

Resident REVIEW

CUTTING EDGE ORTHOPAEDIC INFORMATION ENHANCING RESIDENT EDUCATION

February 2011

From the Editor, Kenneth Noonan, MD



In this edition of the POSNA Resident Review, we highlight and interview Dr. Ellen Raney; as a leader in Pediatric Orthopaedics she brings a unique perspective on the

Shrine Hospital System and what it's like to be a woman in Pediatric Orthopaedics. In addition, we highlight the importance of the Orthopaedic Political Action Committee in health care reform with an interview with Dr Stuart Weinstein.

Rounding out this edition are OITE style questions on Pediatric Lower Extremity Deformity. Finally, we took the opportunity to survey the membership of POSNA and asked them to tell us what diagnosis should never be missed in the Emergency Room. We hope that all residents will learn from the "Top 5 Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room."

As always, any suggestions on this edition or ideas for future editions are welcome at noonan@orthorehab.wisc.edu; this publication is for your education...tell us what you want to learn!!!

Top Five Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room

By: Ken Noonan, MD
University of Wisconsin

The *POSNA Resident Review* recently surveyed the entire POSNA membership on their opinion of conditions that should be appropriately diagnosed in the Emergency Room. Members were asked what conditions are easily missed and have significant chance of long term morbidity. The following are case examples.

CASE EXAMPLE #1

A 14 year old male soccer player was kicked in the shin 2 times during the regional soccer finals. In the emergency room he appears anxious and agitated; he complains of diffuse leg pain that is refractory to oral narcotic use. He has numbness on the dorsum of his foot. Radiographs are negative and his clinical appearance is below.



- *What is your diagnosis?*
- *What is the next step in your management?*

CASE EXAMPLE #1, *continued*

Discussion

This is an actual patient from my practice. His pediatrician called stating his patient had a compartment syndrome from getting kicked in a soccer game. I told him that I doubted this very much and to keep his leg elevated and come to the emergency room should his symptoms persist or worsen. Four hours later the child's physician called me back with increased concern as the boy could no longer keep his pain under control with oral narcotics and was starting to complain of numbness on the dorsum of his foot. Although I was very skeptical that a compartment syndrome could occur from such minor trauma I asked that the boy be brought to the emergency room.

We have all been trained that the cardinal signs (**The 5 P's**) to make a diagnosis of compartment syndrome are progressive Pain that worsens with active or passive stretch, Pallor, Parasthesias, Paralysis and

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Top Five Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room

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CASE EXAMPLE #1, *continued*

Pulselessness. In the adult clinical setting, the diagnosis is easy to make when a patient with a hard swollen compartment has increasing pain that is worsened with passive stretch. Tingling in the distribution of a nerve that passes through the compartment simply cements the diagnosis and emergent treatment is indicated. The problem is that scared and anxious children are rarely the ideal patients to evaluate. Furthermore, these patients often reside on a pediatric floor that only occasionally cares for orthopaedic patients and whose staff is not experienced in detecting a patient with compartment syndrome.

Another finding that is related to pain is increasing agitation and anxiety seen in children with rising compartment pressures. In a series from Boston published in 2001; the increasing analgesic requirements preceded the noted change in vascular status by an average of seven hours in pediatric patients. Although greater than 90% of patients in the Boston study reported pain, only 70% had another associated "P". The presence of the five P's indicates prolonged ischemia and more advanced disease. The authors suggest that increasing analgesic requirement may precede the classic symptoms by greater than seven hours. It is therefore important to completely and fully evaluate any pediatric patient that is requiring increasing amounts of medication for pain and especially if increased agitation and anxiety are present. A patient whose pain was controlled on oral medicine and now requires increasing doses or intravenous narcotics should be immediately examined and compressive and constricting dressings, splints and casts should be removed to allow for the swelling and examination of the limb.

In summary, the frightened pediatric patient is rarely the ideal patient to evaluate for increased compartment pressure and the development of compartment syndrome. The astute clinical team is trained to identify which patients are at risk and to monitor for increased pain and paresthesias and the three "A's": increasing Anxiety, Agitation and Analgesic requirement.

In this case the boy was felt to have an evolving compartment syndrome and he was taken urgently to the operating room. We chose to confirm compartment pressures once under anesthesia; however, his clinical exam convinced us of the need for surgery. In the OR, compartment measurements demonstrated pressures in excess of 30 mm Hg of mercury in 3 of the 4 leg compartments. Decompressive fasciotomy was performed and his muscle remained viable.

CASE EXAMPLE #1, *continued*



Teaching Points

1. **Compartment syndrome can follow minor trauma**
2. **Compartment syndrome is a clinical diagnosis**
3. **Be aware that the Five P's may be too late and the Three A's (Increased agitation, anxiety and analgesic requirement) may be the first clue in children.**

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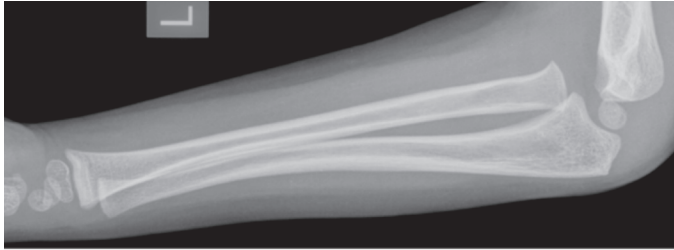
Top Five Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room

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CASE EXAMPLE #2

A 4 year old boy fell on his left arm and had pain and swelling in his arm. He was seen in an urgent care and forearm radiographs demonstrated no obvious fracture. He was referred to our clinic one week later where new radiographs were obtained.

- What is your diagnosis?
- Is this a congenital condition?
- What is your management strategy?

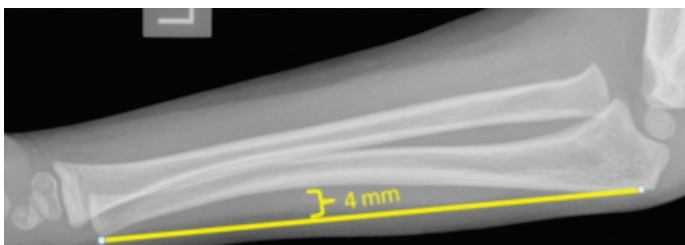


Discussion

This boy has suffered a Monteggia injury to the left arm. He has plastic deformation of his ulna with anterior displacement of his radial head. This likely represents an acute injury and is not a congenital dislocation of his radial head. Congenital dislocations are usually posterior and lateral and may be bilateral.

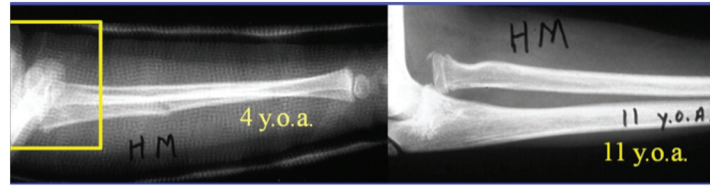


The presence of bilaterality certainly suggests the diagnosis of congenital displacement; long standing dislocations will have a radius that is relatively longer than the ulna with convex radial head and with hypoplasia of the capitellum. Congenital radial head dislocations can occur in an anterior direction but the ulna is usually straight. A line drawn along the ulna border should be straight and not deviate more than 1 to 2 millimeters. In this case there has been an obvious ulna injury due to a bend and deviation of greater than 4 millimeters.



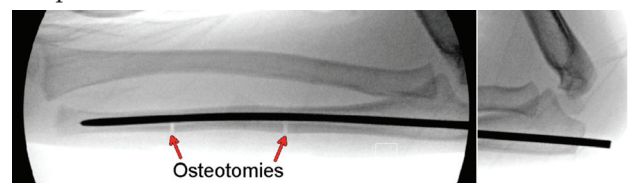
The most important factor in the successful management of the Monteggia injury is timely recognition. In no other injury is the mantra "Examine and radiograph the joints above and below an injury" more apropos.

CASE EXAMPLE #2, continued



The radiograph above shows a 4 year old girl who suffered a Monteggia injury that was errantly diagnosed as an isolated ulna fracture; misdiagnosis for 7 years was a result of failure to obtain good quality radiographs of the elbow in both the AP and Lateral projections. In all radiographic projections of the elbow the proximal radius should line up with capitellum. Unfortunately the girl never had appropriate radiographs after her initial fracture. As a result her late diagnosis led to an annular ligament reconstruction from triceps fascia and prolonged therapy. Radiographically she had a good result from her reconstruction but she had some diminished forearm rotation which was permanent. As with many chronic Monteggia lesions; the treating surgeon and hospital faced legal action.

