



Tibial Shaft Fx's - IM Nails - Entry Portals & Reduction Techniques

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DISCLOSURES

- Hassan R. Mir, MD, MBA, FACS
- Medical/Orthopaedic Publications Editorial/Governing Board
 - OTA Newsletter Editor
 - OsteoSynthesis, The JOT Online Discussion Forum Editor
 - JOT Associate Editor
 - JAAOS Consultant Reviewer
 - JBJS Consultant Reviewer
- Board Member/Committee Appointments for a Society
 - AAOS Diversity Advisory Board and Council on Advocacy Member
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 - FOT Nominating and Membership Committees
- Speakers Bureau/Paid Presentations for a Company or Supplier
 - DePuy Synthes
- Paid Consultant for a Company or Supplier
 - Smith & Nephew

Principles

Starting Point
Trajectory
L/A/R
Stable Construct

Indications for Tibial Nailing

- Soft Tissue
 - Open Fx
 - Compartment Syndrome
- Bony
 - Floating Knee
 - Intact Fibula
 - Unstable Fx Pattern
 - > 5° varus/valgus
 - > 10° proximal
 - > 1 cm short
- Patient
 - Inability to Bear Weight in Cast or Fx Brace
 - Compliance
 - Requires Frequent Follow-up

Surgeon Preference



Patient Preference

Positioning - Flexion

- Supine
- Hip Bump
- Draping
- Sterile Triangle



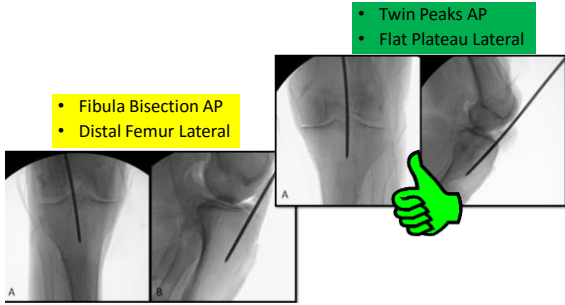
Positioning – Semi-Extension

- Supine
- Hip Bump
- Draping
- Leg Ramp
- Sterile Bump

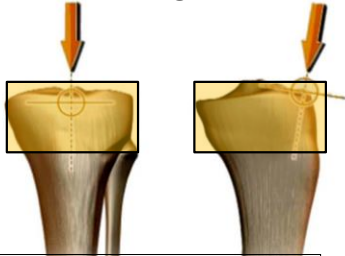


Tibia-Based Referencing for Standard Proximal Tibial Radiographs During Intramedullary Nailing

Jesse E. Eibler, MD, MHS, Aniket A. Chok, MD, Sravan C. Dhulipala, MD, Jason M. Evans, MD, and Hassan R. Mir, MD
The Journal of Orthopaedic Trauma, November 2013

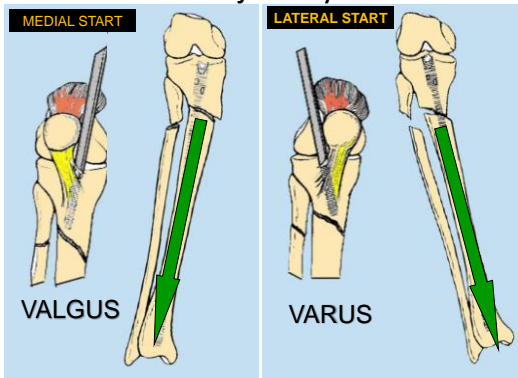


Starting Point

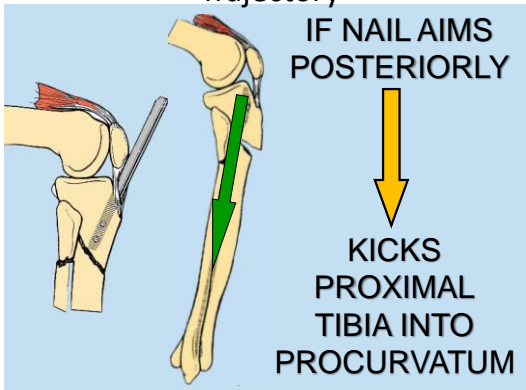


- Tornetta et al. JOT 13: 247-251, 1999
- McConnell et al. JOT 15: 207-209, 2001
- Samuelson et al. JOT 16: 23-25, 2002
- Althausen et al. JOT 16: 687-90, 2002

