



**MUGBERIA GHANGADHAR MAHAVIDYALAYA**

**DEPARTMENT OF PHYSICAL EDUCATION**

**SUB: - SPORTS MEDICINE**

**DISCUSSION: - SPORTS INJURY (FRACTURE)**

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# FRACTURE

- The breaking, cracking, rupture, of a bone, cartilage, or the like, or this resulting condition is called fracture.
- A fracture is any break in a bone, including chips, cracks, splintering, and complete breaks.
- **Fracture:** A break in bone or cartilage. Although usually a result of trauma, a fracture can be the result of an acquired disease of bone, such as osteoporosis, or of abnormal formation of bone in a congenital disease of bone, such as osteogenesis imperfecta ('brittle bone disease').

# Classification

- **Two Basic Types of Fracture:**

- **1. Closed Fracture (Simple fracture):** Occurs when a bone is broken but there is no penetration extending from the fracture through the skin.

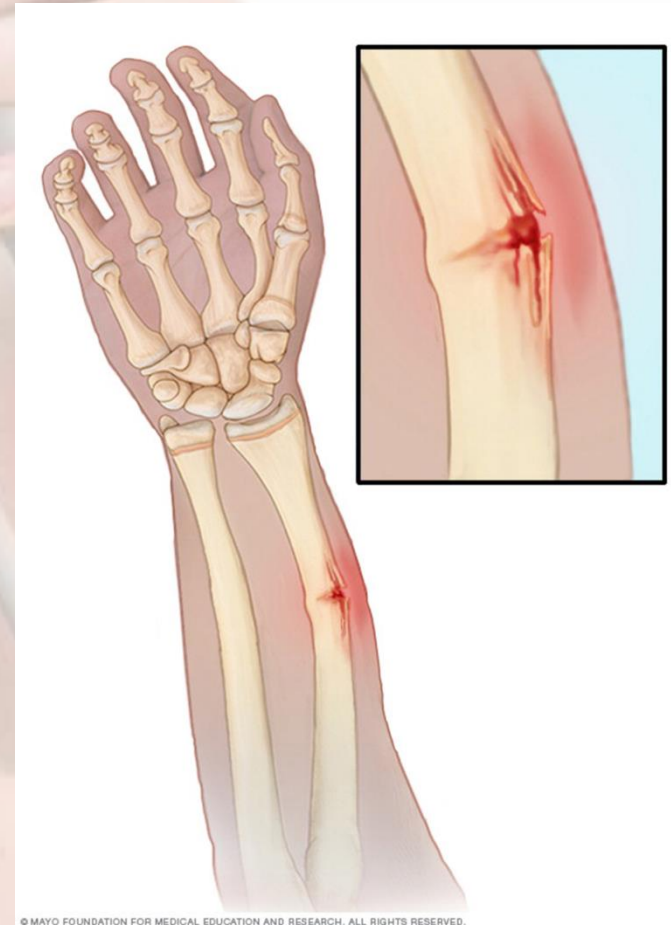
- **2. Open Fracture: (Compound fracture)** is a fracture in which there is a wound over the fracture site, with or without bone protruding through it. This type of fracture is more serious than closed fractures because the risks of contamination and infection are greater.



# Fractures are further classified according to their appearance on x-ray:-

## 1. Green stick fracture:

Usually occurs in children whose bones are still pliable (like green sticks). A break occurs straight across part of the width of the bone, perpendicular to the long axis.





