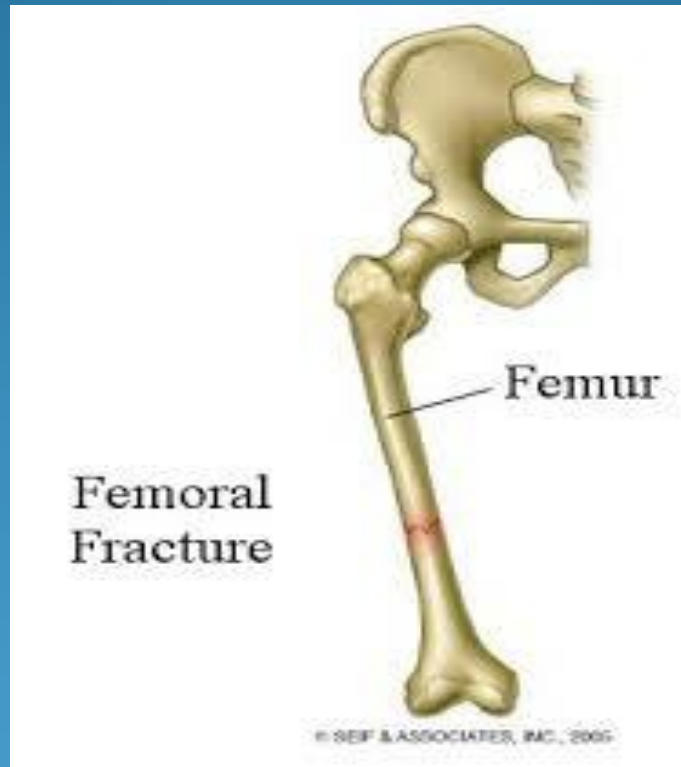


Femoral Shaft Fracture



Femoral Shaft Fracture

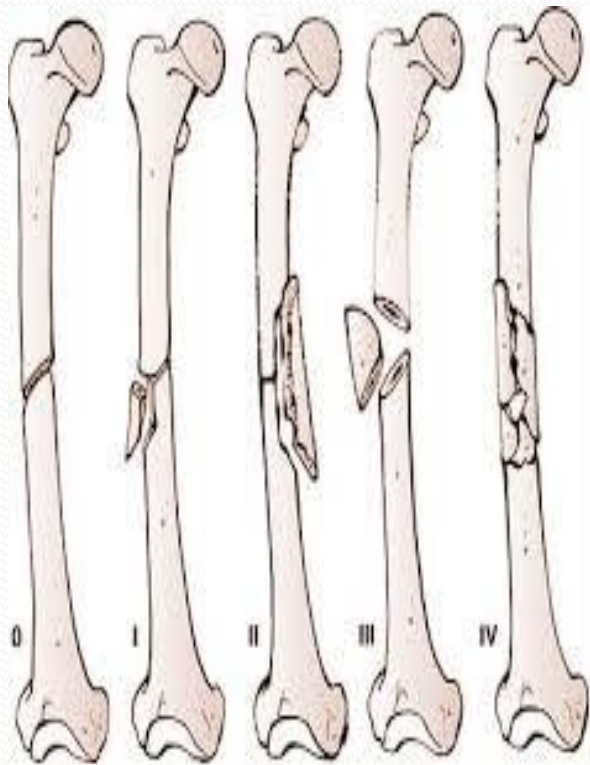
- The femoral shaft is well padded with muscles (an advantage in protecting the bone from all but the most powerful forces) but the disadvantage is that fractures are often severely displaced by muscle pull, making reduction so difficult.

Femoral Shaft Fracture

- Special Features:-
 1. It is essentially a fracture of young adults and usually results from a high energy injury.
 2. Diaphyseal fracture in elderly patients should be considered pathological unless proved otherwise.
 3. In children under 4 years of age ,the possibility of physical abuse must be kept in mind.

