PRESENTED BY
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ASSO.PROF
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DEFINTION

FRACTURE

- It may be defined as the break in the continuity of any long or short bone.

-wongs.

DEFINITION

- A fracture is a structural break in the normal continuity of a bone.

-wongs

causes

Direct

- force directly to the bone.

Indirect

- force to the surrounding area of the bone.

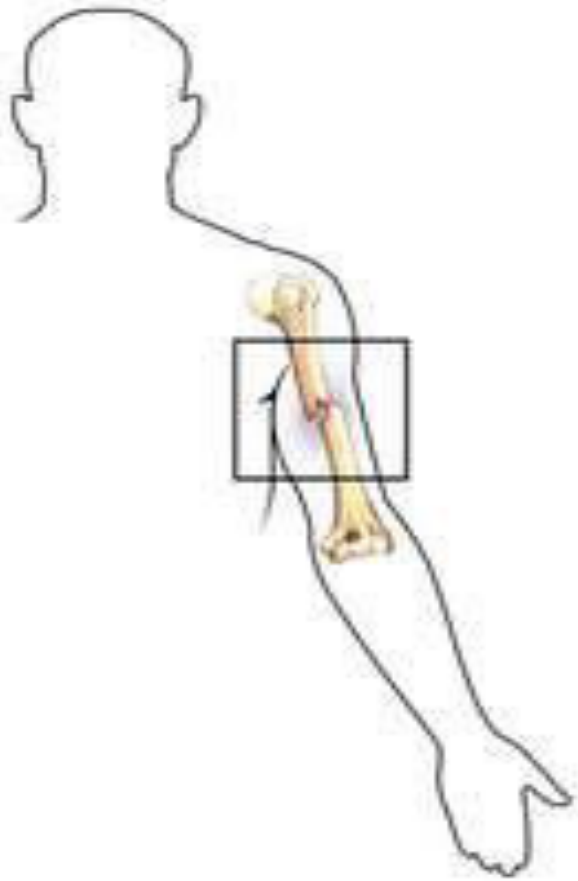
Etiology

- Traumatic injuries
- Direct blows
- Crushing forces
- Extreme muscle contraction
- Sudden twisting motions

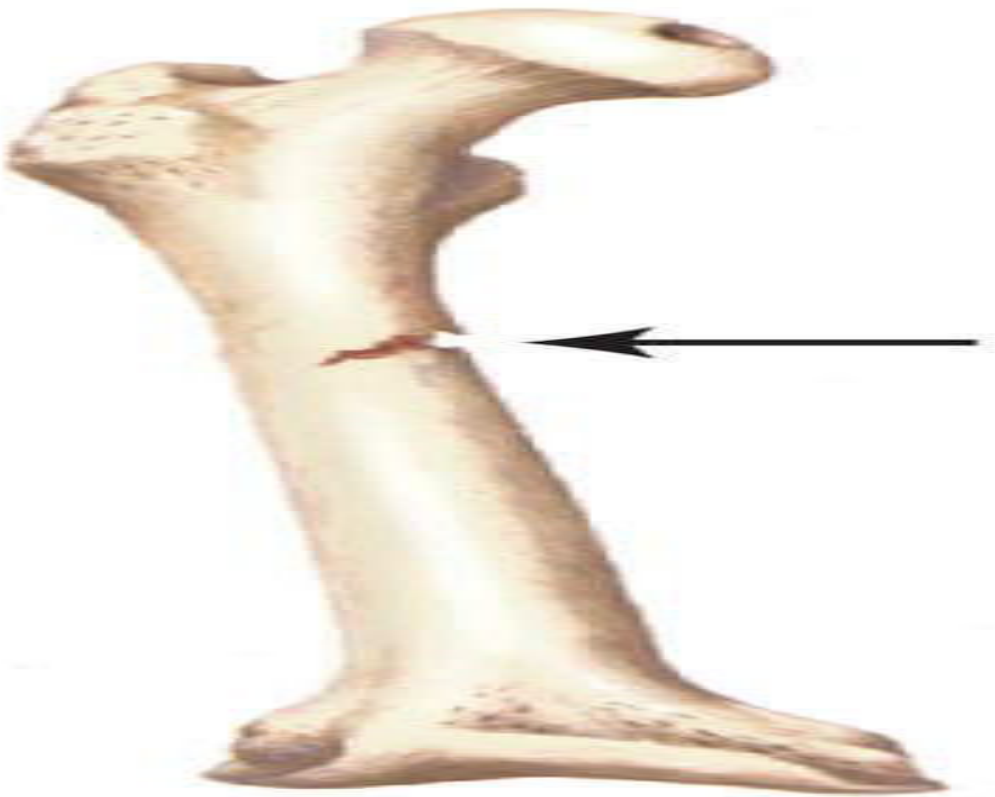
Types of fracture

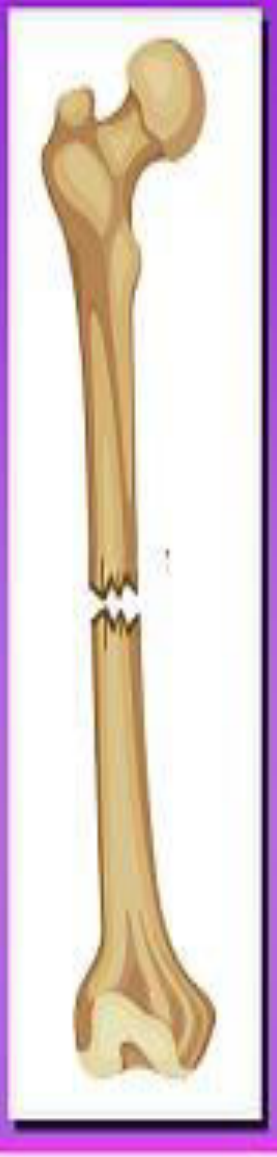
1) Complete fracture
2) Incomplete fracture
3) Open fracture
4) Closed fracture

Complete fracture



Incomplete fracture



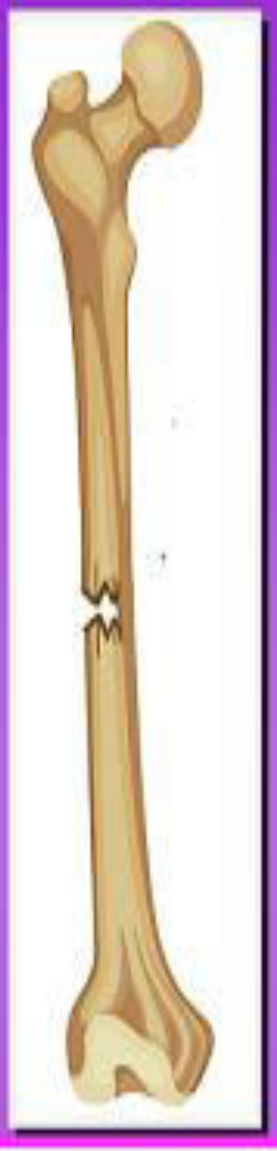


Is the bone :

completely broken

or

part of it?