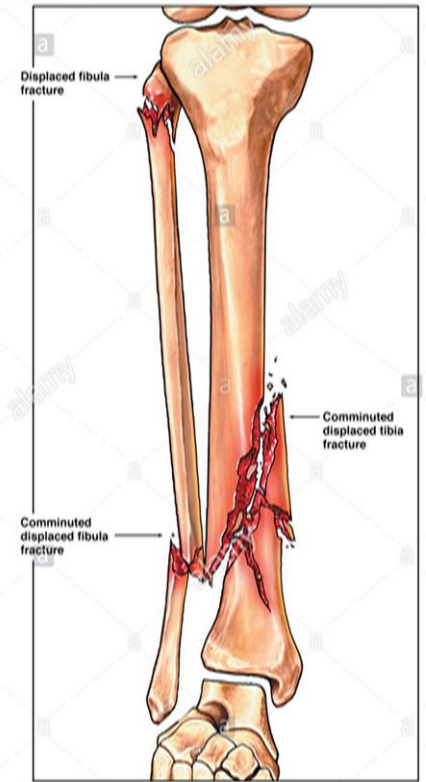
**2. Transverse Fracture:** Cuts across the bone at right angles to its long axis, often caused by direct injury.

**3. Oblique Fracture:** The fracture line crosses the bone at an oblique angle.



**4. Comminuted Fracture:**  
The bone is fragmented into more than two pieces. The bone is shattered into small pieces.

Normal Anatomy

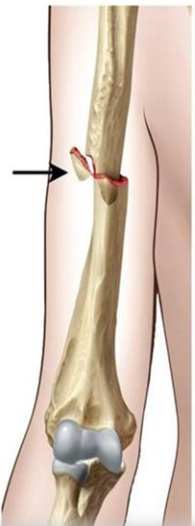


Anterior view of lower leg

a alamy stock photo

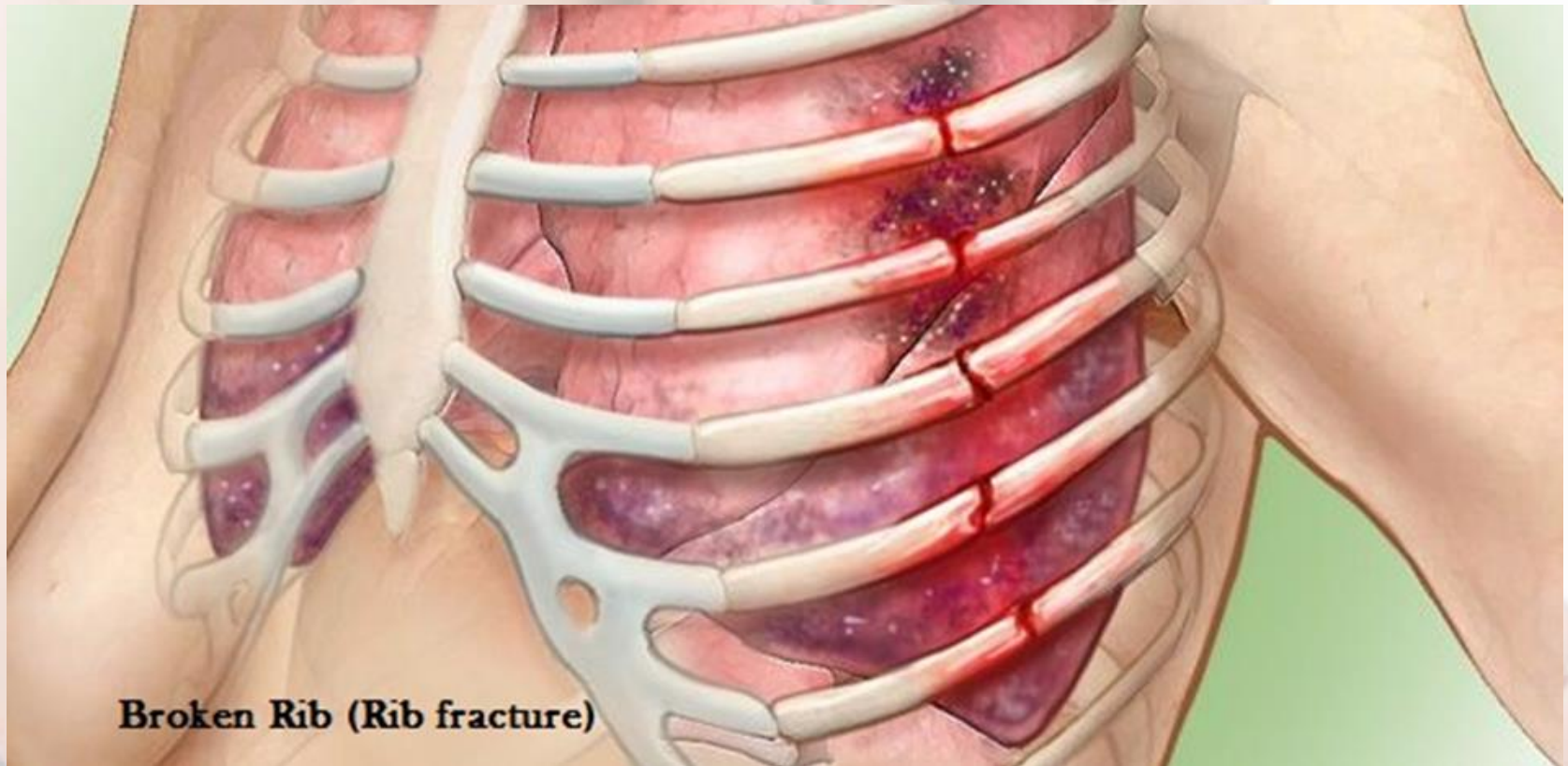
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Impacted Fracture

