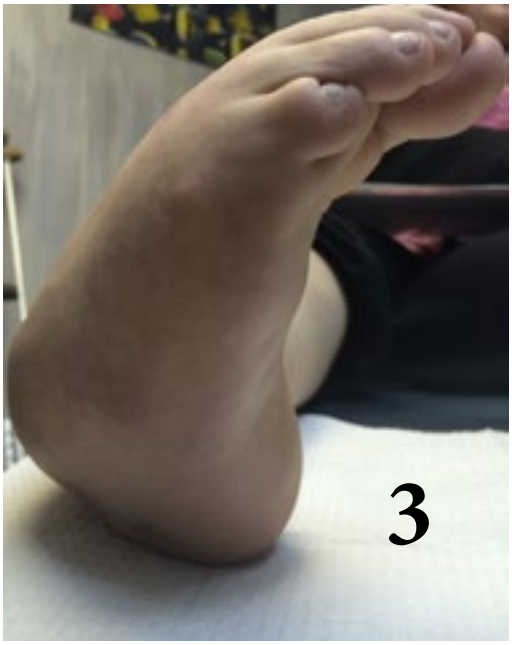
Case:

A 17 y.o. female who sustained a motor vehicle vs. pedestrian accident two years prior presents with rigid equinocavovarus deformity of her right foot. She had

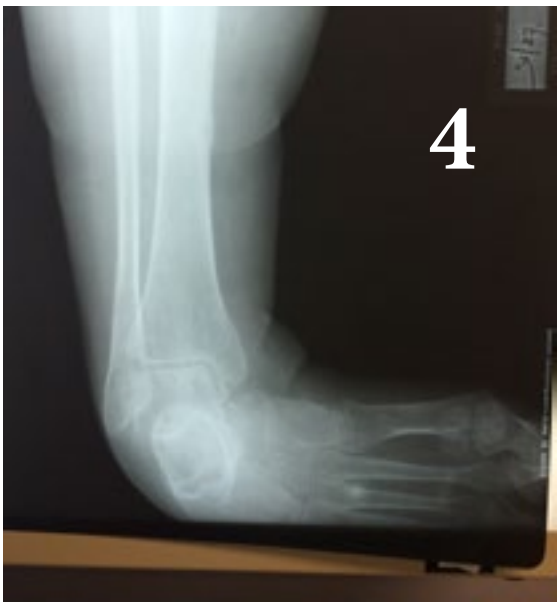
suffered no fractures in her original injury however sustained soft tissue trauma around the popliteal fossa and peroneal nerve with no real understanding of what truly was damaged. She had sought consultations with various practitioners and had undergone an attempt at Ilizarov correction which ended abruptly with complicated pin tract infections and was removed prematurely. She was offered a below knee amputation by numerous surgeons and due to efforts at treating her deformity she developed chronic regional pain syndrome. At the time of consultation this was being treated by a pain management physician. She was unable to place any weight through the extremity and had spent the last two years of her life crawling on her hands and knees. Physical exam revealed a hindfoot varus with supinated forefoot and rigidly plantarflexed digits (Pictures1, 2, 3). She had no sensation over the dorsal or plantar foot and had very little movement at the level of her digits. She had palpable PT and DP.

