

Distal Humeral Fractures: Fixation and Replacement, Patient Selection and Outcomes

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Disclosure

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- I am a consultant for Stryker, Acumed, Zimmer
- Receive royalties from Stryker (elbow, clavicle plates), LWW (publisher)



Patient Selection

- Non-operative treatment
 - elderly, low-demand, demented, medical co-morbidities, active infection, etc
- TEA
 - > 70 years, active, rehab potential, "C3" fracture,
 - low-demand, pre-existing arthritis
- ORIF
 - everyone else

Patient Selection

- Non-operative treatment
 - elderly, low-demand, demented, medical co-morbidities, active infection, etc
- "Functional outcomes of distal humeral fractures managed nonoperatively in medically unwell and lower-demand elderly patients"
- Desloges W, Faber KJ, King GJ, Athwal GS.
- J Shoulder Elbow Surg. 2015
- 32 patients, 9 died, 5 lost, 19 followed
- 13 good/excellent, 100° ROM, 16 united, 2 TEA's

Patient Selection

- TEA
 - > 70 years, active, rehab potential, "C3" fracture
 - Low demand, pre-existing arthritis

Total Elbow Arthroplasty as Primary Treatment for Distal Humeral Fractures in Elderly Patients*

BY TYSON K. COBB, M.D.† AND BERNARD F. MORREY, M.D.†, ROCHESTER, MINNESOTA
Investigation performed at the Mayo Clinic, Rochester

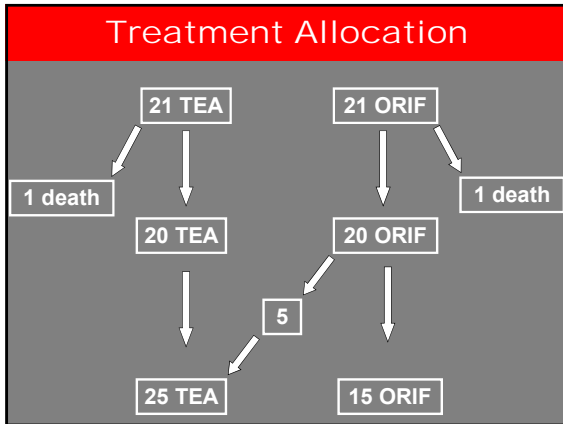
- 20 patients, mean age 72 yrs
- Average f/u 3.3 years
- 15 excellent, 5 good, 1 poor
- MEPS mean 91

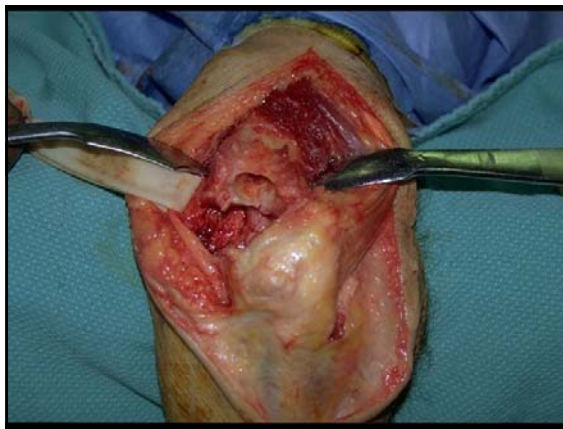
- Immediate stability
- Quicker rehab
- Low complication rate