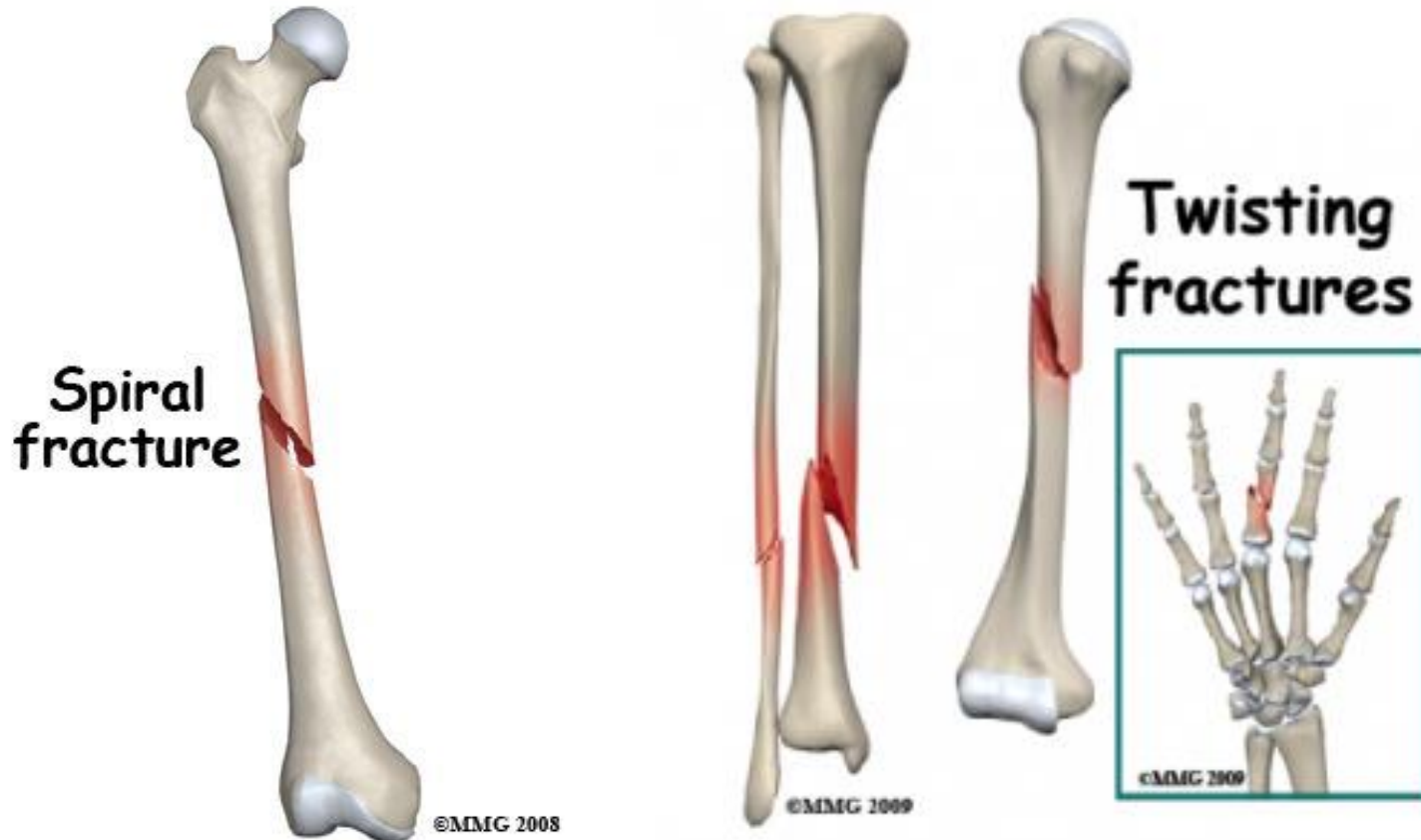


**5. Impacted Fracture:** The broken ends of the bone are jammed together.

**6. complicated fracture:** A fracture of bone associated with significant injury to other structures such as arteries, nerves or muscles

