

FRACTURE



■ ■ ■ Description

A fracture is a complete or incomplete break in a bone, often caused by a fall or contact. Following are the different types of fractures:

- *Complete fracture*: The broken bone is completely separated. This fracture type may be displaced (the bones are not completely touching, if at all, or are angulated) or not displaced (the ends are in proper alignment and touching fully).
- *Incomplete fracture (greenstick)*: The broken bone is not completely separated (this type of fracture may or may not be angulated). There is some bone continuity.
- *Open fracture (compound)*: At least one part of the fractured bone has broken through the skin. There is an increased risk of infection with this type of fracture.
- *Closed fracture*: The fracture has not broken through the skin.
- *Comminuted fracture*: The bone is broken into three or more segments.
- *Compression fracture*: The break occurs from extreme pressure on the bone (includes crushing injury).
- *Impacted fracture*: The broken ends have been driven into each other.
- *Avulsion fracture*: A small piece of bone is pulled off the main bony segment by a tendon or ligament due to a strong force.
- *Pathologic fracture*: A break that occurs from a minor injury in bone weakened or destroyed by disease (including osteoporosis and tumors).
- *Stress fracture*: A complete or incomplete hairline fracture or crack in a bone caused by intense exercise or repetitive and prolonged pressure on the 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
- Paleness and deformity (sometimes)
- Loss of pulse, numbness, tingling, or paralysis below the fracture site (usually an extremity); these are emergencies

■ ■ ■ Causes

A force greater than the bone can resist

■ ■ ■ Risk Increases With

- Contact sports and falls from heights
- Bony abnormalities (including osteoporosis), tumors of bone or bone marrow
- 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.

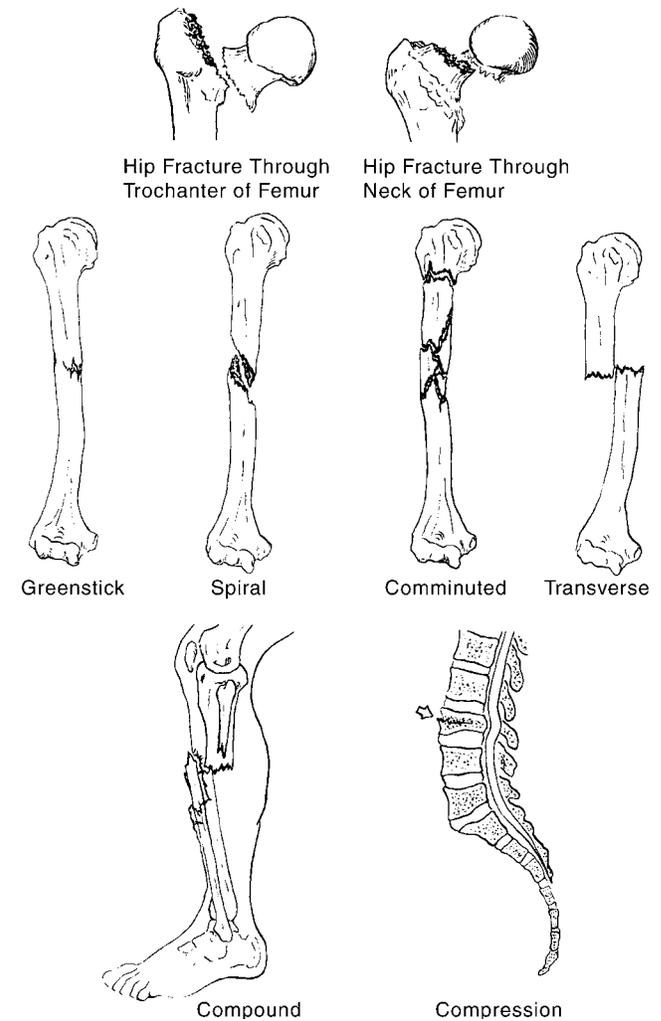


Figure 1

From Griffith HW: *Instructions to Patients*. Philadelphia, WB Saunders, 1994, p. 592.

■ ■ ■ Expected Outcome

This condition is usually curable with skillful first aid and aftercare. Healing time varies.

■ ■ ■ Possible Complications

- Failure to heal (nonunion)
- Healing in a poor position (malunion)
- Shock from blood loss
- Fat embolus (clump of fat cells traveling through the blood) from the injury site to the lungs or brain (more common with femur and thigh fractures)
- Obstruction of nearby arteries

■ ■ ■ General Treatment Considerations

Initial treatment for fractures is reduction of the fracture (repositioning of the bones), performed by trained personnel, with or without surgery. Realignment is much more difficult after several days. After this is done, treatment consists 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.

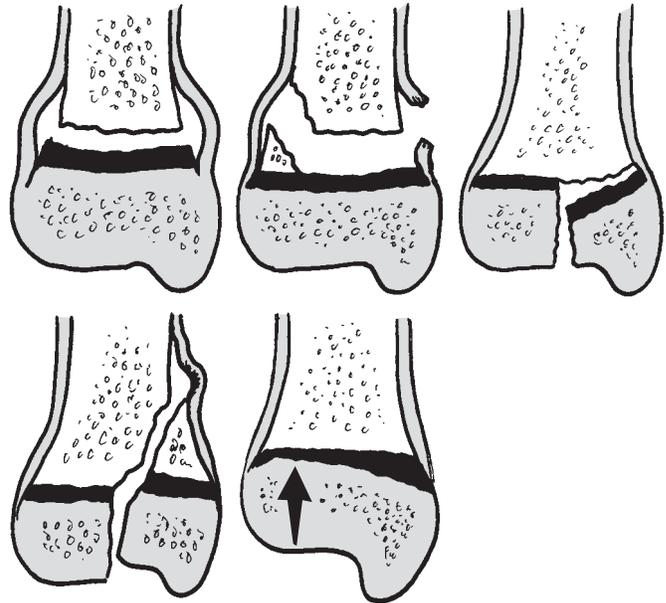
Immobility of a bone for a long period can cause loss of muscle bulk, stiffness in nearby joints, and edema (accumulation of fluid in tissues). Physical therapy may be necessary to regain motion of nearby joints after immobilization or surgery and to regain strength of the muscles around the joint. Recovery is complete when there is no bone motion at the fracture site and radiographs (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 and only as much as you need.

■ ■ ■ 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



Growth plate fractures

Figure 2

From Shankman GA: Fundamental Orthopaedic Management for the Physical Therapy Assistant. St. Louis, Mosby Year Book, 1997, p. 83.

Notes:

(Up to 4400 characters only)

Notes and suggestions