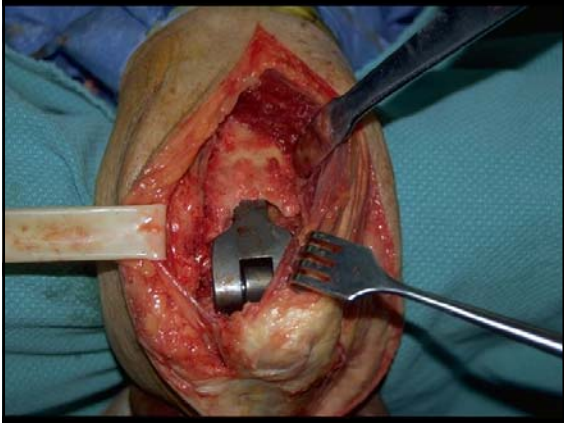


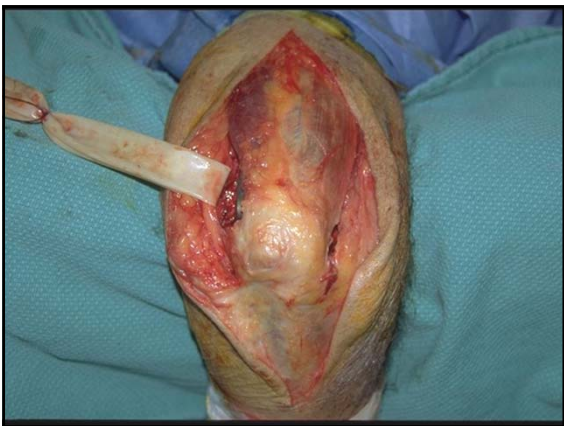


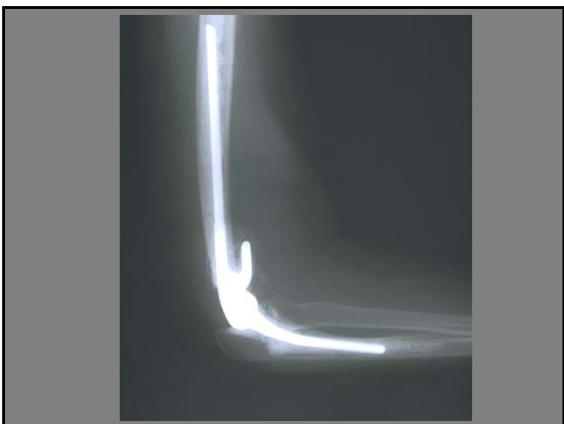




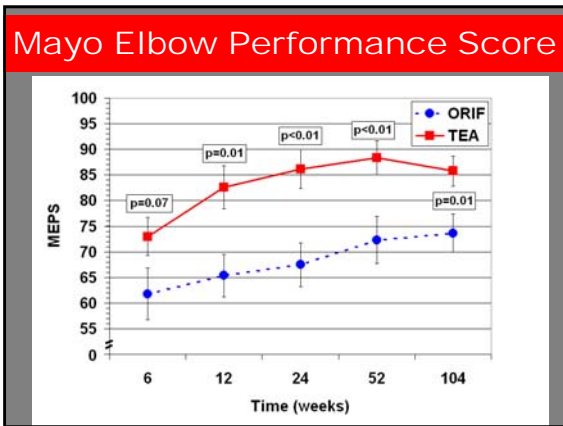












Mayo Elbow Performance Score

	Excellent (≥ 90)	Good (75-89)	Fair (60-74)	Poor (<60)
ORIF	1	7	6	1
TEA	12	9	3	1

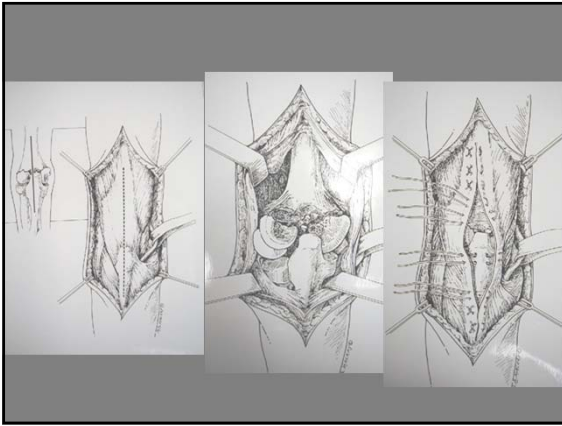
$P=0.03$

Patient Selection

- ORIF
 - everyone else
 - Approach?
 - Type, configuration of plates?
 - Ulnar nerve?











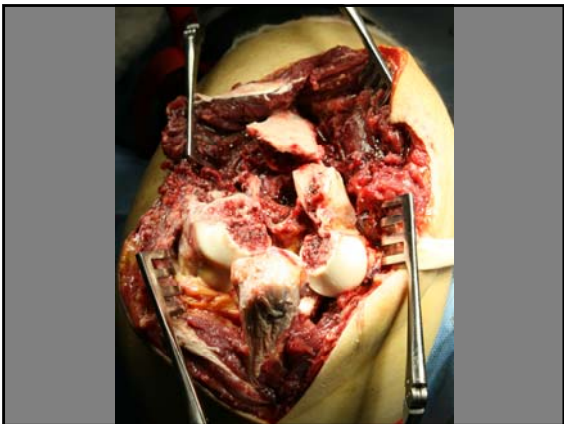


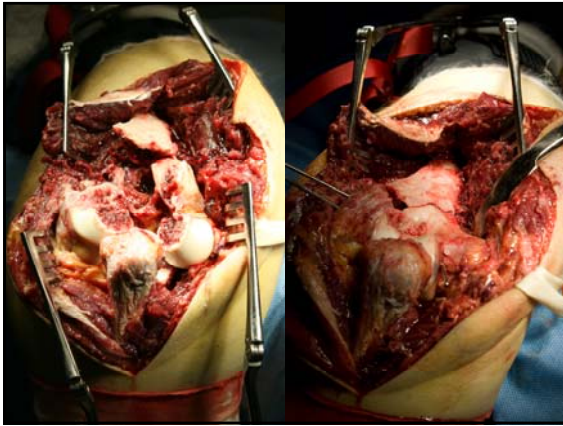
Functional outcome after open supracondylar fractures of the humerus
THE EFFECT OF THE SURGICAL APPROACH
Michael D. McKee, Justin Kim, Khaled Kebaish, David J. G. Stephen, Hans J. Kreder, Emil H. Schemitsch
From the University of Toronto, Canada