In the index case this child has a plastic deformation of his ulna and likely disruption of the annular ligament. Initial surgical strategy involves realignment of the ulna with stabilization; if the proximal radius is stable in the elbow no further treatment is needed. Should the radius remain dislocated after straightening the ulna; a lateral elbow approach and annular ligament repair/reconstruction is needed. In this case, closed osteoclasis of the ulna was tried and was unsuccessful; thus bi-level ulna osteotomy with intramedullary fixation was required. Once the ulna was realigned, the proximal radius was stable and did not require repair.



Teaching Points

1. Monteggia fractures are commonly seen and commonly missed fractures that can result in significant patient morbidity and have medico-legal implications.
2. Initial management involves reduction and stabilization of the ulna followed by assessment of radial head location and stability.
3. Most POSNA members favor operative stabilization of the ulna in all but the most stable fractures.
4. Chronic Monteggia lesions are challenging to reconstruct and are indicated in children younger than 9 when injuries occurred less than 3 years ago.

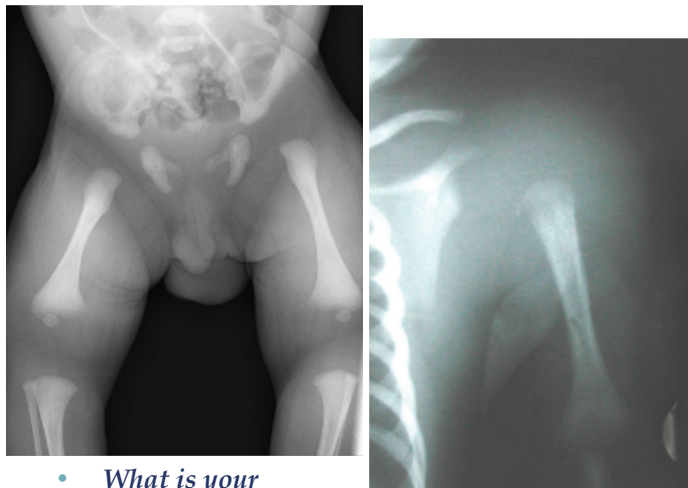
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Top Five Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room

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CASE EXAMPLE #3

A 10 day old baby presents to the emergency room with a history of irritability, discomfort with diaper changes and a rash on his buttock and thighs. Physical examination demonstrates a swollen shoulder, a temperature of 37.3, and pain with range of motion of his shoulder, both knees and hips. Blood work is performed and he has a WBC of 9.2, ESR of 24 and a CRP of 3.5 (normal < 1.0). A radiograph of his shoulder and pelvis is obtained.

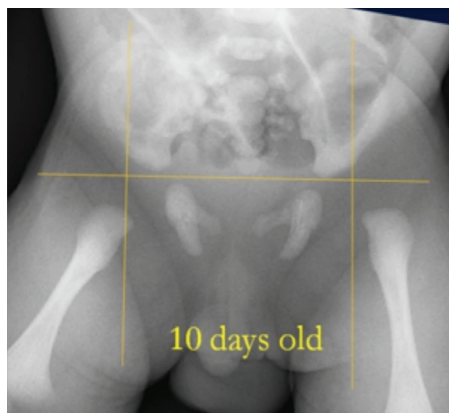


- What is your differential diagnosis?
- What is the next step in the evaluation?

Discussion

The differential diagnosis for this child must include processes that can affect multiple areas of the body. These include metabolic bone disease, neoplasia and most likely whether he is the victim of non-accidental trauma or has the diagnosis of infection. His shoulder radiograph demonstrates lateral displacement with some bony changes of the metaphysis. By drawing Hilgenreiner and Perkins lines on the pelvis radiograph, it becomes apparent that his left hip demonstrates lateral displacement. Three things that could cause this radiographic appearance include congenital dislocation of the hip, septic hip dislocation and transphyseal fracture of the proximal femur. The next best step in this child's care is to obtain an ultrasound.

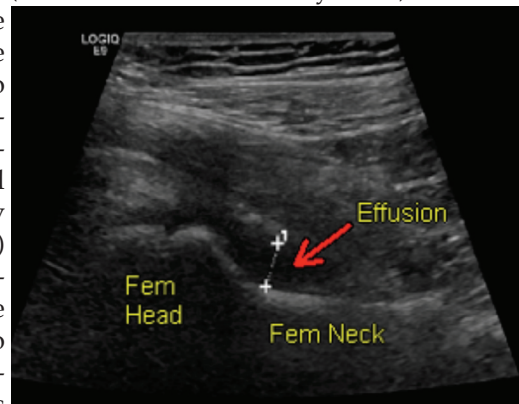
Ultrasound can differentiate between fracture and whether the hip is dislocated...if fluid is present it can be



CASE EXAMPLE #3, continued

aspirated for cell count and culture. In this child, the ultrasound demonstrated continuity of the femoral head and neck thus ruling out fracture. Most important, the ultrasound demonstrated a large effusion that when aspirated demonstrated >75K PMN's with gram positive cocci.

Neonates (with deficient immune systems) are challenging to care for as they are less likely to mount systemic (elevated WBC and inflammatory parameters) signs of infection. They are also prone to multifocal infections thus



it's important to realize that multiple sites of infection could be present. It is wise to examine all of the limbs carefully for signs of swelling, and one should consider ultrasounds of both hips and shoulders as their proximal location can mask intra-articular swelling and tenderness seen in neonatal multifocal osteoarticular infections.

Our index patient was treated with hip and shoulder irrigation and debridement and 6 weeks of antibiotic therapy. Failing to diagnosis and treat septic arthritis in an infant can have disastrous consequences for the function of that joint



as well as the growth potential of the limb. For instance this 4 year old had multifocal neonatal osteomyelitis that was missed and she now has significant deformity; hip and knee instability and growth retardation. This will likely demand Syme amputation, knee fusion and prosthetic fitting; similar to a child with Proximal Femoral Focal Dysplasia.

Teaching Points

1. Neonatal infections may be difficult to diagnose and may have multiple locations.
2. A high index of suspicion is needed to find all sources of infection; ultrasound can help find and facilitate tapping the sites of infection.
3. Surgical and medical therapies are needed to prevent crippling long term effects.

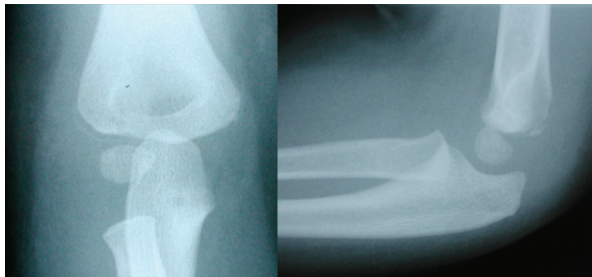
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Top Five Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room

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CASE EXAMPLE #4

A three year old girl fell on an outstretched hand and injured her right arm and elbow. She was seen in the emergency room where the following radiographs were obtained.



- *What is your diagnosis?*
- *What is your treatment plan?*
- *What could be the implication of this injury if it was missed?*

Discussion

This child has a lateral condyle fracture that is displaced around 2 millimeters. Lateral condyle fractures are the second most common pediatric elbow fracture and comprise 10 to 20 percent of the total number of pediatric elbow fractures. Most pediatric orthopaedists recommend treatment based upon displacement. If displaced more than 2 millimeters, it is usually suggested to obtain reduction (open or closed) and stabilization (pins or screws). In this particular patient, it appears that the fracture is displaced just two millimeters. An internal oblique radiograph should also be obtained, as this view highlights the fracture best. This child should either be operatively stabilized or be placed in a cast with every week follow-up with 3 views of the distal humerus out of cast. Casting for 6 weeks may be required for the fragment to heal. However, if during the treatment the fragment does not heal or it displaces further, operative reduction and stabilization should be obtained.

This child was placed in a sling with no further follow-up instructions given. She presented to our clinic at 9 years of age with complaints of elbow pain and instability and she did not like the appearance of her elbow and arm. She did not have



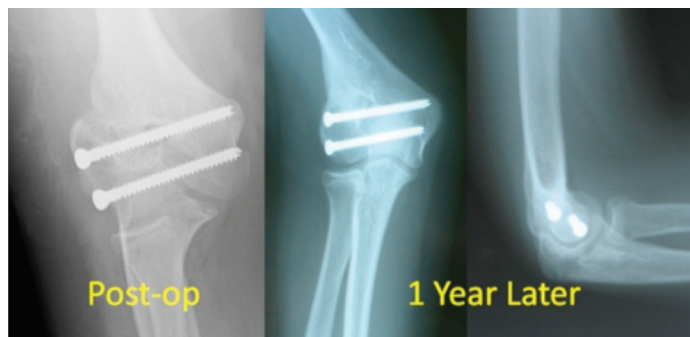
any symptoms of tardy ulna neuritis. Her diagnosis is nonunion of the lateral condyle fracture.

