

The Simple Intertrochanteric Femur Fracture...What could go Wrong?

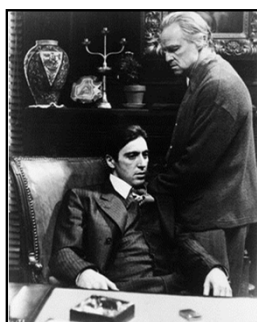
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Disclosure

Educational Speaker
Synthes

Research
Synthes



Outline

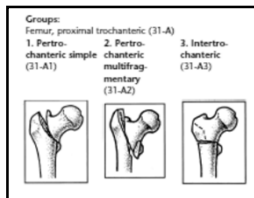
The Right Implant
Positioning
Reduction
Avoiding Malalignment
Tip-Apex Distance
Nail-bow mismatch
Interlocks



Define “Simple Intertroch”

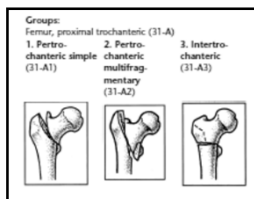
May be easier to define
what's not simple

- Segmental
- Periprosthetic
- Pathologic
- Extending into diaphysis or neck
- Revision ORIF
- Nonunions



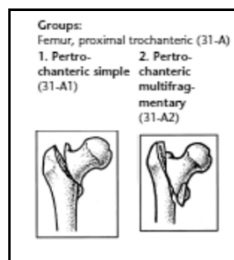
The Right Implant

Depends on the fracture
pattern and surgeon
preference



“Normal Obliquity”

Old School says SHS is
ok for all IT fxs and
lower complication rate



How big does the SHS need to be?

Bolhofner JOT 2000

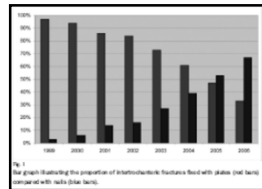
- 2 hole vs 4 hole
- 8 embalmed pairs
- No difference

Bolhofner JOT 1999

- 2 hole side plate
- 69 pts, 70 fxs
- 3 failures: 2 cut-out, 1 dissociation
- No loss fixation of the side plate

“Normal Obliquity”

Use of CM nail suggested to be tied to reimbursement with higher complication rates



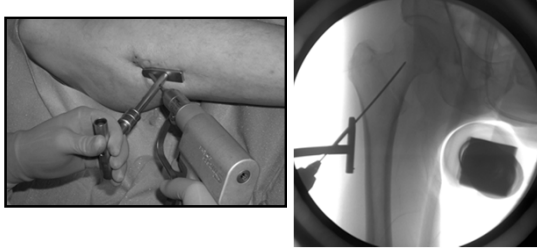
Anglen and Weinstein JBJS-AM 2008

Isn't the incision smaller with a nail?



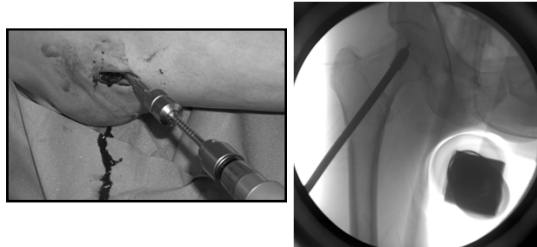
Pics courtesy of Jeff Anglen

Guide used externally



Pics courtesy of Jeff Anglen

Soft Tissue Protectors are for Sissies



Pics courtesy of Jeff Anglen

He gave me his word he didn't extend the incision



Pics courtesy of Jeff Anglen

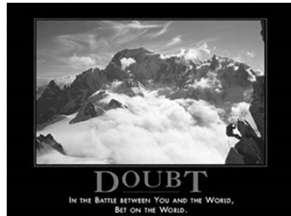
So what's the problem?



SHS for all IT fxs?

53 yo morbidly obese
female fell down
several steps with
right hip pain

- Uncontrolled diabetes
- CHF
- HTN





OTA 31-A2.2

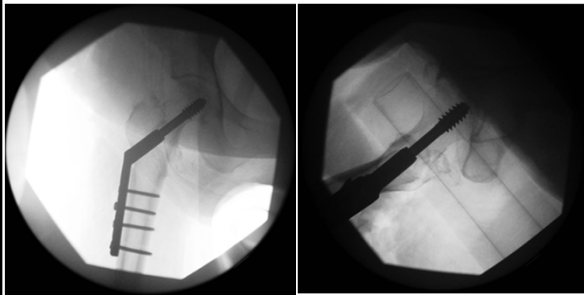
Comminution of
intertrochanteric
region

Lateral wall mostly
intact, but involved

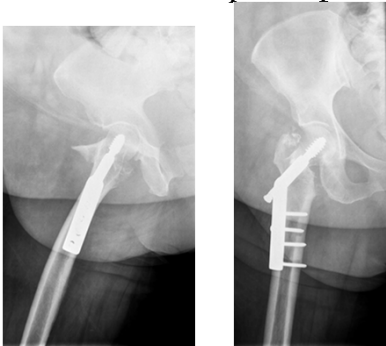
Significant shortening,
even with traction
(and can't see end of soft tissues)



Sliding Hip Screw



3 weeks post-op

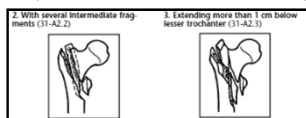


“Normal Obliquity”

But is there a role for CM nails?