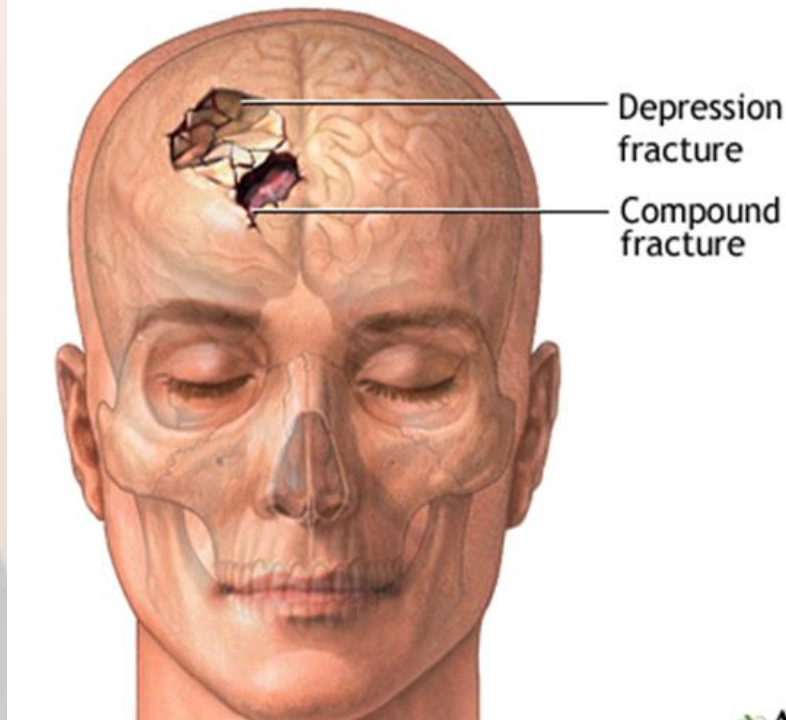


**7. Spiral Fracture:** Usually results from twisting injuries, The fracture line has the appearance of a spring,



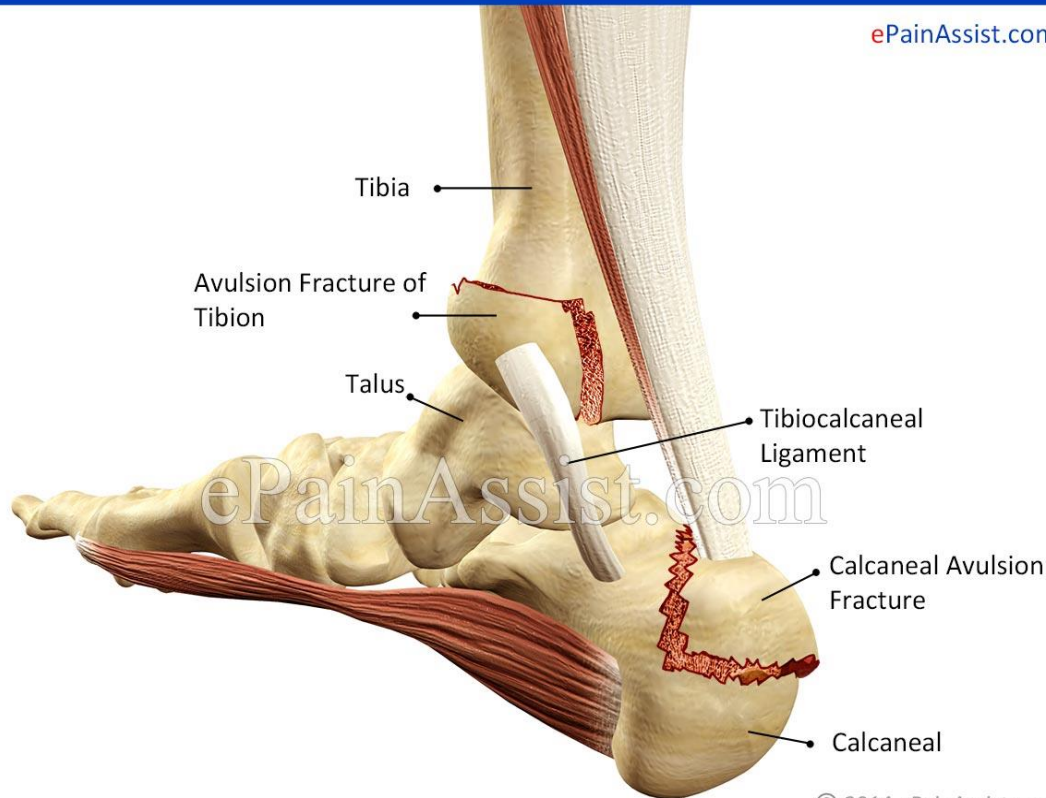


**8. Depressed Fracture:** a fracture especially of the skull in which the fragment is depressed below the normal surface. A depressed skull fracture is a break