Femoral Shaft Fracture

- X-ray :-
 - A. Most fractures of femoral shaft have some degree of comminution, it is the reflection of the amount of force involved in these injuries.
 - B. Displacement may be in any direction.
 - C. Sometimes there are two fracture lines separated by an unbroken length of bone “the segmental fracture”.
 - D. The pelvis and knee must always be x-rayed to avoid missing a fracture in them.



Femoral Shaft Fracture

- Treatment:-

The risk of systemic complications can be largely reduced by early stabilizing of the fracture.

1. General:-assessment of blood loss and resuscitation of patient.



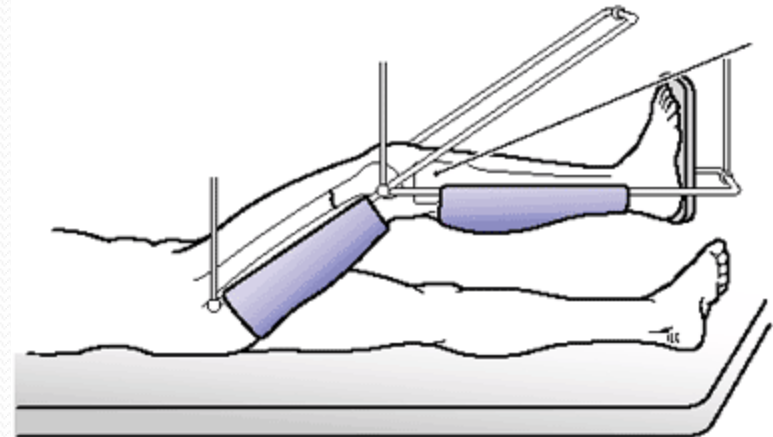
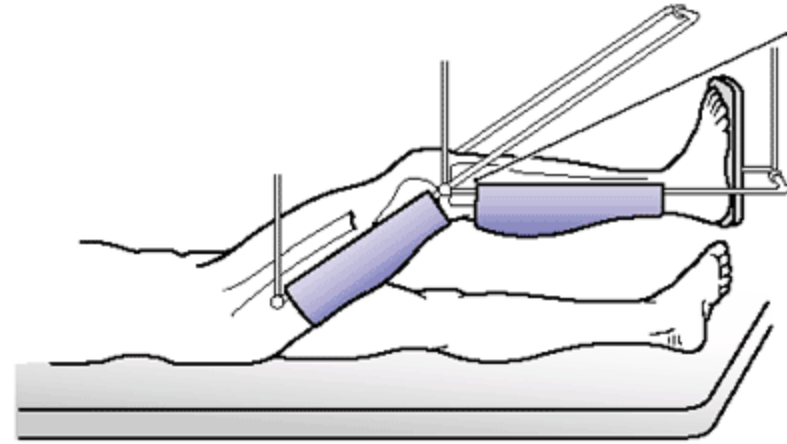
Femoral Shaft Fracture

2. Traction and bracing :-

The main indications of traction are :-

- A. Fractures in children.
 - B. Contra-indications to anesthesia.
 - C. Lack of suitable skill or facilities for internal fixation
- .

The chief drawback is the length of time spent in bed(10-14) weeks for adults with its attendant problems.



Femoral Shaft Fracture

- Some of the difficulties are overcome by reducing the time in traction and then changing to a plaster spica or (in case of lower third fracture) functional bracing for 6-8 weeks.
- While the patient is in traction, joint mobility must be preserved by encouraging movement and exercise.

