PROXIMAL HUMERUS FRACTURE DISLOCATIONS < 60 y.o. O.R.I.F

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MY DISCLOSURES

Stryker- consultant CoNextions- consultant and equity

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Remember the Movie 5 Easy Pieces-1970 Jack Nicholson This is the sequel : 4 Not So Easy Pieces

Fracture lines follow along epiphyseal scar Codman 1934



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Don't Let Mike McKee talk you into thinking this non anatomic thing is as good as a repaired shoulder



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Patients > 60 years old do not benefit from ORIF Prox Hum Fx

Displaced proximal humeral fractures: operative versus non-operative treatment—a 2-year extension of a randomized controlled trial

Eur J Orthop Surg Traumatol

Tore Fjalestad · Margrethe Øye Hole

- 50 patients 60+ yo w/ displaced prox humerus fractures were randomized to operative vs. conservative treatment.
- Primary outcome: constant score. Secondary outcomes: ASES, 15D quality of life assessment and 2 year radiograph.
- Conclusions: Surgical treatment proved no better than operative at 2 year follow up.

16 December 2013

DON'T CONFUSE THAT ARGUMENT STILL UNRESOLVED ABOUT CLOSED VS OPEN TREATMENT OF DISPLACED PROX HUMERAL FXS

FRACTURE DISLOCATIONS ALL GET **OPERATIONS** WE ARE DISCUSSING WHICH ONE TODAY AGE CUTOFF AT 60 IS ABSURD DON'T YOU KNOW THAT 60 IS THE NEW 40 **PEOPLE ARE ACTIVE WITH HIGH EXPECTATIONS** MY ARGUMENT IS SAVE THE HEAD WHENEVER POSSIBLE LEAVE REVERSE TOTAL SHOULDER FOR THE LESS ACTIVE OR DESTROYED HUMERAL HEAD

Neer Classification (1970)

Based on number of displaced segments (displacement >1 cm or >45 degrees angulation)

Accounts for attachments of deforming muscle and head vascularity





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Case: 20 y/o RHD M w/ displaced FX-DISLOCATION



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Indications for ORIF Predominate

ATTEMPT TO FIX ALL OF THESE EXCEPT FOR THE SEVERE HEAD SPLIT/ COMMINUTION DON'T FEAR THE POSSIBILITY OF AVN **ROBINSON REPORTED RADIOLOGIC EVIDENCE OF AVN IN 6/30 PATIENTS JBJS, 88, 2006** ONLY 3 WERE SYMPTOMATIC AND EVEN THEY WERE TREATED CONSERVATIVELY WITHOUT REVISION

J Bone Joint Surg Am. 2019 Oct 9. doi: 10.2106/JBJS.19.00595. [Epub ahead of print]

Complications and Long-Term Outcomes of Open Reduction and Plate Fixation of Proximal Humeral Fractures.

<u>Robinson CM</u>¹, <u>Stirling PHC</u>¹, <u>Goudie EB</u>¹, <u>MacDonald DJ</u>¹, <u>Strelzow JA</u>¹.

Conclusion: Our results support the use of primary ORIF in <u>medically fit</u> patients with a severely displaced fracture or a fracture-dislocation of the proximal part of the humerus in centers where the <u>**EXPERTISE</u>** to carry out such treatment exists.</u>

DON'T LET MIKE MCKEE TALK YOU INTO THIS NON ANATOMIC THING IS AS GOOD AS A RECONSTRUCTED SHOULDER



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TO FIX IT YOU NEED TO UNDERSTAND AND NEUTRALIZE DEFORMING MUSCLE PULL ON FRAGMENTS

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5/25/2023 **12**

APPROACHES to the Proximal Humerus

DELTOPECTORAL-Utilitarian

- Extensile exposure
- access to the anterior, medial, and lateral aspects of the shoulder
- Harder to retrieve the displaced greater tuberosity

DELTOID SPLIT

Axillary Nerve at Risk- 5 cm from acromion Once identified fixation may proceed Better exposure especially for posterior fx-dislocations

DELTOPECTORAL APP STANDARD

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DELTOID SPLIT-TRY IT YOU'LL LIKE IT

Caution: The axillary nerve runs transversely 5-7 cm distal to the edge of the acromion, from post- to anterior. Do not extend split further due to risk of nerve injury

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AXIAL CT TO UNDERSTAND THE COMMINUTION AND HEAD DAMAGE

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TIPS FOR ORIF OF THE FX-DISLOCATION

