

Proximal Humerus Fractures: Preventing and Salvaging Complications

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Problems



Prediction of Nonunion After Nonoperative Treatment of a Proximal Humeral Fracture

 Goudie, Ewan B. FRCSEd(Tr&Orth)¹;  Robinson, C. Michael FRCSEd(Orth)^{1,a}

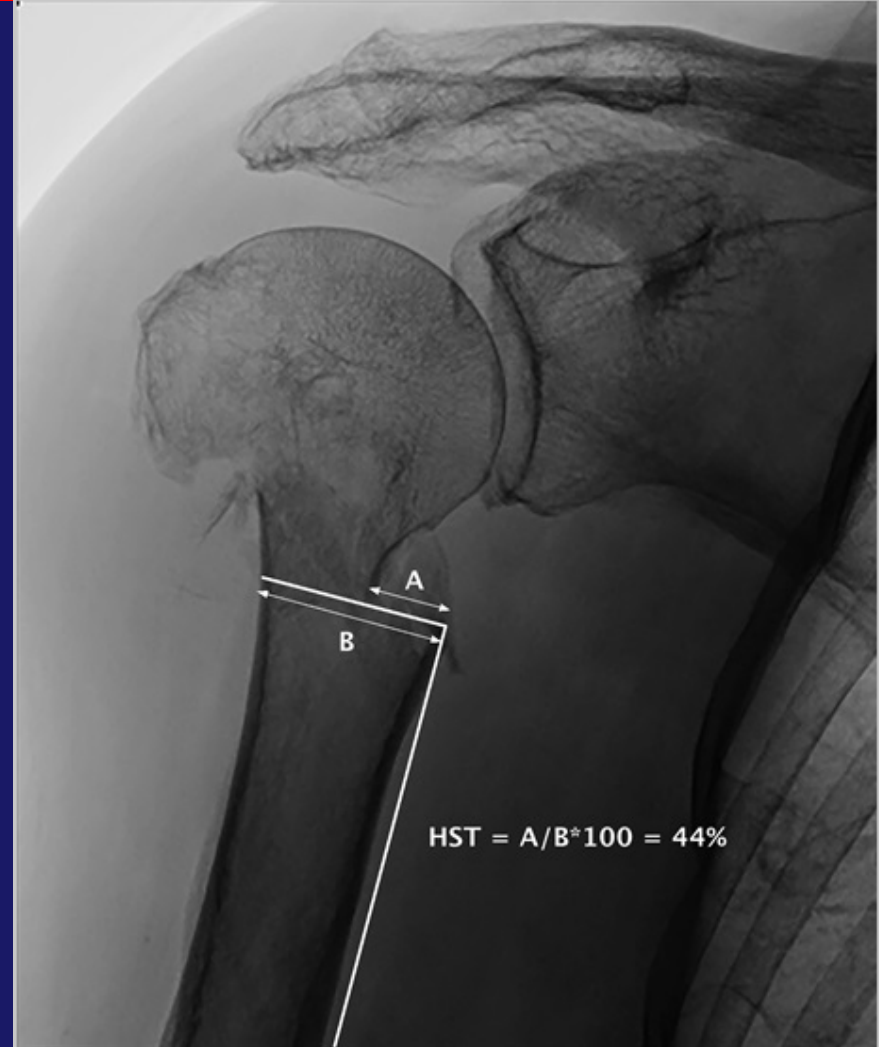
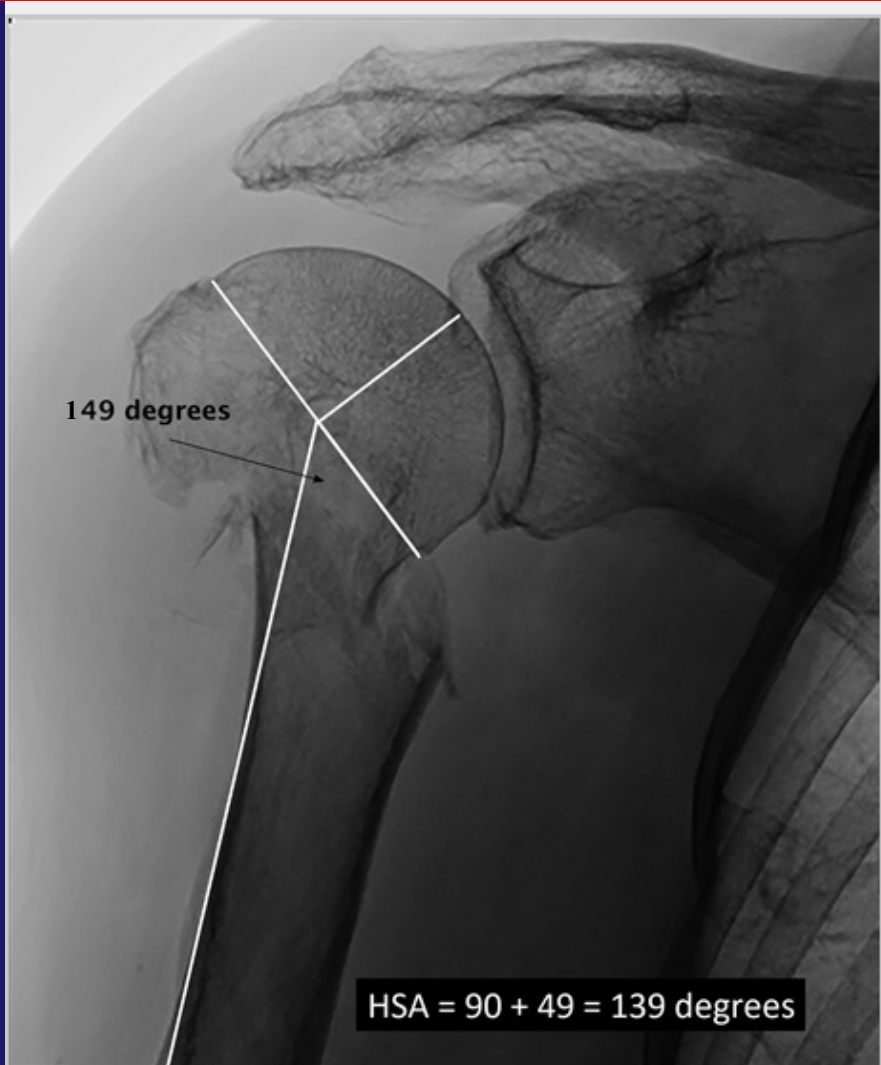
[Author Information](#) 

