Elbow: Fixation Rather than TEA

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- The debate: ORIF vs. TEA still very much alive

- *When fixation is possible, it should be the default - biology beats metal*

J Shoulder Elbow Surg (2009) 18, 3-12

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FEATURED ARTICLES

A multicenter, prospective, randomized, controlled trial of open reduction—internal fixation versus total elbow arthroplasty for displaced intra-articular distal humeral fractures in elderly patients

J Shoulder Elbow Surg (2019) 28, 2198–2204

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ELBOW

Long-term outcomes of total elbow arthroplasty for distal humeral fracture: results from a prior randomized clinical trial

Niloofar Dehghan, MD, FRCSC[a,b], Matthew Furey, MD, FRCSC[c], Laura Schemitsch, BSc[d], Bill Ristevski, MD, FRCSC[e], Thomas Goetz, MD, FRCSC[f], Emil H. Schemitsch, MD, FRCSC[g], Canadian Orthopaedic Trauma Society (COTS), Michael McKee, MD, FRCSC[a,*]

patients aged 65 years or older,
OTA type 13-C fractures
Gustilo grade 1 open fractures treated within 12 hours of injury
definitive surgery within 21 days of injury

JB&JS

EVIDENCE-BASED ORTHOPAEDICS

In Older Adults with Distal Humeral Fractures, Total Elbow Arthroplasty Did Not Differ from Open Reduction-Internal Fixation for Reoperations in the Long Term

Harvey, Edward J. MD, MSc

They Both Suck?
What is the message?

EVIDENCE-BASED ORTHOPAEDICS

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Conclusion of study (2020 Deghan) reflects that both intervention groups had similar outcomes due to less-than-ideal treatment options

More Importantly
At long-term follow-up, mortality was 60% to 67%, and although we currently view hip fractures as a marker of advanced physiological age, we probably should consider distal humeral fractures as another danger sign

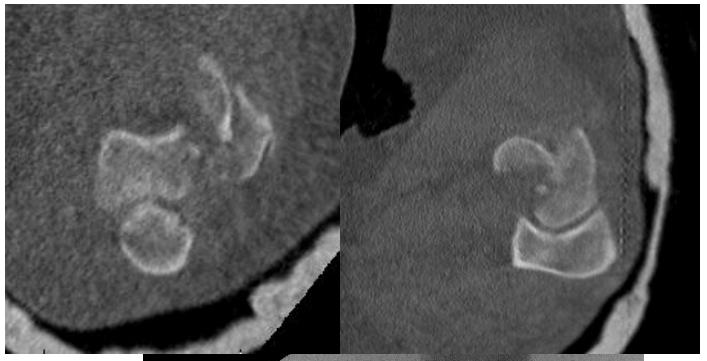
The Case for Native Bone First Principles

- Joint preservation preserves options
  - Albeit TEA after ORIF also sucks

- Native anatomy = optimal kinematics

  No implant perfectly replicates it

- *Arthroplasty is a one-way door - fixation is not*



Distal Humerus Fractures: ORIF Can Work

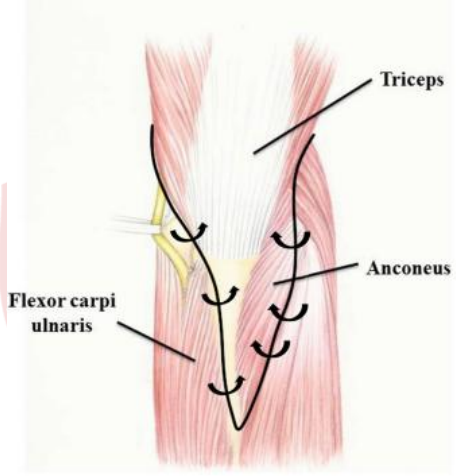
- Historical bias toward TEA in elderly patients
- Modern locking plate technology has improved fixation strength
  - Non-locking plates in previous studies
- Comparable or superior functional outcomes with ORIF in selected patients
  - ORIF allows revision options
  - TEA in a young/active patient is a problem