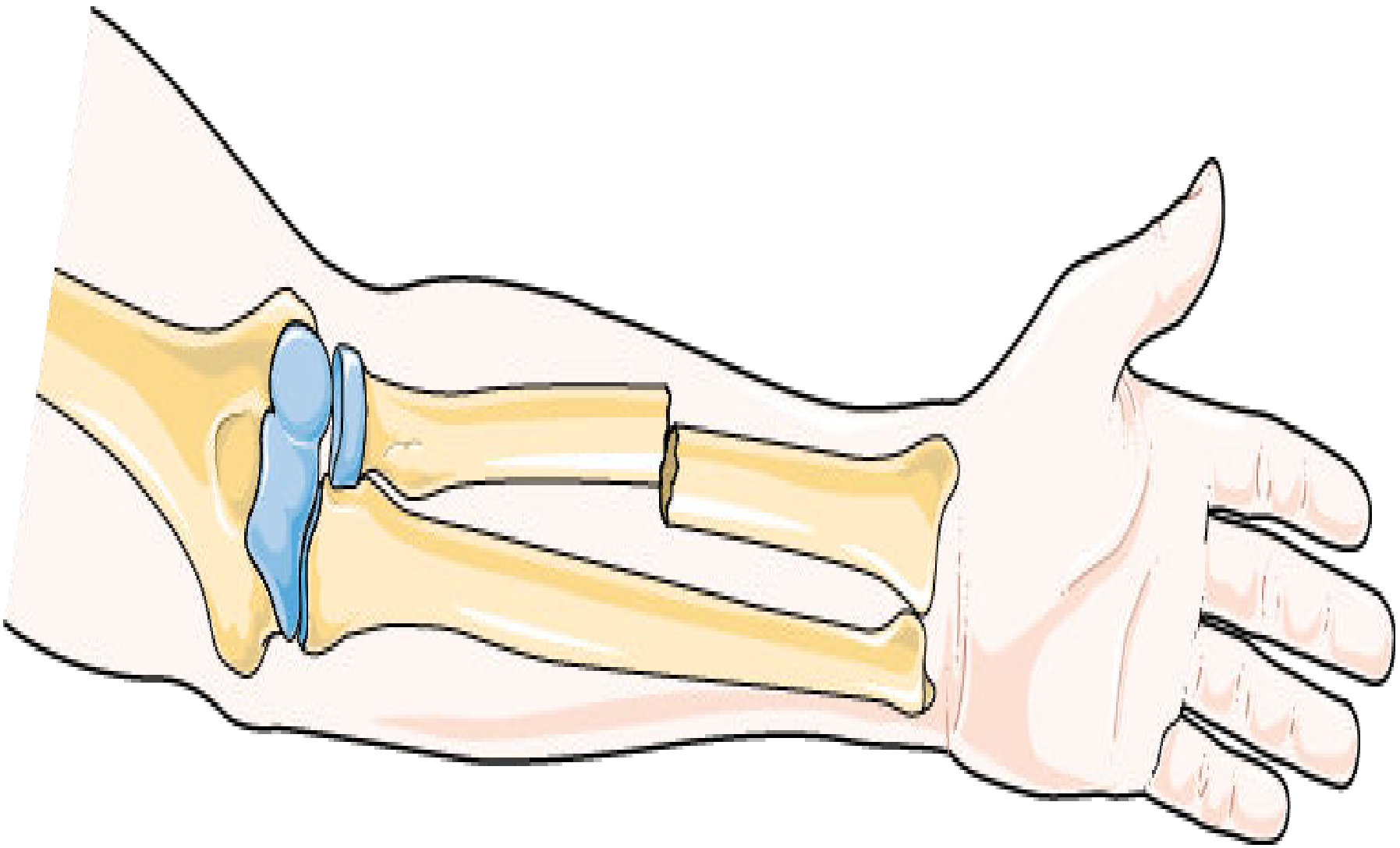


Complete Fracture:

Incomplete Fracture:

Open fracture

Closed fracture



cont....

Open fracture are grading according to the following criteria:

- Grade 1- it is a clean wound less than 1cm long.
- Grade 2- it is a larger wound without extensive soft tissue damage.
- Grade 3- it is highly contaminated, has extensive soft tissue damage, and is the most severe.

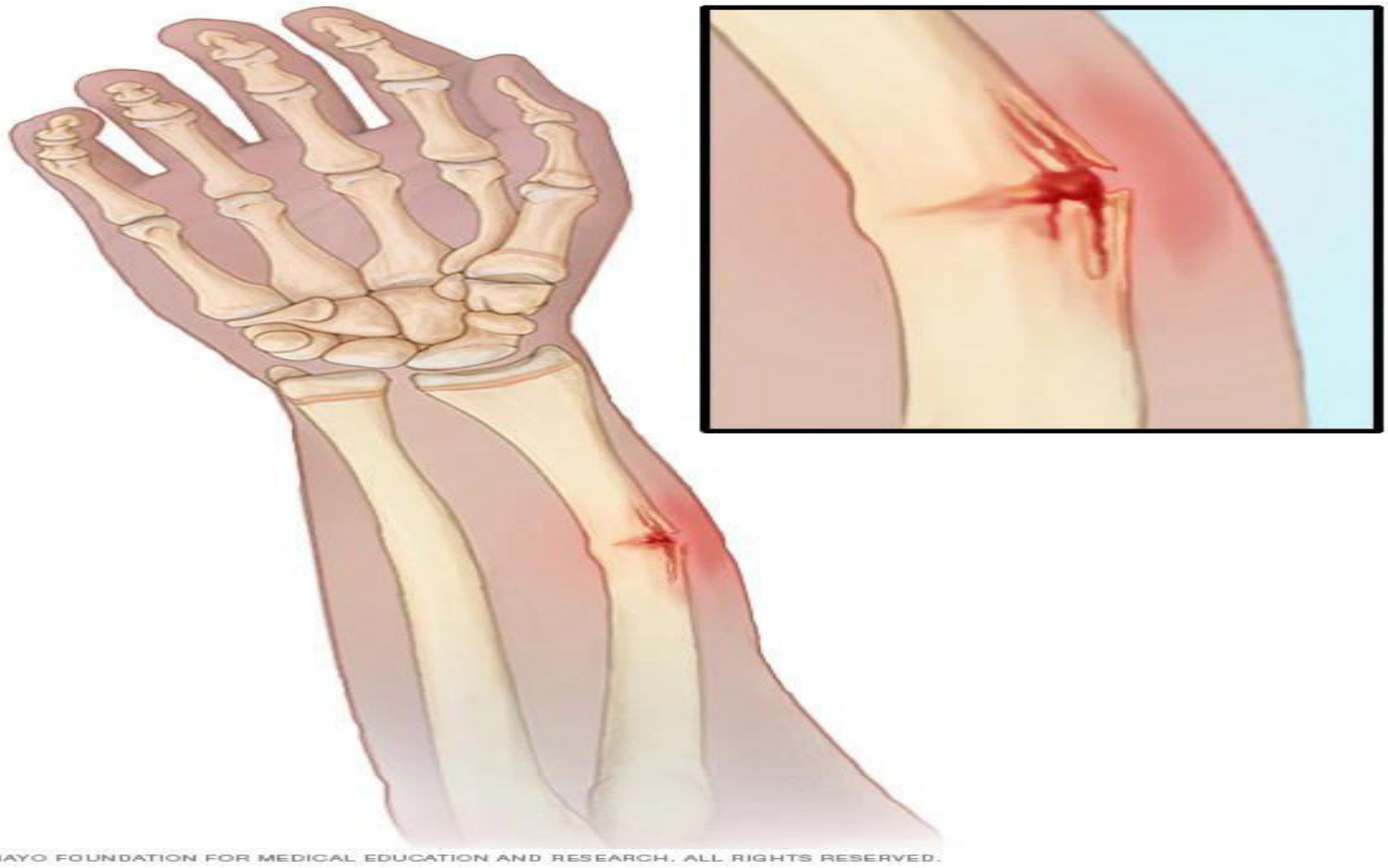
Typical bone fracture

- Greenstick fracture
- Spiral fracture
- Comminuted fracture
- Transverse fracture
- Compression fracture

Greenstick fracture

- A fracture in which one side of a bone is broken while the other is bent (like a green stick).