Late presentation (> 1 year) of lateral condyle fracture non-

CASE EXAMPLE #4, continued

union is a result of less than optimal initial treatment of lateral condyle fractures. In comparison to severe widely displaced fractures with intraarticular incongruity; minimally displaced fractures are more likely to have non-optimal treatment and resultant non-union as a complication [13 percent incidence of non-union in benignly appearing fractures]. Lateral condyle fractures are susceptible to progressive displacement and non-union for several reasons. The lateral fragment is prone to further displacement due to pull of the common wrist and finger extensor origin. Furthermore, bone healing may be delayed because of poor blood supply and the relatively small amount of cortical bone available for healing and perhaps poor organization of fracture hematoma from synovial fluid.

Symptoms of non-union include excessive valgus of the elbow that, with time, may lead to ulna nerve palsy. Mechanical symptoms may predominate in the earlier years following a non-union and these include elbow instability, pain and apprehension; functional elbow motion is usually well maintained. Surgical methods to treat non-union include isolated percutaneous screw placement across the non-union site if the un-united fragment is not widely displaced or open reduction with removal of fibrous non-union, bone grafting and osteosynthesis with screws (as they provide compression and are easy to place in the metaphyseal fragment of non-unions). In order to prevent avascular necrosis, care is taken to avoid associated soft tissue damage, especially posterior, while removing enough of the fibrous non-union to promote bony fusion. Our patient underwent osteosynthesis with screw fixation and with bone graft from the proximal ulna.



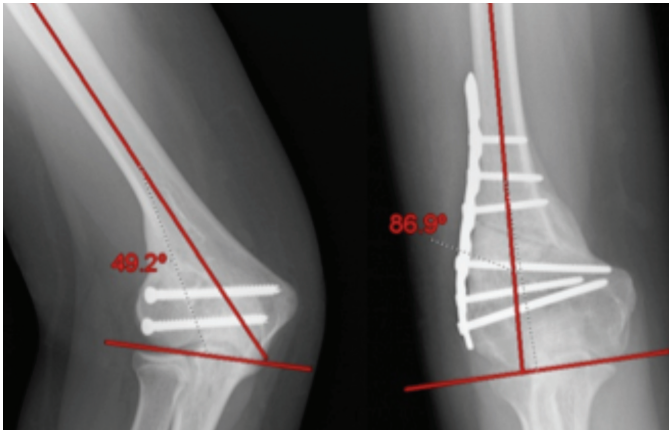
This case is illustrative of issues encountered in management that resulted in non-union. Primarily the presenting radiographs were not completely obtained (no internal oblique view) and the patient was not followed for further displacement. Surgical repair of the non-union was successful and providing fusion between the metaphyseal fragment and the distal humerus. The child's pain was resolved after stable union but she still did not like her appearance so a corrective osteotomy was needed.

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Top Five Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room

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CASE EXAMPLE #4, *continued*



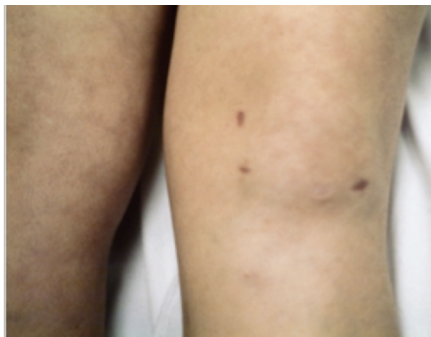
Teaching Points

1. Lateral condyle fractures can be difficult to diagnose and, if underappreciated, can lead to non-union.
2. Surgical treatment of neglected fractures and non-union can be extensive, and it's clearly much better to treat these fractures appropriately at presentation.

CASE EXAMPLE #5

A 13 year old boy has complaints of knee pain for at least 10 months. He has been evaluated by his pediatrician and a sports medicine physician. A diagnosis of ITB syndrome was made and treatment of physical therapy, taping and iontophoresis failed to improve his symptoms. Diagnostic arthroscopy failed to find any intra-articular pathology.

He was playing basketball with some friends and had acute onset of hip pain and worsening knee pain. Physical examination demonstrated postoperative changes of his knee without effusion, an external rotation deformity was present in his hip, severe pain with hip range of motion, and he was unable to ambulate. Knee radiographs were negative and hip radiographs were obtained and are presented here.

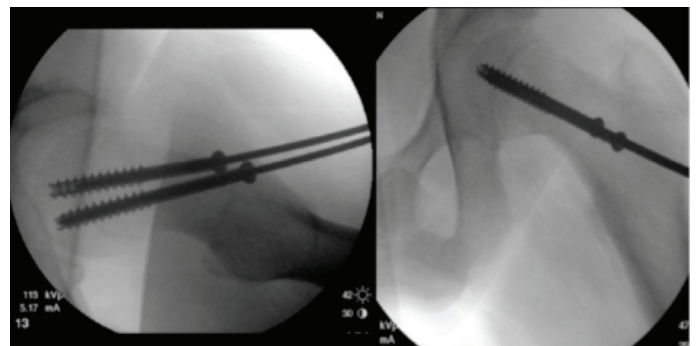


CASE EXAMPLE #5, *continued*



- What is your diagnosis?
- What is your treatment plan?

Discussion



This thirteen year old boy had a Stable (he could ambulate) slipped capital femoral epiphysis (SCFE) for several months that was not appropriately diagnosed and he underwent a series of treatments and procedures for his knee pain which was actually referred pain from his hip. During his recent basketball game he suffered an acute slippage. Because he was unable to walk this is considered an Unstable SCFE. The important difference is that patients with Unstable SCFE have a higher rate of avascular necrosis that has been reported in up to 40% of patients. Treatment consisted of emergent gentle reduction and pinning and capsulotomy. A post-operative CT scan confirmed reduction and appropriate pin placement. After 6 weeks of non-weight bearing he was allowed to resume his normal activities. His family was counseled that contralateral SCFE that requires pinning can occur in up to 20% of patients; thus repeat symptoms in his other knee or hip should generate a rapid referral.

6 months later he had worsening right hip pain; hip radiographs were obtained that demonstrated avascular necrosis of his femoral head. CT scan was obtained that identified the location of his necrosis and a redirection osteotomy was performed that improved his symptoms and

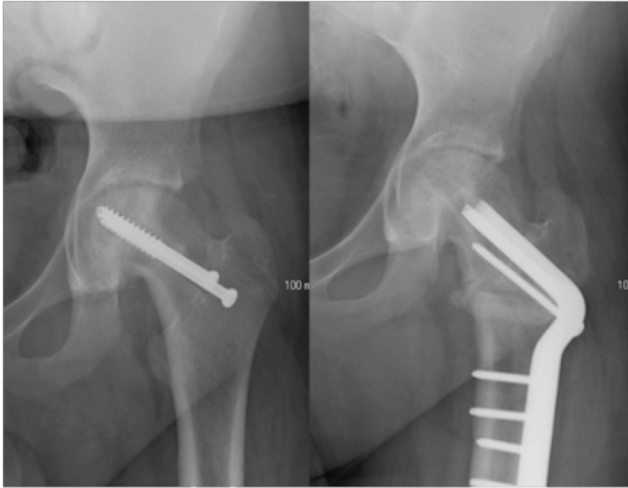
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Top Five Pediatric Orthopaedic Conditions to Diagnose in the Emergency Room

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CASE EXAMPLE #5, *continued*

unloaded the necrotic area of bone into a more contained position within his acetabulum.



CASE EXAMPLE #5, *continued*

Teaching Points

1. SCFE can present with knee pain and not hip or groin pain.
2. Any adolescent with ill-defined knee pain should have an examination of their hips documenting symmetric hip internal rotation. Any questions should illicit an AP and Frog pelvis radiograph to compare for subtle findings of an early slip.
3. Missing a Stable SCFE can lead to an Unstable SCFE with attendant increased risk of AVN.

Pediatric Orthopaedic Profile: Ellen Raney, MD

By: Susan Scherl, MD, University of Nebraska

In this edition of the POSNA Resident Review, the Editorial Board has the privilege of profiling Dr. Ellen Raney MD. In this piece, Dr. Raney will present a feminine perspective of a career in pediatric orthopaedics. As a widely published academic physician, she is also a leader in pediatric orthopaedics at the local and national level. Furthermore, her long history in the Shrine System allows her to reflect and prognosticate the role of these hospitals in providing care for children with orthopaedic disorders.

