Supracondylar Femur Fractures-IM Nails

George V. Russell, MD, MBA
University of Mississippi

Disclosures

- Minor stockholder
- Consulting Fees
- Institutional Grants

Retrograde Intramedullary Rodding:

- Reduction
- Starting Point
- Entrance Angles
- Ending Point
AO/OTA classification
- Type 3X-XX: femur
- Type 33-XX: distal femur

AO/OTA Type 33
- 33-AX Supracondylar
- 33-BX Unicondylar
- 33-CX Bicondylar

See figure for further subclassification

Evaluation of Distal Femur Fractures
- Don’t forget the Hoffa fragment!
- 36% of supracondylar/intercondylar distal femur fractures have a coronal plane fracture (Nork et al. J Orthop Trauma, 87:564, 2005)
- Most precisely diagnosed via CT scanning

Table Selection-Supine Position
- Flat top (+)
  - Patient positioning
  - Multiple injuries
  - Easy
- Flat top (-)
  - Fracture reduction
  - Maintaining fracture reduction
  - Assistants
  - Lateral images proximally
Why Retrograde Medullary Nail?

- "Advantages"
  - Smaller incision
  - "Percutaneous" joint fixation
  - Limited exposure
  - Decreased blood loss (?)
  - Load-sharing device, longer lever arm (if long nail utilized)
  - Soft tissues intact

- "Disadvantages"
  - Arthrotomy required
  - "Percutaneous" joint fixation
  - Lack of alignment control ("windshield wipering" of implant"
  - Insertion thru reconstructed cartilage
  - Difficulty of insertion with total knee arthroplasty component in place

Retrograde Femoral Nailing

When to Retrograde Nail?

- Floating knee
- One surgical positioning
- Preexisting arthritis
- Ipsilateral femoral fractures
- Appropriate fracture pattern
Preferred Steps

1. Get fluoroscopic images of contralateral side
2. Restore the joint surface
3. Obtain length/alignment
   1. Sagittal plane alignment!
4. SEE

Final films
Measure the contralateral side

Planning Definitive Reconstruction – Deforming Forces

- Recognition of muscular deforming forces allows for reduction techniques designed to overcome these forces, thereby achieving anatomical reduction.

Hamstrings Shorten
Gastrocnemius Extends
42 yo male, AO/OTA 33-C2 femur, type II open ipsilateral tibia fracture
Case Presentation
- 23 yo female
- MVC
- B SIJD
- L acetab fx
- R femoral shaft fx
- L femoral shaft fx
  - Assoc IC fx

Entry Portal

Confirmation
Guidewire Across

Final Guidewire Position

Nail Insertion
Key Points

- Get contralateral fluoro images before beginning the operation
- Reduce/fix articular fracture
- Correct extension deformity
- SEE
Thank You

Retrograde Medullary Nail

- Don't forget to reduce the fracture first!
- Nail will not assist with this as you are not achieving an isthmic fit as can be achieved with diaphyseal femoral shaft fractures
- Nail will happily "lock" a fracture in a malreduced position as easily as it will "lock" a fracture reduced
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