Greenstick fracture



Spiral fracture

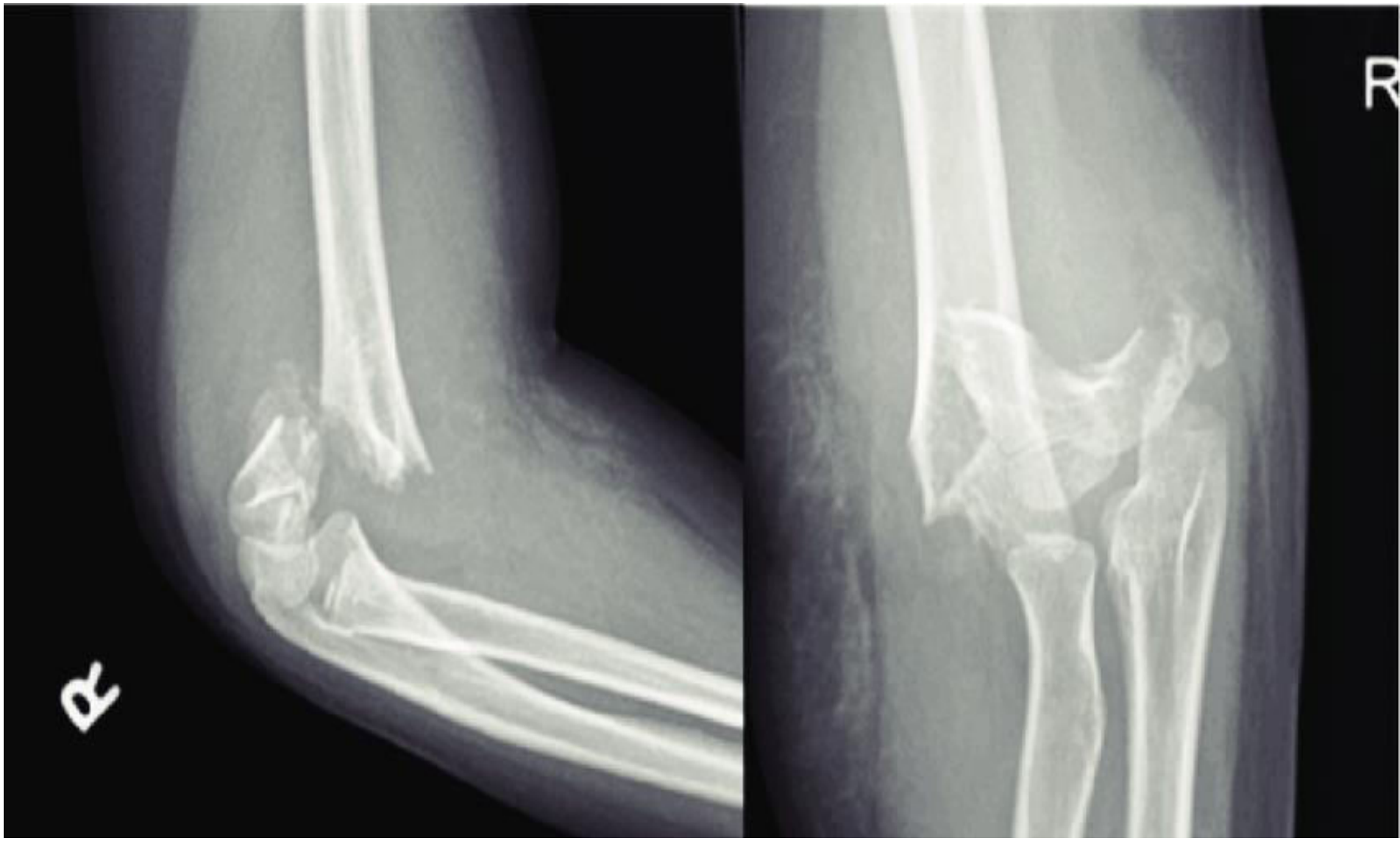
- A fracture, sometimes called torsion fracture, in which a bone has been twisted apart.

Spiral fracture

Communited fracture

- A fracture, in which bone is broken, splintered or crushed into a number of pieces.

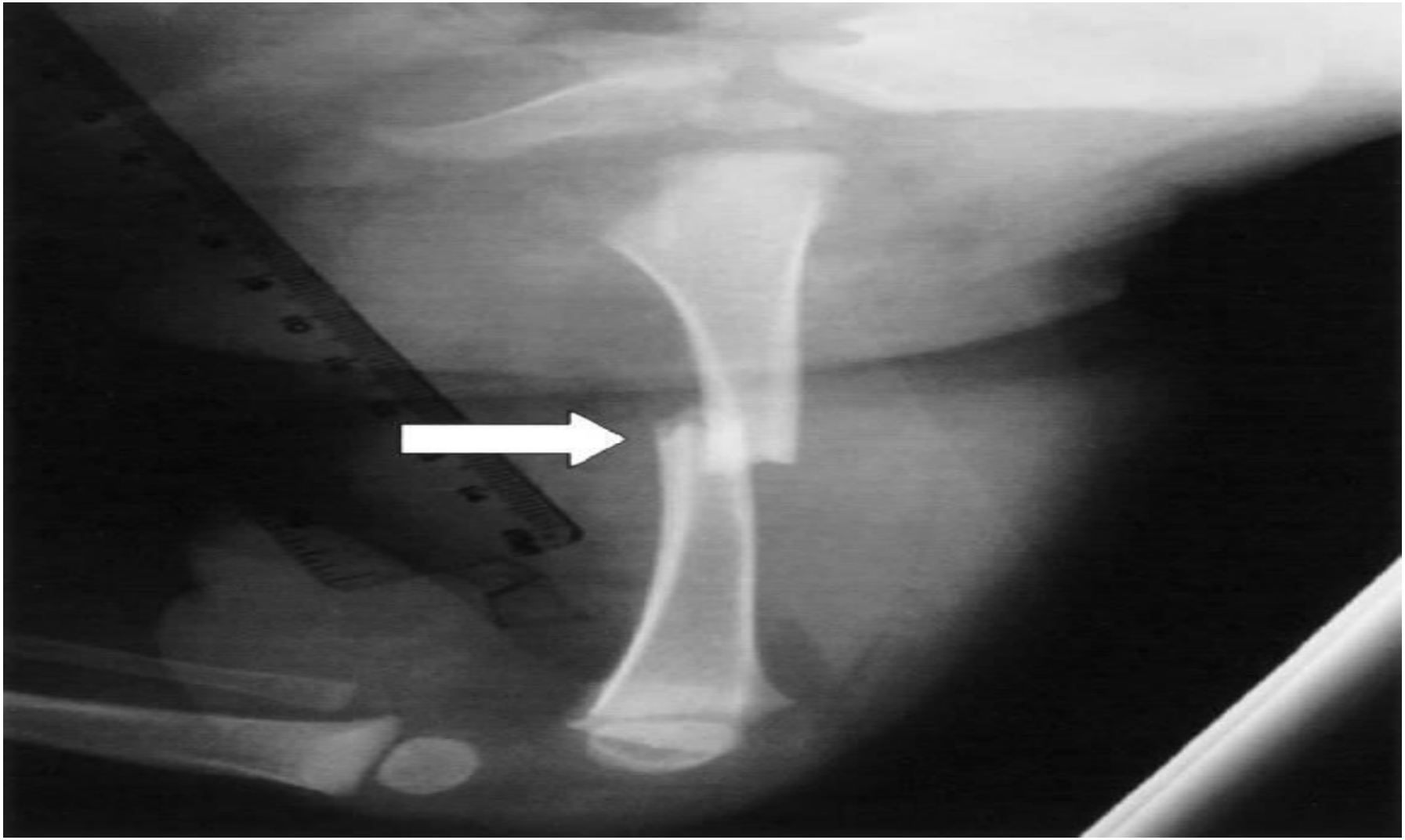
Communited fracture



Transverse fracture

- A fracture, in which the breaks is across the bone, at a right angle to the long axis of the bone.