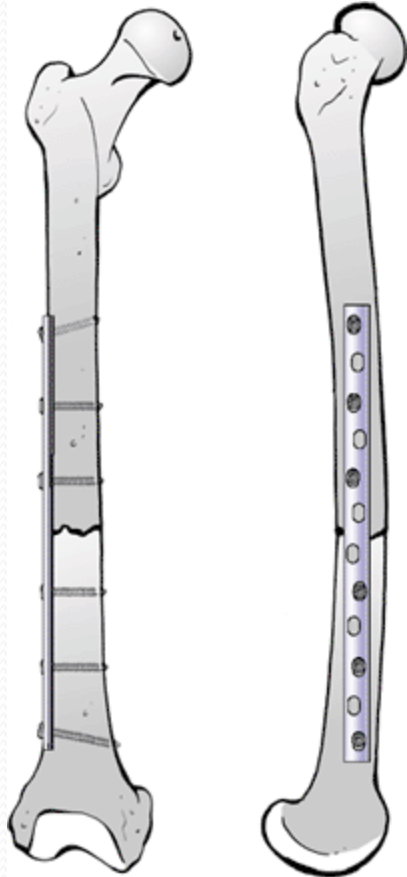
Femoral Shaft Fracture

3. Open reduction and plating :-

Fixation with plates and screw was popular but now it is limited due to complications including implant failure.

The main indications are :-

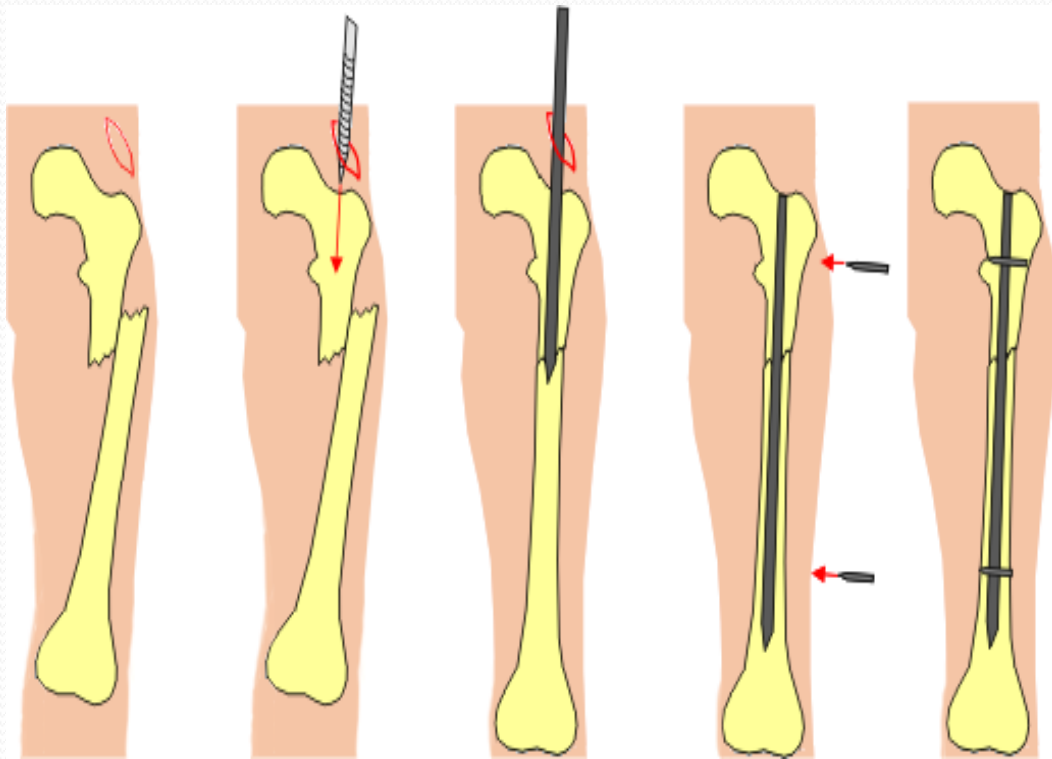
- A. Combination of femoral neck and shaft fractures.
- B. A shaft fracture with associated vascular injury.