The Journal of Bone and Joint Surgery: April 21, 2021 - Volume 103 - Issue 8 - p 668-680

doi: 10.2106/JBJS.20.01139

- 2230 patients
- 231 nonunions (11%)
- HSA (head shaft angle) $> 140^\circ$ good
- HST (head shaft translation) $< 50\%$ good
- Smoking bad
- PHARON developed to predict risk

HSA 149° HST 44% Nonunion Risk 4%

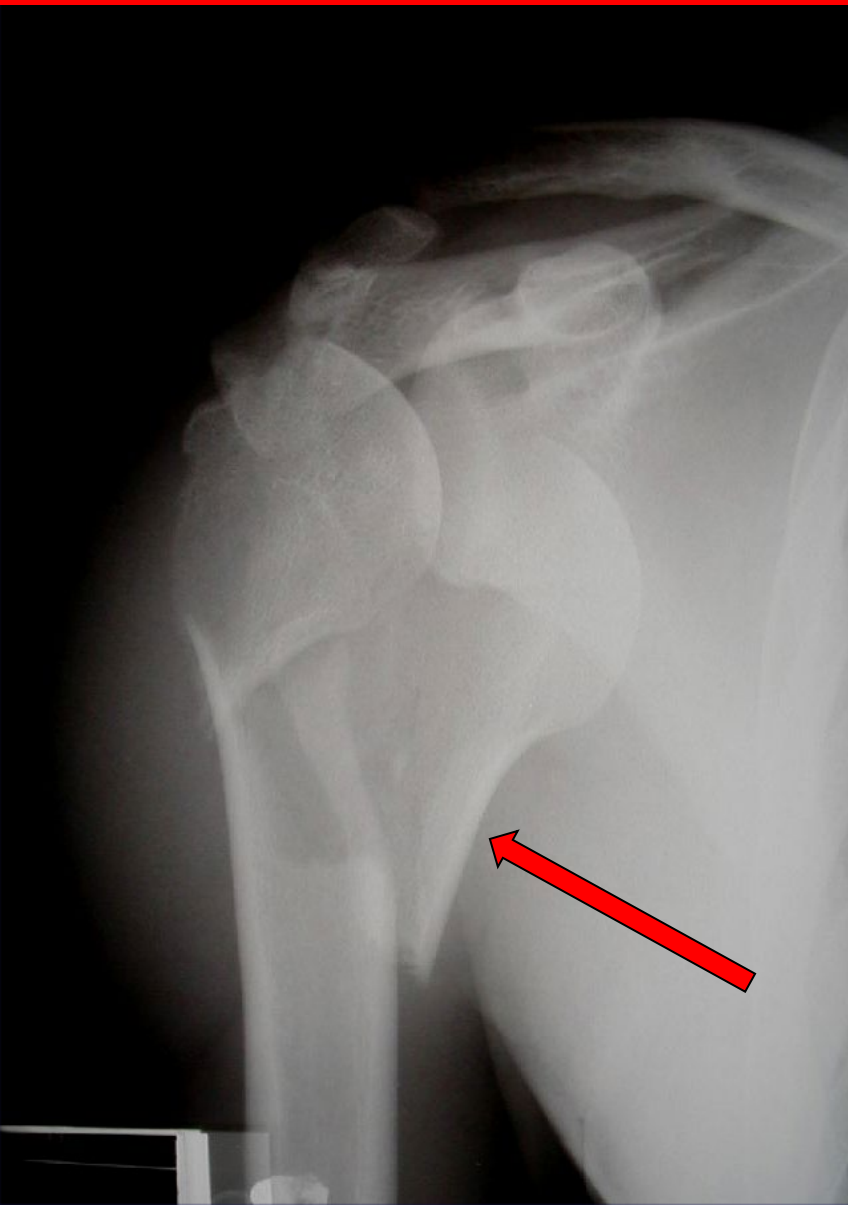


HSA 79° HST 21% Nonunion Risk 67%

79 degrees

$HST = A/B * 100 = 21\%$

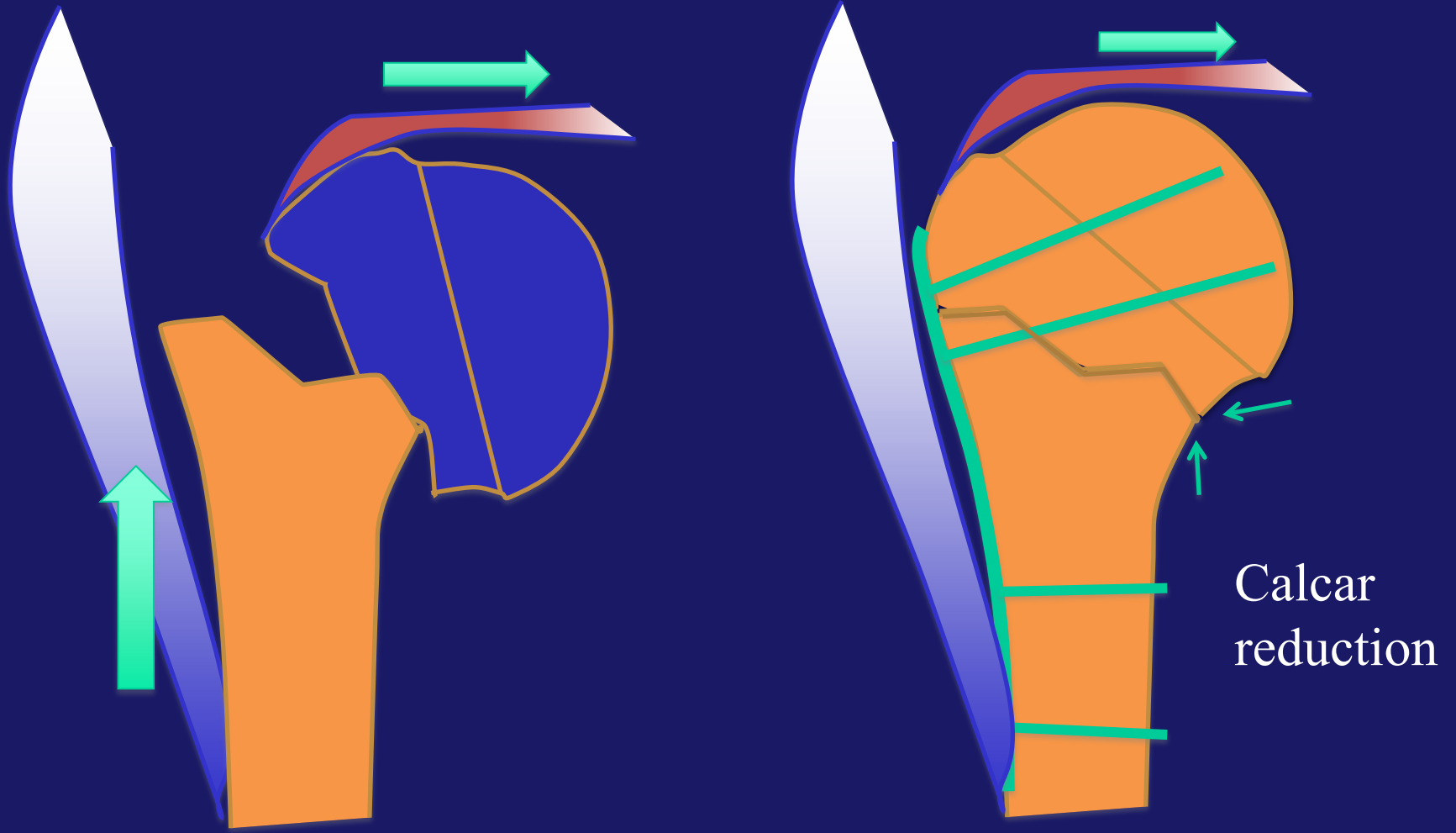
AVN: the “medial hinge”



