Elderly Failed IT Fractures

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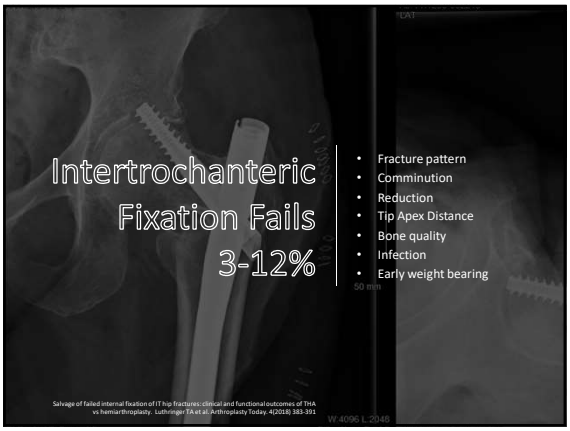

The Journal of Arthroplasty

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evision Arthroplasty

onversion Hip Arthroplasty in Failed Fixation of Intertrochanteric racture: A Propensity Score Matching Study

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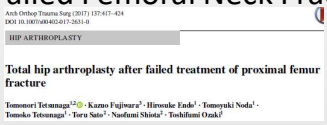
Arthroplasty vs Fixation for IT Fractures

- Increased
  - Blood loss
  - Prolonged operative times
  - Intraoperative fracture
  - Dislocations
- 60% still use assist device

- **Not first line treatment for most patients**
  - **Except arthritis, Severe comminution**

Salvage of failed internal fixation of IT hip fractures: clinical and functional outcomes of THA vs hemiarthroplasty. Luthringer TA et al. Arthroplasty Today. 4(2018) 383-391

Not Failed Femoral Neck Fractures


Arch Orthop Trauma Surg (2017) 137:417–424
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HIP ARTHROPLASTY

Total hip arthroplasty after failed treatment of proximal femur fracture

Tomonori Tetsunaga[1,2] · Kazuo Fujiwara[3] · Hirosuke Endo[1] · Tomoyuki Noda[1] · Tomoko Tetsunaga[1] · Toru Sato[2] · Nasufumi Shiota[2] · Toshifumi Ozaki[2]

Retrospective review of 50 consecutive patients
18 Femoral Neck & 32 Intertrochanteric

Complication rate 25% IT & 0% FN p<0.0001
3 periprosthetic fractures
2 dislocations
2 surgical site infections
1 stem penetration

VAS & HHS showed no difference between the 2 groups


Contents lists available at SciVerse ScienceDirect

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Salvage Hip Arthroplasty After Failed Fixation of Proximal Femur Fractures

Alexander M. DeHaan MD [a], Tahnee Groat MPH [a], Michael Priddy MD [b], Thomas J. Ellis MD [b], Paul J. Duwelius MD [c], Darin M. Friess MD [a], Amer J. Mirza MD [a]

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Retrospective review of 46 patients from 3 centers
22 Intertrochanteric & 24 Femoral Neck

Complication rate 50% IT & 29% FN p>0.05

Intraop fracture	3:1
Deep Infection	2:1
Dislocation	1:2
Aseptic loosening	1:0

Compared complication rates for different implant types
Cancellous screws 28%; Hip screw 56%; Cephalomedulary nail 33% p>0.05

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Total Hip Arthroplasty After Prior Surgical Treatment of Hip Fracture

Is it Always Challenging?

S.M. Javad Mortazavi, MD, Max R. Greenky, BA, Orhan Bican, MD, Patrick Kane, BS, Javad Parvizi, MD, FRCS, and William J. Hozack, MD

- Retrospective review of 154 conversion total hip arthroplasties
  - 83 Femoral necks & 71 Intertrochanteric fractures
  - 9 % arthroplasty complication rate
- Statistically significant difference in
  - OR time 124 vs 94 min
  - OR blood loss 659 vs 335 ml
  - Transfusion 2.4 vs 1.1 units
  - Trochanteric osteotomy 15 vs 7
  - Revision femoral component 54 vs 20
  - Calcar replacing prosthesis 7 vs 0
  - Prophylactic wiring 15 vs 7

IT Fracture Mode of Failure

- Cutting out 45%
  - Failure to slide
- Nonunion 32%
- Hardware failure
- Avascular necrosis
- Malunion
- Arthritis
- Infection

