PERIPROSTHETIC FEMUR FRACTURES AFTER THA:
Treatment with Revision

Daniel J. Berry, MD
LZ Gund Professor
Department of Orthopedic Surgery
Mayo Clinic
Rochester, MN
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PERIPROSTHETIC FX: THA

Introduction

- The infrequency and complexity of these problems often leads to suboptimal management
Fortunately…

- We don’t see much of this anymore:
PERIPROSTHETIC FX: THA

Introduction

• But we still see this…

Nonunion
PERIPROSTHETIC FX: THA

Introduction

• And we still see this...
PERIPROSTHETIC FX: THA

• Current Management?
PERIPROSTHETIC FX: THA
Vancouver Classification

Fracture Location Guides Treatment:

- Peritrochanteric
- Around stem
- Well distal to stem
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Fractures Around Stem

Fractures Around Stem:

- Little role for nonoperative Rx
- Prolonged recovery
- Just delays--and makes more difficult--the inevitable operation
- Risk of malunion, nonunion
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Non Operative Treatment: Problems

- Malunion
- Non union
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Fractures Around Stem

- Fracture Around Stem
  - Stem Fixed
    - ORIF
  - Stem Loose
    - Revise
  - Stem Loose Bone Poor
    - Revise
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Loose Stem

Fracture Around Stem

Stem Fixed
- ORIF

Stem Loose
- Revise

Stem Loose Bone Poor
- Revise
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Loose Stem

Revision Principles:

• Use fracture for access to remove implant
• Bypass fracture, usually with long stem
• Stabilize fracture
• Get stable implant fixation
• Respect biology: Avoid stripping muscle
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂/B₃

Fractures Around Loose Stems:

• With modular tapered fluted, modular stems we can treat B₂ and B₃ fractures the same!
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂/B₃

- Bypass fracture with fluted tapered stem → get distal axial and rotational stability
- Reassemble fracture around proximal stem as scaffold
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B$_2$/B$_3$

Key points:

- Access failed implant and joint through fracture or osteotomy
- Keep all fracture fragments vascular
- Goal: Reasonable but not anatomic reduction
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Keys to Success:

- Absolute axial and rotational stability distal to fracture
- Ream distal femur aggressively
- Prophylactic cerclage below fracture
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₃
PERIPROSTHETIC FEMUR FRACTURES: Results

Mayo Experience:
- 44 B₂/B₃ fx
- Healing 43/44
- Stable stem 43/44

Vancouver Experience:
- Similar!

Abdel, Lewallen, Berry, CORR 2014;472:599
PERIPROSTHETIC FX: THA Pitfalls

- Fracture
- Immediate postop
- Loose

Avoid Undersizing Stem
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Migration of Proximal Bone Fragments
PERIPROSTHETIC FEMUR FRACTURES: Conclusions

Modern Techniques:

- Simplified treatment
- Higher level of success
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Conclusions

Modern Techniques:

• Emphasis on simultaneously creating strong durable mechanical constructs and

• Optimizing biologic environment for fracture healing
EARLY POSTOP FRACTURES
PERIPROSTHETIC FX: THA Early Postop Femur Fracture

Incidence Has Increased in Recent Years:

- More wedge shaped uncemented stems
- Smaller exposures → missed intraop fx
- Quicker rehab, earlier weight bearing, more falls
Etiology:

- Unrecognized intraop fracture that displaces under load
- Fall or stumble that creates new fracture before stem is bone ingrown
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Early Postop Femur Fracture

• Most are associated with *uncemented proximally coated wedge shaped stems*
PERIPROSTHETIC FX: THA Fracture Patterns

Stereotypical Pattern: triangle of posterior medial cortex with lesser trochanter
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Fracture Patterns

Typical Pattern:

- Loose
- Subsided
- Retroverted
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Fracture Patterns: Fracture-Dislocation
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Treatment

- Remove implant, fix fracture, revise stem
- Results mostly good
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Early Fracture Prevention

- Identify and treat intraop fractures
- Prophylactic cerclage in selected patients
- Warn patients on rapid rehab protocols to avoid falls

280 lb male
Prophylactic cerclage