



THE UNIVERSITY OF TOLEDO
MEDICAL CENTER

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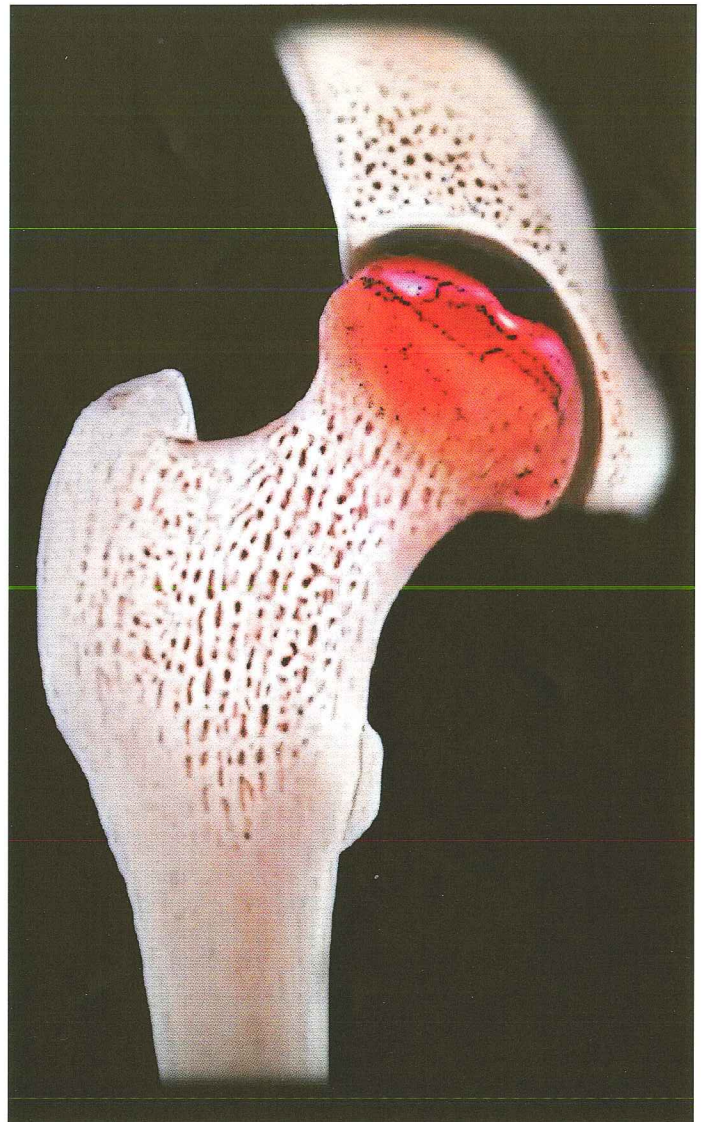
ORTHOPAEDIC MONTHLY

