

PERIPROSTHETIC FEMUR FRACTURES AFTER THA: Treatment with Revision

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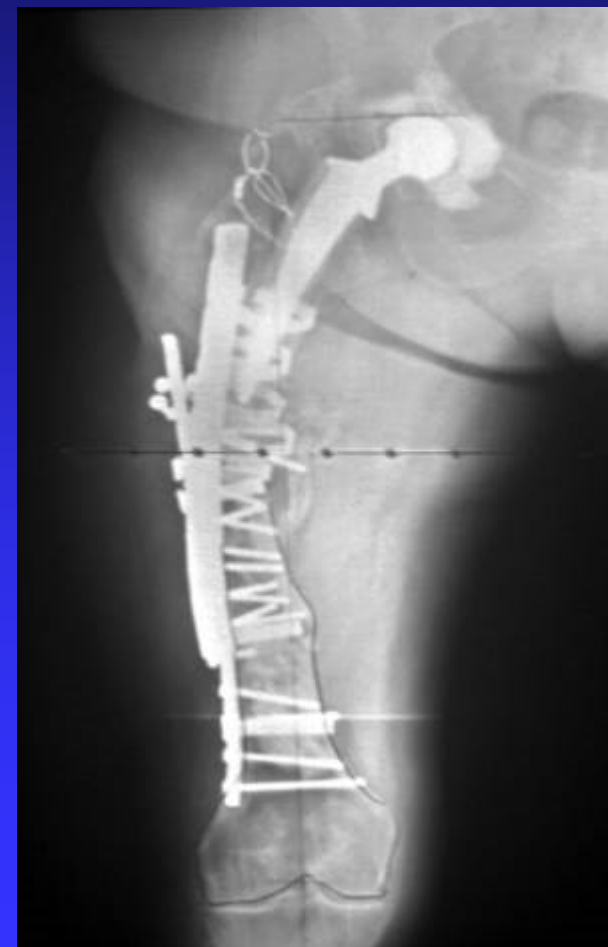
Presenter Disclosure Information

- The author has received royalties from DePuy related to certain hip products
- The author's institution receives research support from: DePuy, Zimmer, Stryker, Biomet, Smith-Nephew

PERIPROSTHETIC FX: THA

Introduction

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



PERIPROSTHETIC FX: THA

Introduction

Fortunately...

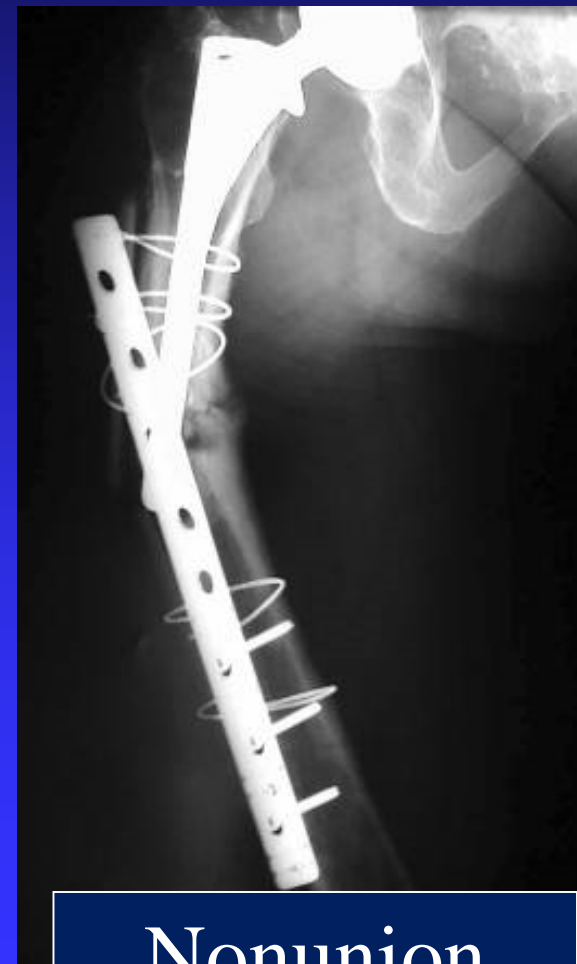
- We don't see much of this anymore:



PERIPROSTHETIC FX: THA

Introduction

- But we still see this...

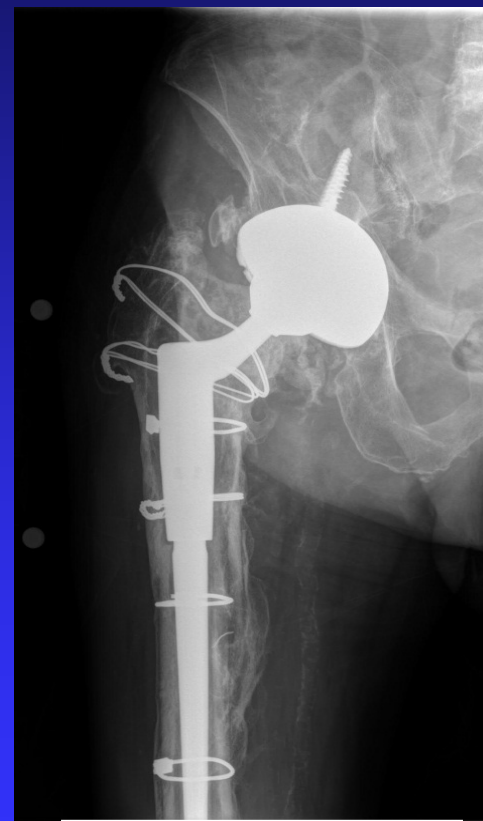


Nonunion

PERIPROSTHETIC FX: THA

Introduction

- And we still see this...



Loose

PERIPROSTHETIC FX: THA

- Current Management?