in a cranial bone (or "crushed" portion of skull) with depression of the bone in toward the brain.

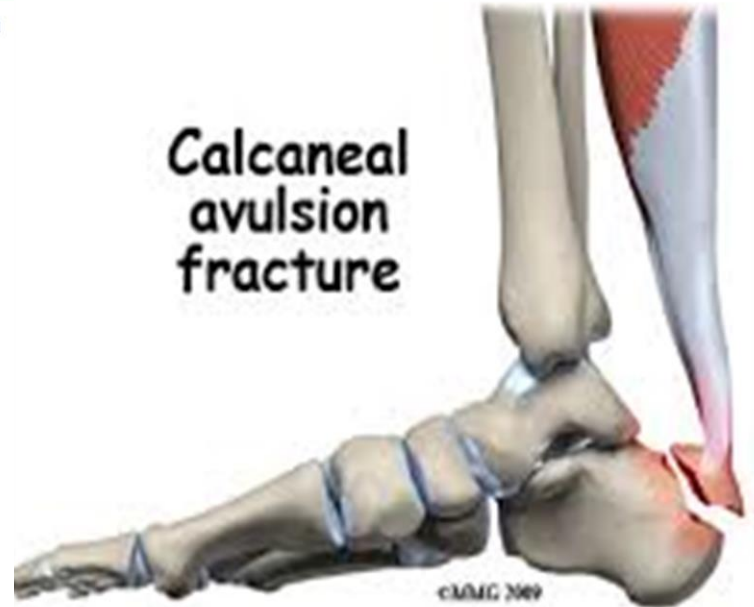


**9. Avulsion fracture** an avulsion fracture is an injury to the bone in a location where a tendon or ligament attaches to the bone. When an avulsion fracture occurs, the tendon or ligament pulls off a piece of the bone.