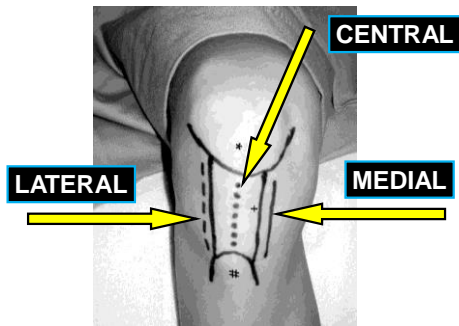
Trajectory



Trajectory



Infrapatellar Incisions

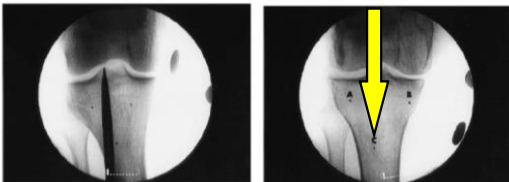


Journal of Orthopaedic Trauma
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**Incision Placement for Intramedullary Tibial Nailing:
An Anatomic Study**

*Peter L. Althausen, *Rafael Neuman, *Christopher G. Finkemeier, and †Steven A. Olson
*University of California Davis Medical Center, Sacramento, California, and †Duke University Medical Center, Durham, North Carolina, U.S.A.

- Lateral Zone – 29/112
- Middle Zone – 75/112
- Medial Zone – 8/112
- Medial Parapatellar – 42/112
- Lateral Parapatellar – 70/112

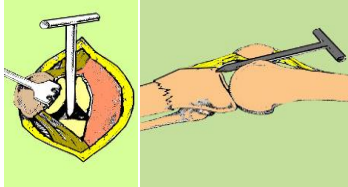


CLINICAL ORTHOPEDICS AND RELATED RESEARCH
Number 328, pp 146-163
© 1998 Lippincott-Raven Publishers

Semiextended Position for Intramedullary Nailing of the Proximal Tibia

Paul Tornetta, III, MD; and Evan Collins, MD

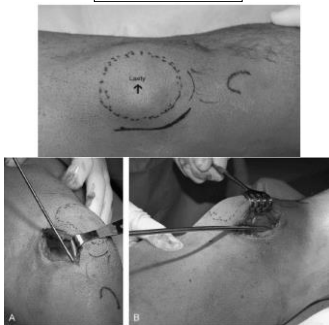
- Medial Parapatellar Arthrotomy



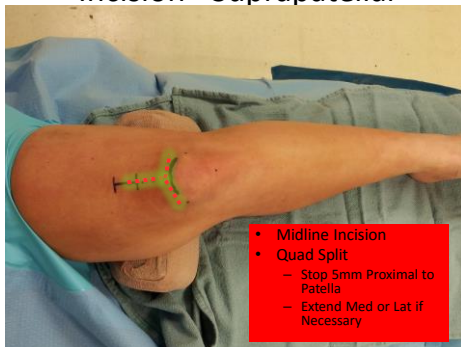
Extra-Articular Technique for Semiextended Tibial Nailing

Erik N. Kubiak, MD, Benjamin J. Widmer, MD, and Dan S. Horwitz, MD

J Orthop Trauma 24: 704-8, 2010



Incision - Suprapatellar



- Midline Incision
- Quad Split
 - Stop 5mm Proximal to Patella
 - Extend Med or Lat if Necessary

OTA 2015

Suprapatellar Intra-medullary Nail Technique Lowers Rate of Malalignment of Distal Tibia Fractures


Frank R. Avillucea, MD
 Kostas Triantafyllou, MD
 Paul S. Whiting, MD
 Edward A. Parke, MD
 Hassan R. Mir, MD, MBA, FACS

Conclusion

Rate of Malalignment following IMN of Distal Tibia Fxs is Improved with Suprapatellar Technique

Infrapatellar – 26.1%
 Suprapatellar – 3.8%

$P < 0.001$



Reduction Tricks

- Bumps
- F-tool, Mallets
- Fracture Reduction Tool
- Femoral Distractor / Exfix
- Blocking Pins / Screws
- Clamps
- Unicortical Plate