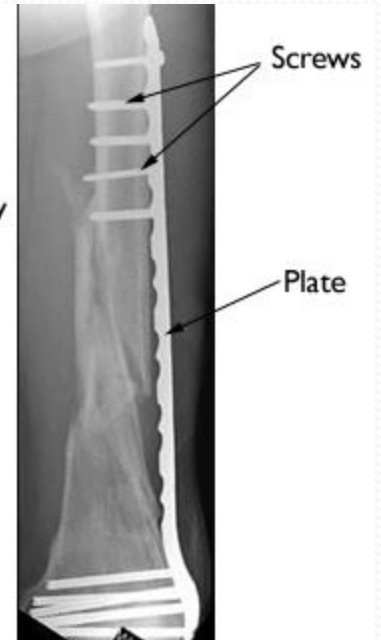
Femoral Shaft Fracture

4. Intra-medullary nailing:-

Is the method of choice for most femoral shaft fractures. it controls rotation and ensure stability even for sub-trochantric and distal third fractures.



Intramedullary Nail



Screws

Plate

Femoral Shaft Fracture

5. External fixation :-

Indication:-

- A. The treatment of severe open injuries.
- B. Management of patients with multiple injuries when there is need to reduce operating time.
- C. Dealing with severe bone loss by bone transport.
- D. Treating femoral fractures in adolescents.

External fixation



Femoral Shaft Fracture

- Open fractures:-

open femoral fractures should be carefully examined for

:-

1. Skin loss.
2. Wound contamination.
3. Muscle ischemia .
4. Injury to vessels and nerves.

Femoral Shaft Fracture

- The immediate treatment is similar to that of closed wounds :-
 1. Antibiotics ,wound cleansing and debridement.
 2. With little skin loss or small clean wound ,the fracture can be treated as closed.
 3. With massive skin loss large wound ,contaminated wound ,tissue destruction ,the internal fixation should be avoided and the wound left open and do external fixation.

Femoral Shaft Fracture

- Femoral fracture in children :
 1. Infants: 1-2 weeks in balanced traction followed by spica for another 3-4 weeks .
 2. Children : up to 10 years can be treated in similar manner but with 2-4 weeks of traction and 6 weeks in spica.
 3. Teenagers: may require longer duration of traction and spica. If satisfactory reduction can't be obtained or healed ,internal fixation with plate and screws is justified especially in those with multiple injuries.

Femoral Shaft Fracture

Complications of femoral shaft fractures:

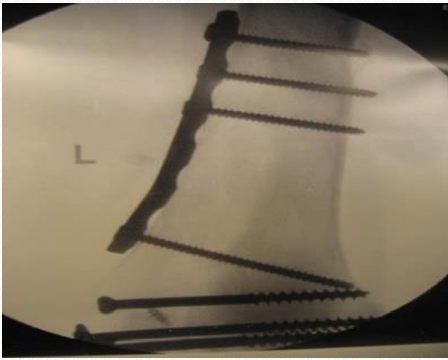
1. General :- severe blood loss ,shock, fat embolism , and acute respiratory distress , are common in high energy fractures.
2. Vascular injuries :- the vascular lesion take priority and the vessels must be repaired or grafted without delay. At the same operation the fracture is secured by internal fixation.
3. Thrombo-embolism:- due to prolong traction in bed .movement and exercise are important to prevent it.

Femoral Shaft Fracture

4. Infection:- in open injuries and following internal fixation , there is always a risk of infection. so give prophylactic antibiotics and pay careful attention to principle of surgery .
5. Delayed union and non union:- it's said that fractured femur must be united in 100 days plus/minus 20 days.
6. Malunion:- fractures treated by traction and bracing often develop some deformity, no more than 15 degrees angulation.
7. Joint stiffness:- the knee joint is affected and may be injured at the same time of insult, or it's stiffness is due to soft tissue adhesion during treatment.