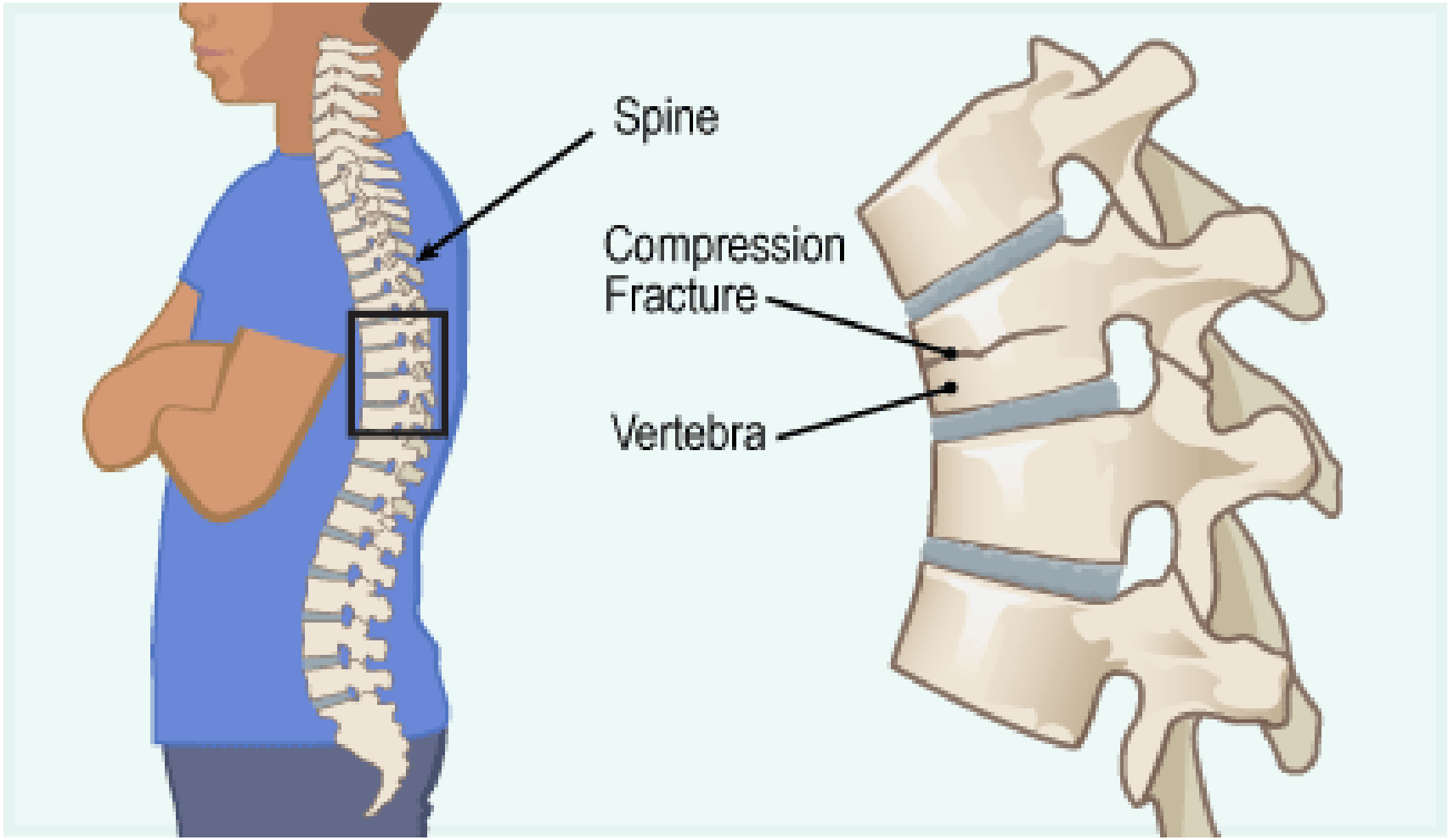
Transverse fracture



Compression fracture

- A fracture caused by compression, the act of pressing together. Compression fractures of the vertebrae are especially common with osteoporosis.

Compression fracture



Pathophysiology

- Due to etiological factors

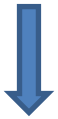
- When bone get fractured, there is a destruction of surrounded blood vessel, periosteum and soft tissue.

- Bleeding occurs and haematoma is formed in medullary canal between the fracture ends the bone & beneath the periostrum.

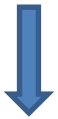
- Death of the tissue immediately occurs adjacent to fracture

Cont....

- Inflammatory response occurs



- Vasodilation, edema, pain, loss of function.



- They build the formation of bone healing.

Clinical features

- Swelling
- Discoloration
- Edema
- Loss of function
- Crepitus
- Hypovolemic shock
- pain

Physical finding

- Pain
- Swelling
- False motion, loss of function
- Crepitus (cracked sound)
- Deformity
- Ecchymosis

Neurovascular status

- Paresthesia
- Ischemia
- Pallor
- Pain on movement
- Loss of active motion
- Injured blood vessels, muscle and nerve

shock

- Bone is vascular

complications

- Shock
- Fat embolism
- Compartment syndrome
- Deep vein thrombosis
- Disseminated intravascular coagulopathy
- infection

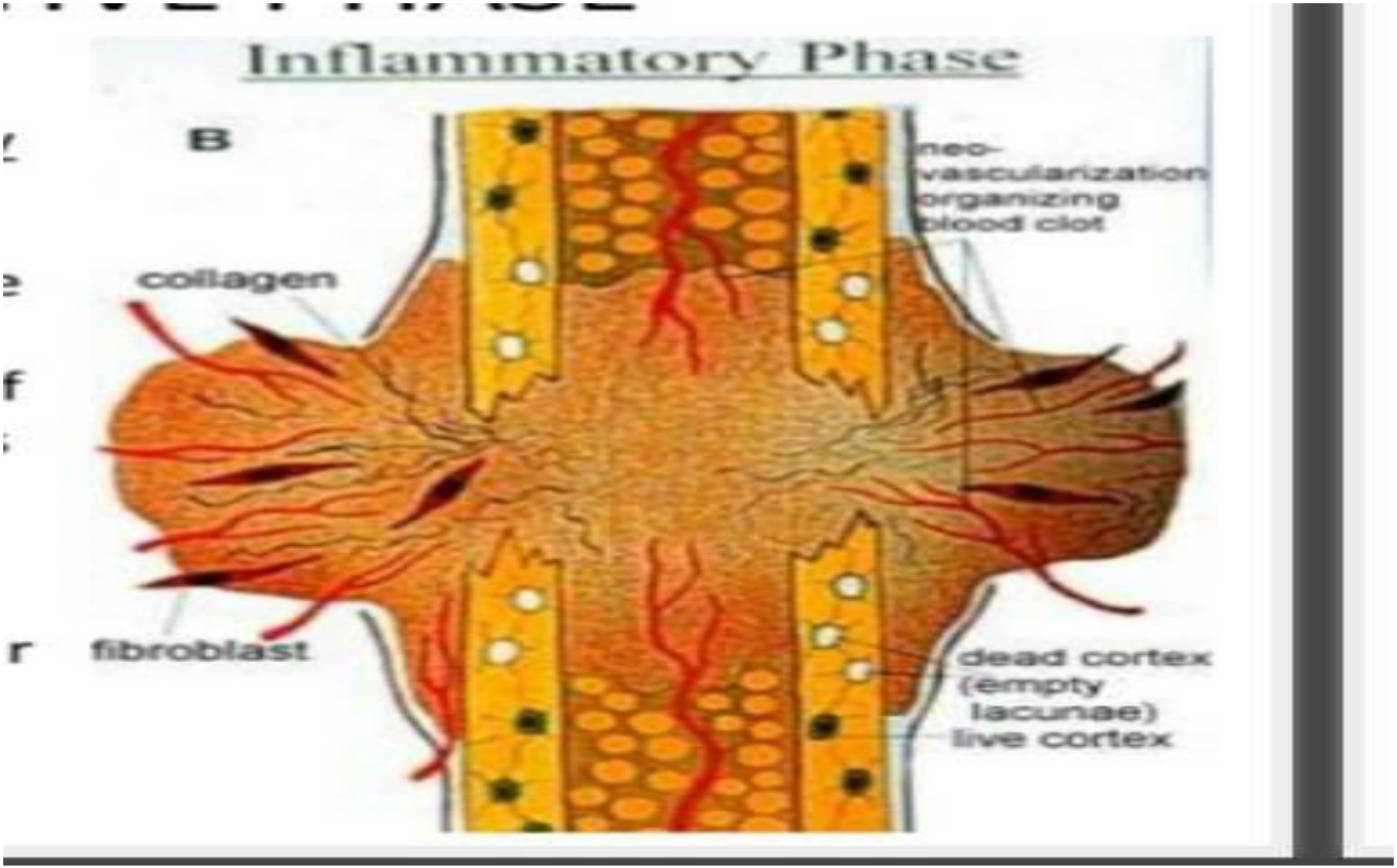
Stages of fracture healing

Three major phases:

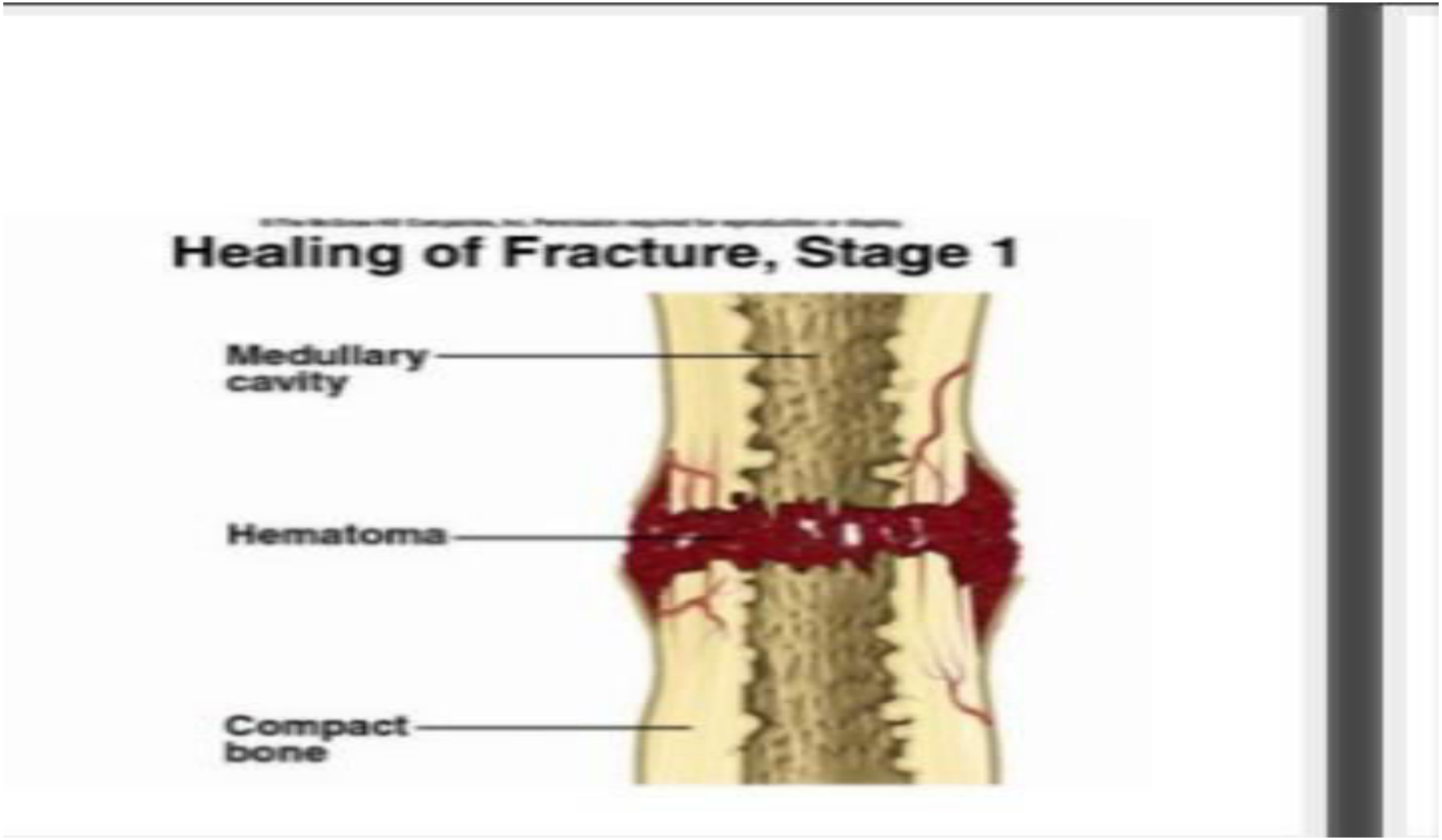
1. Reactive phase

- Fracture and inflammatory phase
- Stage of hematoma formation
- Granulation tissue formation