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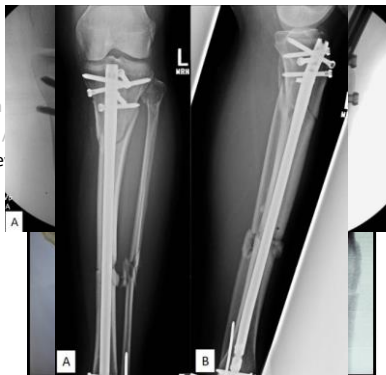
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- **Femoral Distractor / Exfix**



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- F-tool, Mallets
- Fracture Reduction
- Femoral Distractor /
- **Blocking Pins / Screws**
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How High/Low Can You Go?

Distal Tibia

Proximal Tibia

0 mm

14 mm

20 mm

26 mm

42 mm

57 mm

- Proximal Tibia
- Distal Tibia

— Know your Implant

- Number of Screws
- Distance from End
 - Angles
 - Fixed Angle

Postoperative

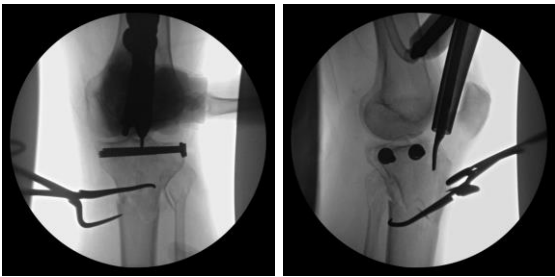
- Early Knee and Ankle A-ROM, AA-ROM, P-ROM
- WBAT for All Extra-Articular
 - Intra-Articular (Proximal or Distal) – NWB x 6 Weeks
 - Walking Boot for Distal Fxs Only
- DVT Prophylaxis
 - Low Risk: ASA 325mg PO BID x 6 weeks for Low Risk
 - High Risk: Lovenox 40mg SQ Daily x 20 days, then ASA x 3 weeks

CASE EXAMPLES

- 69 yom s/p Pedestrian Struck











• 55 yom s/p MCC

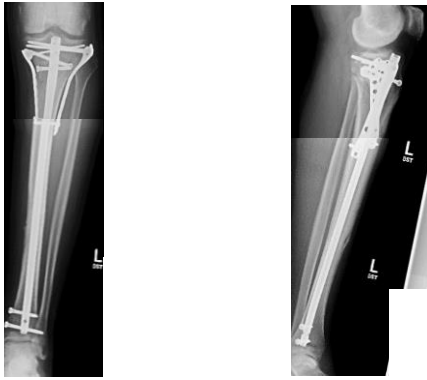






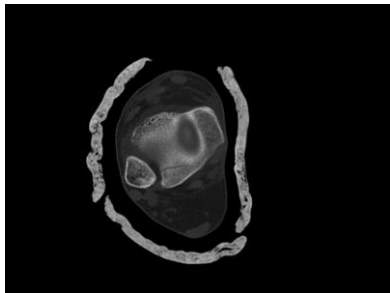


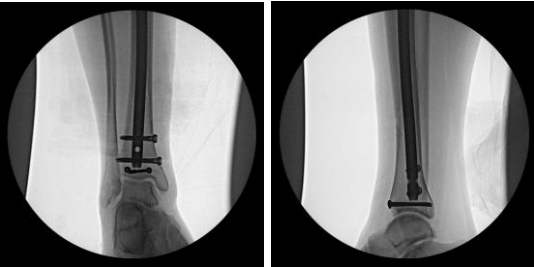
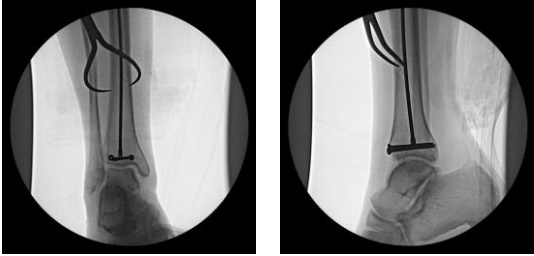




• 53 yof s/p GLF







- 40 yom s/p MCC