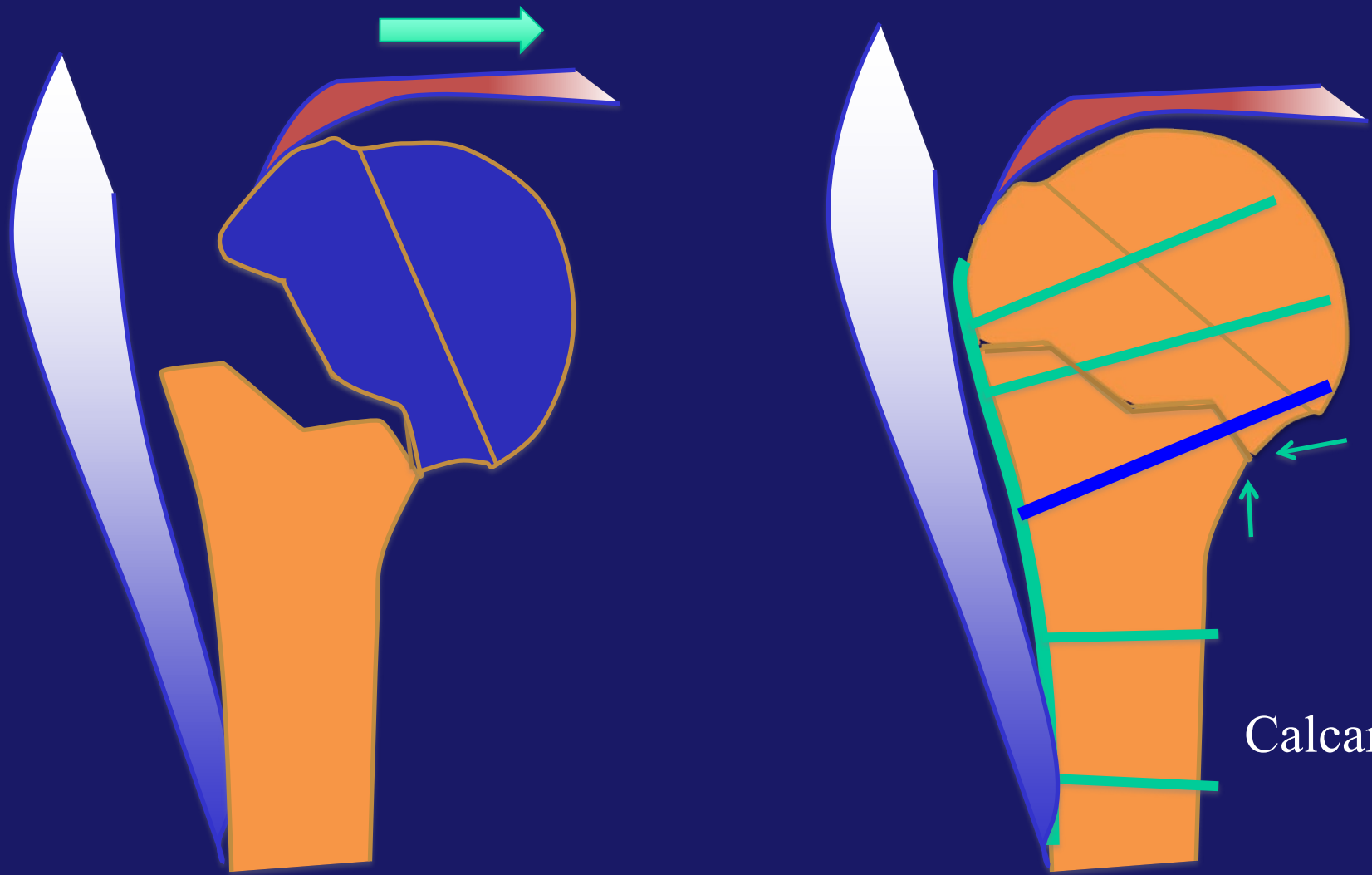
If ORIF is Chosen, How to Maximize Success?