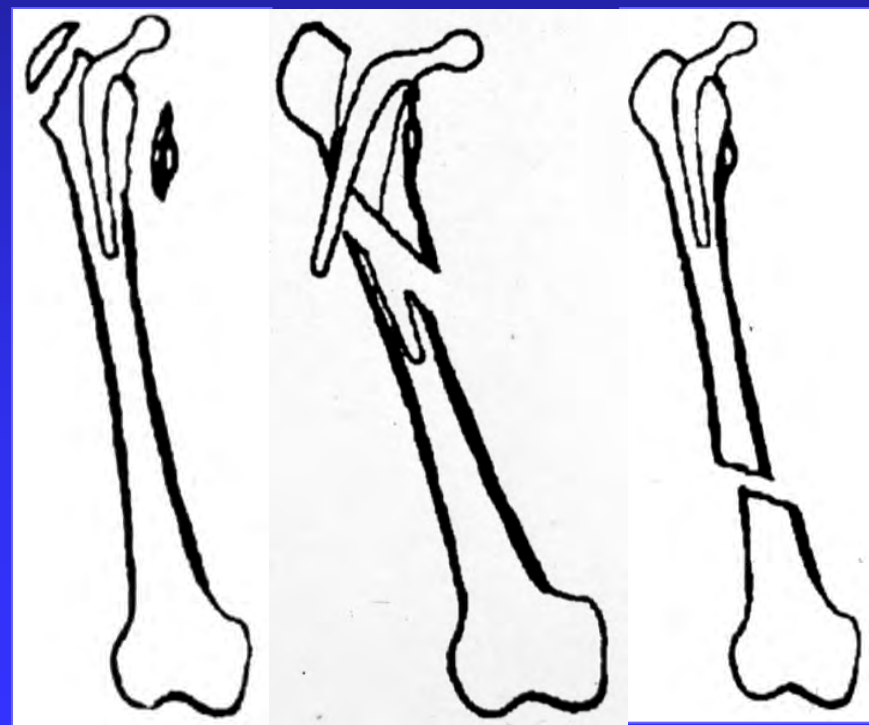


PERIPROSTHETIC FX: THA

Vancouver Classification

Fracture Location Guides Treatment:

- Peritrochanteric
- Around stem
- Well distal to stem



PERIPROSTHETIC FX: THA

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



PERIPROSTHETIC FX: THA

Non Operative Treatment: Problems

Malunion



Non union

PERIPROSTHETIC FX: THA

Fractures Around Stem

Fracture Around Stem



Stem Fixed

Stem Loose

Stem Loose
Bone Poor

ORIF

Revise

Revise

PERIPROSTHETIC FX: THA

Loose Stem

Fracture Around Stem



Stem Fixed

Stem Loose

Stem Loose
Bone Poor

ORIF

Revise

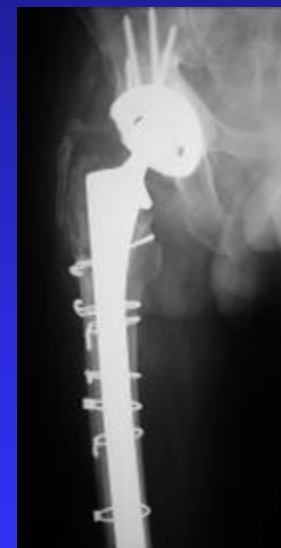
Revise

PERIPROSTHETIC FX: THA

Loose Stem

Revision Principles:

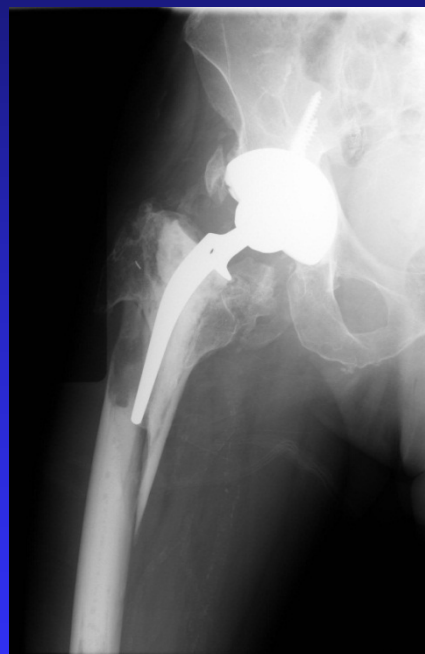
- Use fracture for access to remove implant
- Bypass fracture, usually with long stem
- Stabilize fracture
- Get stable implant fixation
- Respect biology: Avoid stripping muscle



PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂/B₃

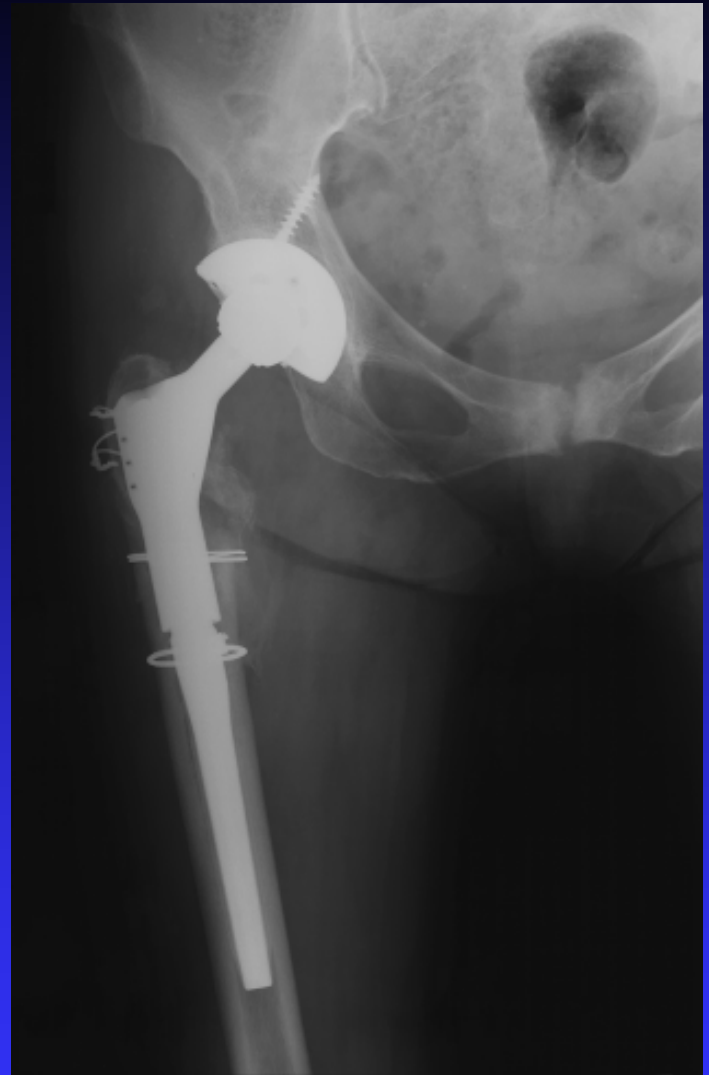
Fractures Around Loose Stems:

