

# FRACTUIRE



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# Definition of fracture

A fracture may be defined as a break in the continuity of the bone. There may or may not be displacement of the bony fragment



# Causes of fracture

A fracture is caused by some degree of force by:

**Direct injury** – which occurs at the point of injury

**Indirect injury**- when the fracture occurs at a point distant to the impact.

The amount of damage will depend on the degree of force which caused the injury.

# Types of Fracture

**Green stick fracture-** periosteum may be torn but remains in contact with the bone. Union is ensured because of the minimal damage to the blood supply

**Transvers fracture-** is usually stable but may result in delayed or non union

**oblique or spiral fracture-** the fracture is unstable and may result in shortening but union usually take place

# Types of Fracture

**A fracture involving a joint-** serious injury which involves bleeding into the joint and may result in irregularity of the joint surface with the risk of osteo arthritis later in life

**Avulsion fracture-** an avulsion fracture occur when a small piece of bone to which the tendon is attached is pulled off from the bone.

## **Continue.....**

**An impacted fracture-** in an impacted fracture the bone ends are crushed together.

**A depressed fracture-** it happened to the skull bone . It can cause damage to the underlying brain

**A complicated fracture-** involve neighbourings structures such as organs, blood vessels muscles and nerves .

**A stress fracture-** often occurs in the metatarsals or shaft of the tibia in athletes





# ***Transverse fracture***



# An oblique fracture



## Fracture involving a joint



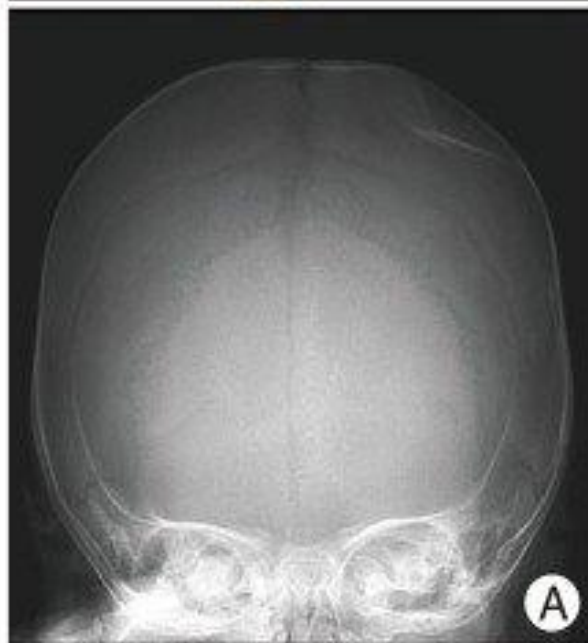
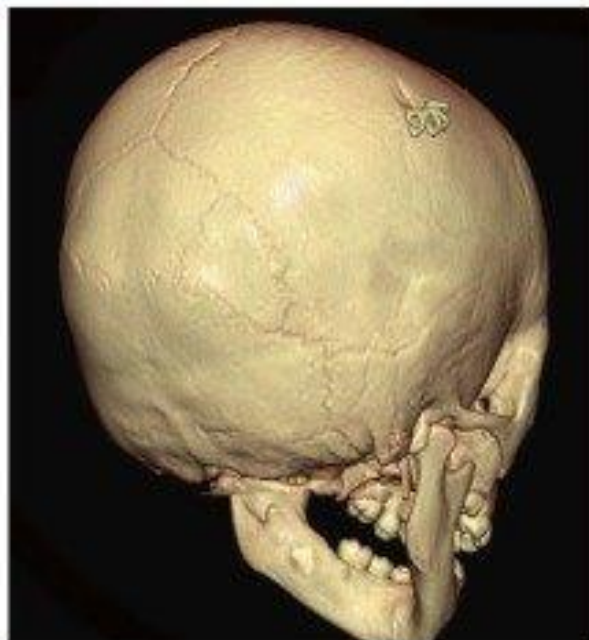
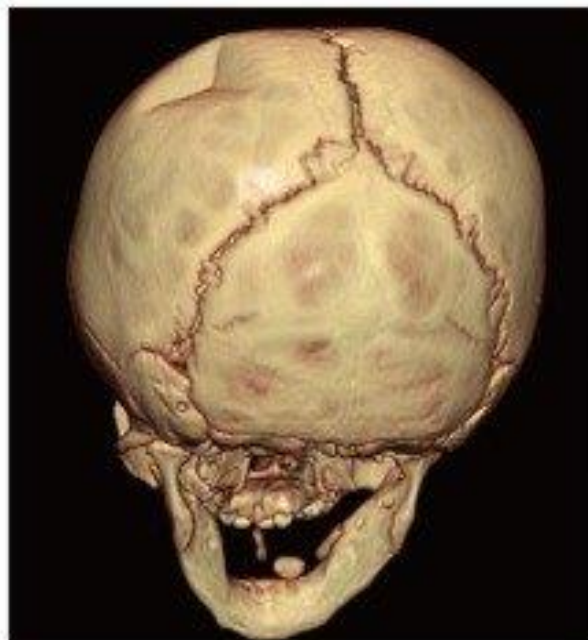
**Multiple  
fractures  
of the  
end of the  
humerus**

