
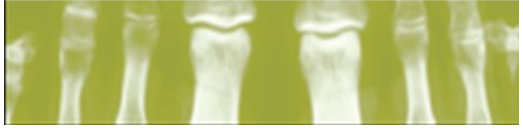


THE UNIVERSITY OF TOLEDO MEDICAL CENTER

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THE UNIVERSITY OF TOLEDO MEDICAL CENTER

ORTHOPAEDIC MONTHLY

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The UTMC Orthopaedic Center

By: Nabil Ebraheim, MD

The Orthopaedic Center prides itself in providing access, service and convenience. We provide treatment from neck to toe! We treat all types of fractures and dislocations and patients of all ages. We are a specialized team that works with sick and elderly patients.

Access: The Orthopaedic Center provides same day service and even walk in patients. When you call our center at 419-383-3761 you don't have to wait for the appointment.

Service: Team Ortho is a team of surgeons who are here to treat all conditions involving fractures, dislocations, spine conditions, and arthritis. We treat problems of the shoulder, elbow, hand, hip, knee, ankle and foot. We are a specialized team that deals with trauma and accidents. Our services include: •Pain management •Rehab medicine •Physical therapy •Procedure room •Braces/orthotics •Cast room •DEXA scan •Radiological imaging - we have digital radiology and MRI •Laboratory - laboratory studies are done within the Orthopaedic Center •Conference room and learning center.

During the patient's visit, we will provide them with same day consultations from other services if it is deemed necessary. We will collaborate with the patient's PCP in regards to their care. The Orthopaedic Center is not just a doctor's office! It is an institute with both talent and resources that are unmatched. The Orthopaedic Center will see difficult and complicated cases. Second opinions are also seen.

Convenience: We are located in one convenient location and offer free valet and on-site parking. The Orthopaedic Center is near the Radisson Hotel and the George Isaac minimally invasive surgery center. The Orthopaedic Center is located inside the UTMC hospital. Our patients won't be shuffled from the emergency room to the doctor's office or from one doctor's office to another. Because our clinic is located within the hospital, this allows the convenience of having one location for all of our patient's needs. Our center provides education to patients, future doctors and the entire world. The Orthopaedic Center trains the best and the brightest orthopaedic surgeons in the country. Our doctors lead the world in education and research.

Osteochondroma

Osteochondroma is a surface lesion that arises from the surface of the bone and continues with the medullary cavity. It arises from trapped growth plate cartilage that herniates through the cortex and grows via the endochondral ossification beneath the periosteum. The cartilaginous cap produces the bone mass by progressive endochondral ossification. It is the most common benign bone tumor.

PRESENTATION: •Mass swelling •Pain or discomfort - Pain can originate from the bursa or due to mechanical impingement. Pain may also occur due to fracture of the stalk.

LOCATION: •Distal Femur •Proximal Tibia •Proximal Femur • Proximal Humerus.

Osteochondroma, however; can occur in any bone which endochondral ossification occurs. Growth of the osteochondroma parallels the growth of the patient. The lesion will stop growing once the physis closes. Most patients have a solitary lesion.

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Osteochondroma continued

X-RAY: The cortex of the medullary cavity is continuous.

The lesion may be either:

Sessile (uncommon) - base of the lesion is wider with a higher risk of malignancy.

Pedunculated (common) - involves narrow stalk that usually grows away from the joint.

Osteochondroma often arise at the site of tendon insertion. D

irection of the growth follows along the line of the tendon.

An MRI will show the cartilage cap better than an x-ray. The cap is usually 2-3 mm in thickness. It may be 1 cm thick in a grown child. The thicker cap indicates growth; however, it is not a reliable indication of malignant transformation. The patient may have a bursa on top of the lesion and there may be calcified or ossified loose bodies.

The cartilaginous cap is made of hyaline cartilage and it has chondrocytes that are benign with a single nucleus, usually arranged in clusters are parallel similar to the physis. If the cartilage cap becomes thicker in adults (more than 2 cm), then rule out chondrosarcoma.

Another disorder characterized by multiple osteochondromas is multiple hereditary exostoses. The lesions are similar in x-ray appearance and histologically to solitary osteochondroma. - May have metaphyseal widening and sessile lesion.

It is autosomal dominant with incomplete penetrance in females and more common in males.