Salvage of failed internal fixation of IT hip fractures: clinical and functional outcomes of THA vs hemiarthroplasty. Luthringer. Arthroplasty Today. 4(2018) 383-391

Options

- Hospice
- Resection Arthroplasty
- Revision of fixation
- Conversion to arthroplasty
  - Total or hemi

No current guidelines

For elderly patients, ***arthroplasty*** is likely the best option

Arthroplasty

- Hemi Vs Total
- Cemented vs Press Fit cups
- Stem Options
- Trochanteric fixation
- Weight bearing recommendations
- Stability management

Hemi VS Total

Non-randomized Systematic Review

Surgeon selected cases

88 Hemi
- All bipolar
- 5% dislocation
- 5.5% intraop femur fracture

100 Total
- Head sizes under 32
- 79% press fit cups
- 10.4% dislocation
- 21.1% intraop femur fracture

Did not reach statistical significance

Salvage of failed internal fixation of IT hip fractures: clinical and functional outcomes of THA vs hemiarthroplasty. Luthringer TA et al.

Hemi VS Total

Non-randomized Systematic Review

Surgeon selected cases

No difference
-reoperation
-infection
-postop fractures
-stem subsidence

Hemiarthroplasty trends to more groin pain

Salvage of failed internal fixation of IT hip fractures: clinical and functional outcomes of THA vs hemiarthroplasty. Luthringer TA et al.

Stem Options

- Cemented
  - Usually longer
  - Calcar replacing
- Press Fit
  - Diaphyseal fitting
    - Splined
    - Fully coated
    - Calcar replacing
    - Modular
  - Metaphyseal filling
    - Limited indications

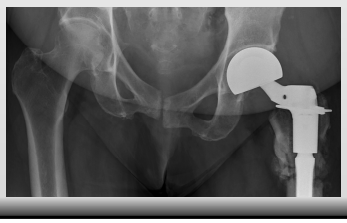
Salvage of failed interna fixation of IT hip fractures: clinical and functional outcomes of THA vs hemiarthroplasty. Luthringer TA et al. Arthorplasty Today. 4(2018) 383-391

Stem Complications

- Malpostition
  - Leg length discrepancy
  - Incorrect version
- Perforation
- Intra-operative fracture

Leg Length Discrepancy

- Loss of landmarks
- Holding length during cementation
- Lengthening for stability



Stem Related Intraoperative Fractures

188 patients

- denominators not reported

- Cemented - 1 fracture
- Press Fit
  - Diaphyseal fitting
    - 4 fractures
  - Metaphyseal filling
    - 9 fractures

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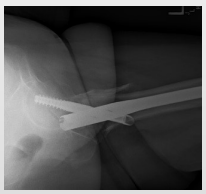
Dislocation Considerations

- Intra-articular impingement
  - Component Malposition
    - Cup and Stem Version
  - Head size/constraint
    - Dual mobility
- Extra-articular impingement
  - Bone and hypertrophic soft tissue
- Bracing

Extra Articular Impingement

- Common in early and late fixation failures
  - Nails expand greater trochanter in due to trochanteric comminution
- Usually from greater trochanter
  - Anterior or posterior
- Common cause of dislocation



Decreasing Extra Articular Impingement

Increase Length &/or Offset

- Push the anterior greater trochanter away from the anterior inferior iliac spine

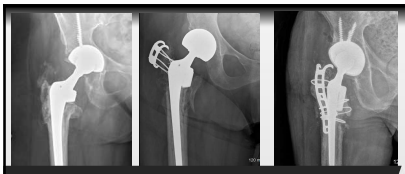
Anterior capsular debridement

- Post-traumatic capsular hypertrophy
- Heterotopic ossification
- *Femoral neurovascular bundle*

Bone resection

- Identify area of impingement & remove
  - rongeur, osteotome or saw
- Anterior or posterior
- *Do not compromise abductor sleeve*

Greater Trochanteric Management



- No repair/Suture
- Wiring
- Cable Plate
- Trochanteric bolt

- Abduction precautions

Maintain the Abductor/Lateralis Sleeve to improve Stability & Function

Tricks to Sleeve Maintenance

- Early identification of abductors
- Some elevation of vastus lateralis
- Limited dissection through abductors during nail removal
- Placement of greater trochanteric fragment behind Charley retractor
  - Also simplifies removal of unwanted bone