- **1. Calcar reduction**
- **2. No varus**
- **3. Calcar screw**
- **4. Suture greater tuberosity**

Varus

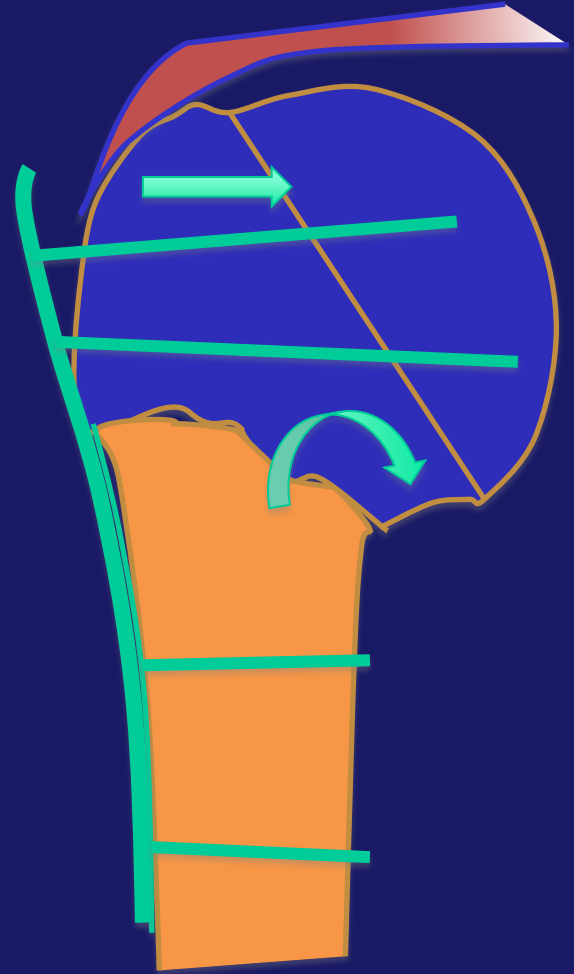
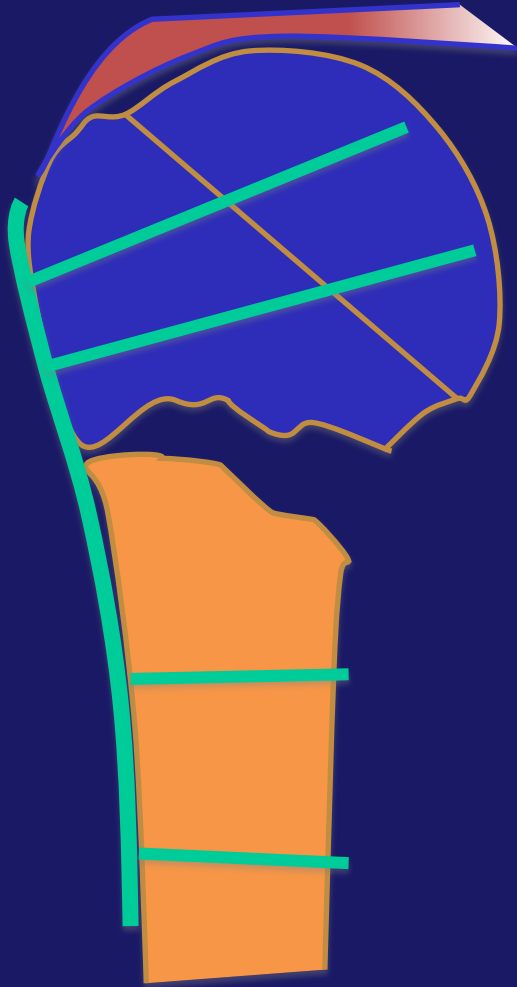


