Subtrochanteric Femur Fractures
What Works?

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Subtrochanteric Femur Fractures
Problems In Treatment

- Difficult To Reduce
- High Stress Concentration
- Prolonged Healing Times
- Fixation Failures
- Increased Complications

Subtrochanteric Femur Fractures
Deforming Forces

- Short Proximal Fragment
- Fracture Anatomy
  - Iliopsoas: Flexion
  - Gluteus Medius: Abduction
  - Short ER: External Rotation
Subtrochanteric Femur Fractures

Why Is Anatomy So Important?

- Predictable Pattern Mal-Reduction
  - Varus
  - Procurvatum
  - External Rotation
  - Compromised Fixation

Whether You Choose A Nail Or Plate; The Reduction Is Critical To Fixation Stability And Fracture Healing

In My Experience The Majority Of Subtrochanteric Femur Fractures Are Best Managed With An Intra-Medullary Device
Subtrochanteric Femur Fractures

Terminology

1st Generation Nail
2nd Generation Nail
3rd Generation Nail

Conventional Nail
Reconstruction Nail
Cephalomedullary Nail

Advantages Of IM Nails
- Closed Nailing
- Load Sharing Implant
- Stable Fixation
- Biologically Friendly
- Mechanically Sound

Technical Points
- Confirm Entry Portal
- Restore Neck - Shaft Angle
- Secure Proximal Fixation
- Always Distal Lock
Subtrochanteric Femur Fractures

Technical Points

• Over-Ream Proximally 1.5 mm
• Accommodates Enlarged Proximal End Of Nail
• Allows Rotational Adjustment For Anteversion or Retroversion

Subtrochanteric Femur Fractures

Intra-Medullary Nailing

• Consider Lateral Nailing
  • Improved Access To Entry Portal
  • Improved Control Of Prox Fragment
  • Easier Control Of Distal Fragment
  • Traction Facilitates Reduction

Subtrochanteric Femur Fractures

Lateral Nailing

• Set-Up Longer & More Difficult
• Fracture vs Jackson Table
• Rotational Assessment
• Neutralizes Deformity
• Facilitates Piriformis Nailing
Good Control Of The Proximal Fragment With Less Interference From the Flank, Chest Wall, Or Ribs

Lateral Decubitus Nailing On Fracture Table: Surgical Technique

- Understand Deformity
- Traction Can Increase Deformity
- Incision More Posterior
- Use Reduction Tools
- Limited ORIF If Necessary
- Respect Biology

Subtrochanteric Femur Fractures
Supine Nailing
Supine Nailing
Reduction Tool

• Proximal Fragment Flexed
• Skin Incision More Posterior
• Correct Entry Portal
• IM Reduction Tool
• “Steer” The Guide Wire

Restore Alignment Before Reaming & Nailing

Restore Alignment Before Reaming & Nailing
Subtrochanteric Femur Fractures
Reduction Tools

- Joystick
- Manual Pressure
- Bone Hook
Subtrochanteric Femur Fractures
Reduction Tools

Ball Spike Pusher

Subtrochanteric Femur Fractures
Reduction Tools

Co-linear Clamp

Subtrochanteric Femur Fractures
Reduction Tools

Co-linear Clamp
Subtrochanteric Femur Fractures Reduction Tools

Insertion Of The Nail

External Fixation, Ball Spike Pusher, Joy Stick, Working Hard To Make It Right!

Sometimes Despite All Of Our Tools And Tricks, The Fracture Cannot Be Reduced Closed
Clamp Assisted Reduction of High Subtrochanteric Fractures of the Femur

Subtrochanteric Femur Fractures
Implant Selection

- Based on Radiographs
- What Is Broken; What Is Intact
- Most Require Fixation Into Head & Neck
- Recon Versus Cephalomedullary Nails
- Nail Whenever Possible
- Plate When Necessary
29 Yr Motorcycle Accident Treated With A First Generation Nail

Follow-Up At 4 Months; Healed At 12 Months

23 Year Old Male S/P GSW Proximal Femur
46 Yr Male S/P MCA; Treated With A Cephalomedullary Nail

14 Month Follow-Up Healed & Working

41 Yr Male S/P Motor Vehicle Accident
Reduction On A Fracture Table

ORIF With Proximal Femoral Locking Plate

At 4.5 Months Early Healing With Good Alignment
Subtrochanteric Fx S/P Motor Vehicle Accident

Reduction & Fixation With Joystick & IM Nail

6 Month Follow-Up Healing & Working
Comminuted Intertrochanteric - Subtrochanteric Fracture

Lateral Nailing On Fracture Table With Recon Nail

15 Month Follow-Up Healed & Back To Work
Multiply Injured Patient Following MVA

Lateral Decubitus On Fracture Table

Closed IM Nailing With A Recon Nail

3 Year Follow-Up Healed
Subtrochanteric Femur Fracture
Take Home Message

- Nail When Possible
- Fracture Table Consider Lateral Position
- Reduction Is The Key!
- Outcomes Better; Implants Better
- Proximal Femur Locked Plate?

If You’re Lucky Enough To Live And Work In Southern California, You’re Lucky Enough!

Subtrochanteric Fractures
Supine Nailing

- Set-Up Easier & Faster
- Piriformis Entry Portal Difficult
- Trochanteric Entry
Subtrochanteric Fractures
Nailing Complications

- Trochanteric Comminution
- Posterior Cut-Out
- Poor Proximal Fixation
- Varus Reductions
Subtrochanteric Fractures
Nailing Complications

- Proximal Screw Back Out
- Missed Proximal Screws
- Hip Joint Penetration

Subtrochanteric Fractures
Nailing Complications

- Delayed Union
- Non-Union
- Mal-Union
- Implant Failure
- Infection
- Heterotopic Bone

Subtrochanteric Fractures
Subtrochanteric Femur Fractures

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27 Yr Old French Tourist Hit By Auto On Rodeo Drive

Post-Op Recon Nailing

8 Weeks Post-Op