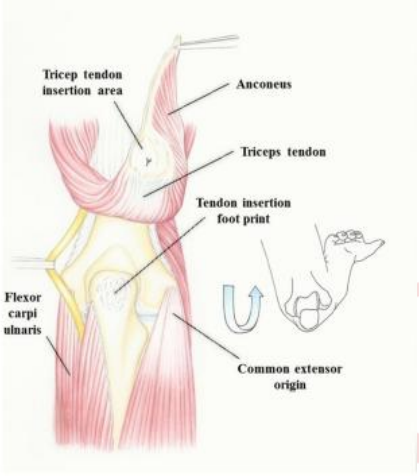
- Outcomes (Egol et al 2011) included patient-reported grading of function and pain, revision surgical procedures, and implant survival
  - Comparison of functional outcomes of total elbow arthroplasty vs plate fixation for distal humerus fractures in osteoporotic elbows
  - no significant difference at 2 years in elderly

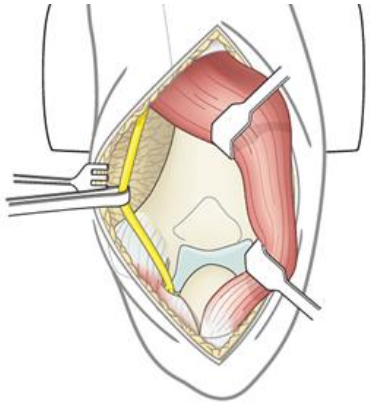
Fracture "fixability" is often underestimated preoperatively — I "always" try

Set Yourself up to Succeed

- Incision for ORIF should be TEA friendly
- I use a TRAP Flap for ORIF







TEA
Real Limitations You Must Know

- Lifetime activity restrictions
  - (no lifting >1–2 kg repetitively)
- Implant loosening and bushing wear over time
- Periprosthetic fracture risk
- Revision TEA is morbid — poor outcomes, high complication rates

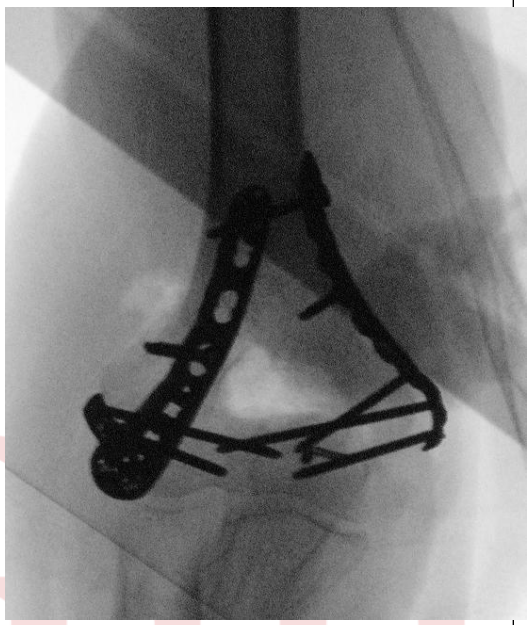
- *You are committing your patient to a restricted life and a difficult revision path*

Summary:
The Fixation-First Algorithm

- Simple decision framework
- Is the fracture reconstructable? → ORIF
- Is the patient young or active? → ORIF (avoid TEA)
- Is the patient elderly and low-demand with non-reconstructable fracture? → Consider TEA

Take-Home Message

- Joint preservation preserves future options
- Modern fixation technology has expanded what is "fixable"
- TEA carries real long-term costs
  - don't use it as an easy out
- *"When in doubt, fix it. You can always revise to arthroplasty. You can't undo it."*