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Osteonecrosis of the Hip

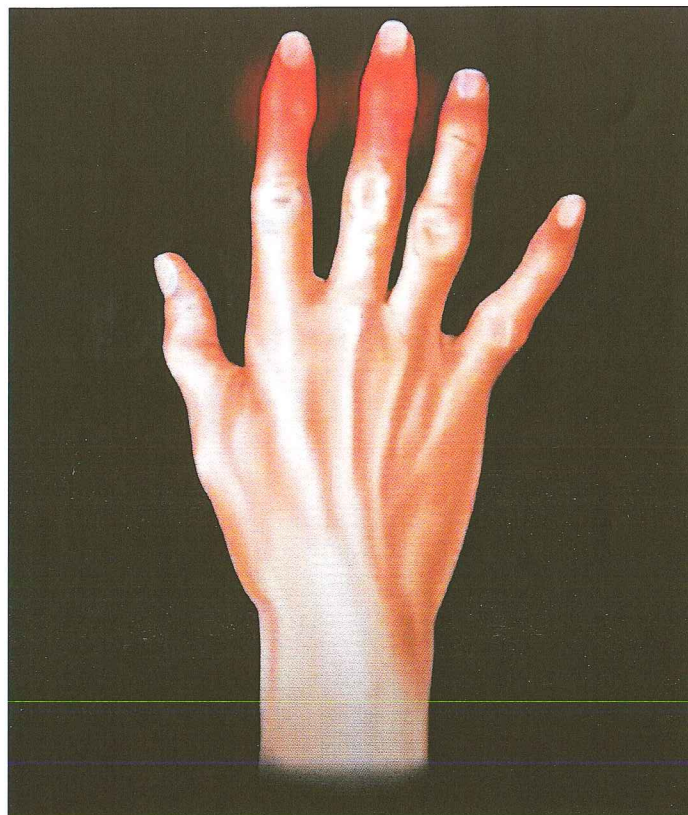
Transient osteoporosis of the femoral head is not an osteonecrosis of the femoral head. In transient osteoporosis, the symptoms are usually more than the x-ray findings. It usually affects pregnant women, and it also affects men during the 5th decade of life. On x-ray, you probably will not find much. You may find osteopenia. The signal changes will involve the femoral head and extend into the neck, and may include the trochanteric area. In transient osteoporosis, there is no double density which is seen in the MRI of patients with osteonecrosis. Transient osteoporosis is not a tumor, it is not an osteonecrosis, and it does not need surgery. Osteonecrosis may be bilateral in about 80% of patients. Check the other hip even if the patient is asymptomatic. Early diagnosis and treatment may improve the chances for success of a head preserving surgical procedure, such as core decompression or bone grafting. In late stages of osteonecrosis, the femoral head collapses and cannot be saved. For the patient to have a good outcome, the femoral head will need to be replaced at this late stage. MRI is usually the study of choice, especially when the patient has persistent hip pain and the radiographs are negative and the diagnosis of osteonecrosis of the femoral head is suspected, especially if the patient has risk factors. On the T1 MRI, there will be a well-defined band of low signal intensity usually within the superior anterior portion of the femoral head. Decreased signal from the ischemic marrow, and there is a single band-like area of low signal intensity (crescent sign). The crescent sign represents the reactive interface between the necrotic and reparative zone. The single line demarcates the normal from the ischemic bone. Double line sign is seen in T2 images. The subcortical lesion on T2 shows two lines: low signal intensity line and high signal intensity line. The lesion will show a high signal intensity inner border with a low signal intensity peripheral rim (double line). The high signal intensity represents hyper vascular granulation tissue. The size of the lesion is the most important factor in determining the development of symptoms and the progression of the disease. The best prognosis occurs in a small lesion with sclerotic margins. The presence of bone marrow edema on the MRI is predictive of worsening of the pain and future progression of the disease. Multifocal osteonecrosis is a disease involving three or more sites such as the hip, the knee, and the shoulder or ankle, and it occurs in about 3% of patients. A patient that presents with



osteonecrosis at a site other than the hip should undergo MRI of the hip to rule out the asymptomatic lesion in the femoral head.

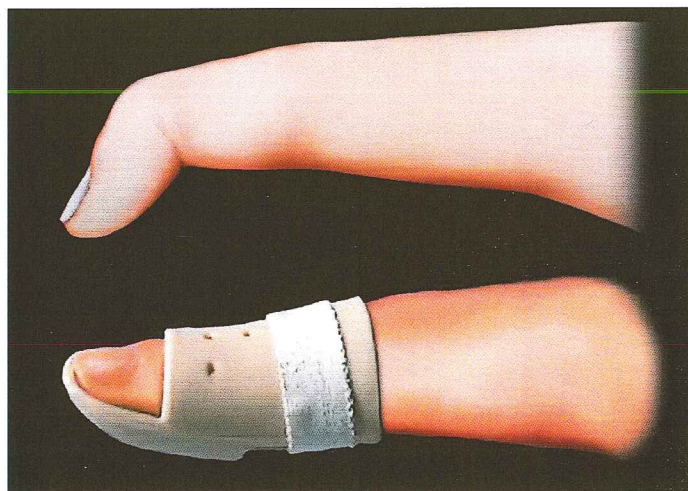
Osteoarthritis of the Fingers

Osteoarthritis is a degenerative condition of the cartilage. There is no clear etiology identified for osteoarthritis. Osteoarthritis is not related to tumor, inflammation, infection, gout, or trauma. Osteoarthritis is different from rheumatoid arthritis which is an inflammatory condition. The distal interphalangeal joint (DIP) is the joint that is most often involved with osteoarthritis. The trapeziometacarpal joint (TM) is the second most involved joint with osteoarthritis. When the trapeziometacarpal joint is involved, it causes pain with weak pinch and grip. DIP (Heberden's Nodes) are bony swellings (osteophytes) that can develop in the distal interphalangeal joints (DIP) due to the affects of osteoarthritis on these joints. Heberden's nodes are a sign of osteoarthritis caused by osteophytes formation (bony outgrowth) of the articular cartilage in response to repeated microtrauma at the joint. Heberden's nodes are more common in women than in men. PIP (Bouchard's Nodes) are also associated with osteoarthritis, and they are similar bony growths which develop in the proximal interphalangeal (PIP) joints. Bouchard's nodes, like Heberden's nodes, may or may not be painful. Swollen, hard and painful finger joints (Heberden's and Bouchard's nodes) are the classical signs of DIP and PIP joint osteoarthritis. Mucous cysts are small, fluid-filled sacs that form between the DIP joint of the finger and the bottom of the fingernail and are another sign of osteoarthritis. The best treatment for the mucous cyst is surgical excision of the cyst and removal of the underlying osteophyte to decrease the risk of recurrence.



