

# PHYSEAL INJURIES

## (Growth Plate Injuries)



### ■ ■ ■ Description

The growth plate is a cartilage structure near the end of bone. Bones grow in length from the cartilage production of the physis, followed by calcification of the cartilage. Most growth plates close (fuse or disappear) in girls by 14 to 16 years of age and by 16 to 18 years of age in boys (although some growth plates close as late as 25 years of age).

The growth plate is the weak link in the growing athlete. Thus the growth plate is more likely to be injured than bone, muscle, or ligaments. Due to the increased blood supply at the growth plate, it is also more susceptible to infection in athletes and nonathletes.

Fractures involve the growth plate and may include a piece of bone, whereas acute ligament-type injuries and overuse muscle-tendon type injuries are associated with the growth plate becoming inflamed (in overuse injuries) or separating from the underlying bone and being pulled off (avulsion fracture), with or without bone.

### ■ ■ ■ Common Signs and Symptoms

- Pain, tenderness, bleeding, bruising, and swelling at the fracture site
- Weakness and inability to bear weight on the injured extremity
- Weakness or inability to use the injured extremity in athletic activities
- Paleness and deformity (sometimes)
- Loss of pulse, numbness, tingling, or paralysis below the fracture site (usually an extremity); these are emergencies

### ■ ■ ■ Causes

- Injury or sudden strain producing a force greater than the growth plate can resist
- Repetitive stress and strain to or overuse of muscles and tendons
- Sudden increase in amount or intensity of activity
- Muscle imbalance or weakness

### ■ ■ ■ Risk Increases With

- Contact sports and falls from heights
- Endurance sports activities
- Poor balance
- Poor physical conditioning (strength and flexibility)

### ■ ■ ■ Preventive Measures

- Appropriately warm up and stretch before practice or competition.

- Maintain appropriate conditioning:
  - Cardiovascular fitness
  - Muscle strength
  - Flexibility and endurance
- Wear proper protective equipment.
- Use proper technique.

### ■ ■ ■ Expected Outcome

This condition is usually curable with skillful first aid and after care. Healing time varies. Surgery may be required.

### ■ ■ ■ Possible Complications

- Failure to heal (nonunion)
- Healing in a poor position (malunion)
- Shock from blood loss (rare)
- Death of bone cells due to interruption of the blood supply
- Weakness of muscle force if the muscle-tendon attachment is pulled off and not replaced in proper position
- Shortening or deformity of the fractured bone
- Complete or partial arrest of bone growth, resulting in a short bone or growth at an abnormal angle
- Arthritic joint due to death of bone or repeated injury
- Obstruction of nearby arteries
- Recurrence of symptoms or increasing symptoms if not given adequate time to heal or if sports are resumed too soon; appropriately treating the problem the first time reduces the likelihood of recurrence
- Prolonged healing time if not appropriately treated or not given adequate time to heal
- Untreated, inflammation of the growth plate progressing to a complete fracture of the growth plate

### ■ ■ ■ General Treatment Considerations

Initial treatment for growth plate injuries is to reduce the fracture (reposition the bones), performed by trained personnel, with or without surgery. Realignment is much more difficult after several days. After, treatment consists of the use of medications and ice to relieve pain and immobilization with a splint, cast, or brace to allow the bones to heal without moving. Surgery is occasionally necessary to reposition the bones and hold the position with rods, pins, plates, or screws. If the growth plate is only inflamed, rest with or without immobilization (cast, brace, or splint) may be all that is necessary.

Immobility of a bone for a long period can cause loss of muscle bulk, stiffness in nearby joints, and edema (accumulation of fluid in tissues). Physical therapy may be necessary to regain motion of nearby after surgery or immobilization and

to regain strength of the muscles around the joint. Recovery is complete when there is no bone motion at the fracture site and x-rays show complete healing.

**■ ■ ■ Medication**

- General anesthesia, sedation, or muscle relaxants may be necessary to make bone manipulation and repositioning possible (when displaced). After this, medications, such as acetaminophen, may also be used to relieve mild to moderate pain.

- Narcotic pain relievers may be prescribed by your physician for severe pain. Use only as directed.

**■ ■ ■ Notify Our Office If**

- The following occur after immobilization or surgery (report any of these signs immediately):
  - Swelling above or below the fracture site
  - Severe, persistent pain
  - Blue or gray skin below the fracture site, especially under the nails, or numbness or loss of feeling below the fracture site

Notes:

(Up to 4400 characters only)

Notes and suggestions