GENETIC MUTATION:

•EXT1, EXT2 and EXT3.

•In EXT1, there will be a more severe presentation, such as more limb malalignment and decreased range of motion of the knee and elbow.

•EXT1 will have more exostoses and more malignancy than in EXT2.

MALIGNANT TRANSFORMATIONS:

•Solitary is less than 1%.

•Multiple is about 10%.

•Proximal lesions tend to undergo more malignant transformations than distal lesions.

•If it transforms to malignant, then the lesion will be a low grade chondrosarcoma. This usually occurs in the pelvis.

PRESENTATION OF MULTIPLE HEREDITARY EXOSTOSIS:

•Short stature (shortened femur)

•Skeletal deformities (site of limb deformities is usually the knee, forearm, and ankle.

•Coxa Valga, knee valgus with shortened fibula and patellar dislocation.

•Ankle valgus due to a shortened fibula.

•In the upper extremity, there may be radial bowing with the ulnar shortened, the radial head dislocated and ulnar deviation of the hand (treated by osteotomy and exostosis excision).

•This condition is similar to Madelung's Deformity.

Clinically, any new pain or sudden increase in size of the lesion will signal a low grade chondrosarcoma that usually occurs in the scapula or pelvis.

It is necessary to assess the cartilage cap (MRI will show the cap as a bright signal). It occurs more in the sessile type showing an area of lucency or destruction of the base of the osteochondroma or destruction of the adjacent bone. The presence of a calcified soft tissue mass may also be found. It usually occurs in older patients.

DIFFERENTIAL DIAGNOSIS:

•Parosteal osteosarcoma

•Myositis ossificans

TREATMENT:

•Observation (if the patient is asymptomatic)

•Excision after skeletal maturity (usually done if there is the presence of pain, cosmetic deformity or loss of range of motion)

•Need to be aware of any loss of pronation and supination in the forearm!

•Wide surgical excision in case of secondary chondrosarcomas.

The Lateral Plantar Nerve (Baxter's Nerve)

Baxter's Nerve is located on the first branch of the lateral plantar nerve and is an important cause of foot pain. Around the medial side of the ankle close to the tarsal tunnel, the posterior tibial nerve divides into the medial and lateral nerves.

Thickening of the flexor retinaculum causes compression of the posterior tibial nerve (tarsal tunnel syndrome).

Arrangement of the tendon nerves and vessels: Remember Tom, Dick, and Harry - T, D, A, N and H. Tibialis posterior, flexor digitorum longus, posterior tibial artery, tibial nerve and halluces longus.

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Baxter's Nerve continued

When drawing a line between the medial malleolus and the calcaneus, the posterior tibial nerve divides into branches within 2 cm from the axis.

Remember, the interossei comes from the lateral plantar nerve.

The pain associated with the Baxter's nerve is very similar to the pain associated with plantar fasciitis.

Compression of the first branch of the lateral plantar nerve:

•The first branch gets compressed between the fascia of the abductor halluces muscle and the medial side of the quadratus plantae muscle. This condition may require surgical release of the abductor halluces fascia, if conservative treatment and injection do not produce any effect.

The lateral plantar nerve is important because:

•It is similar to the ulnar nerve in the hand.

•It supplies most of the intrinsic muscles of the foot.

•It supplies the Baxter's nerve branch.

•It can be injured during surgery (rod placement from the heel).

The hardware placement, prominent to the sustentaculum tali, can injure the flexor halluces longus tendon and can also injure the lateral plantar nerve.

Panner's Disease

Panner's disease is a disease involving the capitellum of the distal humerus with changes similar to Legg Calve Perthes disease (flattened femora head - avascular necrosis). Panner's disease is seen in the younger patient population (about 5-11 years of age) and it typically occurs in the dominant elbow.

With Panner's Disease, loose bodies are not usually seen within the elbow joint. Residual deformity is not common. The process of Panner's disease is believed to be avascular necrosis of the capitellum secondary to trauma. It usually has a relatively benign course and typically occurs within the first decade of life. This process is caused by interference of the blood supply of the growing epiphysis (capitellum) which results in resorption and later on repair and replacement of the ossific center.

In people under the age of 20, the capiitellum is only supplied by arteries that enter posteriorly. Surgical procedures involving children should not be done posteriorly due to risk of injury to the blood supply.