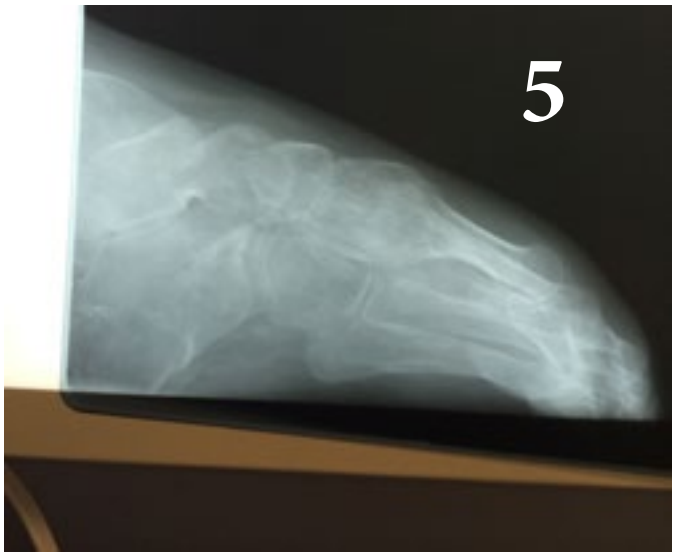






Nerve conduction velocities showed very little activity through the distributions of both the peroneal and the tibial nerves. Radiographs revealed strong similarities to that of a rigid clubfoot (pictures 4,5). This patient was first offered a Ponsetaylor style frame as described by Herzenberg et al. and declined due to her poor previous experiences. The senior author recommended gradual correction to preserve length and allow for early ambulation however patient wished for acute correction. A modified lambrinudi triple arthrodesis was described to patient with forefoot intervention to correct the rigid contractures of the toes. Patient did agree to this with the understanding that her outcome would be unpredictable due to her CRPS. This patient underwent acute correction first addressing the hindfoot with a lambrinudi triple arthrodesis, followed by

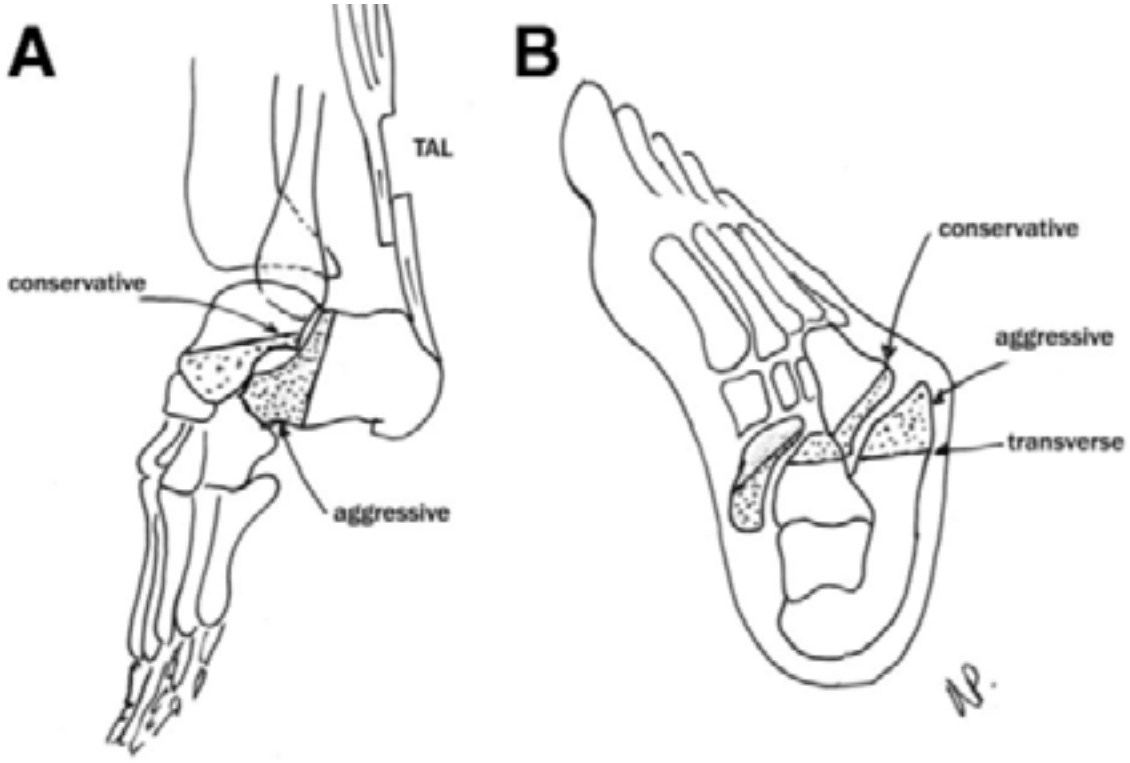




forefoot reconstruction.