Ellen was born in San Antonio, Texas, at Brook Army Hospital. After leaving the Armed Services, Ellen's father was a general practitioner in Montana. He later went on to become an orthopaedic surgeon. When Ellen was in medical school, her mother went back to school as well, and became a nurse. She later worked with Ellen's father. Ellen has a brother, Laurence, who is the Director of the Division of Emergency Medicine at the Medical University of South Carolina.

Currently Dr. Raney is Chief of Staff of the Shriners Hospital for Children, Honolulu, Hawaii, and Clinical Professor in the Departments of Surgery and Pediatrics at the University of Hawaii. Ellen earned a Bachelor of Science in Biology with Honors from Newcomb College of Tulane University in New Orleans, and went to medical school and residency at Tulane as well. She did her pediatric orthopaedic fellowship at the Shriners Hospital for Children, Tampa, Florida under John Ogden, MD. After her fellowship, Dr. Raney stayed on staff at Shriners Tampa for six years. Since 1998, she has been on staff at Shriners Honolulu, becoming Chief of Staff in 2001.

Ellen has written more than 30 articles that have been published in peer reviewed journals, and has lectured and presented at dozens of international and national meetings. Her expertise spans the spectrum of the pediatric orthopaedic experience, including trauma, spine, limb deformity and tumor. She has also received several



Ellen Raney hiking in Hawaii with her dogs.

research grants. She has served on committees and in leadership positions in numerous national orthopaedic organizations, including as Member-at-Large on the POSNA and Western Orthopaedic Association Boards. She has been President of the Ruth Jackson Orthopaedic Society, the Hawaii Orthopaedic Association, and the Shrine Surgeons Association, and

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Pediatric Orthopaedic Profile: Ellen Raney, MD, *continued*

currently serves on the AAOS Diversity Committee.

Recently, we asked Ellen some questions about the Shriners hospital system, the challenges of tertiary level pediatric orthopaedics, living in Hawaii, and her thoughts on being a female pediatric orthopaedist.....

What got you interested in orthopaedics in general, and pediatric orthopaedics in particular?

Like so many orthopaedists my interest began with my own orthopaedic problem, Legg-Calve-Perthes (LCP) disease. My father was, at the time, a general practitioner who subsequently did an orthopaedic residency. Perhaps my LCP inspired us both. My interest in pediatric orthopaedics was spurred by the patients who don't let anything stop them. Imagine my surprise at being soundly beaten in video games by a child with no hands who worked the controls with her feet. I am constantly challenged by the wide variety of conditions I see in my practice. The variety keeps me interested and the children keep me inspired.

Who have been some of your mentors in pediatric orthopaedics?

I can't say enough about the importance of mentors. I would advise any resident to reach out and talk to attending faculty or practicing physicians. I have been fortunate to have had several mentors. Laura Tosi and Richard Haynes have been especially helpful over the years.

Describe the Shriners Hospital system, and what it's like to work at a Shriners Hospital.

The Shriners' Hospitals for Children are a system of 22 hospitals across North America. Most of the hospitals focus on orthopaedic care, 2 include spinal cord injury units and 3 are exclusively burn hospitals. The system is supported by the Shriners fraternity. Care is provided without cost to the

families. It has been wonderful over the years to focus on what the children need rather than what their insurance will cover.

The Shriners Hospitals typically see a lot of children with tertiary and quaternary orthopaedic problems. Can you talk a little bit about the challenges and rewards of treating patients with neuromuscular disorders, and those with complicated spinal deformity?

Working with children with neuromuscular disorders can be profoundly rewarding. We have the opportunity to unlock a child's potential. Our interventions often enable children to walk, transfer, or improve upper extremity function which can allow them to earn a living or care for themselves. Caring for the child with a complicated spinal deformity is extremely challenging. The challenges include not only technically demanding surgery but also an involved decision making process with the family and other medical specialists.

My interest in pediatric orthopaedics was spurred by the patients who don't let anything stop them. Imagine my surprise at being soundly beaten in video games by a child with no hands who worked the controls with her feet.

Your hospital does a lot of outreach work in the South Pacific. What is that like, and what kinds of disorders do you encounter in those patients?

Our team will often fly for many hours to exotic sounding islands with horrifically underserved children. We provide care in many developing areas of the South Pacific where we see complex deformities resulting from untreated or undertreated conditions

such as septic arthritis, osteomyelitis, fractures and clubfeet. I enjoy the reality check of working in conditions with less comfort than we have become accustomed to.

Any thoughts on being a female orthopaedist?

Being a female orthopaedist is much less difficult now than it was. I see myself as being in the second wave of female orthopaedists. The first group which included Ruth Jackson and Leibe Diamond were the ground breakers. My generation had a few female residents who had gone before us but no female faculty. Now we have female faculty and even a few program directors but as of yet, no female orthopaedic department chairs. Practicing orthopaedists are 2% women; yet residents in training are now 10% women. As much as I enjoy working with my male colleagues it is good to see women having the opportunity to participate in our specialty.

What's it like living in Hawaii, and what do you do for fun?

Hawaii is a gorgeous place to live with perfect weather everyday. I love ocean

kayaking, scuba diving and hiking in the mountains with my dogs. The one down side is that plane rides to the mainland can get long especially for short meetings.

What's the best piece of advice you've gotten in the course of your career, and what advice do you give residents?

Find a practice area that inspires you to enjoy going to work everyday.

Challenging Cases: What Would You Do?

CASE #1

A 3 year old adopted boy has a history of an infection as an infant with the radiograph shown in Figure 1. He has a shortened femur and his adopted parents are interested in limb lengthening in the future. What would be the least likely complication of a proposed femoral lengthening:

- A. Knee stiffness
- B. Hip subluxation
- C. Pin tract infection
- D. Foot drop
- E. Malalignment during lengthening

Your Response: ____

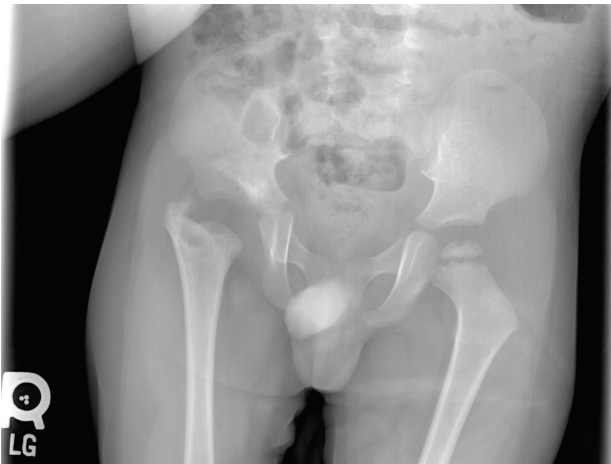


Figure 1

Discussion

The AP Pelvis show post infection changes in the proximal femur with complete destruction of the proximal femoral physis. Hip subluxation is a significant risk without measures to stabilize the destroyed proximal femur within the acetabulum. Pin tract infections are common with external fixation devices and knee stiffness must be carefully guarded against and treated with aggressive physical therapy. Fracture through the regenerate bone can occur if the fixator is removed prior to bone maturation. Foot drop would not likely occur during femoral lengthening. It can be seen acutely in tibial lengthening due to pin placement or from compartment syndrome associated with a proximal tibial corticotomy or in a delayed fashion during lengthening from peroneal nerve palsy.

The correct answer is D.

References

Herzenberg JE, Scheufele LL, Paley D, et al. Knee range of motion in isolated femoral lengthening. *Clin Orthop* 1994;301:49-54.
Ilizarov GA. The tension-stress effect on the genesis and growth of tissues - PartII: The influence of the rate and frequency of distraction. *Clin Orthop* 1989;239:263-285.

CASE #2

A 4 year old boy presents with the obvious tibial bowing. Radiographs of the left tibia are present (Figure 2). History and physical examination are likely to reveal what other features?

- A. Positive Lachman's test
- B. Café-au lait spots and axillary freckling
- C. Limb Length discrepancy.
- D. History of a tibia fracture at the apex of deformity
- E. Positional clubfoot.

