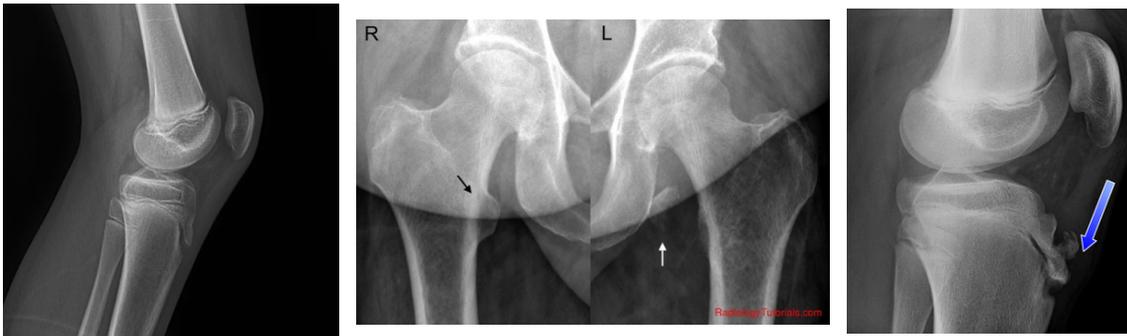


## Apophysitis and Avulsion Fractures



### APOPHYSITIS

#### **What is apophysitis?**

An apophysis is a secondary growth center on bones where muscles attach. These growth centers are made of cartilage that is growing into bone, and thus are fragile and vulnerable to recurrent traction forces from overuse of tight powerful muscles that attach there. Recurrent traction forces can ultimately create inflammation, edema, and cartilage breakdown in the apophysis, which creates pain with activity involving the apophysis. This is called apophysitis and can result in an avulsion fracture if not treated.

#### **What are the symptoms?**

Symptoms of apophysitis may vary for each person, some of these include:

- Pain and sometimes mild swelling at the site of apophysitis.
- Worsening pain with use of involved apophysis and attached muscle.
- Pain initially after activity, then during and after activity as condition progresses.

#### **How do you diagnose it?**

This is a clinical diagnosis that your doctor makes based on the history and exam. X-ray may be needed to check for an abnormal apophysis or avulsion injury. Sometimes, MRI or CT scan may be ordered to establish diagnosis, however these studies are usually not needed.

#### **How is it treated?**

Usually apophysitis is treated with a combination of a period of rest from aggravating activity followed by physical therapy. Complete healing usually takes 4-8 weeks depending of stage of progression. Physical therapy is focused on flexibility, optimal biomechanics, strength and function of the body part once enough healing has taken place.

### AVULSION FRACTURES

#### **What is an avulsion fracture?**

An avulsion fracture is a common type of fracture in which a fragment of bone is pulled away from the rest of the bone by a tendon or ligament. These fractures occur when a large amount of force is placed on a tendon or ligament and, instead of tearing, it pulls away from the bone taking a piece of bone with it. In growing children and adolescents, ligaments and tendons are often stronger than the surrounding bone, causing a little of the bone to be pulled away at its weakest point. Avulsion fractures occur commonly in the fingers and toes but, in young athletes, they can also occur in the pelvis, elbow and foot where tendons attach to growth centers. These growth

centers are made of weaker, softer cartilage and can be pulled away during a forceful contraction of the muscle.

### **What are the signs and symptoms?**

Symptoms of avulsion fracture may vary for each person, some of these include:

- Pain and swelling at the site of injury. Bruising may appear a few days after.
- Strong pain that does not go away following a sudden, forceful injury.
- Unwillingness to use the injured joint or extremity.
- A pop may be heard or felt at the time of injury.

### **How do you diagnose it?**

Like most fractures, the only way to truly diagnose an avulsion fracture is with an x-ray. Your doctor will order several views of the area to determine if any fracture is present. An avulsion fracture will appear as a small fleck of bone resting next to the larger bone from which it has been pulled. Sometimes, an MRI or CT scan may be ordered to further check the injury, however additional studies are not often needed.

### **How is it treated?**

Care of an avulsion fracture depends on the size of the piece that has been pulled off and how far away from the bone it has been pulled away. Most avulsion fractures can be treated without surgery with rest, pain and swelling control and bracing or splinting. These fractures usually do not require a cast, but keeping the body part immobilized and protected is key to proper healing. In some rare cases, surgery may be needed to place the bone back in correct alignment until enough healing has occurred. Complete healing can take 4-8 weeks. Your doctor may order physical therapy to help get back motion, strength and function of the body part once enough healing has taken place.

### **References:**

Children's Hospital Colorado Sports Medicine Program for young athletes  
American Academy of Pediatrics  
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