# Calcaneal avulsion fracture



# Impacted Fracture

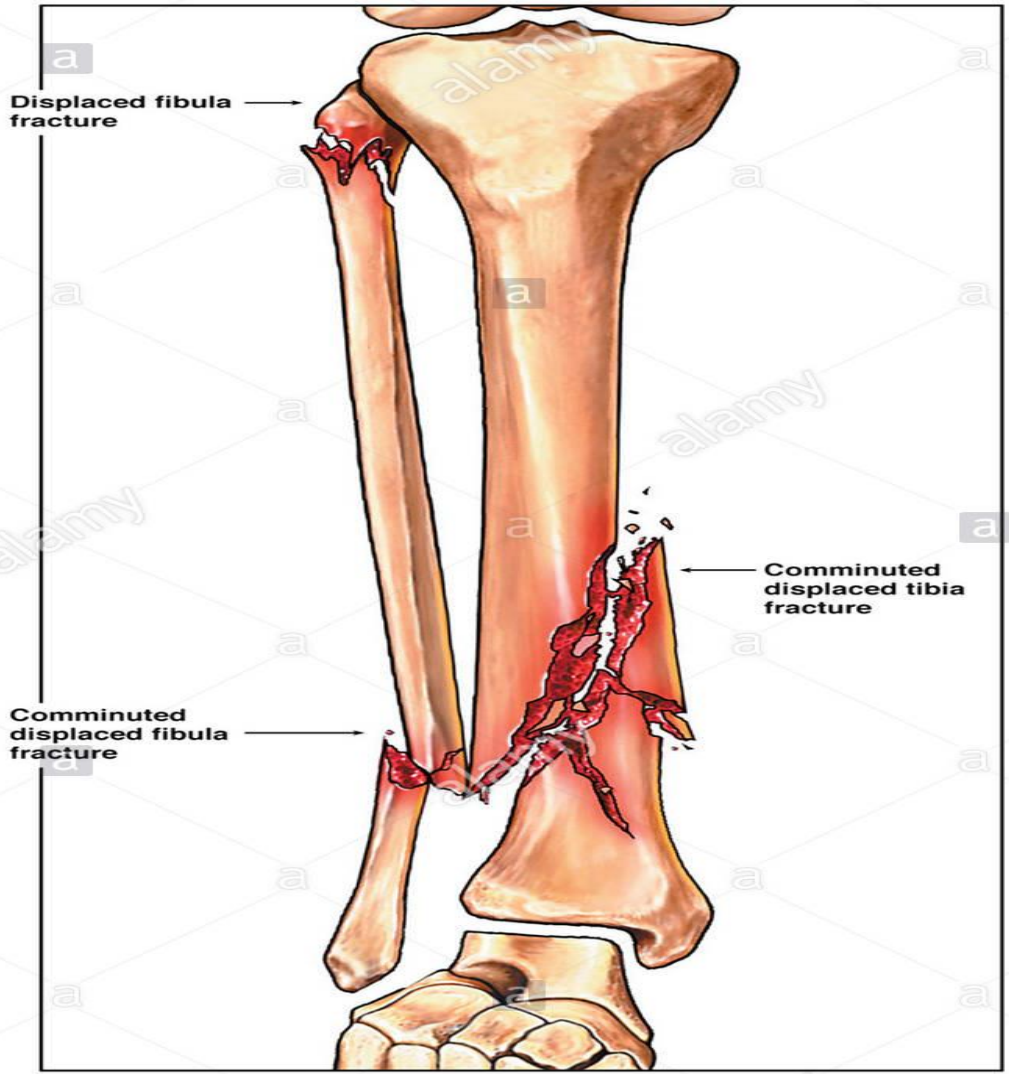




### Normal Anatomy

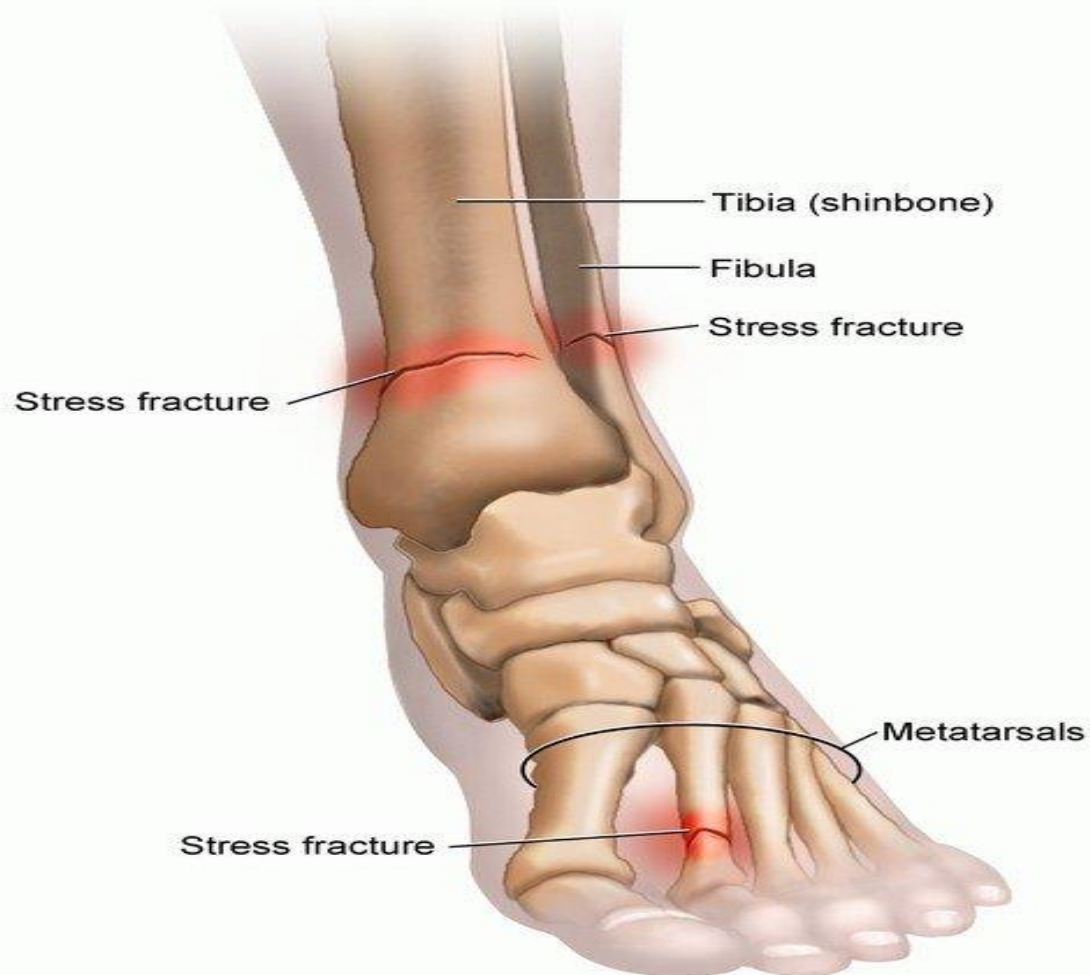


### Post-accident Condition





## Stress Fractures of the Leg and Foot



# Classification of fracture

**A . Pathological fracture-** may be defined as fracture caused by the degree of violence which would not normally produce a break in the bone.

Condition which lead to pathological fractures are:

**1.Generalized weakness** of the bone such as rickets and osteomalacia, Paget's disease

**2. Localized weakness** of bone such as infection e.g destruction of bone by osteomyelitis , local tumor or bone cyst.

# Pathological fractures



## **Continue.....**

**Non pathological fracture:** may be defined as fractures where there no underlying disease of the bone. Fracture may be further classified as :

**1. Close fracture or simple fracture** where there is no break in the overlying skin

**2. open fracture or compound fracture:** where the overlying skin is broken so that the fracture site is in communication with the outside air, the bone ends may or may not go through the skin

simple fracture



compound fracture







*The signs and symptoms arise from the effects described:*

*1. Break in the continuity of the bone:*

*a. Tenderness at the site of the fracture*

*b . abnormal mobility and crepitation*

***2. Displacement of fragment:***

*a. Deformity*

*b. loss of function*



# Signs and symptoms of fracture

## ***3. Damage to the soft parts causes :***

- a. Pain and tenderness at the fracture site*
- b. Bleeding- external and visible, internal causing swelling, bruising and shock*
- c. skin wound*
- d. paralysis or ischemia*
- e. Evidence of damage to organs e.g. brain, spleen, bladder, lungs*