Mallet Finger Treatment

Treatment for mallet finger is extension splinting of the DIP only for about 6 weeks or more is the usual treatment. Acute injuries with minimal displacement and no joint subluxation are treated with extension splinting of the DIP joint for 6-8 weeks. You will need to keep the splint on for 24 hours daily. The splinting can be volar splinting or dorsal splinting. Allow the PIP joint to move freely in flexion and extension. After 6 weeks of splinting, night splinting may be needed for longer periods. It appears that supplemental night splinting after full time splinting treatment is controversial and may not really improve the outcome. Wearing the splint may not be liked by professionals such as doctors, hair dressers, or dentists, and they may desire the surgery of percutaneous pin fixation. Conservative treatment can be tried even if the treatment is delayed up to four weeks with low, long term complication rates. There is an increased complication rate with surgical treatment. The goal of surgery is to keep the DIP extended until the bone or the tendon heals. K-wire utilization is a very common technique. Indications for surgery include volar subluxation of the distal phalanx, avulsion fracture with a large joint fragment more than 50%, and some physicians think that 30% of articular involvement is an indication for surgery. Some orthopaedic surgeons will continue to treat this injury by closed means (splint), even if there is a volar subluxation of the joint. The rationale is that a stiff finger that is treated by closed means is better than a stiff finger that is treated by surgery. A closed injury



with or without a small avulsion fracture is different than a closed injury that involves a large fragment (more than 50% of the joint) or an injury that causes subluxation of the DIP joint. Mallet finger with subluxation of the DIP joint is clearly an indication for surgery. It may require open or closed reduction and pinning of the fracture or the joint.

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Mallet Finger Treatment

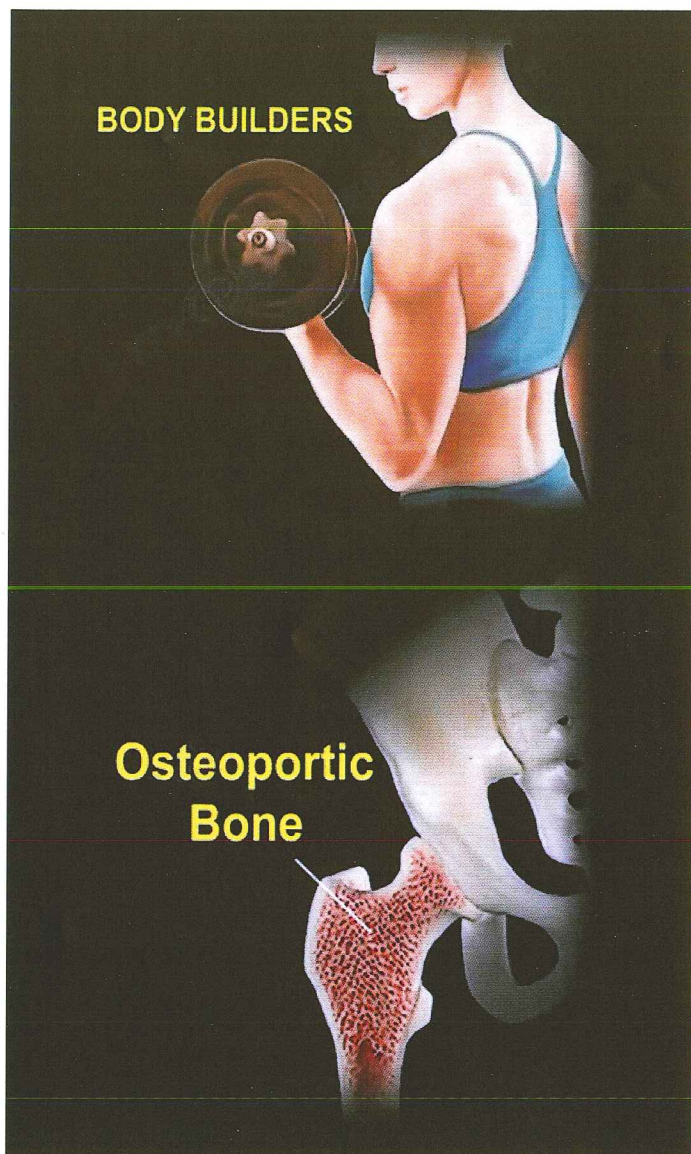
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A single pin is usually sufficient for the treatment of a purely tendon injury. When pinning a purely tendon injury, make sure you mark the affected finger on the dorsal aspect as well as the volar aspect of the finger preoperatively. Mark the finger, because the x-ray will not show any evidence of injury, and this will help you to avoid pinning the wrong finger. The finger position will change if the finger is pinned with palm down or with the palm up. For extension block pinning technique, flex the DIP and insert the k-wire from distal to proximal direction. The k-wire is passed dorsal to the bony fragment