- With modular tapered fluted, modular stems *we can treat B₂ and B₃ fractures the same!*





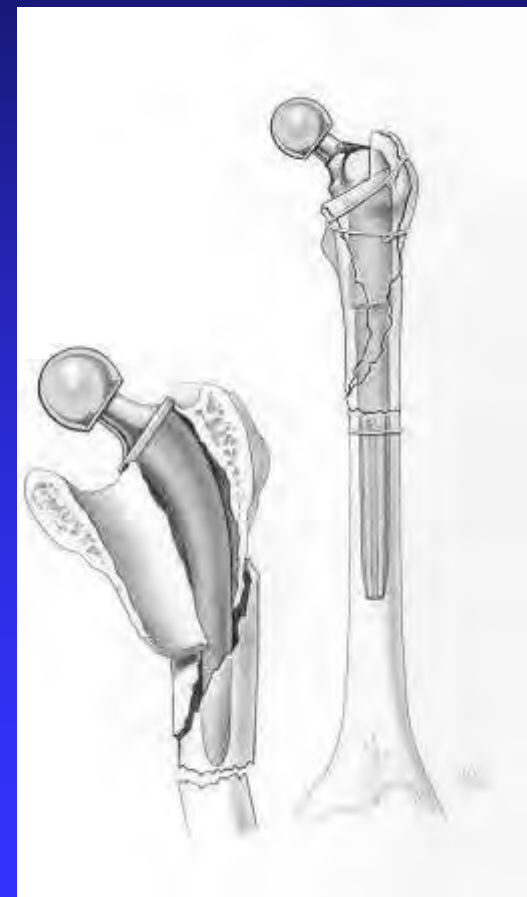
Preop



3 Months

PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂/B₃

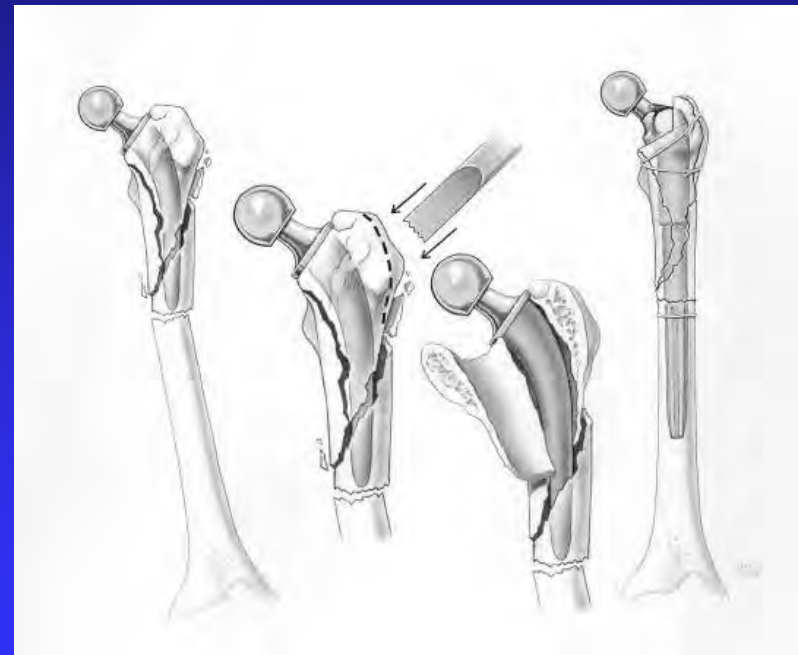
- Bypass fracture with fluted tapered stem → get distal axial and rotational stability
- Reassemble fracture around proximal stem as scaffold



PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂/B₃

Key points:

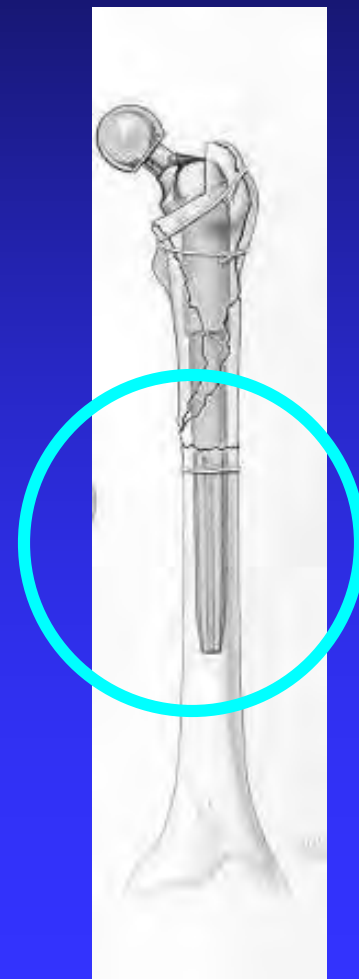
- Access failed implant and joint through fracture or osteotomy
- Keep all fracture fragments vascular
- Goal: Reasonable but not anatomic reduction