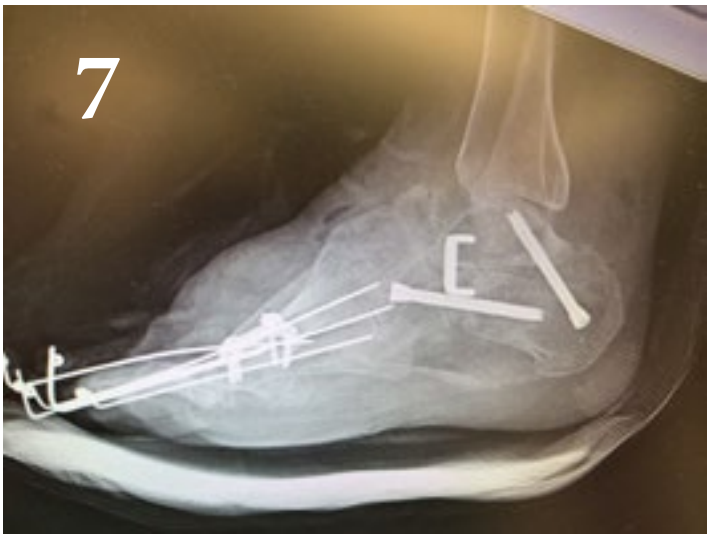
Procedure:

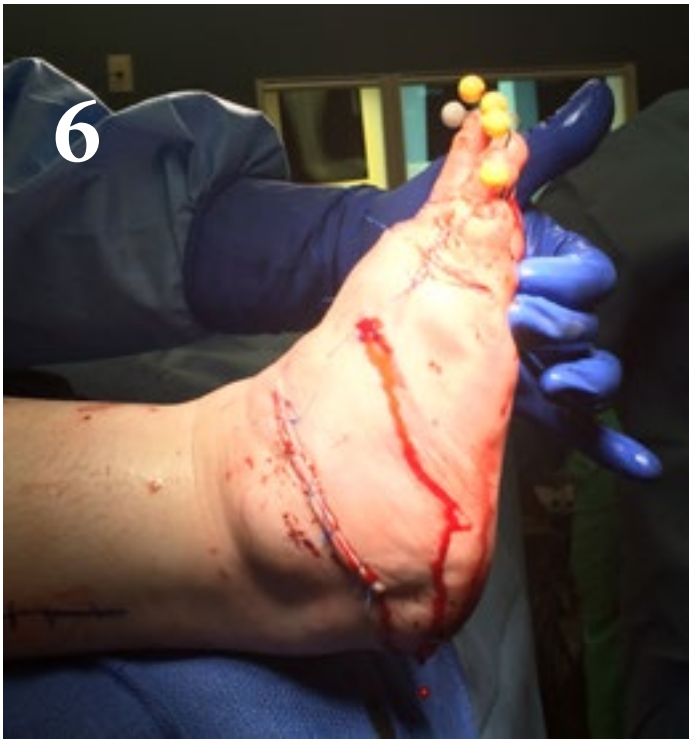
The patient was placed in supine position with patella forward. The leg and foot were prepped to the level of the thigh tourniquet. At this point an oblique incision was created at the level of the sinus tarsi just over the calcaneal cuboid joint. The extensor brevis was sharply removed from the floor of the anterior calcaneus and peroneal tendons are protected. First a laterally based 2 cm wedge was removed along the transverse axis of the calcaneus. This wedge is usually 1.5-2 cm in width at the base. Next a parallel cut was made at the level of the calcaneal cuboid joint to remove the cartilage from the cuboid parallel to the joint axis. Then an anterior based wedge was removed from the talus with the cut starting at the dorsal articular cartilage of the head of the talus. This wedge then extends to the posterior process of the talus and is in line with the long axis of the tibia. Lastly an anterior based wedge is taken from the calcaneus. This is done in a sequential fashion as to allow for some correction of equinus. Once the forefoot was able to be reduced on the hindfoot the navicular was prepared by placing a hole in the central portion with a large curette to accept the point that was created with the head of the talus (Diagram 1).[20] At this point the patients prepared joints are held with Steinman pins and the senior author prefers to fixate this with one screw in the posterior facet of the STJ, a Richards staple in the