and through the extensor tendon into the middle phalanx. Then extend the DIP and the k-wire will help in buttressing and reducing the fracture with extension of the DIP. After the surgery, the patient may experience an extensor lag, but without functional deficit. Complications of mallet finger include residual deformity that usually does not affect the function and swan neck deformity. Care must be taken during treatment to avoid this deformity. The PIP should be moving freely in extension and flexion to avoid this deformity.

Female Athlete Triad

Female athlete triad is a condition that affects female athletes such as gymnasts, dancers, or athletes with weight classifications such as body builders. It is a syndrome in which amenorrhoea, osteoporosis, and insufficient caloric intake affects certain groups of athletes. Each component of the female athlete triad can occur from mild to severe. Not all components need to be present, but if one component is found, the doctor should check for the others. If you find a healthy, young female with stress fractures, ask about her eating habits. The physician should examine the relationship between the different components of the triad. The athlete will try to restrict their diet in order to maintain lower body fat, and that may cause an imbalance of energy (low caloric intake). This restriction of the athlete's caloric intake will lead to negative energy balance. Amenorrhoea results from energy imbalance. Insufficient caloric intake is the most common cause of amenorrhoea in female athletes, and it may or may not be associated with eating disorders. Eating disorders can affect the brain's regulation of the ovaries. This may cause an absence of the menstrual cycle (amenorrhoea). It occurs in about 65% of athletes such as runners and ballet dancers. There are two types of amenorrhoea: primary and secondary. Primary amenorrhoea occurs when menstrual cycles never start. Secondary amenorrhoea occurs when there is no menses for 6 months or absence of 3 or more consecutive menstrual cycles. Osteoporosis will lead to bone fragility and often manifest as stress fractures. 90% of bone mineral content occurs by the end of adolescence. The first step in treatment is recognition of the disorder. Treatment includes prevention, correction of the energy deficit, increase dietary calcium and vitamin D, maintaining bone mass, resume normal menstrual function, and reduce training intensity. The patient will need a multidisciplinary team including an athletic trainer, a nutritionist, a psychologist, and a physician. Female patient with a history of stress fracture should undergo a workup. This includes obtaining a menstrual cycle history, nutritional consult, bone density, and psychological consult for eating disorder.

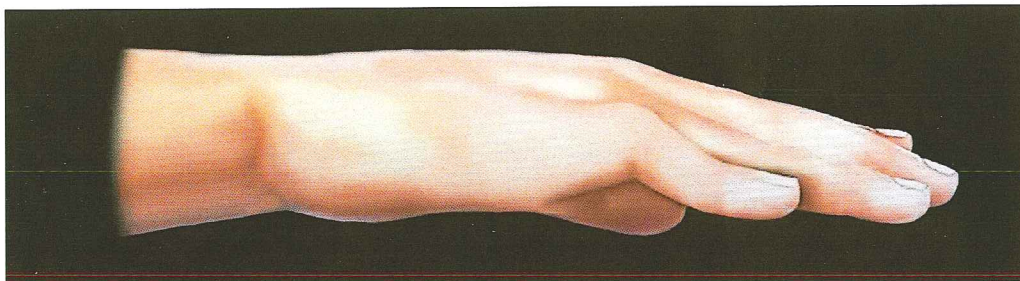


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Camptodactyly

Camptodactyly is a fixed flexion deformity at the PIP joint of the little finger. The condition is an autosomal dominant trait involving permanent flexion of the little finger. Camptodactyly may also be bilateral affecting multiple digits. Unilateral 1/3 of the time and bilateral 2/3 of the time. Camptodactyly occurs in less than 1% of the population, and it may be associated with several congenital syndromes. Camptodactyly may be caused by abnormal lumbricals and flexor digitorum superficialis insertion. Severe camptodactyly may cause difficulty in grasping objects. Clinodactyly is congenital curvature of the digit in the radioulnar plane. Treatment should be done early with splinting, passive stretching, and physical therapy. Surgery may be needed if the deformity is flexible, the patient may need tenotomy or tendon transfer. If the deformity is severe and fixed, the patient may need osteotomy or arthrodesis.



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