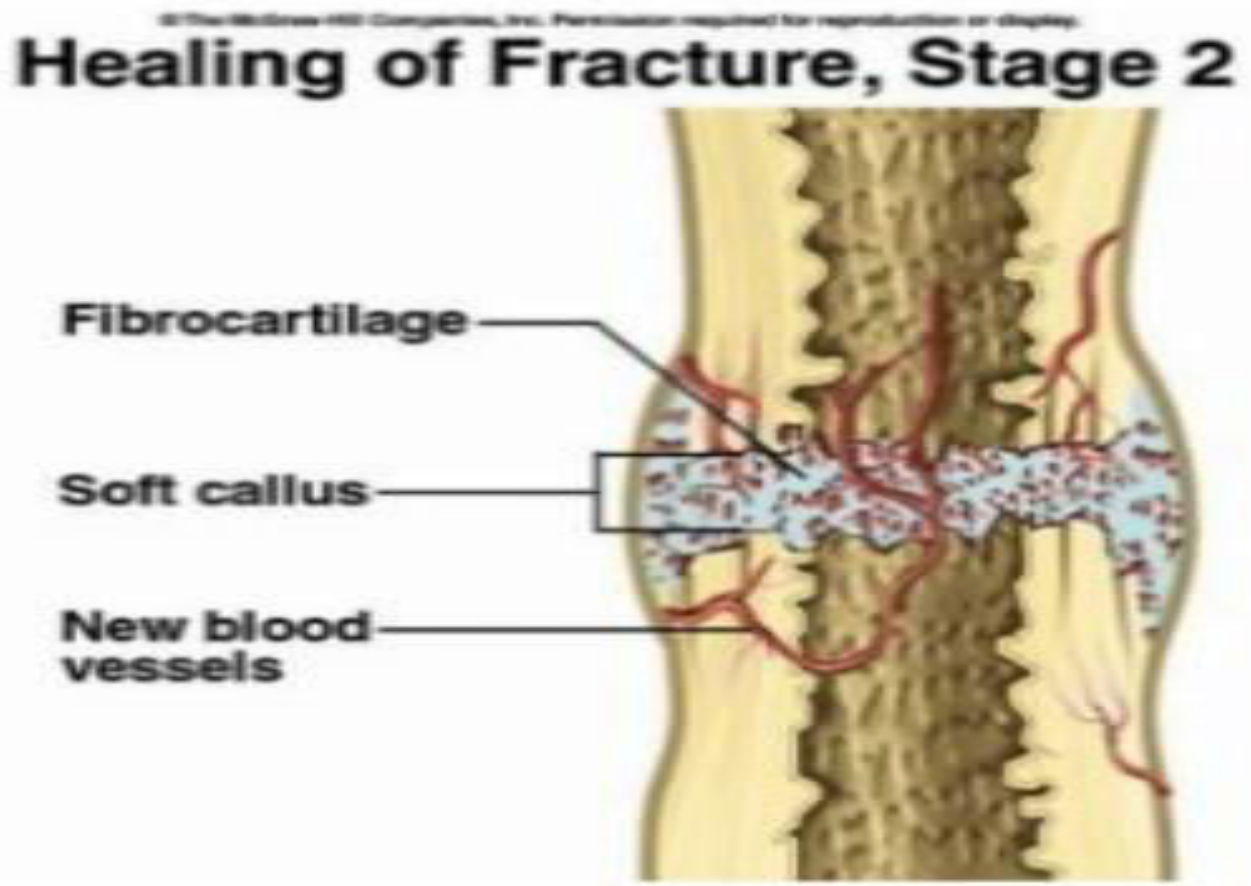
Fracture and inflammatory phase



Stage of hematoma formation



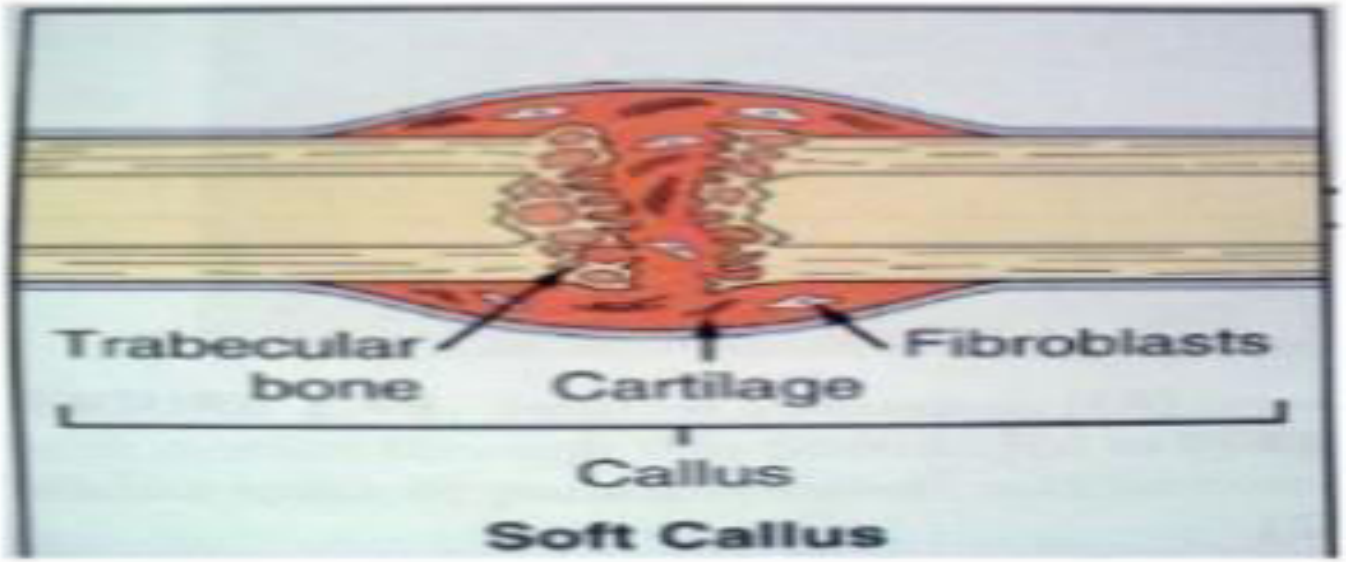
Granulation tissue formation



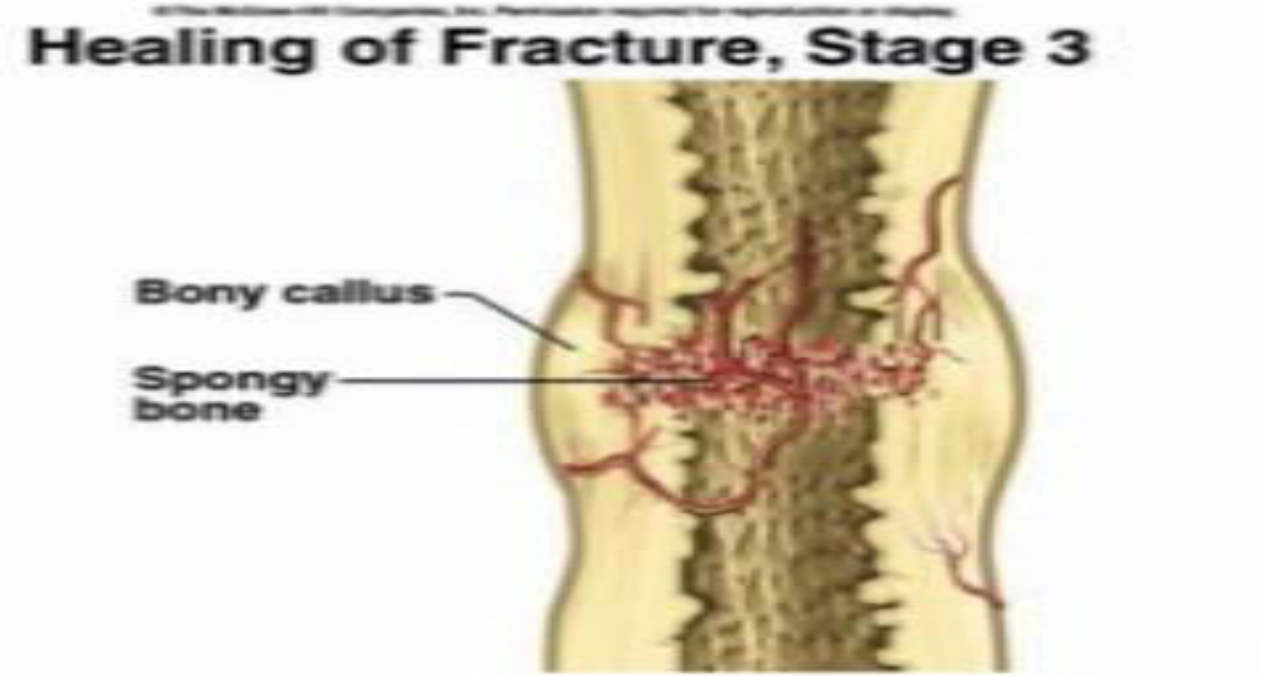
2. Reparative phase

- Cartilage callus formation
- Lamellar bone deposition

Cartilage callus formation



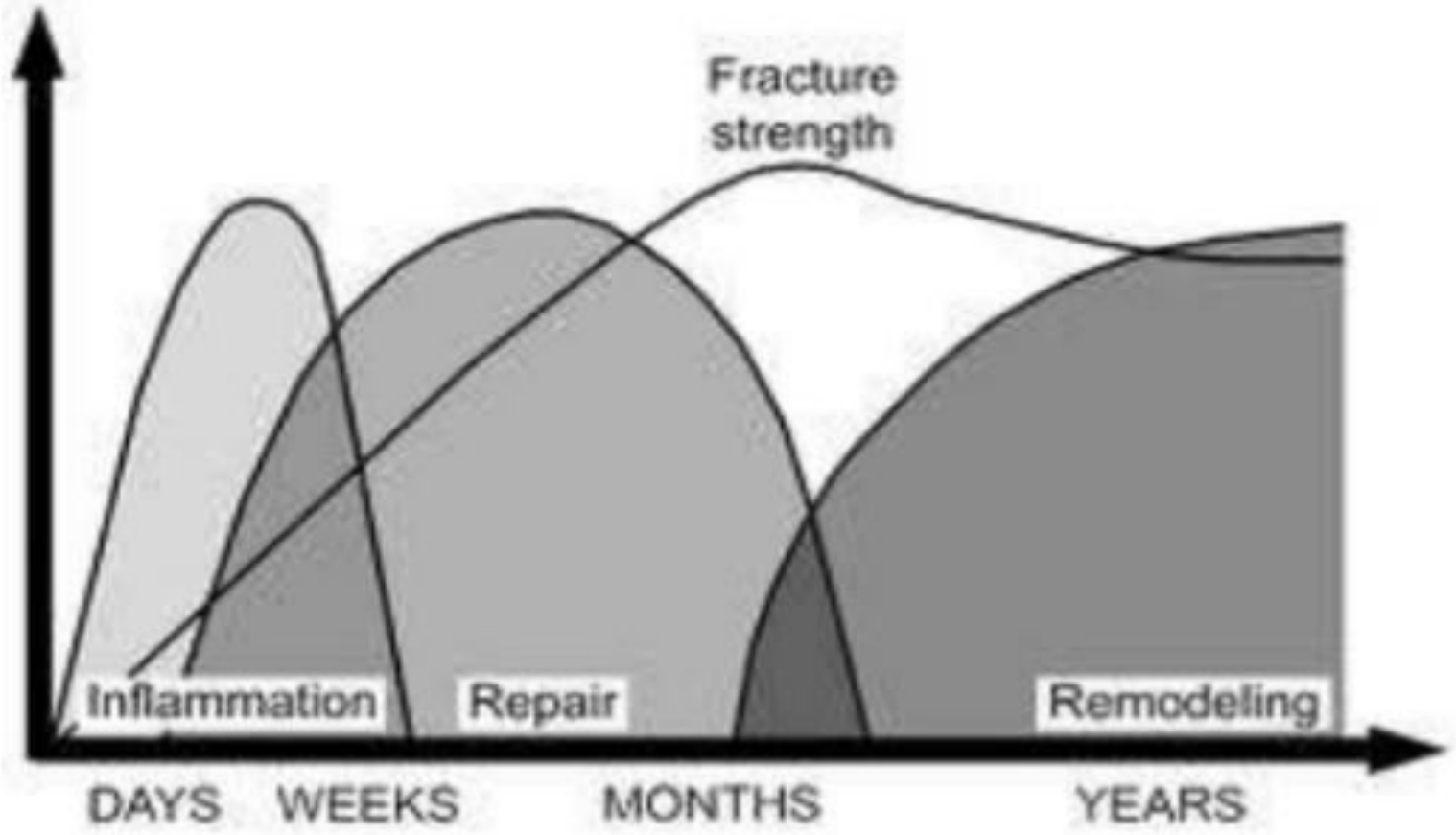
Lamellar bone deposition



3.Remodeling phase

- Remodeling to original bone contour.

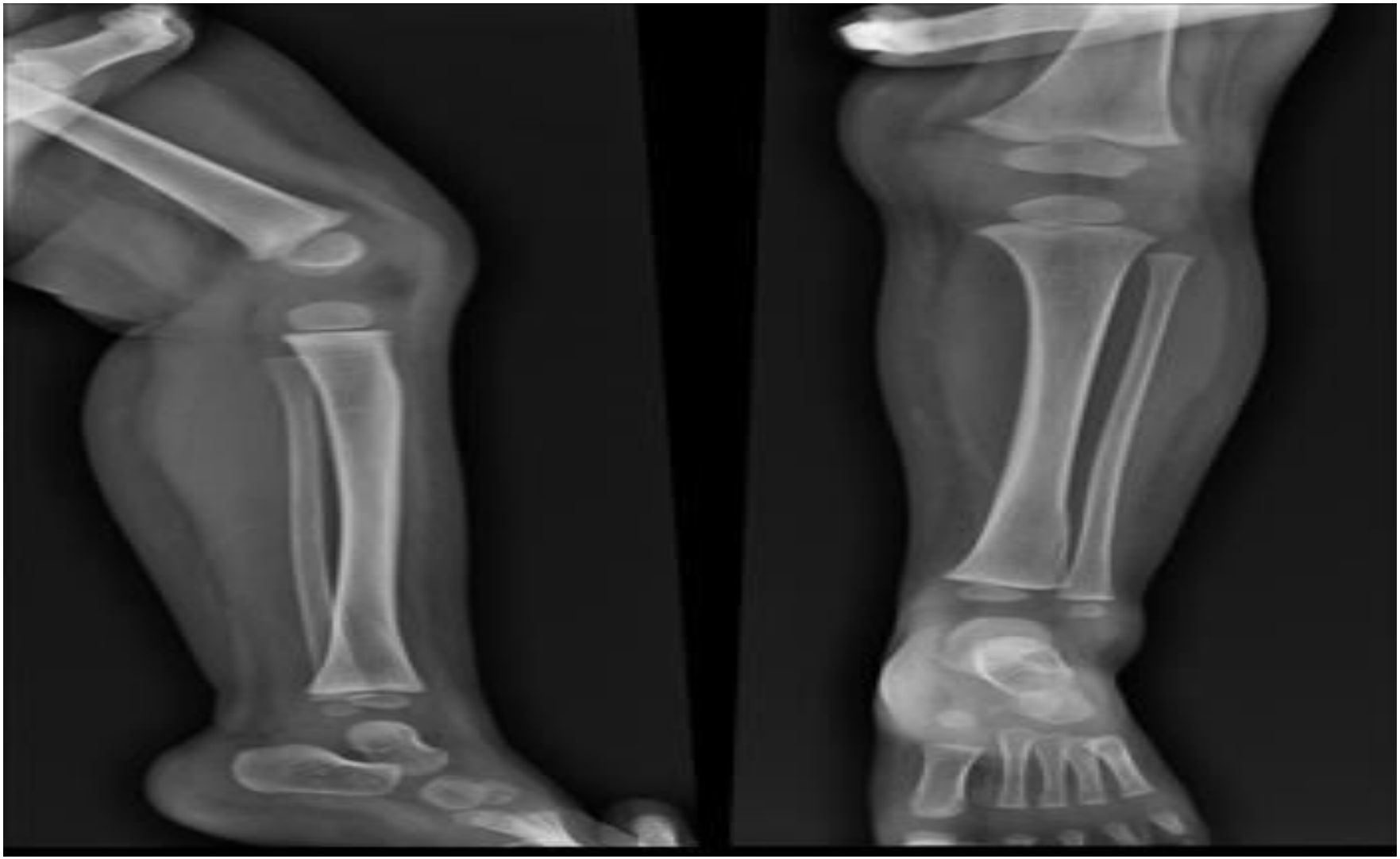
Remodeling to original bone contour.