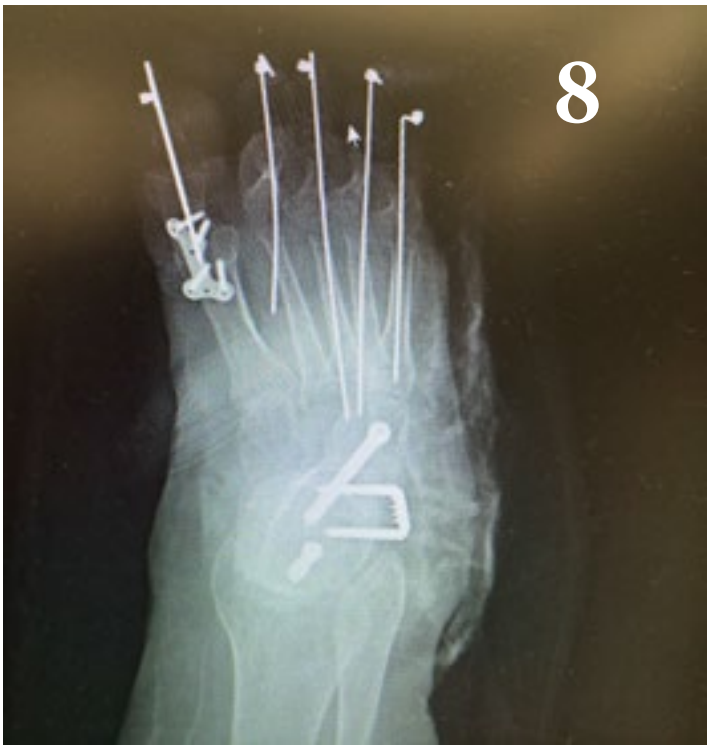
Used with permission from Dr. Penny from Techniques in Orthopaedics 2005.

anterior process of the talus as positional fixation, a screw through the CC joint and the stability through the TN comes from the hole created in the navicular and placement of the anterior talus. At this time patient continues to have 10 degrees of equinus therefor open TAL was performed and frontal plan lengthening was done. The hindfoot was 90 degrees to the leg and the forefoot continued to have severe digital contractures with flexion of over 50 degrees at each joint with subluxations. Attempt was made at soft tissue release without success and patient was converted to pan met head excision and first MPJ fusion to allow for digital correction. Steinman pins were placed in all toes

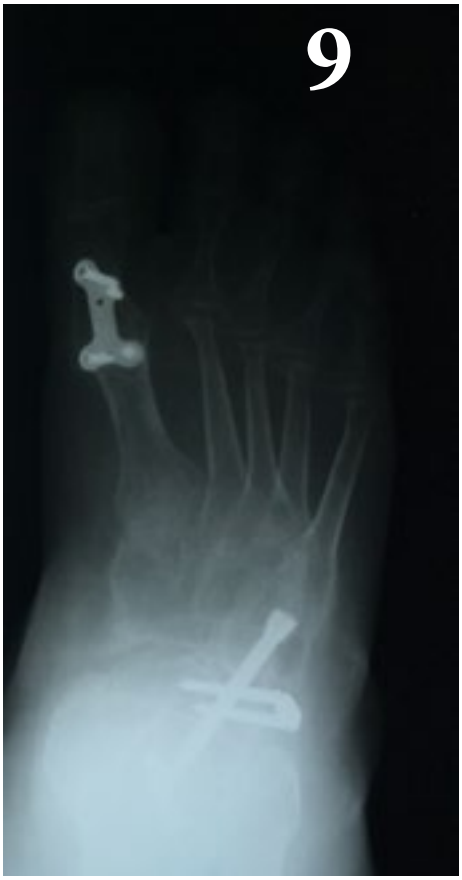




(Pictures 11,12,13) Patient has transitioned to an AFO brace and will wear for up to a year with sneakers.