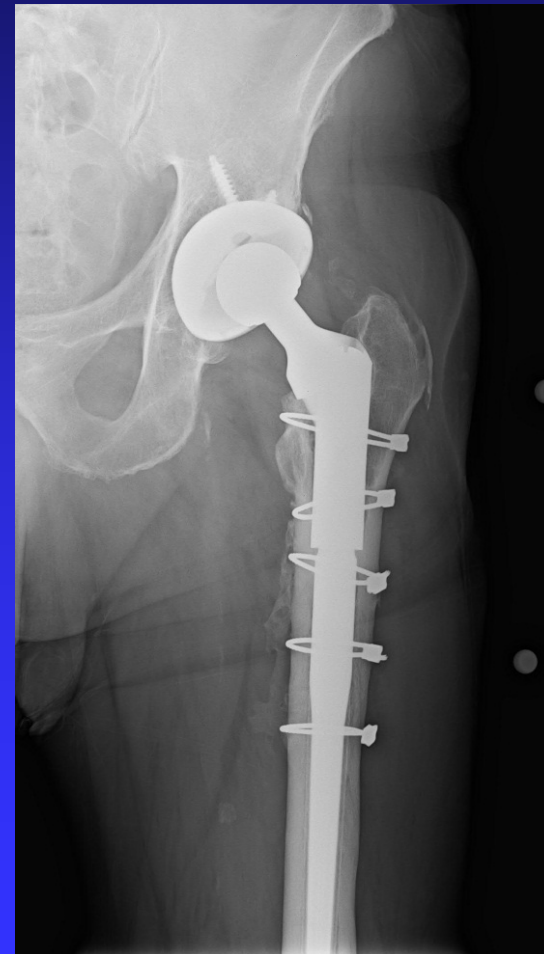
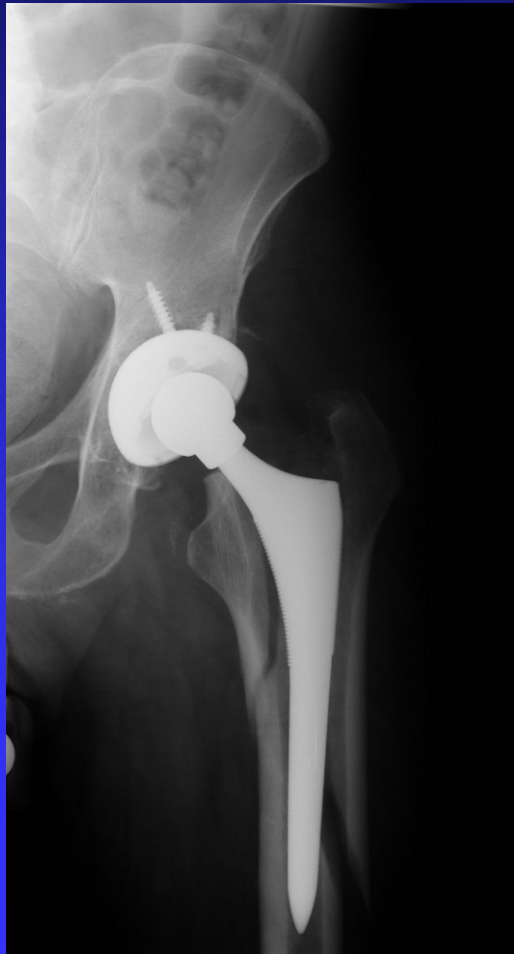
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂/B₃

Keys to Success:

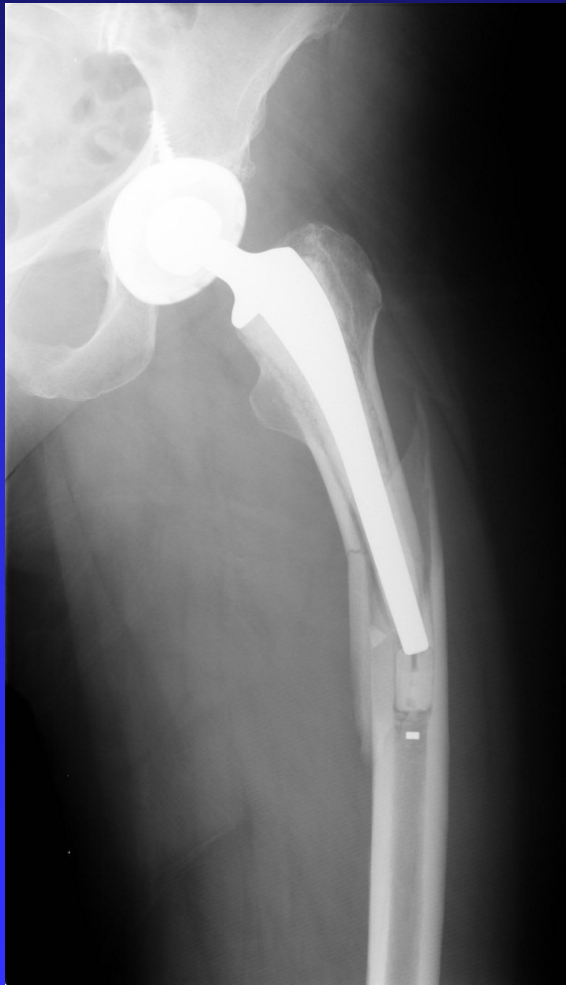
- Absolute axial and rotational stability distal to fracture
- Ream distal femur aggressively
- Prophylactic cerclage below fracture



PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂



PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₂



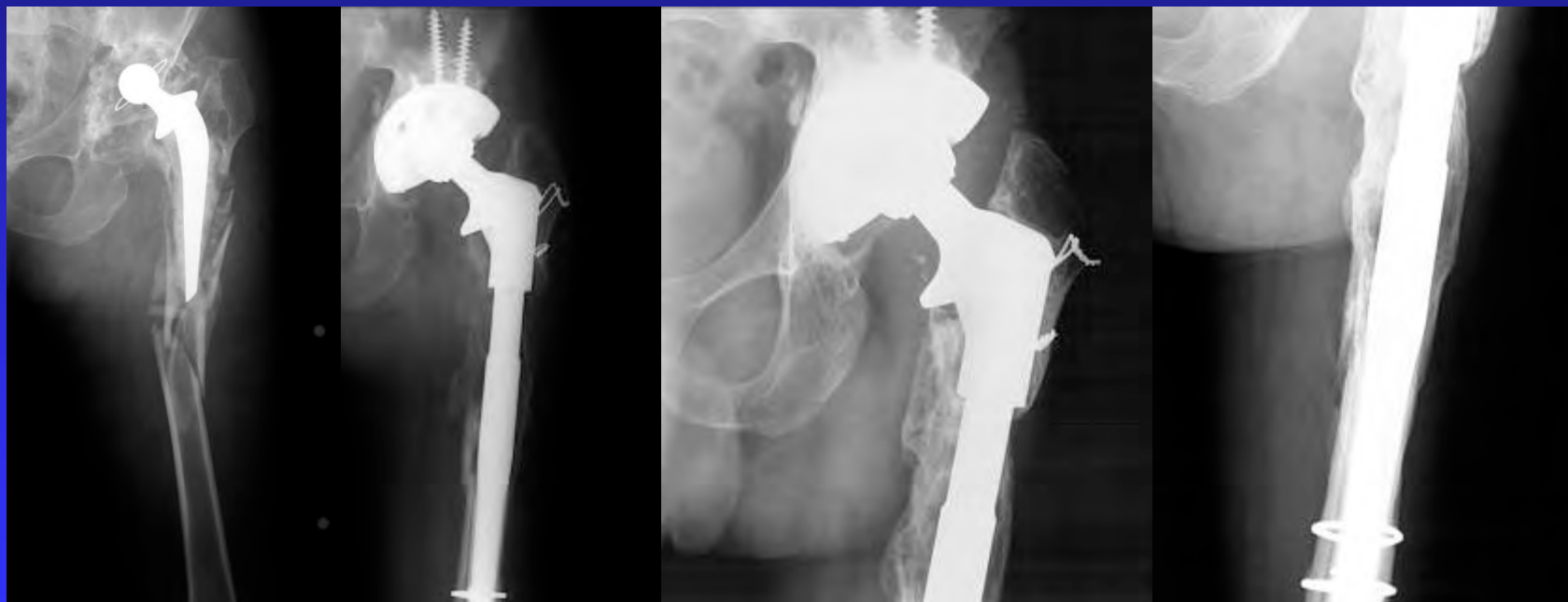
PERIPROSTHETIC FEMUR FRACTURES: Vancouver B₃

Fracture

Postop

2 yrs

2 yrs



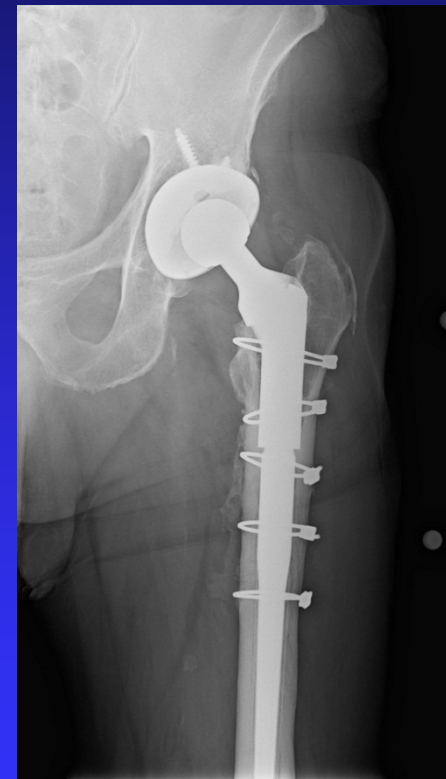
PERIPROSTHETIC FEMUR FRACTURES: Results

Mayo Experience:

- 44 B₂/B₃ fxs
- Healing 43/44
- Stable stem 43/44

Vancouver Experience:

- Similar!