Although trauma, especially chronic repetitive trauma, is involved in this condition, it is believed that Panner's disease may be congenital hereditary, due to fat embolism or endocrine disturbances.

DIFFERENTIAL DIAGNOSIS:

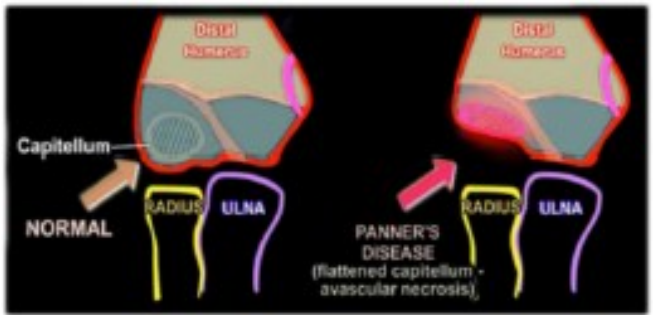
•Osteochondritis Dissecans

-Usually occurs in older boys.

-Usually related to throwing activities.

-X-rays may appear similar to Panner's disease, but the progression of the x-rays will differ.

Patients complain of intermittent pain and stiffness that lasts for a few months. Pain and stiffness is aggravated by activity and improved by rest. There may be local tenderness over the capitellum,



slight joint effusion, and there may be minimally loss of extension, pronation and supination. X-rays will show irregularity of the capitellum with some areas of radiolucency. This means that there is some degree of resorption, especially near the articular surface. Some sclerosis may also be present. In a few months, the area of radiolucency will be larger. It is then followed by reconstruction of the bony epiphysis again. Then, in 1-2 years, the epiphysis will return to its normal configuration and shape.

In about 50% of patients, the radial head on the same side will show early maturation.

TREATMENT:

•Symptomatic

- The epiphysis will revascularize and become normal in time.

-Elbow activity needs to be reduced or modified.

-Long arm casts or splints may need to be used if the pain is severe.

The x-ray findings may be different compared to the patient's complaint. The patient may be doing very well; however, the x-ray may show the presence of the disease. Be patient, the x-ray may be lagging behind.

Tension Pneumothorax

Tension Pneumothorax is a life threatening condition and a medical emergency. This topic comes up frequently on exams. Air leaks outside of the lung and is trapped between the pleura and the lung.

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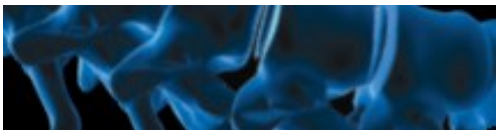
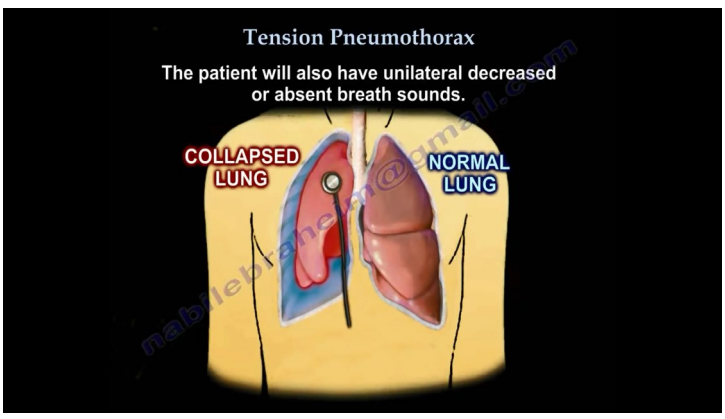


Tension Pneumothorax continued

This air in the pleural space cannot exit. This prevents expansion of the lung and oxygenation. This condition leads to hypoxia and cardiopulmonary collapse. The patient will have acute unilateral chest pain, dysnia, respiratory distress, tachypnea and tachycardia. They will also have unilateral decreased or absent breath sounds. As air pushes against the lung, it deviates the trachea to the other side.

TREATMENT:

• Needle Compression. • Insert the needle at the 2nd intercostal space, mid-clavicular line. • Followed by insertion of a chest tube.



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Dr. Ebraheim, Amanda Critton, Julie Anderson and Ellen Finch do not have any relationships with industry to disclose.

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