USE AXILLARY APPROACH

BETTER PROTECTS POSTERIOR CIRCUMFLEX ARTERY SUPPLY TO THE HEAD JOY STICK THE HEAD FOR CONTROL

PROVISIONALLY PLACE TRANS-ARTICULAR K WIRE ACROSS REDUCED GH JOINT

GATHER THE TUBEROSITY WITH HEAVY NONABSORBABLE SUTURE

CONVERT THE 3 OR 4 PART INTO A 2 PART

REDUCE THE SHAFT TO THE ARTICULAR BLOCK

LOCKING PLATE WITH ANTI-VARUS CALCAR SCREW

SPREAD LOCKING SCREWS IN HEAD

CEMENT SCREW AUGMENTATION IF ANY VOIDS IN HEAD

BONE GRAFT WITH FIBULAR STRUT IF NECESSARY

JOY STICK TO REDUCE HEAD AND PROVISIONAL K WIRE INTO GLENOID WHILE YOU REASSEMBLE THE TUBEROSITIES

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Reduction of Calcar

ANOTHER TIP VARUS DISPLACEMENT CONTROL

IF YOUR IMPLANT DOESN'T HAVE A HOLE POSITIONED FOR CALCAR STRUT **USE A FIBULAR STRUT ALLOGRAFT OR DOUBLE PLATE**

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JB JS Open Access. 2019 Jul 16;4(3). pii: e0060.1-8. doi: 10.2106/JBJS.OA.18.00060. eCollection 2019 Jul-Sep.

Locking Plate Use with or without Strut Support for Varus Displaced Proximal Humeral Fractures in Elderly Patients.

Wang H¹, Rui B¹, Lu S¹, Luo C¹, Chen Y¹, Chai Y¹.

Conclusion: The use of a locking plate in combination with medial strut support with use of a fibular allograft reduced complications when used for the treatment of varus displaced proximal humeral fractures in elderly patients in comparison with the use of a locking plate alone.

Fibular strut graft prevents varus Aids Union

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ORTHOPEDICS

HUMERAL HEAD VASC

- DOGMA
- Major blood supply is from the ant. humeral circumflex artery (ascending branch)
- Gerber et al, JBJS 1990
- NEWER STUDIES
- >60% humeral head vascularity from posterior circumflex artery
- Hettrich et al, JBJS 2010

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Proximal Humeral Locking Plate IDEALLY A FIXED ANGLE CALCAR SUPPORT SCREW GOOD SPREAD OF ADDITIONAL LOCKING SCREWS MANY HOLES FOR SUTURE FIXATION

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SUTURE REPAIR OF TUBEROSITY

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Results of proximal humeral locked plating with supplemental suture fixation of rotator cuff

Brian Badman, MD^a, Mark Frankle, MD^b, Christopher Keating, BS^c, Leanne Henderson, PA-C^b, Jordan Brooks, BS^c, Mark Mighell, MD^{b,*}

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n	Fracture Type		\overline{x} ASES	ASES Range	Complications	
81	2-Part	26	80	27-100	Screw	3
	3-Part	41			Avascular	
	4-Part	14			Necrosis	is 5

- Fracture union achieved in all patients
- No tuberosity failures

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Back to our case: Calcar screw placed Tuberosities repaired with suture

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@ 2 weeks, Stable, start pendulums

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@ 6 months- well healed

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6 month clinical follow-up

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61 y.o F fell while hiking

- 4-part Proximal Humerus Fx
- Offered choice between
 ORIF & rTSR
- Aware of AVN risk with ORIF

Management?

ORIF with allograft packing and suture

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2 yr follow up- No Pain, Excellent Fct.

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3 year follow-up- No Prog to Collapse

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Case- Don't throw the baby out with the bathwater.

- 70 y/o female
- 4 part Proximal humerus fracture dislocation
- Head split- films long lost ago
- Operation: Hemiarthroplasty
- 25 years later shows up in my office
- Came in because she had some aching in her shoulder for which she took occasional ibuprofen

25 y F/U hemiarthroplasty

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HEMIARTHROPLASTY @ 25 YEARS

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HEMIARTHROPLASTY @ 25 years

- No subsidence
- No loosening
- Tuberosities healed
- Glenoid remodeled
- GH joint space still present
- Despite reports it still is a reasonable alternative to rTSR especially in the young
- Every operation requires expertise to obtain a maximal outcome NewYork-Presbyterian

Solve this equation for rTSR

Expected lifespan - age at injury = x (# of revisions expected) Think twice before default decision to implant rTSR

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One Question Mike

Do you have any 25 year follow ups of Reverse total shoulders?

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Thank You

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