# Treatment of fracture

1. Resuscitation of the patient

2. Reduction:

➤ open reduction

➤ Close reduction

3. Immobilization -using plaster ,splints

4. Re-education and restoration of function

5. Prevention of complication

## **Process of union:**

The process of union depends upon the formation of callus, which can be looked as a natural bone cement. The blood vessel at the fracture sites clots and then gradually becomes changed into bone as bone forming cell or osteoblasts, grow into it both from the periosteum and from the broken bones .

## **Process of union:**

Union which is natural process will restore continuity and rigidity even without treatment but it can be aided by efficient immobilization.

Manipulation is necessary to restore alignment and prevent mal-union.

Failure of the bone end to unite by bone is called non-union

# Complications of fractures

## IMMEDIATE

**A . Systemic Hypovolemia Shock**

**B. Local injury to:**

- major vessels
- Muscles and tendons
- Joints
- viscera

# LATE COMPLICATIONS

## **Related to imperfect union**

1. Delayed union
2. Non union
3. Mal union
4. Cross union

## **Others**

1. Avascular necrosis
2. Shortening
3. Joint stiffness
4. Osteomyelitis
5. Ischemic contracture
6. Myositis .
7. osteoarthritis

# Early complication

## **A. Systemic**

1. Hypovolemic shock
3. Fat embolism
4. pulmonary embolism
5. Aseptic traumatic fever
6. Septicemia
7. Crush syndrome

## **B. Local**

1. Infection
2. 2. Compartment syndrome



# Management of open fracture

- Analgesia
- Fluid/blood replacement
- Splinting
  - Antibiotics
  - Tetanus prophylaxis
- X-ray
  - Dressing wound
- Surgical debridement
- Stabilization

# Goal of management

Safe the life

Safe the injured limb

Restoration function of injured limb

prevent infection

# Fracture

NURSING CARE MANAGEMENT



# Nursing Management

Nursing management for close and open fractures should be differentiated.

## **Nursing Assessment**

Assessment of the fractured area includes the following:

- **Close fracture.** The patient with close fracture is assessed for absence of opening in the skin at the fracture site.
- **Open fracture.** The patient with open fracture is assessed for risk for osteomyelitis, tetanus, and gas gangrene.
- The fractured site is assessed for signs and symptoms of infection.

## **Diagnosis**

Based on the assessment data gathered, the nursing diagnoses developed include:

**Acute pain** related to fracture, soft tissue injury, and muscle spasm.

**Impaired physical mobility** related to fracture.

**Risk for infection** related to opening in the skin in an open fracture

## **Planning & Goals**

**Planning and goals developed for a patient with fracture are:**

- Relief of pain.
- Achieve a pain-free, functional, and stable body part.
- Maintain asepsis.
- Maintain vital signs within normal range.
- Exhibit no evidence of complications.

## **Nursing Interventions**

Nursing care of a patient with fracture include:

- The nurse should instruct the patient regarding proper methods to control edema and pain.
- It is important to teach exercises to maintain the health of the unaffected muscles and to increase the strength of muscles needed for transferring and for using assistive devices.
- Plans are made to help the patients modify the home environment to promote safety such as removing any obstruction in the walking paths around the house.

# Continue.....

**Wound management.** Wound irrigation and debridement are initiated as soon as possible.

**Elevate extremity.** The affected extremity is elevated to minimize edema.

**Signs of infection.** The patient must be assessed for presence of signs and symptoms of infection



## **Evaluation**

- The following should be evaluated for a successful implementation of the care plan.
- Pain was relieved.
- Achieved a pain-free, functional, and stable body part.
- Maintained asepsis.
- Maintained vital signs within normal range.
- Exhibited no evidence of complications

## **Discharge and Home Care Guidelines**

After completion of the home care instructions, the patient or caregiver will be able to:

**Control swelling and pain.** Describe approaches to reduce swelling and pain such as elevating the extremity and taking analgesics as prescribed.

**Care of the affected area.** Describe management of immobilization devices or care of the incision.

Consume diet to promote bone healing.

**Mobility aids.** Demonstrate use of mobility aids and assistive devices safely.

**Avoid excessive** use of injured extremity and observe weight-bearing limits