

Postoperative Treatment Following Femur Fracture Intramedullary Nailing--Dr. Kerns

Indications: Fractures of the femur are relatively common injuries and are not typically amenable to nonoperative treatment. Early surgical fixation is recommended for all but the moribund and the nonambulatory in order to optimize pain control, pulmonary toilet, and in-bed mobility, as well as to minimize deconditioning by allowing early mobilization of fractures.

Technique: The patient is intubated on their hospital bed and then transferred to a fracture table with a well-padded perineal post. Both legs are placed into traction boots and are never placed into lithotomy position. Patients with distal extremity trauma or who have amputations may alternatively have a traction pin placed in the distal femur or proximal tibia and a bow will then be used to provide intraoperative traction. The fracture is returned as closely as possible to anatomic alignment with longitudinal traction and external manipulation using the fracture table. After standard prepping and draping, the greater trochanter is opened proximally using a cannulated reamer. Additional incisions are made to allow for fine tuning of the reduction using percutaneous techniques. The fracture site may be opened formally to allow for maximal control of the reduction. Once anatomic reduction is achieved, the entire femur is instrumented with an intramedullary device and locking bolts are inserted through the proximal nail using an attached aiming device. Distal locking bolts are then inserted through the nail with a free hand technique using fluoroscopy. Wounds are irrigated, closed, and dressed sterilely.

RED FLAGS FOR DELAYED/ NONUNION RISK:

- **High energy mechanism.**
- **Open fracture.**
- **Previous bisphosphonate use**
 - **Especially if presenting as stress fracture of subtrochanteric femur**
- **Tobacco Abuse.**

Postoperative Care:

Phase 1 PT/OT (Protect Repair, Optimize mobility, Minimize Deconditioning):

- Foot flat weight bearing (Weight of leg on ground or 20#)
 - If patient unable to adhere to/ comprehend limitations, then bed- chair transfers only.
- Isometric quadricep strengthening, VMO emphasis.
- Up with assistance only. Progress to independent mobility as tolerated. Bedside commode.
- Fall prevention and gait training with assistive device.
- AROM/ PROM of knee while sitting on side of bed.
- ADLs

Antibiotics: Standard perioperative antibiotic therapy x 24 hours.

Anticoagulation:

- 4 weeks of prophylactic anticoagulation with Lovenox
- Start Lovenox 40mg sq daily 14 hours after close of surgery.

Pain Control (Multimodal Approach)

- Geriatric Protocol (>70 yo)
 - Scheduled Tylenol 1000mg po q8hours.
 - Oxycodone 5-10mg po q 4 hours prn pain
 - Morphine 2mg iv q 2 hours prn breakthrough pain.
- Younger patient (<65yo)
 - Ketorolac 30mg iv q6 hours x 3, postop
 - Norco (7.5 or 10) 1-2 tabs po q4 hours prn pain
 - Morphine 4mg iv q 2 hours prn breakthrough pain
 - Tramadol 50mg po q6 hours scheduled if not taking SSRI or MAOI (Cymbalta counts)

Labs: Hct/Hgb in am x 3 days; BMP in AMx 2 days; PT/INR daily when on Coumadin protocol
Foley:

- Men: d/c on POD 1
- Women: d/c on POD 2

D/C Planning: Social work consult on DOS. SNF placement for most older patients. The young and motivated may be discharged to home +/- home health.

Discharge planning: uneventful, medically stable patient d/c'd on POD 2.

Follow-up at POD 10-14.

1st follow-up POD 10-14:

- XR of hip: Ap/ Lat hip. Confirm that fixation is stable, no evidence of loss of reduction or new injury.
- Wound check. Stitches out, steri-strips applied.
- Pain assessment. Refill pain medications as needed.
- Confirm that anti-coagulation regimen is effective and that appropriate communication has been maintained with nursing home/ home health.
- **Weightbearing:**
 - Midshaft fracture, nail >8mm⇒ weight bearing as tolerated.
 - Subtrochanteric or distal 1/3 shaft fracture→ foot-flat weight bearing.
- **Outpatient vs. home health therapy (Phase 1):**
 - **1-2x/ week x 6 weeks**
 - Gait training with assistive device.
 - Isometric quadriceps and abductor exercise.

- AROM/ PROM of knee while sitting at side of bed.
 - Fall prevention.
 - Modalities prn
 - Advance to independent program when patient able to do all exercises reliably without pain.
- **Nursing home orders:** Continue gait training with assistive device. Foot flat weight bearing. Isometric quadricep strengthening, VMO emphasis. Emphasize ADLs. Discharge okay from orthopaedic standpoint when safety/ mobility/ ADL parameters are met per PT/OT. Fall prevention screening for home environment before discharge.
- Schedule surveillance venous duplex at 4 weeks after surgery.
- Schedule followup for 8 weeks after surgery.
- Expected Return to Work:
 - Cognitive/ Sedentary: 9-10 weeks.
 - Medium Labor: 3 months
 - Heavy Labor: 4-6 months.

2nd follow-up at 8 weeks after surgery.

- XR of hip: AP/ Lat views. Confirm that fixation is stable and fracture has healed radiographically.
 - Advance to Phase 2 therapy when 3+ cortices are bridged with callus on plain films.
 - If < 3 cortices bridged, then continue with Phase 1 therapy and have patient follow-up in one month during Dr. Trueblood's office hours.
- Wound check.
- Pain assessment. Refill prescriptions as needed.
- Repeat osteoporosis counseling.
- NH Orders: Therapy.
- Otherwise uncomplicated patients: follow-up at 3 months after surgery.

Phase 2 Therapy (Regain Ambulatory Status)

- 1-2x / week x 6 weeks
- Abductor/ adductor stretching and strengthening.
- Quadriceps strengthening, VMO emphasis.
- Wean from assistive devices as tolerated
- For working age patients, advance to work conditioning program when patient is able to walk without assistance or pain.
- Modalities prn
- HEP. Transition to pure HEP when pt. can perform all exercises with 80% contralateral strength, no substitution patterns, and no pain.

3rd follow-up at 3 months:

- XR of femur: AP/Lat. Confirm union of fracture.
 - If still <3 cortices bridged, then start with External Bone Stimulator.
 - If united, then this is the last x-ray.
 - If not united, then patients next follow up is in 4 weeks in Dr. Trueblood's office hours.
- Continue Phase 2 therapy. Advance to work conditioning if appropriate.
- Schedule Follow-up at 4-6 weeks for heavy laborers, *prn* for united geriatric/ lower demand

Final Follow-up at 4-4 ½ months

- Harris Hip Score when united. Pain assessment/ refill medications if needed.
- Work Note: Based on patient performance. No expected limitations.
- Work conditioning for manual laborers as needed. Follow-up in 4-6 weeks for Heavy Manual Laborers.
- Expected Return to Work:
 - Cognitive/ Sedentary: 9-10 weeks.
 - Medium Labor: 3 months
 - Heavy Labor: 4-6 months.