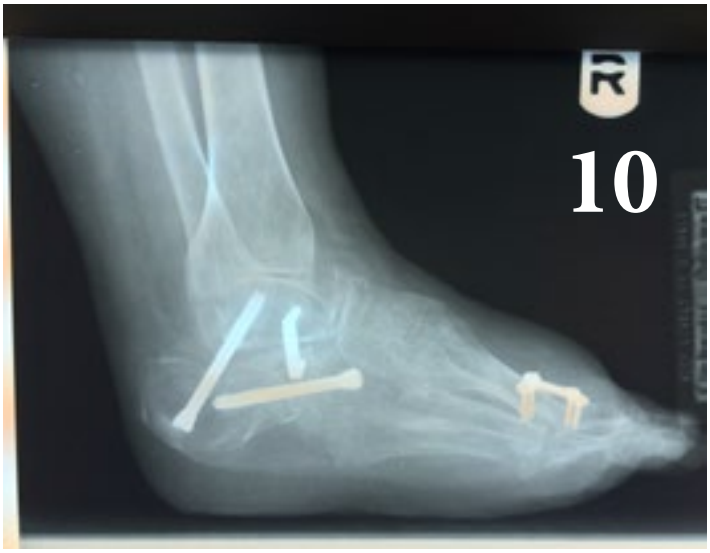


and were pulled at 6 weeks.(Pictures 6,7,8) Patient was casted for 13 weeks and CT was obtained prior to weight bearing. CT showed >50 % consolidation at the STJ and over 75% consolidation at the CC joint with full fusion of the first MPJ. Patient is now over 10 months post op and ambulating (Picture 9,10). She continues to have flare ups of her CRPS and continues to get sympathetic blocks as needed. She has a plantigrade foot and continues to work with physical therapy to advance her stability and progress her activity level.



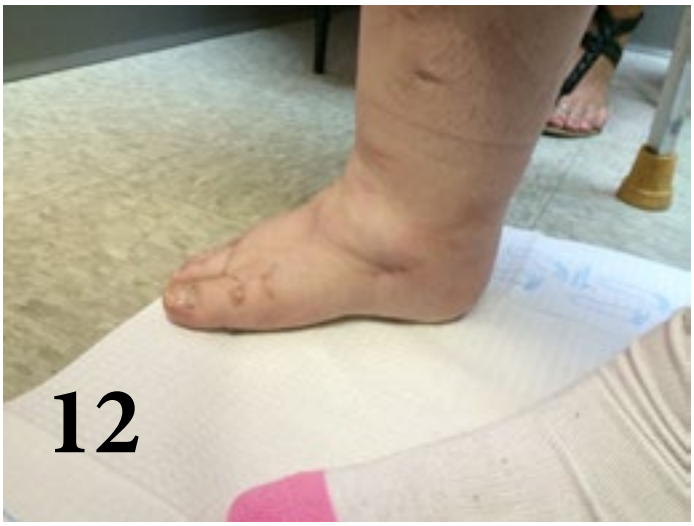
Discussion:

The seniors authors preferred method of correction of resistant clubfoot is through gradual correction with external fixators to preserve length and allow for early ambulation. As Dr. Penny states in his article the procedure is only as good as the post-operative care which holds firm and true. Post-operative care to edema as well as possible need for manipulation with cast application is important and must not be overlooked.



These cases are very challenging and require significant preoperative planning and complex intra-operative decision making. Significant complications can arise with soft tissue compromise in the post-operative period after acute correction and it is imperative that strict elevation be performed for the first 48-72 hrs. In this case some may have transferred the posterior tibial tendon to help with extension of the ankle however an intra-operative decision was made to not perform this additional procedure during her primary surgery due to risk of soft tissue compromise medially. At the present time the patient has adequate extension of the ankle and will likely not need transfer in the future. The goal of this surgery is to create a plantigrade foot that will allow for ambulation which was achieved.

Conclusions:
The modified Lambrinudi triple arthrodesis is a very powerful procedure that can correct significant deformity at the expense of significant shortening of the foot (picture 11). This is the authors preferred method of acute correction for rigid, neglected and resistant clubfoot conditions when traveling abroad and at times can be a good option in the United States when external fixation is not utilized.



The Authors would like to thank Dr. Norgrove Penny for his picture he has allowed for use in this article from his landmark article "The Neglected Clubfoot."

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