Four Part Fractures: Fix Them All

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I (and/or my co-authors) have something to disclose.

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RCT's of Proximal Humeral Fractures Operative versus Non-operative

• Olerud 2011 – 60 pts, mean age 74, 2 yrs f/u
  - Constant score Non-op 59, OR 61

• Fjalestad 2012 – 50 pts, mean age 73, 1 yr fu
  - Constant score Non-op 33, OR 35

• PROFHER study, JAMA, 2015, 231 patients
  - Oxford scores 39 surgical, 38 non-op
Results

- The outcome scores in these studies are poor in general
- The subgroup that does best is the ORIF group with anatomic reduction and healing
- The subgroup that does the worst is the ORIF group with complications

If ORIF is Chosen, How to Maximize Success?

- 1. Calcar reduction
- 2. No varus
- 3. Calcar screw
- 4. Suture greater tuberosity
Common technical problems

- Tuberosity pull-off
- Varus collapse of the fracture
Varus

Rotator cuff fixed to shaft or plate

Suture Greater Tuberosity?


- Tension-relieving rotator cuff sutures do not add stability to the repair of 3-part proximal humerus fractures. No mechanical data exist to demonstrate benefit of adding suture to a plate and screw construct for limiting fracture displacement.
Plating for 3 & 4 Part Fx

Humeral Head Based Fixation =

No or Poor Tuberosity Fixation
Acumed Polarus 3 Plate

Case 1
- 8 weeks
- Varus
- Painful, limited ROM
- CT: delayed / non union
SUPERIOR HOOK FOR BETTER GT FIXATION

CASE 1

- Healed
- 160 degrees flexion
- 45 degrees ER, IR to L5
- No pain
- Back to work
Case #4: 34 year old female fall from a horse
Displaced two part surgical neck fracture

Operation
58 YR OLD MALE, IMPACTED VALGUS FRACTURE WITH LARGE GT FRAGMENT

INTRAOPERATIVE RADIOGRAPHS Demonstrating GT Fixation

8 WEEKS POST-OP WITH ANATOMIC GT UNION, PT HAS 120° FLEXION
Conclusions

- ORIF has a role in specific situations
- Successful ORIF has the best results
- Proper technique can reduce complications
- Implant modifications may improve results by decreasing common complications