Supracondylar femur fractures: ●

The supracondylar femur account for approximately 7% of all femur ● fractures. They occur just proximal to the knee joint, in the terminal 9 cm of the femur between the metaphyseal-diaphyseal junction and the femoral condyles. Supracondylar femur fractures have a bimodal distribution within the population. They present in younger patients due to high-energy injuries, such as from motor vehicle collisions or falls from height. In elderly patients, these fractures are often due to low-energy injury mechanisms such as simple falls due to underlying osteoporosis. Supracondylar femur fractures may extend proximally into the diaphysis (patients presented with deformity & swelling of thigh with external rotation of leg) or extend distally in the knee joint (patients presented with severe swelling & deformity of the knee joint). Regardless of injury mechanism, supracondylar femur fractures often require surgical treatment for the restoration of limb alignment and fracture stability.





Complications: ●

1-Early: vascular injury. ●

2-Late :joint stiffness & non -union. ●

Knee joint injuries

there are four bones that come together at the knee, only the femur (thighbone) and the tibia (shinbone) form the joint itself. The head of the fibula (strut bone on the outside of the leg) provides some stability, and the patella (kneecap) helps with joint and muscle function. Movement and weight-bearing occur where the ends of the femur called the femoral condyles match up with the top flat surfaces of the tibia (tibial plateaus)

The stability of the knee joint is maintained by four ligaments, thick • bands of tissue that stabilize the joint. The medial collateral ligament (MCL) and lateral collateral ligament (LCL) are on the sides of the knee and prevent the joint from sliding sideways. The anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL) form an "X" on the inside of the knee and prevent the knee from sliding back and forth. These limitations on knee movement allow the knee to concentrate the forces of the muscles on flexion and extension.

Inside the knee, there are two shock-absorbing pieces of cartilage • called menisci (singular meniscus) that sit on the top surface of the tibia. The menisci allow the femoral condyle to move on the tibial surface without friction, preventing the bones from rubbing on each other. Without this cartilage covering, the friction of bone on bone would cause inflammation, or arthritis.

Acute knee injuries can cause pain and swelling with difficulty • bending the knee and weight-bearing. Pain can also be felt with specific activities. Pain while climbing stairs is a symptom of meniscus injury, where the cartilage is being pinched in the joint as the joint space narrows with knee bending. Pain with walking down stairs suggests patellar pain, where the kneecap is being forced onto the femur. If the swelling occurs immediately, it may suggest a ligament tear or fracture. If the swelling arises over a period of many hours, meniscal or cartilage injuries may be the cause. Giving way or a feeling of instability of the knee, or popping or grinding in the knee is associated with cartilage or meniscus tears. *Locking* is the term used when the knee joint refuses to completely straighten, plain X-rays may not be initially needed and imaging of the knee may wait until a later date. Standing X-rays of the knees may be obtained. An MRI might be considered to evaluate the ligaments and cartilage within the knee joint

Treatment

In Strains of ligament: RICE (rest, ice, compression, and elevation) with some strengthening exercises and perhaps physical therapy will be needed. Sometimes the decision for surgery is delayed to see if the RICE and physical therapy will be effective. Each injury is unique, and treatment decisions depend on what the expectation for function will be. As an example, a torn ACL(anterior cruciate ligament) would usually require surgery in a young athlete or a construction worker, but the ACL may be treated nonoperatively with physical therapy in an 80-year-old who is not very active. IN chronic pain during walking uphill or climbing upstairs & swelling & signs of giving way which are signs of meniscus injury usually need Arthroscopic menisectomy.MCL,LCL & PCL alone rarely need surgery in acute stage unless associated with meniscal or ACL injuries .

Diagnosis

X-ray: will be taken to make sure there are no breaks in the bone.

Examination of pulses: Injury to the arteries in the knee is common with this injury. The doctor will make sure there are pulses in the foot.

An arteriogram (X-ray of the artery): This X-ray may need to be done to detect injuries to the artery. Some medical centers may also use special Ultrasound or Doppler (sound wave) machines to assess the blood flow in the arteries.