Cases With Other Considerations

87 year old female

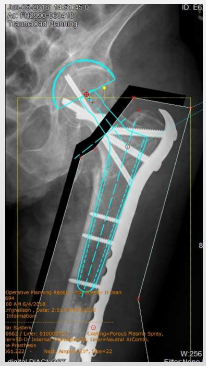
Fixation Post Injury Day 2

Clinic Follow-up: Post Injury Day 10

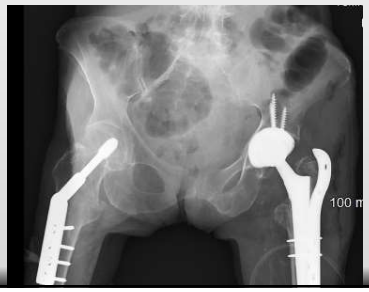
Treatment Options

- Hospice
- Resection Arthroplasty
- Revision of Fixation
- Cement in a short stem
  - Cut a calcar?
- Press fit a short stem
- Total femur conversion

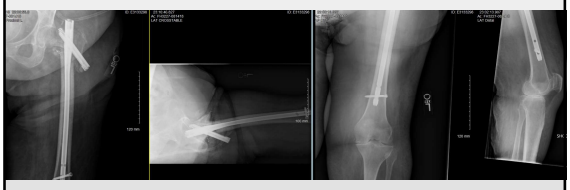
- Hemi or Total?



Ambulated POD#3
Cause of death unknown
POD#30



Purulent Drainage from Lateral Hip



71 YO Female
- Has not walked in 6 months
- 3 courses of IV antibiotics

Open debridement

Findings

- Cut our head
- Small amount of acetabular cartilage damage
- Florid osteomyelitis
- Intact abductor/trochanteric lateralis sleeve

- Antibiotic spacer or 1 stage arthroplasty

Acta Orthopaedica 2013; 84 (4): 377–379 377

1-stage primary arthroplasty of mechanically failed internally fixated of hip fractures with deep wound infection

Good outcome in 16 cases

Till O Klatte[1,2], Padraigh F O'Loughlin[3], Mustafa Citak[1], Johannes M Rueger[2] , Thorsten Gehrke[1], and Daniel Kendoff[1]

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- 8 of 16 were IT fractures
- Few MRSA/Gram negative infections
- All patients had previous procedures
- All had cemented stems and cups with antibiotics
- Complications
  - One patient had a new infection 1 year post op
  - 4 dislocations
  - 1 aseptic loosening

J Orthopaed Traumatol (2017) 18:43–50
DOI 10.1007/s10195-016-0419-6

ORIGINAL ARTICLE

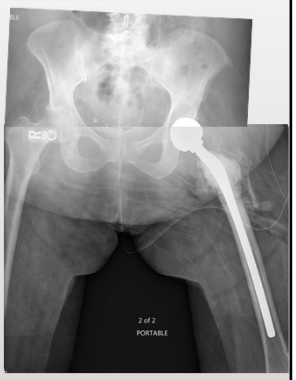
A protocol for staged arthroplasty to salvage infected nonunion of hip fractures

Ayman M. Ebied[1] · Adel I. Elseedy[1] · Osama Gamal[1]

- 11 of 26 had extracapsular fractures
- MRSA, Gram neg, pseudomonas or yeast in all but 6
- Complications at 44 months
  - 2 dislocations
  - 2 trochanteric nonunions
  - 1 >1cm leg length discrepancy
  - 2 patients with HO
- No recurrence of infection

Antibiotic Coated Hemiarthroplasty

- Cemented into the bone proximally
- Abductor sleeve tied down with absorbable sutures
- *Off label* use of hemiarthroplasty head length extender



64 YO Former Alcoholic
4 Years s/p Failed IT fracture fixation

Trochanteric Osteotomy

Common for malunions

Conclusions

- Failed intertrochanteric fractures are often disasters
- Arthroplasty is recommended for elderly patients
- Reconstruction can be complex and should be undertaken by experienced hip surgeons
- Hospice is an option

Recommendations

- Hemi vs Total
  - Determined by the surgeon
- Cemented stems
  - Fewer intraoperative fractures
  - Less modularity
- Decrease Dislocations
  - Component placement
  - Head diameter & dual mobility
  - Sources of extra articular impingement
- Conserve the Abductor sleeve