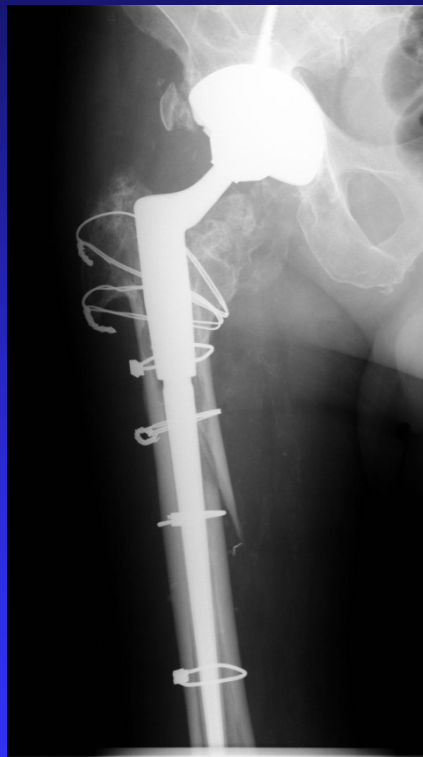


PERIPROSTHETIC FX: THA

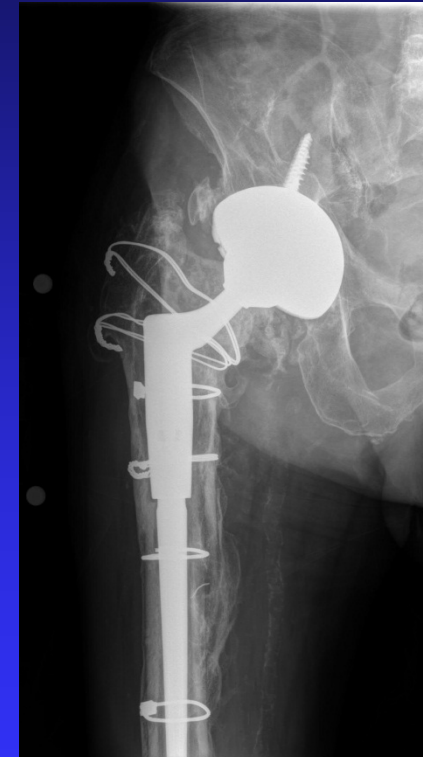
Pitfalls



Fracture



Immediate postop



Loose

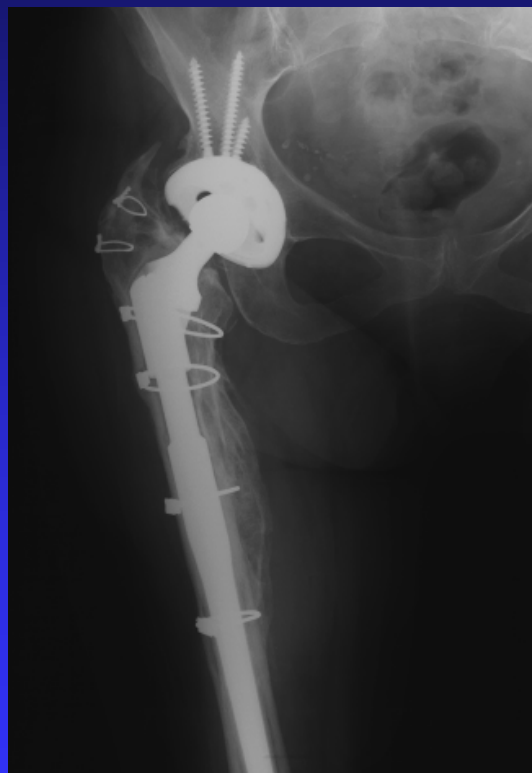
Avoid Undersizing Stem

PERIPROSTHETIC FX: THA

Pitfalls



Preop



2 Years



2 Years

Migration of Proximal Bone Fragments

PERIPROSTHETIC FEMUR FRACTURES: Conclusions

Modern Techniques:

- Simplified treatment
- Higher level of success



Revision

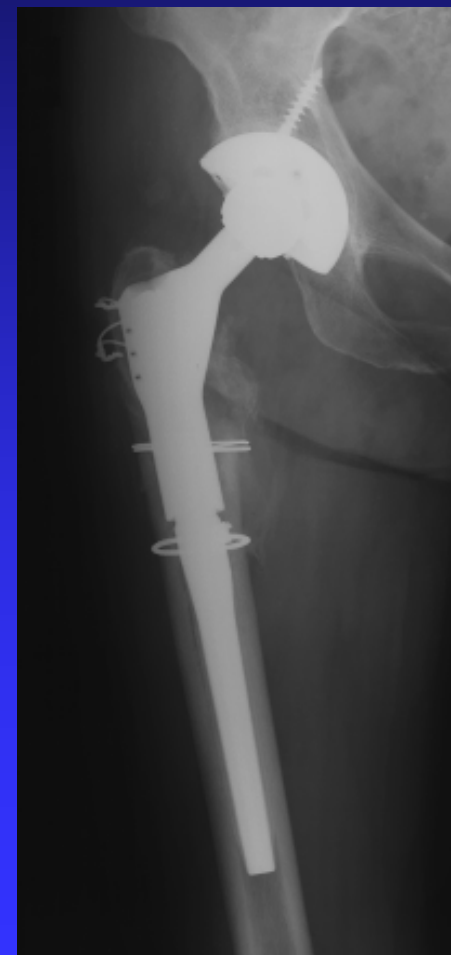
PERIPROSTHETIC FX: THA

Conclusions

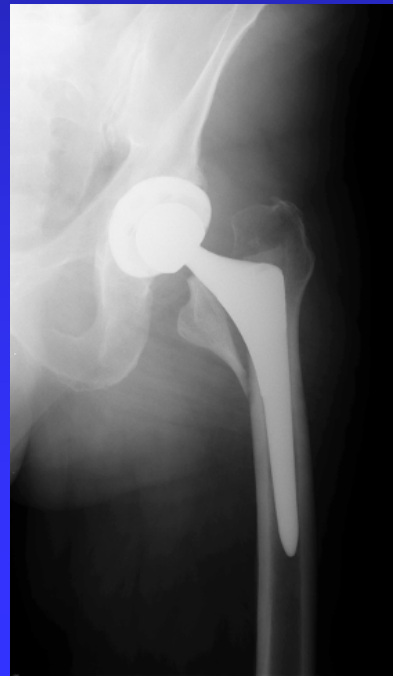
Modern Techniques:

- Emphasis on simultaneously creating *strong durable mechanical constructs*

and
- Optimizing *biologic environment* for *fracture healing*



EARLY POSTOP FRACTURES

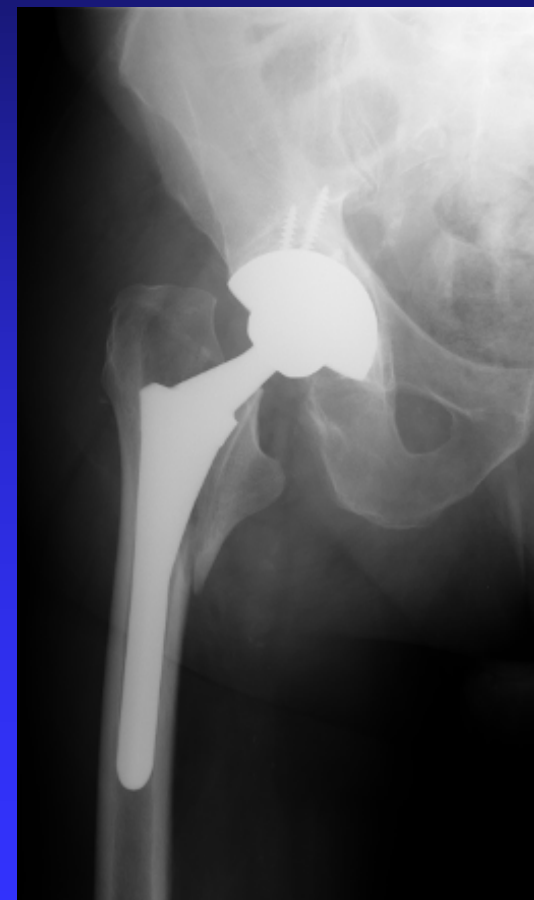


PERIPROSTHETIC FX: THA

Early Postop Femur Fracture

Incidence Has Increased in
Recent Years:

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

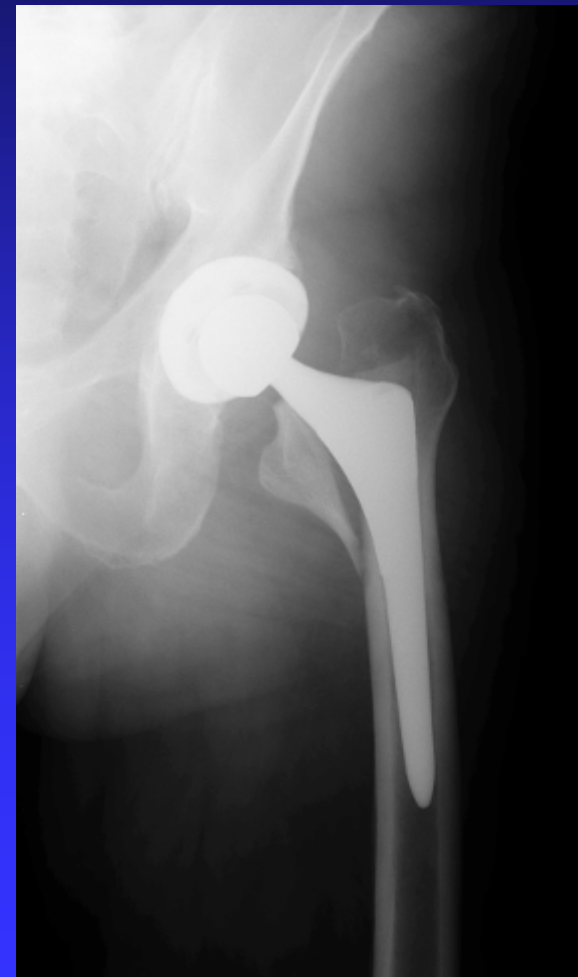


PERIPROSTHETIC FX: THA

Etiology of Early Postop Fractures

Etiology:

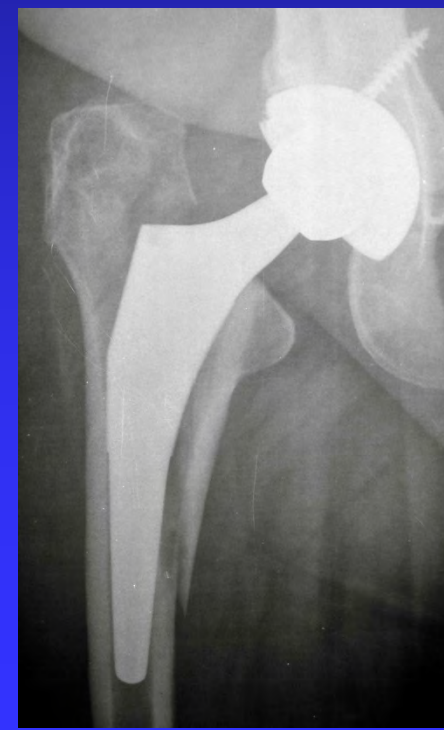
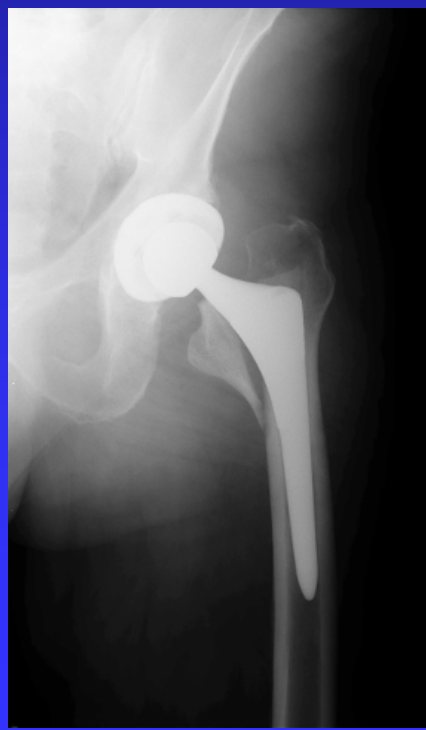
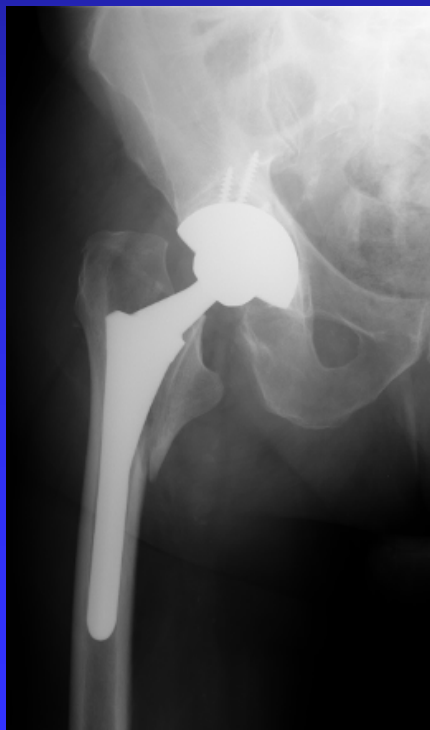
- Unrecognized intraop fracture that displaces under load
- Fall or stumble that creates new fracture before stem is bone ingrown



