Vasu Pai MS, MCh, FRACS

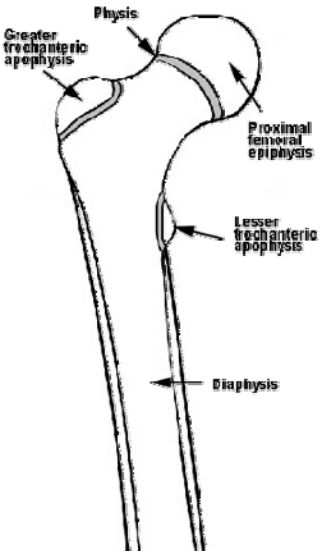
Growth Plate Damage

Bones of children and adults share many of the same risks for injury.
However, a child's bones are also subject to a unique injury called a growth plate fracture.
Growth plate fractures often require immediate attention because the long-term consequences may include limbs that are crooked or of unequal length.
Younger the patient, worse the prognosis
In an established growth plate problem, various surgical options are available.

What is the growth plate?

The growth plate (physis) is an area of developing tissue near the ends of long bones, between the widened part of the shaft of the bone (the metaphysis) and the end of the bone (the epiphysis).

The growth plate regulates and helps determine the length and shape of the mature bone. The long bones of the body do not grow from the center outward. Instead, growth occurs at each end of the bone around the growth plate.



The growth plate is the last portion of the bone to harden (ossify), which leaves it vulnerable to fracture. Because muscles and bones develop at different speeds, a child's bones may be weaker than the surrounding connective tissues (ligaments).

Children's bones heal faster than adult's bones. This has two important consequences. First, it means that a child with an injury should see a doctor as quickly as possible, so the bone gets the proper treatment before it begins to heal. Ideally, this means seeing an orthopaedic specialist within five to seven days of the injury, especially if manipulation to align the bone is required. Second, the period of immobilization required for healing will not be as long as for an adult.

Diagnosis by doctor

History of injury
Use X-rays
Very often need: Magnetic resonance imaging (MRI), computed tomography (CT), or ultrasound.

Who's at risk?

Although all children who are still growing are at risk, girls and boys near the end of their growth period are especially vulnerable.
Growth plate fractures occur twice as often in boys as in girls.
One-third of all growth plate injuries occur in competitive sports, such as football, basketball or gymnastics.
About 20 percent of growth plate fractures occur as a result of recreational activities, such as biking, sledding, skiing or skateboarding.
Fractures can result from a single traumatic event, such as a fall or automobile accident, or from chronic stress and overuse.

Most growth plate fractures occur in the long bones of the fingers (phalanges) and the outer bone of the forearm (radius).
They are also common in the lower bones of the leg (the tibia and fibula).

Treatment Options

Undisplaced fracture

> Generally heal well. The bone remains aligned, and usually no surgery is required. Treated by cast immobilization

Displaced fracture

Surgery may sometimes be required. This is the most common type of growth plate fracture.
Most are treated with cast immobilization.
More common in older children. Because the center of the growth plate has begun to harden, the fracture does not continue across the bone, but angles down and breaks the bone end.
Growth plate fractures must be watched carefully to ensure proper long-term results.
In some cases, **a bony bridge** will form that prevents the bone from getting longer. Orthopaedic surgeons are developing techniques that enable them to remove the bony bar and insert fat, cartilage, or other materials to prevent it from reforming.
In other cases, the fracture actually stimulates growth so that the injured bone is longer than the uninjured bone. Surgical techniques can help achieve more even length.
Regular follow-up visits to the doctor should continue for at least a year after the fracture. May need to be followed until the child reaches skeletal maturity

.