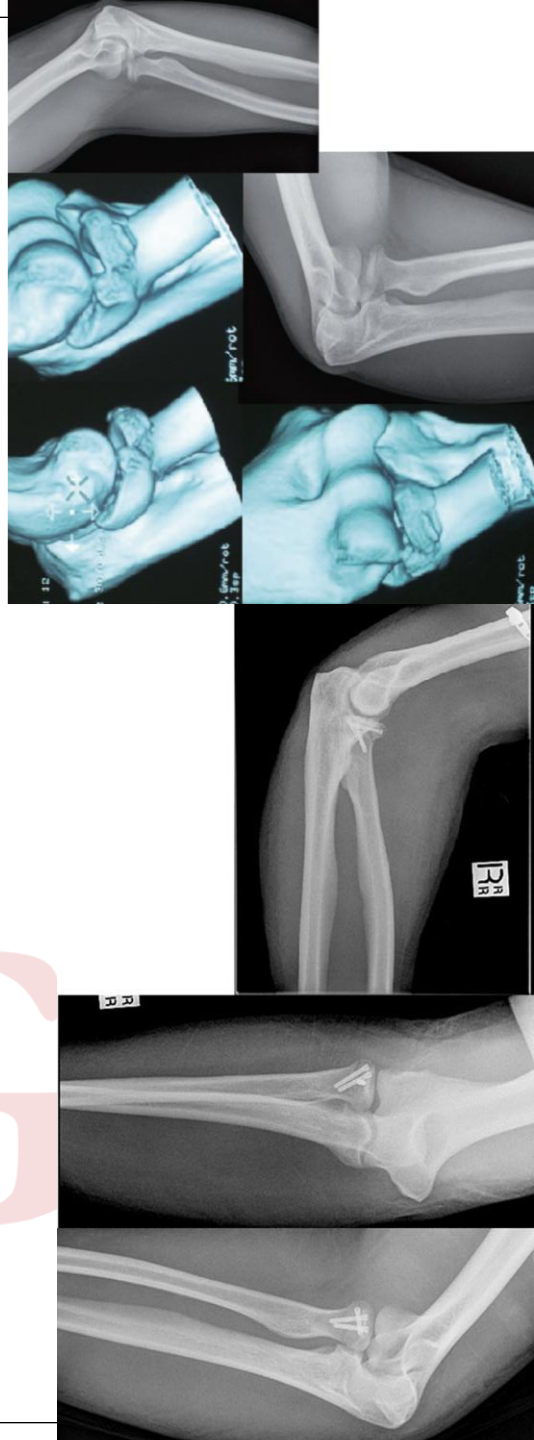


Thanks (for loving ORIF)

McGill

Radial Head Fractures: Fix Before You Replace

- Arthroplasty has become normal technique for Mason III fractures
- ORIF of comminuted radial head fractures can achieve good results
  - Duckworth et al- fixation in Mason III — acceptable outcomes in active patients
- Arthroplasty complications: loosening, stiffness, size of implant, overstuffing the joint?
  - *Count the fragments — if ≤3 and large enough, fix it*



High Risk of Further Surgery After Radial Head Replacement for Unstable Fractures: Longer-term Outcomes at a Minimum Follow-up of 8 Years. Clin Orthop Relat Res 2019 Nov;477(11):2531-2540.
CD Cristofaro ... AD Duckworth

- 119 patients, 25% (30) underwent reoperation
  - 3 patients undergoing revision and 27 patients undergoing prosthesis removal at a median of 7 months (range 0 to 125 months).
  - Twenty-one of 30 procedures (70%) occurred within 1 year after implantation
  - Kaplan-Meier survivorship analysis demonstrated a cumulative implant survival rate of 71%. I
  - prothesis revision or removal ($p = 0.466$) and prosthesis type ($p = 0.553$) were not associated with patient-reported outcome
- Conclusions: radial head replacement has a high risk of reoperation.
- Despite this, patients report low disability according to the QuickDASH at a minimum follow-up of 8 years

The "Terrible Triad" Argument
Fixation Can Still Win

- Radial head replacement often used by default in terrible triad
- Argument: if radial head can be fixed, stability and kinematics are better preserved
  - At least implants in my hospital
- Coronoid fixation + radial head ORIF + LCL repair +/- MCL
  = durable construct
- Key point: *Replacement should be a fallback, not a first choice*