Your Response: ____

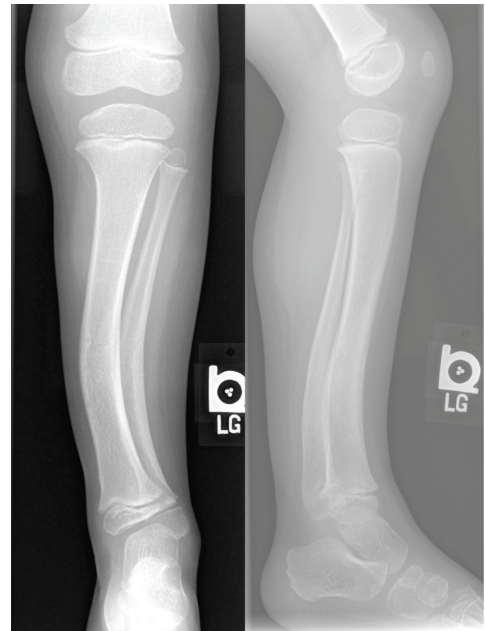


Figure 2

Discussion

The AP and lateral radiographs show posteromedial bowing of the tibia. This deformity is typically accompanied by a calcaneovalgus foot deformity at birth which will usually resolve and may occasionally be treated with stretching. Bowing may persist and require a tibial osteotomy. Normal healing of the tibia can be expected. A leg length inequality may result and may require epiphysiodesis or rarely tibial lengthening. Anterolateral tibial bowing with progressive psuedoarthrosis can be seen in patients with neurofibromatosis.

The correct answer is C.

References

Hofmann A, Wenger DR. Posteromedial bowing of the tibia: Progression of discrepancy in leg lengths. *J Bone Joint Surg* 1981;63A:384.
Pappas AM. Congenital posteromedial bowing of the tibia and fibula. *J Pediatr Orthop* 1984;4:525.

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Challenging Cases: What Would You Do?

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CASE #3

A healthy 15 month old presents to the ER refusing to walk after a fall. X-rays are shown in Figure 3. The genetic defect commonly seen in association with this disorder is:

- A. Mutation in the genes that codify for type I procollagen
- B. Somatic mutation in the GNAS (guanine nucleotide-binding protein) gene
- C. Mutation in the ACVR1 (activin A receptor, type I) gene
- D. Defect in the NF1 gene on chromosome 17
- E. Mutation in the CLCN7 (chloride channel 7) gene

Your Response: ____



Figure 3

Discussion

The radiographs demonstrate an anterolateral bow of the tibia with a non-displaced fracture through the sclerotic segment at the apex of the bow. This is frequently the initial presentation of congenital pseudoarthrosis of the tibia. This is associated with neurofibromatosis (NF-1) in over 50% of cases. The genetic defect for NF-1 is located on chromosome 17 and codes for the protein neurofibromin. Other findings include café-au-lait skin lesions, cutaneous neurofibromas, Lisch nodules, optic gliomas, and scoliosis.

Osteogenesis imperfecta is associated with mutations in the genes that code for type 1 procollagen. Somatic mutations in the GNAS gene are responsible for the findings seen in McCune Albright syndrome. The clinical findings with this disorder include polyostotic fibrous dysplasia, skin pigmentation changes and precocious puberty. Mutations in the ACVR1 gene are seen in conjunction with the fibrodysplasia ossificans progressiva. The most common gene defect in the autosomal dominant form of osteopetrosis is a mutation in the CLCN7 (chloride channel 7) gene.

The correct answer is D.

References

<http://www.posna.org/education/StudyGuide/congenitalPseudoarthrosisOfTheTibia.asp>
<http://ghr.nlm.nih.gov/>

CASE #4

Congenital short femur is associated with the following except:

- A. Varus deformity of the knee and patella subluxation
- B. Anterolateral femoral bow
- C. Fibular hemimelia
- D. Anterior cruciate deficiency
- E. Femoral Retroversion

Your Response: ____

Discussion

Congenital short femur is associated with other abnormalities apart from isolated shortening of the bone. These include distal femoral valgus due to hypoplasia of the lateral femoral condyle, abnormal soft tissues, knee instability due to absence or hypoplasia of the anterior cruciate ligament, anterolateral bowing of the femur and femoral retroversion. The assessment of knee stability is important prior to femoral lengthening due to the risk of knee dislocation. Fibular hemimelia is seen in about 50% of cases and can be associated with further shortening, ankle valgus, ball and socket ankle, tarsal coalition and absence of the lateral rays of the foot.

The correct answer is A.

References

Sanpera I Jr, Fixsen JA, Sparks LT, Hill RA. Knee in congenital short femur. *J Pediatr Orthop B* 1995;4:159–63.
Paley D. Lengthening reconstruction surgery for congenital femoral deficiency. In: Herring JA, Birch JG, eds. *The child with a limb deficiency*. Rosemont, Illinois: American Academy of Orthopaedic Surgeons, 1998:113–32.

CASE #5

An 8 year old boy born without the 5th ray of the left foot presents with a limb-length discrepancy and deformity of the left leg. Alignment radiograph is presented in Figure 5. When counseling the parents on the treatment options in this patient, which of the following should be considered a contraindication for limb reconstruction and therefore an indication for amputation and prosthetic fitting?

- A. Knee instability
- B. The projected discrepancy of 20 centimeters
- C. Instability of the ankle joint
- D. Complete fibular absence
- E. The presence of tarsal coalition

Your Response: ____

Challenging Cases: What Would You Do?

continued from previous page

CASE #5, *continued*

Figure 5



Discussion

The most common congenital deficiency of long bones is fibular hemimelia, typically classified according to the appearance of the fibula (short, very short or absent). Common associated findings include cruciate hypoplasia, femoral hypoplasia and coxa vara as well as tarsal coalitions and absent rays on the lateral side of the foot. Lengthening is generally indicated in less severe cases with more than 3 toes, although intermediate term outcomes have been shown to be comparable for both lengthening as well as amputation. The most important factor for considering a lengthening procedure is the amount required with projected discrepancies of more than 20 centimeters at maturity (30% compared to the other side) considered more appropriate for limb ablation and prosthetic fitting.

The correct answer is B.

References

McCarthy JJ, Glancy GL, Chang FM, Eilert RE; Fibular Hemimelia: Comparison of Outcome Measurements After Amputation and Lengthening; *J. Bone Joint Surg. Am.*, Dec 2000; 82: 1732.
Walker JL, Knapp D, Minter C, Boakes JL, Salazar, JC, Sanders JO, Lubicky JP, Drvaric DM, Davids JR; Adult Outcomes Following Amputation or Lengthening for Fibular Deficiency; *J. Bone Joint Surg. Am.*, Apr 2009; 91: 797 - 804.

CASE #6

A 7 year old girl presents because of deformity of the lower limbs and limited range of motion in the knees, both feet are supinated but painless. Alignment and lateral leg radiographs are presented below (Figure 6). In comparison to fibular hemimelia, patients with tibial hemimelia:

- A. Always have normal hips
- B. May have a positive family history.
- C. Are more common.
- D. Always have stable knees
- E. Usually have spina bifida

Your Response: _____

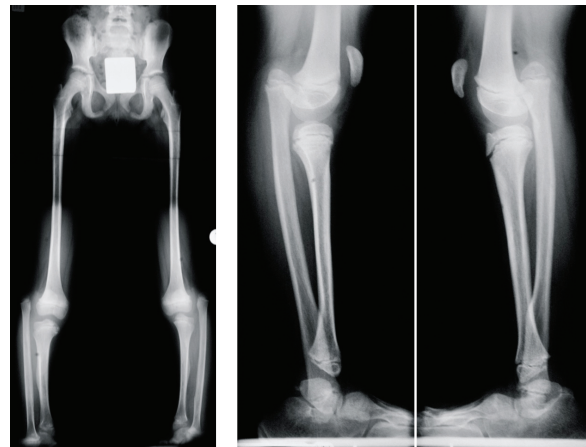


Figure 6a,b and c

Discussion

This is a very rare condition known as tibial hemimelia and is much less common than fibular hemimelia and has an incidence estimated at 1 in 1 million, there is a hereditary component and clinically it is classified according to the appearance of the tibia as being completely absent, having a rudimentary proximal tibia, a rudimentary distal tibia or congenital diastasis of the ankle. The condition is bilateral in approximately 30% of cases and most have severe flexion contractures and gross instability of the knee. Numerous associated findings have been reported including DDH, foot deformity and lobster hand. Spina bifida has not been specifically associated with tibial hemimelia. Treatment should be aimed at optimizing function and quality of life.

The correct answer is B.

References

Weber M, New classification and score for tibial hemimelia; *J Child Orthop.* 2008 Jun;2(3):169-75. Epub 2008 Mar 6.
Schoenecker PL, Capelli AM, Millar EA, Sheen MR, Haher T, Aiona MD, Meyer LC; Congenital longitudinal deficiency of the tibia; *J. Bone Joint Surg. Am.*, Feb 1989; 71: 278 - 287.

Continued on page 12

Challenging Cases: What Would You Do?