Fracture
strength
Inflammation
Repair
Remodeling
DAYS
WEEKS
MONTHS
YEARS

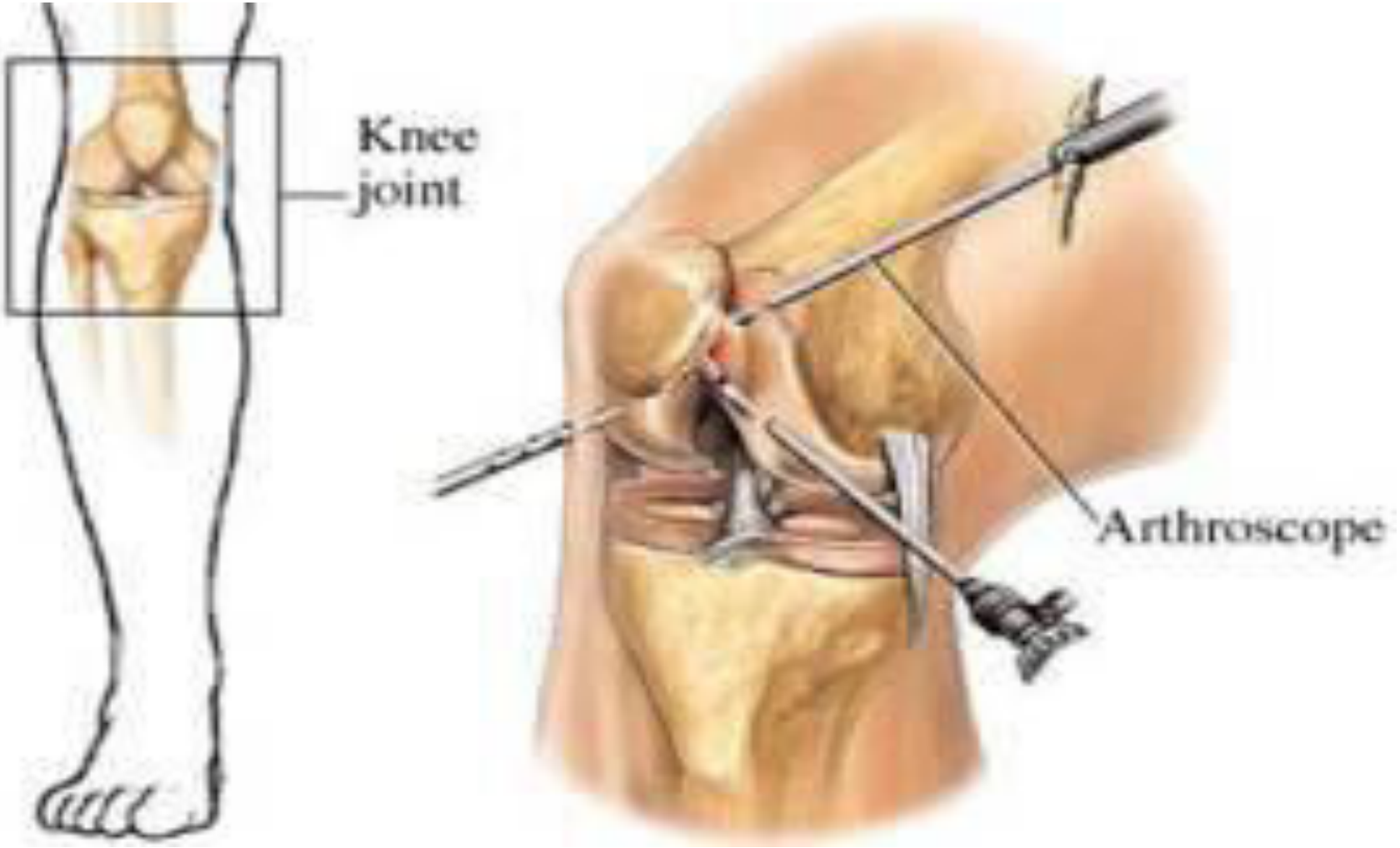
Diagnostic evaluation

- X-ray
- Blood studies
- Arthroscopy
- angiography
- Electromyogram
- CT scan
- MRI
- Bone scan

