



## Ep 30- Distal Femur Fractures w/ Dr.Spitler Show Notes-

### History/Physical.

- Usually high energy trauma in young individuals; Low energy falls in elderly patients
- MVCs, MCC, Falls
- Tenderness and swelling of the thigh
- Assess for open injuries and other soft tissue injuries
- Assess for signs of vascular injury (pulse, abi, cap refill). CTA as needed.
- Look out for any signs of Shock
- Notice any associated injuries to the hip or shaft of the femur. Also ipsilateral injuries to the tibia, ankle, and foot

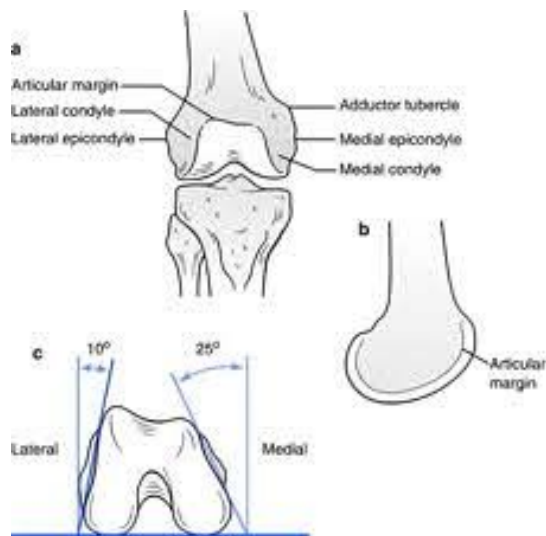
### Imaging

- AP and Lateral radiographs of the knee and femur
- Pelvis, ipsilateral hip and femoral shaft to rule out associated injuries
- Traction radiographs may be considered
- CT imaging of the knee. Can be done after external fixation if will be applied





## Anatomy

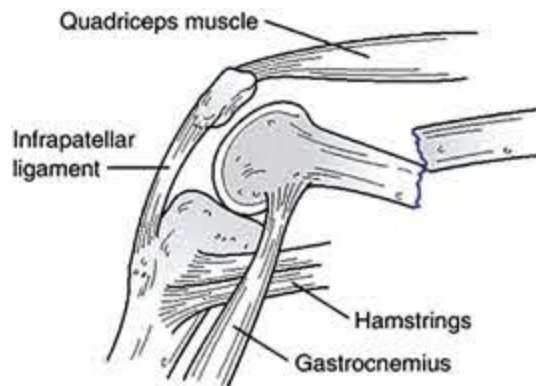


- Distal femur is trapezoidal with the posterior condyles being wider than the anterior
- **25 degree inclination angle on the medial surface and 15 degrees on the lateral surface (Notice this may make implants that appear to be the correct length on the AP radiographs actually be too long)**
- Knee is normal oriented parallel to the ankle and ground
- 7 degrees of valgus
- Hunters canal injury



### Deforming forces

- Quads, hamstrings, and adductors lead to shortening and varus angulation
- **Gastrocnemius produces apex posterior angulation of the distal fragment**



### Treatment.



### Operative Mngt.

Blade plates

Liss plate

Approaches

\* Lateral

\* AL- - modification of lateral parapatellar arthrotomy

\* Medial approach- sub vastus- displaced medial condyle fx

Constant fragment along posterior cortex above condyles



- Good to help gauge reduction in flexion/extension

### Type A Distal Femur Fractures

#### Locked plating

- Fracture reduction
  - A. Traction
  - B. Bone Clamps
  - C. Femoral distractor (Length, alignment)
  - D. Sterile “bump” to control sagittal malalignment
  - E. Periarticular plates (Combination of locking and cortical screws)
- Cortical screws must be placed first to lag the bone)
- Longer plate constructs with more screws, more locked screws.

#### MIPO Technique

### Type B Distal Femur Fractures

- Includes medial or lateral condyle fractures. Also Hoffa fragments
- Hoffa fragment - intra articular coronal plane fragment of the distal femur
- Fixation is often with anti glide plate and carefully placed lag screws
- Articular surface must be anatomic and stable

### Type C Distal Femur Fractures

- ORIF with adequate exposure to the articular reduction
- Goals to maintain anatomic and stable reduction of the Articular surface



#### IMN of Distal femur fractures

- Often Retrograde
- Must optimize the starting point and maintain quality reduction during the procedure
- Starting point in line with the femoral shaft and at the apex of the intercondylar notch on the AP. Just anterior to Blumensaat's line on the lateral.
- Any screws used for fixation of the condyle must not block the path of the nail.

#### Surgical pitfalls:

- Plate too anterior- can lead to unicortical screws
- Plate too posterior- screws into intercondylar notch
- Plate too posterior- golf club deformity (posterior portion of lateral condyle projects more laterally than designed for plate>> leads to medialization of condylar segment)
- Plate too distal- intra articular screw placement, golf club deformity (convex part of plate pushes condyles medial)
- Plate too flexed/extended- unicortical screws, posterior thrust
- Plate length
  - High or more screw holes above the most proximal aspect of fx if possible (78)
  - Guidepin closest to joint- designed to restore varus/valgus alignment if parallel to joint axis

#### Complications

- Malalignment/malunion-
- Nonunion- revision +/- grafting
- Infection
- Knee stiffness



- Post traumatic arthritis

Nailed It Ortho podcast episode

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#### References:

Coon MS, Best BJ. Distal Femur Fractures. [Updated 2020 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan-.