Periprosthetic Distal Femur Fractures

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A 75-year-old female patient presents with a history of MVC (Motor Vehicle Collision). The images show a posterior cruciate ligament-substituting knee replacement with well-aligned components and no signs of loosening or instability.
Objectives

• Review differences in periprosthetic distal femur fractures compared to native distal femur fractures

• Discuss methods of fixation

• Evaluate possible complications of periprosthetic distal femur fractures and fixation
Risk Factors

• Rheumatoid arthritis
• Osteoporosis
• Stress shielding
• Neurologic disorders
• Chronic steroid use
• Anterior cortical notching*
• Revision TKA
Fixation Methods

- ORIF
- Intramedullary Nailing
- Dual fixation constructs
- Revision TKA
Fixation: ORIF

• Same options as last talk

• Less bone stock

• Must work around implant for fixation
  • Fixed angle versus variable angle implants

• Benefit: can work with proximal implants in place
  • THA, IMN for hip fracture
Fixation: ORIF

- Bridge construct
- Go long
- Span proximal implants if present
Retrograde nails

• Adequate bone stock

• Advantages:
  • Minimal incision
  • Minimal stripping
  • Ability to use previous midline incision
  • Potentially improved biomechanical stability

Credit: Doug Lundy, MD
Retrograde nails

• Disadvantages:
  • Can’t use in closed femoral box.
  • Difficulties with ipsilateral THA.
  • May produce malunion.
  • Difficulties with distal fixation.

Credit: Doug Lundy, MD
Retrograde Nails

- Consider options to increase fixation in distal segment
Fixation: Dual Implant Construct

• Support poor bone quality and bone stock with dual implants
  • Plate-nail combo
  • Plate-plate combo
• Allows early weight bearing with improved fixation in poor distal bone
Fixation: Dual Implant Construct

Fixation: Dual Implant Construct

Fixation: Revision TKA

- Old, sick, low mobility – distal femur replacement
  - Immediate WB
  - No fracture healing required
- Loose TKA
  - Revision knee if very little bone attached to implants
  - If significant bone attached to implant, consider fixation of fracture with staged revision once healed
75 yo female s/p MVC
Summary

• Periprosthetic fractures are often more complicated than native distal femur fractures due to less bone stock
• Consider the total knee implant when choosing fixation method
  • Be aware of closed box
  • May damage poly with IMN
  • Need to be able to angle screws around femoral component if ORIF
• Dual fixation may be needed to improve stability
• Revision TKA or distal femoral replacement is an option
Thank You