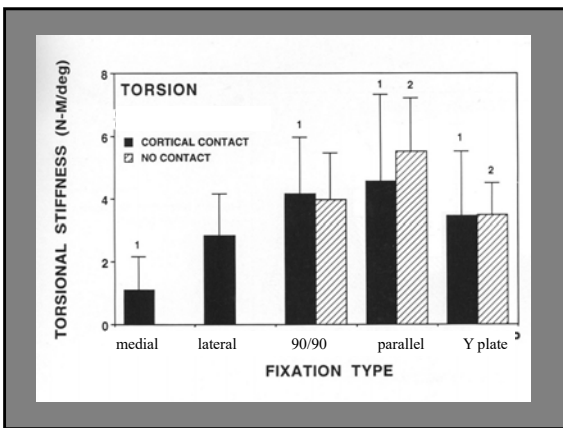
We reviewed 26 patients who had had internal fixation of an open intra-articular supracondylar fracture of the humerus. All operations were performed using a posterior approach, 13 with a

We used one of two posterior approaches to the site of the fracture, either a triceps split or an olecranon osteotomy. Wilson et al¹³ reported no differences in function outcome after treatment of closed intra-articular fractures.

- Patients treated with triceps split had:
 - 11° better arc of motion
 - 10 point improvement in Mayo Elbow score
 - less hardware irritation



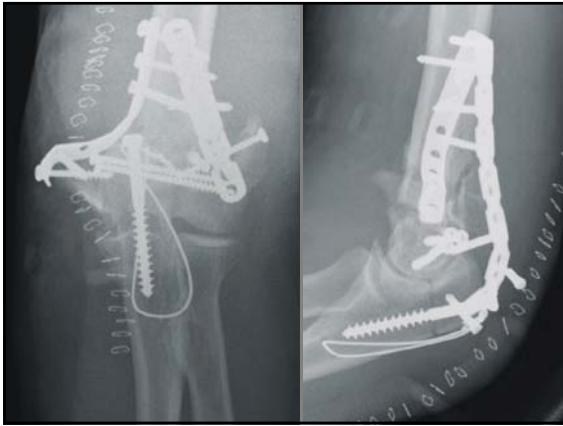


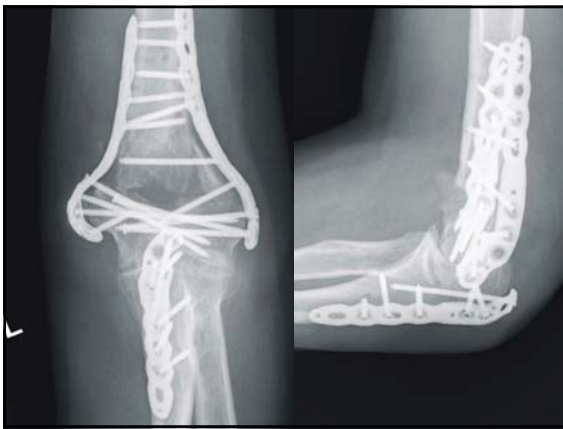


Successful fixation when:

- 1) Parallel plates are placed that permit a total of four to six long (45-70mm) screws in the distal fragments, from one side across the other
- 2) Screws interdigitate
- 3) Plates are precontoured particularly on the lateral side

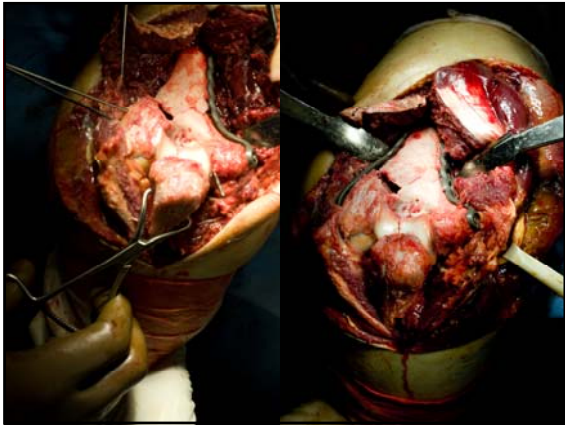
O'Driscoll et al, OCNA 2002





Shin SJ, Sohn HS, Do NH.
A clinical comparison of two different double plating
methods for intra-articular distal humerus fractures.
J Shoulder Elbow Surg. 2010 Jan;19(1):2-9.

- 17 patients 90/90 plating > 2 nonunions
- 18 patients parallel plating > 0 nonunions
- Outcome scores similar








What to do with the ulnar nerve?

- Transpose?
- Leave in situ?
- OTA 2016



ORIF for intra-articular distal humeral fractures: Standard of Care

- McKee et al. "Functional outcome following surgical treatment of intra-articular distal humeral fractures through a posterior approach" JBJS 82-A, 1701-1707, 2000.
- Reliably "good" results in the majority of cases
- Mean flexion contracture of 25°
- Mean 108° arc of motion (25° to 133°)
- Return of 71% to 76% of flexion/extension strength
- Low rate of arthrosis
- Re-operation rate of 24% (hardware removal, elbow release)

Conclusions

- A triceps-splitting approach has some advantages, especially in open fractures
- ORIF with medial and lateral column plates remains the treatment of choice for the majority
- Semi-constrained TEA has a role in elderly, low-demand patients (pre-existing arthritis, severe comminution, etc)
- Management of the ulnar nerve remains controversial – it must be isolated and protected, but final disposition remains unclear