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CASE #7

A 4 year old healthy boy who is the product of normal vertex pregnancy and delivery presents to your office with a chief complaint of bilateral in-toeing. On prone positioning, he has a thigh foot axis of 10 degrees and bilateral internal rotation of femurs of 80 degrees and external rotation of 20 degrees. Which of the following is the next step in the management of this patient?

- A. AP Pelvis radiograph to rule out acetabular dysplasia
- B. Educate the family that the natural history is favorable and re-assess as needed
- C. Show the family proper sitting posture in order to avoid W-sitting.
- D. Femoral derotational osteotomies
- E. Twister cables for internal tibial torsion

Your Response: ____

Discussion

This child has a rotational profile consistent with excessive femoral anteversion. Asymmetric rotation is more concerning for hip dysplasia in this child without clinical risk factors for DDH. The natural history is that children under the age of 1 year have almost 40 degrees of anteversion, which decreases to 30 degrees by the age of 2 years. It then decreases by about 1-2 degrees/year until the age of 10 years at which time it averages 24 degrees. Careful education of the parents is important as in-toeing is common and is usually self-correcting. It is not improved by exercises, braces, or sitting posture. Surgery should be reserved in rare cases in which there is no improvement by the age of 10 years.

The correct answer is B.

References

Shands Jr A, Steele M: Torsion of the femur. *J Bone Joint Surg Am* 1958; 40:803

Staheli L: Torsion: Treatment indications. *Clin Orthop Relat Res* 1989; 247:61.

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CASE #8

The most common cause of in-toeing in the pre-school age-group is:

- A. Internal Tibial Torsion
- B. Metatarsus Adductus
- C. Developmental Dysplasia of the Hip
- D. Excessive Femoral Anteversion
- E. Clubfoot

Your Response: ____

Discussion

Internal tibial torsion is the most common cause of in-toeing up to 3-4 years of age. In a normal fetus, the foot is internally rotated, and lateral rotation occurs with increasing age. The medial malleolus lies posterior to the lateral malleolus in the fetus, is level with the lateral malleolus at birth, and lies anterior to the lateral malleolus at walking age. The amount of lateral tibial torsion increases from about 5 degrees at birth to an average of 15 degrees at maturity. A medial thigh-foot angle of 30 degrees falls within 2 SD of the mean in the age group of infants and toddlers. An understanding of this normal range and the natural history of tibial torsion is important to avoid unnecessary treatment of a condition that is benign and self-resolving.

The correct answer is A.

References

Tachdjian's Pediatric Orthopaedics from the Texas Scottish Rite Hospital for Children (4th edition); John Anthony Herring, Chapter 22, 2008.

Staheli LT: Rotational problems in children. *J Bone Joint Surg Am* 1993; 75:939.

Staheli LT, Corbett M, Wyss C, et al: Lower-extremity rotational problems in children. Normal values to guide management. *J Bone Joint Surg Am* 1985; 67:39.

CASE #9

A seven year old child presents to the office 3 years following treatment of a non-displaced metaphyseal tibia fracture treated in a long leg cast for 4 weeks (Figure 9). The deformity is painful and the family thinks it might be getting worse. The next step in treatment should be:

- A. Proximal tibial medial guided growth
- B. MRI scan to assess for growth arrest
- C. Proximal tibial osteotomy
- D. Observation
- E. Medial unloader brace

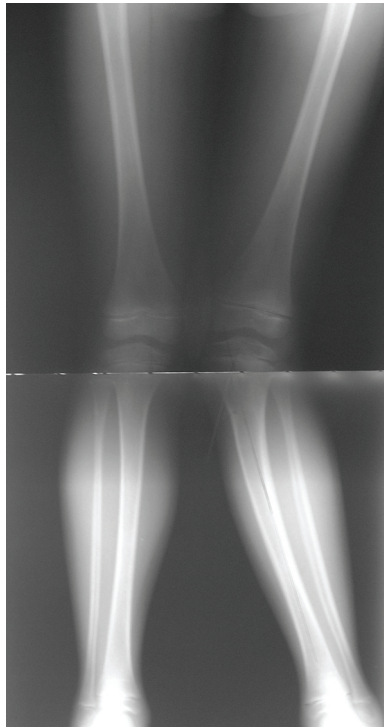
Your Response: ____

Challenging Cases: What Would You Do?

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CASE #9, continued

Figure 9



Discussion

Post traumatic tibia valgus may result from regional growth acceleration after a proximal tibial fracture despite healing in anatomic alignment. Parents need to be informed of this at the time of the initial treatment. Described by Cozen, this phenomenon usually resolves spontaneously. The initial treatment should be observation. For cases that do not respond, are getting worse or are symptomatic; treatment should consist of guided growth via medial growth plate hemi-epiphysiodesis with a removable device. A permanent hemi-epiphysiodesis would result in a significant discrepancy and overcorrection. Osteotomy will straighten the leg but may result in recurrence of the phenomenon.

The correct answer is A.

References

Cozen L. Knock-knee deformity in children. Congenital and acquired. *Clin Orthop Relat Res.* 1990 Sep;(258):191-203.
Robert M, Khouri N, Carlloz H, Alain JL. Fractures of the proximal tibial metaphysis in children: review of a series of 25 cases. *J Pediatr Orthop.* 1987 Jul-Aug;7(4):444-9.

CASE #10

A 14 month old child is referred from his pediatrician for bowlegs. Birth and family history is unremarkable. The child is well nourished, is at the 50th percentile for height and weight and ambulates well for his age. The radiographs are below. The most appropriate initial treatment would be:

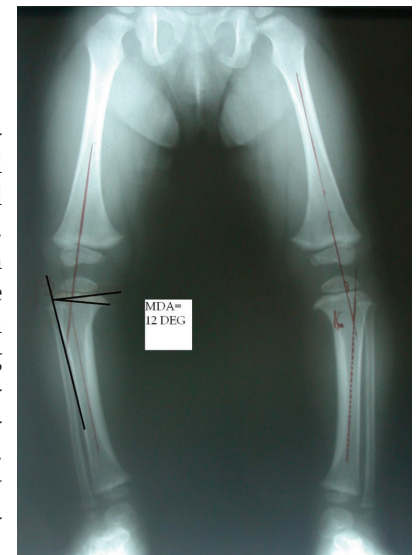
- A. Bilateral proximal tibial lateral stapling
- B. Repeat exam with radiographs in 10 months if not improved
- C. Referral for endocrine evaluation
- D. Proximal tibial osteotomy
- E. Valgus producing brace

Your Response: _____

Figure 10

Discussion

Most children presenting with bowed legs prior to age 2 will spontaneously correct. These patients with physiologic bowing are to be differentiated from other causes of bowing such as rickets (widened growth plates, metaphyseal "cupping"), bone dysplasia (usually less than the 25th percentile in height) and Blount's Disease. Infantile tibia vara or Blount's disease, results in tibial beaking, and the varus originates from the proximal tibia, not globally throughout the limb. The angle between the metaphysis and the diaphysis of the tibia can be measured for prognosis; patients with angles less than 9 degrees will improve without treatment. Patients with meta-diaphyseal angles from 9 - 16 degrees may worsen. In this patient, the appearance of the growth plates and the metaphyseal-diaphyseal angles support physiologic bowing; thus if the patient fails to improve, re-examination with or without radiographs is appropriate.



The correct answer is B.

References

Lavelle WF, Shovlin J, Drvaric DM. Reliability of the metaphyseal-diaphyseal angle in tibia vara as measured on digital images by pediatric orthopaedic surgeons. *J Pediatr Orthop.* 2008 Sep;28(6):695-8.

Cheema JI, Grissom LE, Harcke HT. Radiographic characteristics of lower-extremity bowing in children. *Radiographics.* 2003 Jul-Aug;23(4):871-80.

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Challenging Cases: What Would You Do?

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CASE #11

An 11 year old obese male presents with knee pain and a unilateral bowed leg on the right side. A radiograph is taken from hip to knee on the affected side and you are measuring the x-ray for alignment. Which of following areas are contributing to abnormal varus positioning?

- A. Knee joint and femoral shaft
- B. Distal femur, proximal tibia and ankle
- C. Distal femur and proximal tibia
- D. Tibia shaft and ankle
- E. Distal femur and ankle

Your Response: ____

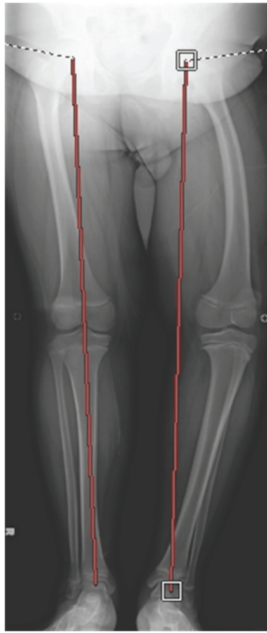


Figure 11

Discussion

Adolescent Blount's disease may manifest as both varus of the proximal tibia and the distal femur. One third of the total knee varus can come from distal femoral deformity. Treatment options should include correction of the tibial deformity and if femoral deformity is greater than 5 degrees...this should be corrected too. Deformity can be corrected with osteotomy or with guided growth provided the patient has at least 2 years of growth remaining.