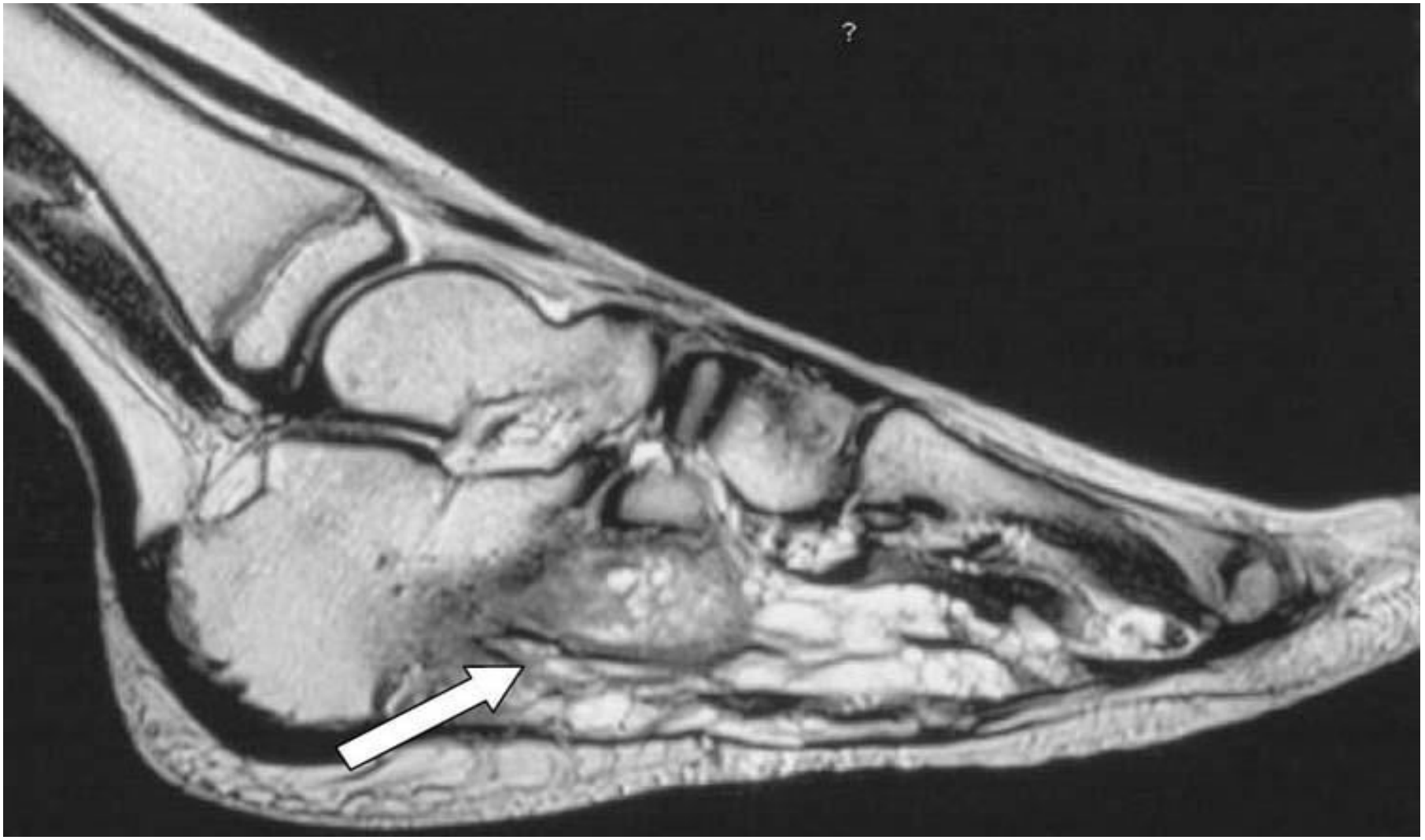
X-ray



arthroscopy



angiography



Medical/surgical management

1. Reduction

-reduction of the fracture refers to restoration of the fracture fragments to anatomic alignment and rotation.

Open reduction

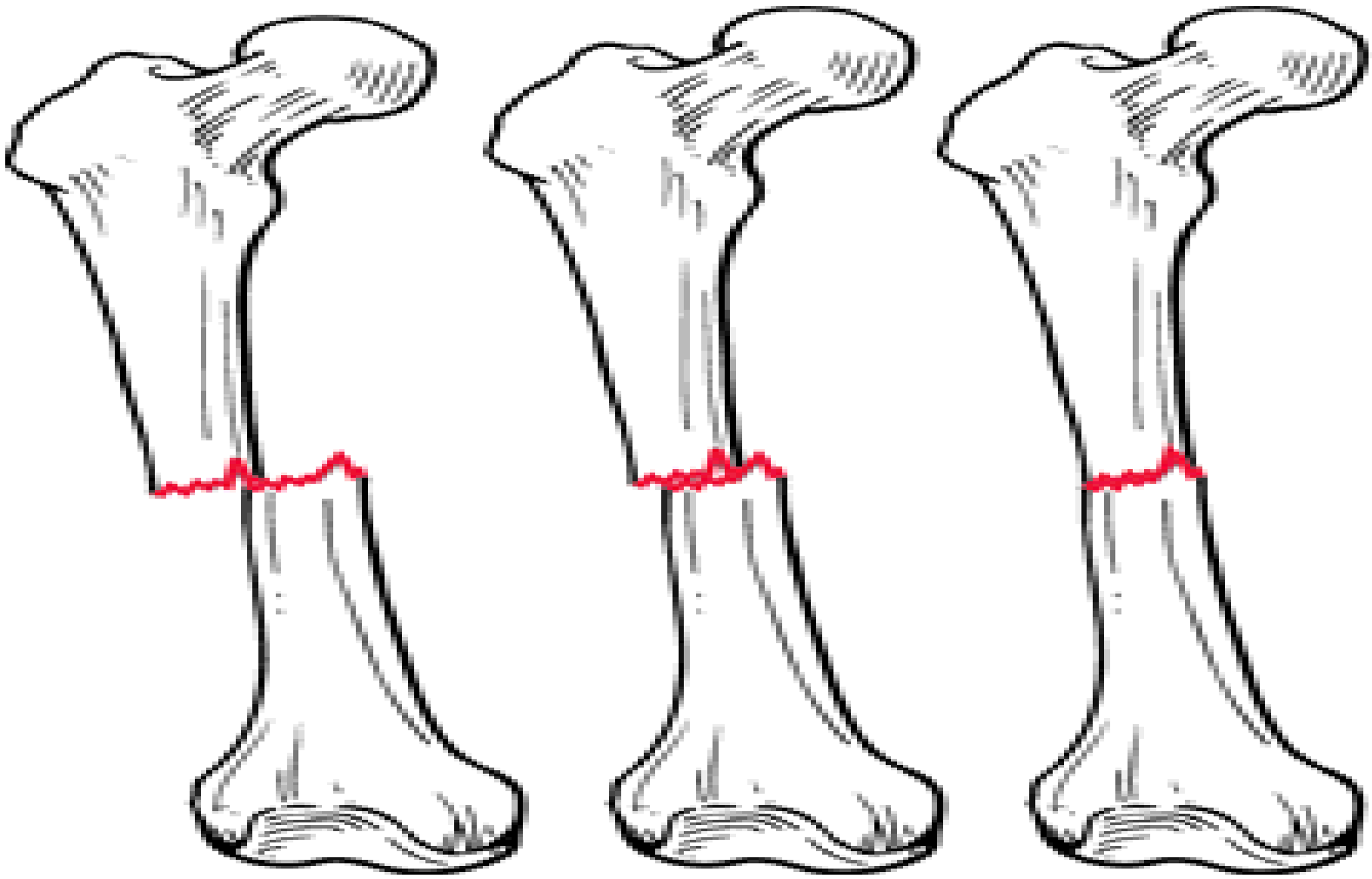
- It’s a surgical approach, the fracture fragments are reduced.
- External/internal fixation devices (metallic pins, wires, screws, plates, rods) may be used to hold the bone fragments in position until solid bone healing.

Open reduction

Closed reduction

- Extremity is held in the desired position while the physician applies a cast, splint, or other device.
- X-rays are obtained to verify that the bone fragments are correctly aligned.
- Traction (skin or skeletal) may be used to effect fracture reduction and immobilization.

Closed reduction



2. immobilization

- Immobilization may be accomplished by external or internal fixation.
- Methods of external fixation include bandages, cast, splints, continuous traction, and external fixators.
- Metal implants used for internal fixation serve as internal splints to immobilize the fracture.

cast

splint

traction

traction

1. Skin traction

- Bucks traction used for knee, hip bone fracture.
- Weight usually 5-7 pounds attach to skin.

2. Skeletal traction

- Needs invasive procedure
- Weight is upto 10 kg attached to bone.

splinting

- Splinting is the most common procedure for immobilizing an injury.

Possible items for splinting

- Soft materials

-towels, blankets, or pillows, tied with bandaging materials or soft cloths.

- Rigid materials

- A board, metal strip, folded magazine or newspaper, or other rigid item.

3. Maintaining and restoring function

- Restlessness, anxiety, and discomfort are controlled with a variety of approaches, such as reassurance, position changes, and pain relief strategies, including use of analgesics.
- Exercises are encouraged to minimize disuse atrophy and to promote circulation.
- Participation in activities of daily living is encouraged to promote independent functioning and self-esteem.

Treat open fracture

- Cover wound
- Splint without disturbing wound
- Place a moist 4”x4” dressing over bone end to prevent drying.
- Assist the surgeon in debridement of wound.

Nursing management

Patients with closed fracture

- Encourage patient not to mobilize fracture site.
- Exercises to maintain the health of unaffected muscles for using assistive devices (eg: crutches, walker)
- Teach patients how to use assistive devices safely.

Patients with open fracture

- administers tetanus prophylaxis if indicated.
- Wound irrigation and debridement in the operating room are necessary.
- Intravenous antibiotics are prescribed to prevent or treat infection.
- Wound is cultured.

Care of cast

- Detailed explanation of the procedure
- Skin preparation involves through cleansing of the skin.
- Presence of unremovable particle or dust should be reported to the physician.
- As the water evaporates the cast will dry.
- Do not cover the cast.

Care of external fixation

- Assessment-pain, nerve supply, infection, pin site, etc.,
- Small bleeding from pin site is normal.
- Critical, if extend more than 24 hours.
- Administer antibiotics, analgesic medicine.

Care of traction

- Assessment-skin breakdown, pain, constipation.
- Stool softner
- Plenty of fluids
- Provide bedpan and urinals for elimination
- Encourage clients activity.

Nursing diagnosis

- Acute pain related to breakdown of continuity of the bone.
- Impaired physical mobility related to application of traction or cast.
- Self care deficit related to fracture
- Imbalanced nutrition less than body requirement related to increase demand of nutrient for bone healing.
- Constipation related to immobilization
- Risk for infection related to damage of preventive barrier
- Skin integrity related to applying immobilising devices.

Health talk to mother

- Away from traumatic injuries.

Thank you