Palm showed 30% lateral wall fractures in A2.2 and A2.3 (74% during the procedure)

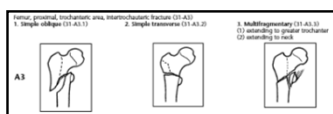
Higher complications with nails may be historical (Bhandari et al. JOT 2009)



“Reverse Obliquity”

SHS inappropriate

A fixed angle device is needed (CM nail, blade, locking proximal femoral plate)



Alternative implants

Use for pertrochanteric femur fractures (compared to 4-hole SHS)

- Less blood loss
- Less OR time
- Better pain scores at 5 days
- Fewer malunions



Moroni et al 2005 JBJS

Positioning

Surgeon preference

- Lateral with bean bag or fx table
- Supine with “bump” or fx table

If using fracture table, adduct the operative leg



Positioning

Beware using the “well leg holder”

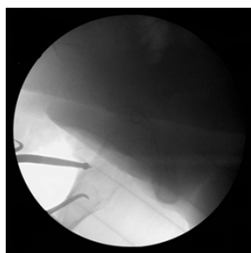
Compartment syndrome is a risk with longer procedures (Anglen CORR ‘94)



Reduction

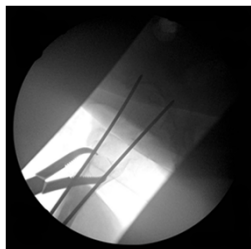
Usually done by traction and internal rotation

If that fails, try percutaneous methods



Reduction

K-wires can be placed on either side of hip screw and into bony pelvis if grossly unstable



Reduction

Judicious use of clamps can be done if unable to hold or reduce percutaneously

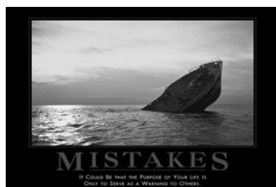


Avoiding malalignment

With nails, usually do to improper starting point

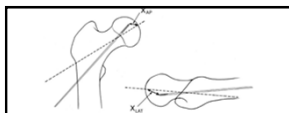
Most nails designed to start at most medial aspect of greater trochanter

Take patient out of varus after starting point is achieved



Tip-Apex Distance

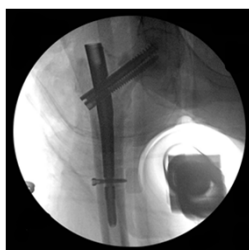
Described by
Baumgaertner to center
the hip screw in the
femoral head



Note this does not
describe position of the
screw in the neck

Does this apply to all?

Some nails and plates
have 2 screws



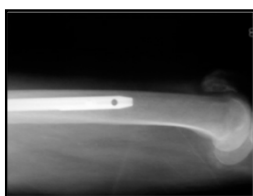
Consider averaging the
2, or the center of an
imaginary point between
the screws

Nail-Bow Mismatch

Radius of curvature
(ROC) shortens in the
elderly

Use ROC less than 2

Beware resistance, check
a lateral!



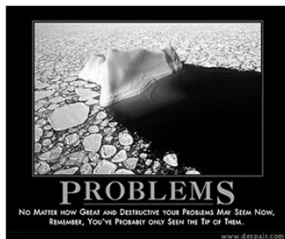
Haidukewych JBJS-AM 2009

Nail-Bow Mismatch

A more anterior starting point may help

(A more posterior approach will not)

Can always bail out to a plate/screw construct



Interlocks

May not be needed for "Stable" intertroch fractures (consider using a SHS)

If unstable enough for an IL in a short nail, consider going long



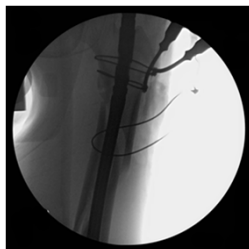
Subtroch Extension?



Subtroch Extension

Afsari et al 2009 JBJS

- Clamp assisted reduction of subtroch fractures
- **JUDICIOUS** use of cerclage wire
- Creates a tube
- Prevents blowing out IT extension
- Corrects varus deformity



Immediate and 1 year post-op



Other Pearls

Release traction and compress if normal obliquity, or lock the nail if reverse obliquity (not in distraction)

Every patient gets a clinical check for rotation prior to extubation (not the nurse first assist or resident closing)

Summary

SHS is still gold standard for 2-part simple fractures

Convert to a nail for reverse obliquity, lateral wall involvement, and consider for 3 or 4 part IT fx's (the more comminution the more likely the lateral wall will be involved)

Summary

If nailing, keep your starting point as medial as possible on the trochanter (this might mean a large incision for morbidly obese)

If doing a short nail and you think you need an interlock, you may need a long nail

Thank you