Examination of nerves: Nerves also run through the knee, so it is possible that they may have been damaged. The ability to feel touch and to move certain muscle groups are the main ways nerves are tested. Specifically, the ability to move the foot up and down and to turn the foot inside (inversion) and outside (eversion) are important muscle movements to examine. Any feeling of numbness is concerning for nerve injury.

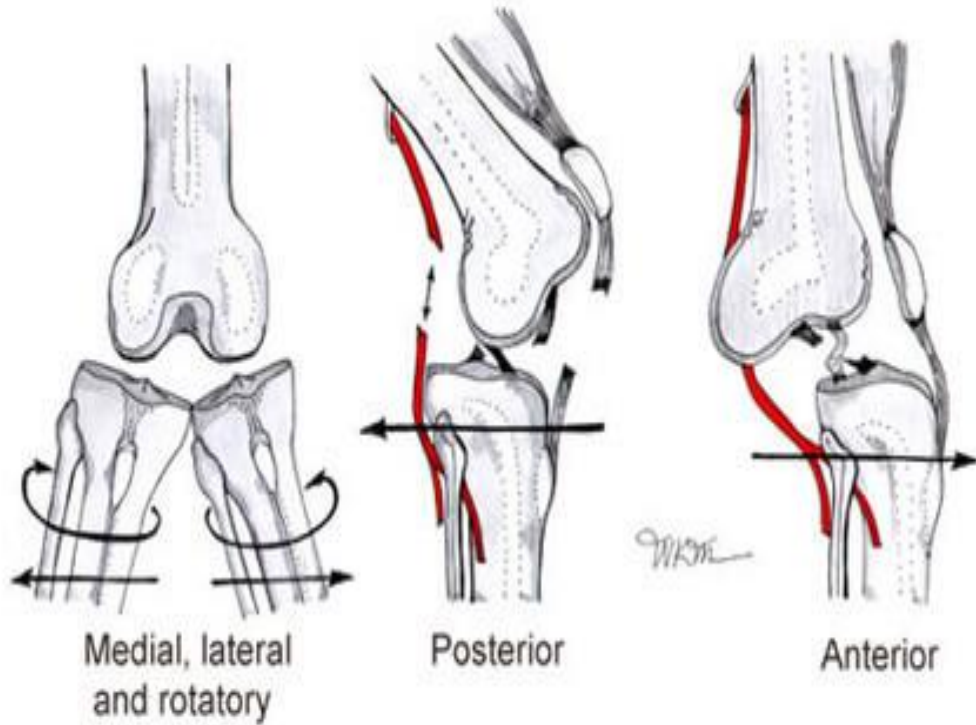
Dislocation of the knee joint

. They usually happen only after major trauma, including falls, car crashes, and other high-speed injuries. Knee dislocation will always cause severe pain in the knee. Sometimes, there will be no feeling below the knee. If the knee relocates, it will become swollen from fluid in the knee and be painful with any movement. Very serious symptoms include loss of a pulse below the knee or loss of feeling or movement below the knee. If a dislocated knee joint is suspected, there is likely severe ligament injury. Go to the nearest hospital's emergency department.

Treatment

Relocation by closed reduction is usually done in emergency unit by orthopedic doctors.

If an arterial injury is determined to be present, immediate surgery by a trauma or vascular surgeon to repair the injured vessel(s). Immobilization: the entire knee joint will be kept in a splint or immobilizer. This will keep the knee from bending and help the tissues to start healing. A knee dislocation almost always has severe tears and sprains of the ligaments and sometimes has breaks in the bones of the knee. After swelling has gone down, the knee may need reconstruction surgery to regain function



Complications:

A-Early:

- 1-vascular injury: popliteal artery
- 2-nerve injury: mostly common peroneal or tibial nerves.
- 3-Associated fracture femoral condyles or shaft or tibial plateau.
- 4-ligaments injuries.



Late: ●

1- joint instability ●

2- joint stiffness ●

3- Osteoarthritis ●



THE END

Thank you for listening