PERIPROSTHETIC FX: THA

Early Postop Femur Fracture

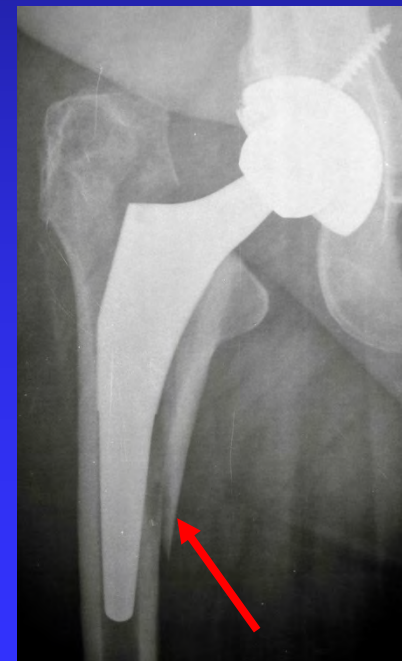
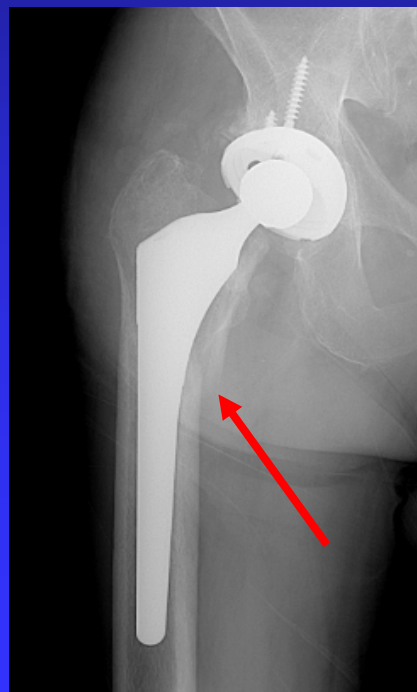
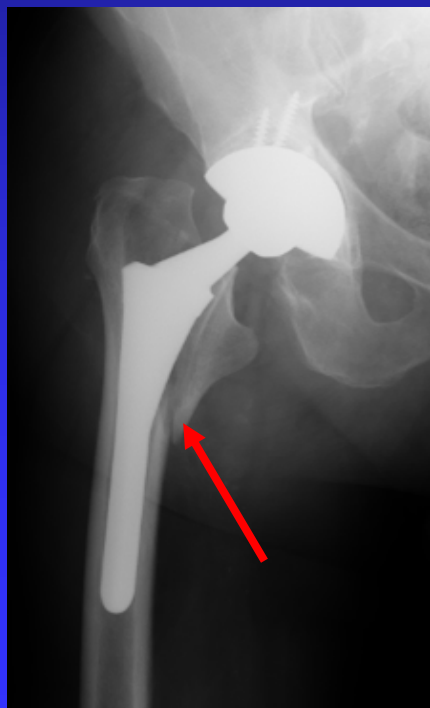
- Most are associated with *uncemented proximally coated wedge shaped stems*



PERIPROSTHETIC FX: THA

Fracture Patterns

Stereotypical Pattern: triangle of posterior medial cortex with lesser trochanter

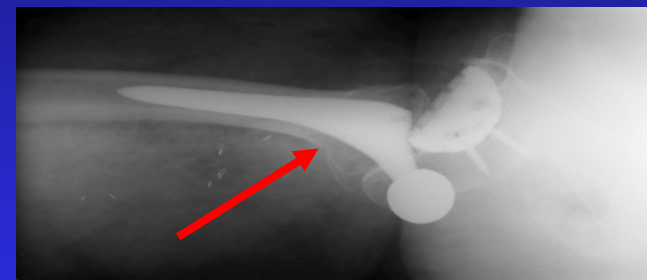


PERIPROSTHETIC FX: THA

Fracture Patterns

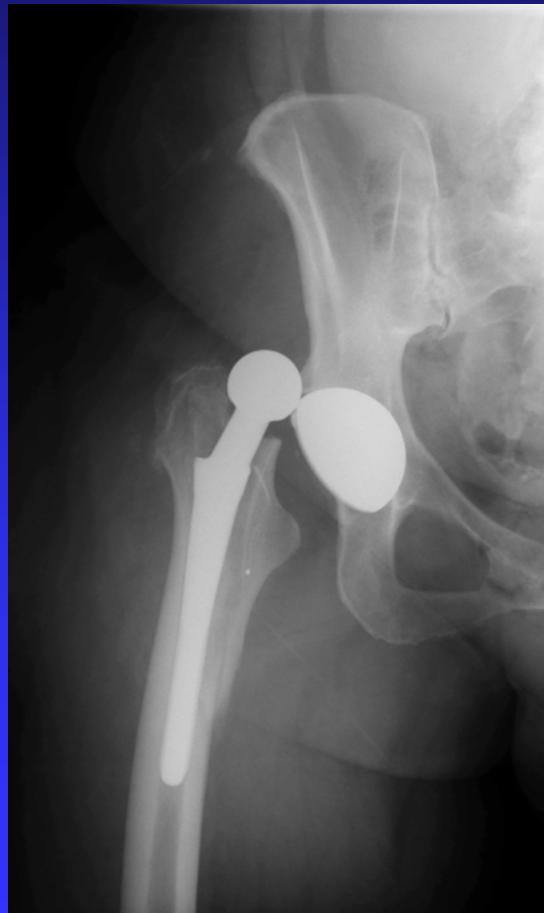
Typical Pattern:

- Loose
- Subsided
- Retroverted



PERIPROSTHETIC FX: THA

Fracture Patterns: Fracture-Dislocation



PERIPROSTHETIC FX: THA Treatment

- Remove implant, fix fracture, revise stem
- Results mostly good



PERIPROSTHETIC FX: THA

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

