

Growth Plate Injury

Growth plates are located on the long bones of children and young people. These plates are areas of growing tissue near the end of the bones and are the weakest parts of the developing bones. Growth plate injuries have the potential to disrupt the normal growth of bone.

Most long bones have two growth plates – one at each end where the long bones grow. When young people finish growing, the growth plates close and are replaced by solid bone.

Growth plate injuries tend to occur around the wrist, fingers, knees, or in the ankles, foot or hip bones. These injuries occur almost twice as often in boys than in girls.¹

CAUSES AND RISK FACTORS

Most growth plate injuries are caused by a sudden accident, such as falling or being hit hard. Many occur during competitive sports, such as football, or recreational activities, such as skateboarding. Some children and young people get injuries from overuse include:

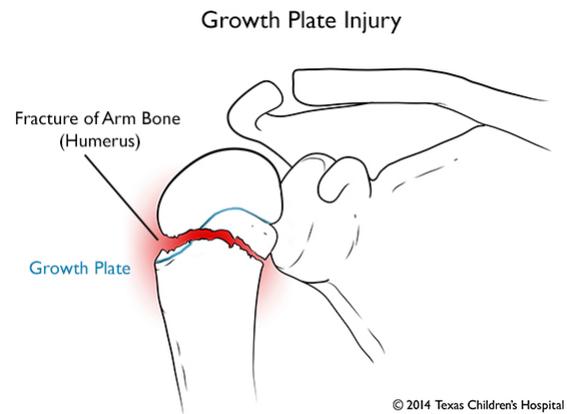
- Gymnasts
- Long-distance runners
- Baseball pitchers

SYMPTOMS AND TYPES

Growth plate fractures are classified depending on the degree of damage to the growth plate itself. The American Academy of Orthopaedic Surgeons explains: “Several classification systems of growth plate fractures have been developed. Perhaps the most widely used is the Salter-Harris system and is described here:

- **Type I Fractures:** These fractures break through the bone at the growth plate, separating the bone end from the bone shaft and completely disrupting the growth plate.
- **Type II Fractures:** These fractures break through part of the bone at the growth plate and crack through the bone shaft as well.
- **Type III Fractures:** These fractures cross through a portion of the growth plate and break off a piece of the bone end.
- **Type IV Fractures:** These fractures break through the bone shaft, the growth plate, and the end of the bone.
- **Type V Fractures:** These fractures occur due to a crushing injury to the growth plate from a compression force. They are rare fractures.

Any child who experiences an injury that results in visible deformity, persistent or severe pain, or an inability to move or put pressure on a limb should be examined by a doctor.”²



DIAGNOSIS AND TESTS

The doctor will first determine how the injury happened. Then, the doctor will examine the child and use x-rays to find out what kind of fracture it is. After the x-rays have been examined, the doctor will develop a treatment plan. Sometimes other tests are used to look at the fracture, including CT scan (a special x-ray), MRI (magnetic energy that looks inside the body) and ultrasound (sound waves that visualize the inside the body).

TREATMENT AND CARE

The treatment of growth plate injuries depends on the type of fracture.

- **Type I Fractures:** These fractures tend to be treated with a cast that immobilizes the bone. In some cases, surgical treatment may be necessary. If surgery is needed, the surgeon usually treats the injury with pins to hold the bone together and ensure proper alignment.
- **Type II Fractures:** The most common type of growth plate fracture, these generally heal well and are treated with an immobilizing cast. Surgery may sometimes be required, however.
- **Type III Fractures:** These fractures are more common in older children. A Type III fracture is treated with surgery and internal pins to ensure proper alignment of both the growth plate and the joint surface.
- **Type IV Fractures:** These fractures frequently stop bone growth and are treated surgically and with internal pins.
- **Type V Fractures:** These fractures can often be treated with cast immobilization, or may require surgery.

Once the fracture has healed, most children will engage in exercises (also known as physical therapy) to strengthen part of the body where the injury occurred.

LIVING AND MANAGING

Most growth plate fractures do not cause any lasting problems. Occasionally, the bone stops growing and ends up shorter than the other limb. Additional surgery may be required remedy this problem.

According to the American Academy of Orthopaedic Surgeons, "Regular follow-up visits to the doctor should continue for at least a year after the fracture. Complicated fractures (types III, IV, and V) as well as fractures to the thighbone (femur) and shinbone (tibia) may need to be followed until the child reaches skeletal maturity."³



Need an appointment or have questions?

Call 832-822- 3100 for the Main Campus Clinic and Health Centers.

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¹ National Institute of Arthritis and Musculoskeletal and Skin Diseases, "Growth Plate Injuries."

http://www.niams.nih.gov/Health_Info/Growth_Plate_Injuries/growth_plate_injuries_ff.asp

² American Academy of Orthopaedic Surgeons, "Growth Plate Fractures." <http://orthoinfo.aaos.org/topic.cfm?topic=A0004>