The correct answer is C.

References

- Gordon JE, King DJ, Luhmann SJ, Dobbs MB, Schoenecker PL. Femoral deformity in tibia vara. *J Bone Joint Surg Am.* 2006 Feb;88(2):380-6. PubMed
- Gordon JE, Heidenreich FP, Carpenter CJ, Kelly-Hahn J, Schoenecker PL. Comprehensive treatment of late-onset tibia vara. *J Bone Joint Surg Am.* 2005 Jul;87(7):1561-70.
- Myers TG, Fishman MK, McCarthy JJ, Davidson RS, Gaughan J. Incidence of distal femoral and distal tibial deformities in infantile and adolescent Blount disease. *J Pediatr Orthop.* 2005 Mar-Apr;25(2):215-8.

CASE #12

A 7 year old sustains a distal femoral physal fracture that is reduced, pinned and eventually heals after 6 weeks in a cast. In your follow up radiographs of this patient, you notice that a portion of the physis is no longer visualized. You order a CT scan to delineate the problem and plan your surgical approach. Which of the following scenarios is true?

- A. A central boney bar making up 70% of the physis is appropriate for resection
- B. A peripheral boney bar making up 70% of the physis is appropriate for resection
- C. A central boney bar making up 10% of the physis with femoral valgus of 20 degrees is appropriate for resection
- D. A peripheral boney bar making up 20% of the physis with 5 degrees of valgus is appropriate for resection
- E. Children less than 8 years old can usually overcome a physal bar of less than 15%.

Your Response: ____

Discussion

The best prognosis for resection is a peripheral bar no greater than 50%. This occurs because the peripheral bars are easier to approach surgically and the size delineates how much physal damage occurred at the time of the accident. Several investigators consider bar excision to be unreliable, it is considered a good choice in small peripheral bars with a significant amount of growth remaining and with no concurrent deformity. Adjunctive osteotomy should be considered with bar excision if deformity is greater than 20 degrees.

The correct answer is D.

References

- Birch JG. Surgical technique of physal bar resection. *Instr Course Lect.* 1992;41:445-50.
- Kang HG, Yoon SJ, Kim JR. Resection of a physal bar under computer-assisted guidance. *J Bone Joint Surg Br.* 2010 Oct;92(10):1452-5.
- Khalid I, Khoshhal and Gerhard N. Kiefer Physal Bridge Resection. *J. Am. Acad. Ortho. Surg.*, January/February 2005; 13: 47 - 58.

Challenging Cases: What Would You Do?

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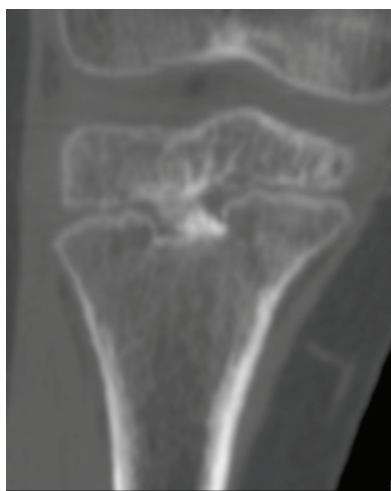
CASE #13

An 11-year-old girl is noted to have a 3-mm leg length difference six months following a proximal tibial fracture. A CT-scan is obtained (Figure 13). The preferred treatment is:

- A) Observation of such a small discrepancy.
- B) Completion of the physal arrest to prevent deformity.
- C) Physal bar resection with interposition grafting.
- D) Wait until skeletal maturity for definitive corrective osteotomy.
- E) Bilateral proximal tibia epiphysiodesis.

Your Response: _____

Figure 13



Discussion

The original fracture resulted in a central physal bar, or growth arrest. If untreated, this bar will likely cause progressive limb length discrepancy. The proximal tibial physis grows approximately 6 mm per year and girls reach skeletal maturity at approximately 14 years; as such, this patient projects to have a 2.1-cm leg length difference. Although such a difference can be treated with a shoe lift, this treatment may be cumbersome. Because the bar is central, it is not as amenable to physal bar resection with interposition of fat graft or other material in an attempt to restore normal growth. As such, bilateral proximal tibial epiphysiodesis could be offered to maintain equal leg lengths. Limb lengthening or contralateral limb shortening osteotomy are more invasive procedures and are usually reserved for projected differences of 5 cm or more.

The correct answer is E.

References

Kasser JR. Physal bar resections after growth arrest about the knee. *Clin Orthop Relat Res.* 1990 Jun;(225):68-74.
Stanitski DF. Limb-length inequality: assessment and treatment options. *J Am Acad Orthop Surg.* 1999 May-Jun;7(3):143-53.

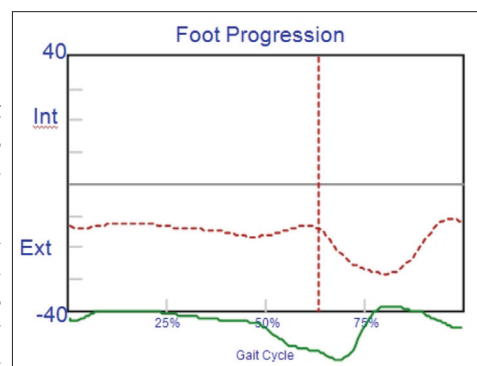
CASE #14

A thirteen-year-old female presents with right anterior knee pain. Physical exam reveals right hip internal/external rotation of 80/35 degrees versus 75/40 degrees on the left; right external thigh-foot angle 40 degrees versus 25 degrees on the left; and bilateral flexible pes planovalgus feet. Gait analysis is obtained (Figure 14). Physical therapy emphasizing hip rotator strength and patellofemoral mechanics has been unsuccessful in relieving her pain. The surgical treatment most likely to improve her symptoms is:

- A) Medial patella femoral ligament reconstruction
- B) Femoral internal rotation osteotomy
- C) Lateral retinacular release and medial plication
- D) Tibial internal rotation osteotomy
- E) Lateral column lengthening of the os calcis

Your Response: _____

Figure 14



Discussion

This patient demonstrates bilateral excessive anteversion, right external tibial torsion and pes planovalgus feet, commonly referred to as miserable malalignment syndrome. Anterior knee pain has been attributed to many factors including weakness of the core, hip and knee muscles; ligamentous laxity; patella maltracking due to a hypoplastic femoral condyle; muscle tightness associated with rapid growth; and, as in this case, long bone rotational abnormalities. Although physical therapy with or without the addition of arch supports can be successful in relieving symptoms in many patients, this patient's poor response is most likely due to her significant right external tibial torsion as evidenced by her foot progression on kinematic plot. Medial patella femoral ligament reconstruction or lateral retinacular release with medial plication surgeries are useful in patients with knee pain secondary to patella instability, maltracking, or excessive tilt but do not address rotational deformity.

The correct answer is D.

References

Bruce WD, Stevens PM. Surgical correction of miserable malalignment syndrome. *J Pediatr Orthop.* 2004 Jul-Aug; 24(4):392-6.
Boling MC, Padua DA, Marshall SW, Guskiewicz K, Pyne S, Beutler A. A prospective investigation of biomechanical risk factors for patellofemoral pain syndrome: the Joint Undertaking to Monitor and Prevent ACL Injury (JUMP-ACL) cohort. *Am J Sports Med.* 2009 Nov;37(11):2108-16.

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Challenging Cases: What Would You Do?