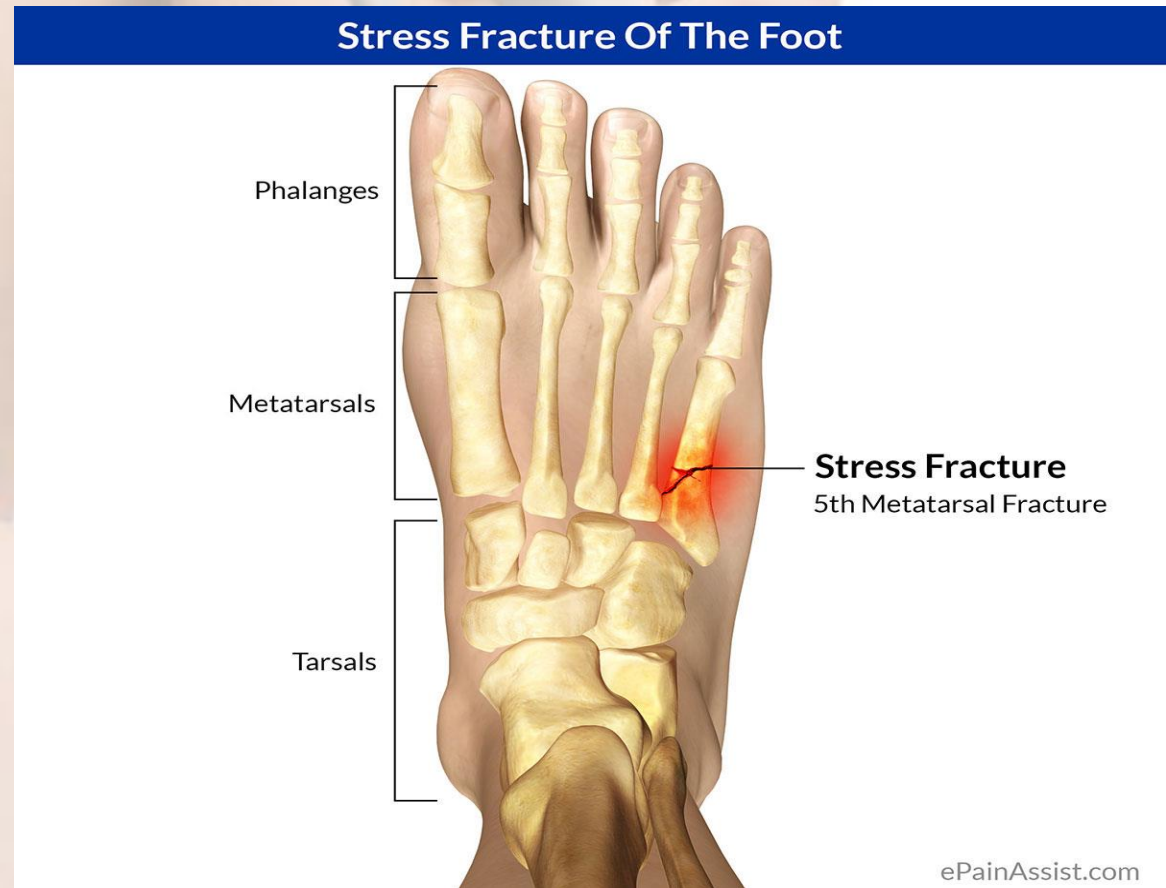
### Ankle Avulsion Fracture



### Calcaneal avulsion fracture



**10. Stress Fracture:** stress fracture A is an overuse injury. It occurs when muscles become fatigued and are unable to absorb added shock. Eventually, the fatigued muscle transfers the overload of stress to the bone causing a tiny crack called a stress fracture.





• In orthopedic medicine, fractures are classified in various ways. Historically they are named after the physician who first described the fracture conditions; however, there are more systematic classifications in place currently.

• *@ According to Mechanism: ----*

- 1. Traumatic fracture** – This is a fracture due to sustained trauma. e.g., fractures caused by a fall, road traffic accident, fight, etc.
- 2. Pathologic fracture** – A fracture through a bone that has been made weak by some underlying disease is called pathological fracture. e.g., a fracture through a bone weakened by metastasis. Osteoporosis is the most common cause of pathological fracture.
- 3. Periprosthetic fracture** – This is a fracture at the point of mechanical weakness at the end of an implant.



## Anatomical location:

An anatomical classification may begin with specifying the involved body part, such as the head or arm, followed with more specific localization.

- Skull fracture
- Rib fracture
- Sternal fracture
- Shoulder fracture
- Clavicle fracture
- Scapular fracture
- Arm fracture
- Humerus fracture
- Ulnar fracture
- Radius fracture
- Hand fracture
- Pelvic fracture
- Fracture of the hip bone
- Femoral fracture
- Patella fracture
- Tibia fracture
- Fibular fracture
- Foot fracture

# Symptoms of bone fractures

Symptoms of a bone fracture can vary wildly depending on the affected region and severity. However, they often include some of the following:

- Pain
- Swelling
- Bruising
- Discolored skin around the affected area
- Angulation - the affected area may be bent at an unusual angle
- The patient is unable to put weight on the injured area.
- The patient cannot move the affected area

# Symptoms of bone fractures.....cont..

Symptoms of a bone fracture can vary wildly depending on the affected region and severity. However, they often include some of the following:

- The affected bone or joint may have a grating sensation
- If It is an open fracture, there may be bleeding
- When a large bone is affected, such as the pelvis or femur the sufferer may look pale and clammy
- There may be dizziness (feeling faint)
- Feelings of sickness and nausea.
- Deformity

# Causes Of Fractures:

- 1. Direct Force:** The bone breaks at the spot of application of the force e.g., direct hit over a bone, bullet injury.
- 2. Indirect Force:** The bone breaks away from the application of force somewhere else, e.g. after falling on outside stretched hands.
- 3. Force of Powerful Muscle Actions:** For example, violent cough may cause rib fracture
- 4. Aging and bone disease:** Can increase the risk of fractures (pathologic fractures), with bones breaking even minor accidents
- 5. Twisting Forces:** Such injuries are often seen in football and skiing accidents where a person's foot is caught and twisted with enough forces to fracture a leg bone.



# Fractures (broken bones): First aid

- **Stop any bleeding.** Apply pressure to the wound with a sterile bandage, a clean cloth or a clean piece of clothing.
- **Immobilize the injured area.** Don't try to realign the bone or push a bone that's sticking out back in. If you've been trained in how to splint and professional help isn't readily available, apply a splint to the area above and below the fracture sites. Padding the splints can help reduce discomfort.
- **Apply ice packs to limit swelling and help relieve pain.** Don't apply ice directly to the skin. Wrap the ice in a towel, piece of cloth or some other material.
- **Treat for shock.** If the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower than the trunk and, if possible, elevate the legs.

## General principles for treatment of fractures:

- Establish and maintain an open airway
- Control hemorrhage
- Begin resuscitation
- After dealing with life-threatening conditions, identify and immobilize all fractures. Immobilization is accomplished by splinting.
- **Splints:** A splint is a device used to immobilize a fracture.

**If the broken bone is the result of major trauma or injury, call your local emergency Medical team.**

Also call for emergency help if:

- The person is unresponsive, isn't breathing or isn't moving. Begin Cardio-Pulmonary Resuscitation (CPR) if there's no breathing or heartbeat.
- There is heavy bleeding.
- Even gentle pressure or movement causes pain.
- The limb or joint appears deformed.
- The bone has pierced the skin.
- The extremity of the injured arm or leg, such as a toe or finger, is numb or bluish at the tip.
- You suspect a bone is broken in the neck, head or back.



**THANK YOU**