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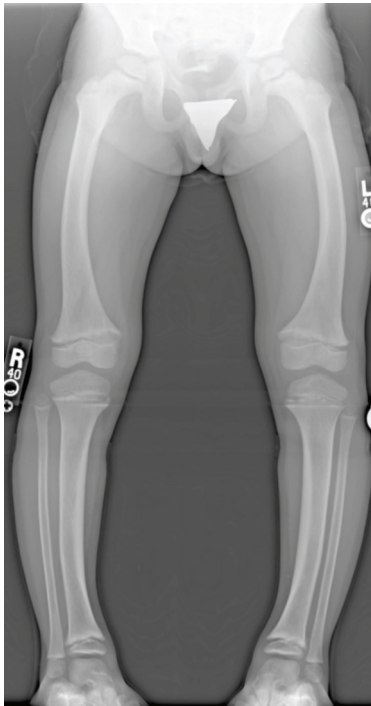
CASE #15

A 6 year old Caucasian boy with Genu Vara and Internal Tibial Torsion presents to clinic. A standing alignment film has been obtained (Figure 15). The most likely cause of his deformity is

- A. Hypophosphatemic Rickets
- B. Vitamin D Deficient Rickets
- C. Multiple Epiphyseal Dysplasia
- D. Infantile Blount's Disease
- E. Metaphyseal Chondrodysplasia

Your Response: ____

Figure 15



Discussion

Hypophosphatemic Rickets is usually X-linked dominant and results from failure of phosphate absorption in the kidney. This is characterized by decreased serum phosphate, but normal levels of calcium, PTH, and Vitamin D with increased alkaline phosphatase. Nutritional rickets or Vitamin D dependent rickets is extremely rare in the USA. Infantile Blount Disease or skeletal dysplasias would not result in the classic rachitic findings seen here with cupping of the physes, diffuse bony bowing and widening of the growth plates. Additionally, patients with multiple epiphyseal dysplasia usually have genu valgum and would have fragmentation and dysplasia of the epiphysis.

The correct answer is A.

References

AAOS Comprehensive Orthopaedic Review, Jay Lieberman, Ed, 2010, page 373.

CASE #16

A 14 year old girl presents with a 3.2 centimeter limb length discrepancy. (Figure 16). She would like her legs to be as equal as possible. The optimal method of operative treatment is:

- A. Femoral and tibial growth arrest
- B. Femoral lengthening
- C. Femoral shortening
- D. Acute femoral lengthening with structural bone graft
- E. Tibia shortening

Your Response: ____

Figure 16



Discussion

This child has a 3.2 cm discrepancy from discrepancy of both the tibia and the femur. Although this 14 year old child still has open growth plates her relative near-maturity would not make her a growth arrest candidate. Most girls have stopped growing by age 14. Distraction Osteogenesis is used for patients with discrepancy greater than 5 centimeters or who have concurrent deformity that requires an osteotomy anyway. Acute lengthening is rarely indicated today. Acute bone shortening is a good choice here and tibial shortening is difficult as fibula and tibia need shortening; femoral shortenings can be done percutaneously.

The correct answer is C.

References

Friend L, Widmann RF. Advances in management of limb length discrepancy and lower limb deformity. *Curr Opin Pediatr.* 2008 Feb;20(1):46-51.
Coppola C, Maffulli N. Limb shortening for the management of leg length discrepancy. *J R Coll Surg Edinb.* 1999 Feb;44(1):46-54

Orthopaedic Political Action Committee (PAC). What Is It and Why Do You Need to Play a Part: An Interview with Dr. Stuart Weinstein

By: Brian Smith, MD



Stuart L. Weinstein, MD

Stuart L. Weinstein, MD is currently the Ignacio Ponseti Chair and Professor of Orthopaedics at the University of Iowa.

Dr. Weinstein is one of the most well known, highly respected, and distinguished pediatric orthopaedic surgeons in the country. He has been president of the Pediatric Orthopaedic Society of North America, the American Orthopaedic Association; the American Board of Orthopaedic Surgery, and the American Academy of Orthopaedic Surgeons. He has published widely and extensively and two of his most notable contributions are the editorship of the pediatric orthopaedic textbook *Lovell and Winter's Pediatric Orthopaedics* as well as authorship of the textbook, *The Pediatric Spine*. Currently for the American Academy of Orthopaedic Surgeons he serves as the Chairman of the Doctors for Medical Liability Reform based in Washington D.C. as well as Chairman of the Orthopaedic Political Action Committee. It is for this latter role that we conducted this interview with Dr. Weinstein with the goal to inform Orthopaedic Residents about the Orthopaedic PAC.

What exactly is the Orthopaedic PAC and what purpose does it serve?
The Orthopaedic PAC is a Political

Action Committee that has been developed to represent the interests of orthopaedic surgeons with our legislators in Congress. In our country, congressional campaigns are very expensive. While involvement in and support of these political campaigns may at times seem less than desirable, this is in fact the American political process and a necessary mechanism for these individuals to be elected. Since many U.S. House seats now require several million dollars per election cycle while those of U.S. senate contests may exceed \$30 million per candidate, the respective candidates are always interested in garnering support for their electoral efforts.

The Orthopaedic PAC provides the American Academy of Orthopaedic Surgeons and therefore its member surgeons "a voice at the table" on issues that are critical and essential to our professional lives. This is especially important at this time when healthcare is one of the dominant issues and concerns facing our country.

The Orthopaedic PAC enables the AAOS to communicate our goals and ultimately to advocate for the people that we serve, our patients. A huge effort on the part of the PAC and our Orthopaedic Association is really the education of these legislators about the liability issues, cost constraints, and access to care matters that impact us, and obviously our patients.

What is the history of the Orthopaedic PAC?

Our PAC has been started in the last decade and was quite modest at the beginning, raising less than a million dollars in the 2003/2004 election cycle with participation of only about 13.6% of members. By the 2004 and 2006 election cycle, nearly three million dollars were raised with the partici-

pation rate of 25.7% of orthopaedic surgeons. In the 2009-2010 cycle we were able to get nearly a 28% participation rate and we raised about \$3.8 million dollars. While the amount donated continues to increase, the participation rate still is less than many other professional PACs. For instance, Trial Lawyers contribute at better than a 90% level. This is one aspect of the Orthopaedic PAC that needs to be improved. The collective voice of orthopaedic surgeons resonates more strongly on Capitol Hill when as your representative I can indicate to legislators that we have a high participation rate among orthopaedic surgeons, including our future members- orthopaedic residents.

How did the Orthopaedic PAC do in the most recent election cycle in 2010?

The Orthopaedic PAC had a major role in this most recent election cycle. It is now recognized as the largest specialty physician PAC, bigger now even than the AMA. The PAC is bipartisan; it supports candidates from both parties who support our issues. The Orthopaedic PAC participated in 237 congressional races, which included 27 in the Senate and the remainder in the House. The success rate in supporting winning candidates was 89%, which was one of the highest among the medical PAC's.

What benefits does the PAC provide specifically to orthopaedic surgeons?

The main goal of the PAC is education of congressmen and senators. The presence of the PAC permits unprecedented access to speak and present our issues and our point of view to members in person on Capitol Hill. A number of orthopaedic surgeons have been able to interact with their elected representatives

Continued on page 18

An Interview with Dr. Stuart Weinstein, *continued*

through the National Orthopaedic Leadership Conference that is held annually in Washington D.C. Orthopaedic residents also have been part of the annual NOLC and had the opportunity to meet with members of congress.

The opportunity to be present and meet face-to-face with our members of congress enables us to provide the best level of advocacy for our members and our patients. Being able to present our point of view on front line patient care issues such as access to specialty care, the problems posed by the medical liability crisis, insurance coverage for prostheses and braces and other issues are critically important to our ability to care for our patients.

How would you sum up the value of the PAC and its importance even for orthopaedic residents?

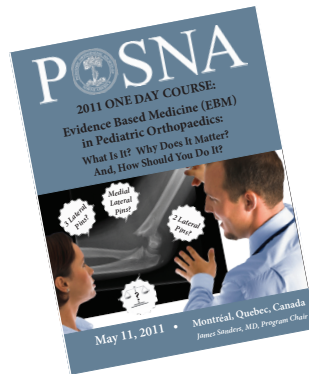
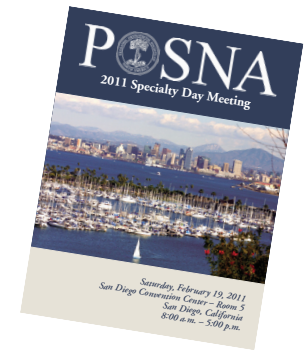
To advocate for our patients is one of our most important roles as physicians and surgeons. In these critical times for healthcare in our country, we need to advocate also for our profession. The PAC is the most effective way that this can be accomplished in our current system. The saying in Washington is either "you are at the table or you are on the table being carved up." The PAC is our means to initiate a dialogue and maintain a discussion with our elected officials about what is most important to us as a professional organization and thus ultimately to the patients we serve.

Your knowledge of and participation in the Orthopaedic PAC both now as residents and in the future as orthopaedic surgeons is vitally important to the long-term health of our profession and ultimately to help preserve the high level of patient care that we provide to orthopaedic patients in the United States. I would urge every resident to begin even now to join the Orthopaedic PAC and make a contribution on an annual basis. All contributions are welcome, \$25, \$50, whatever level is comfortable; but begin to get involved now and do it every year.

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