Varus



Calcar screw

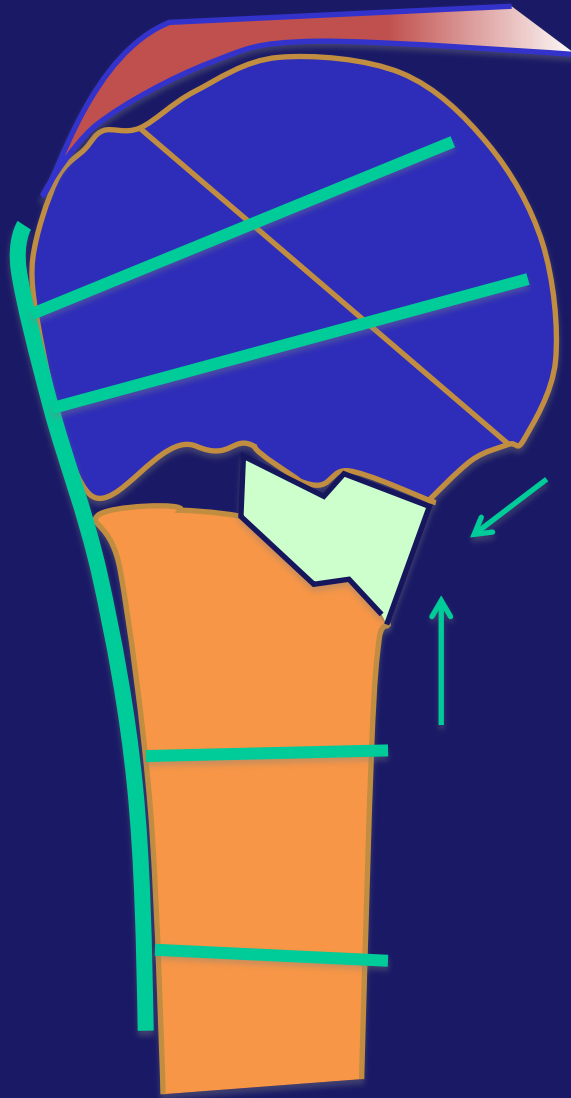
Varus



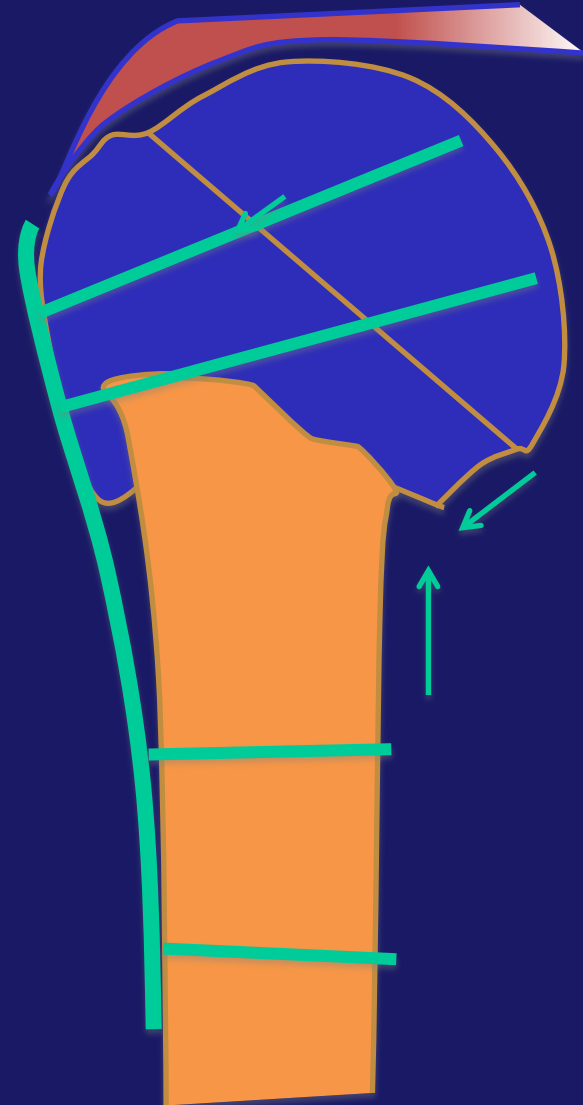
Calcar support

- **Fibular strut graft (Lorich)**
- **Calcium phosphate (Egol, Zuckerman)**
- **Allograft femoral head (JP Warner)**
- **Medial plate (Wang and He)**
- **Other.....**

Varus



Structural graft



Compression -reduction

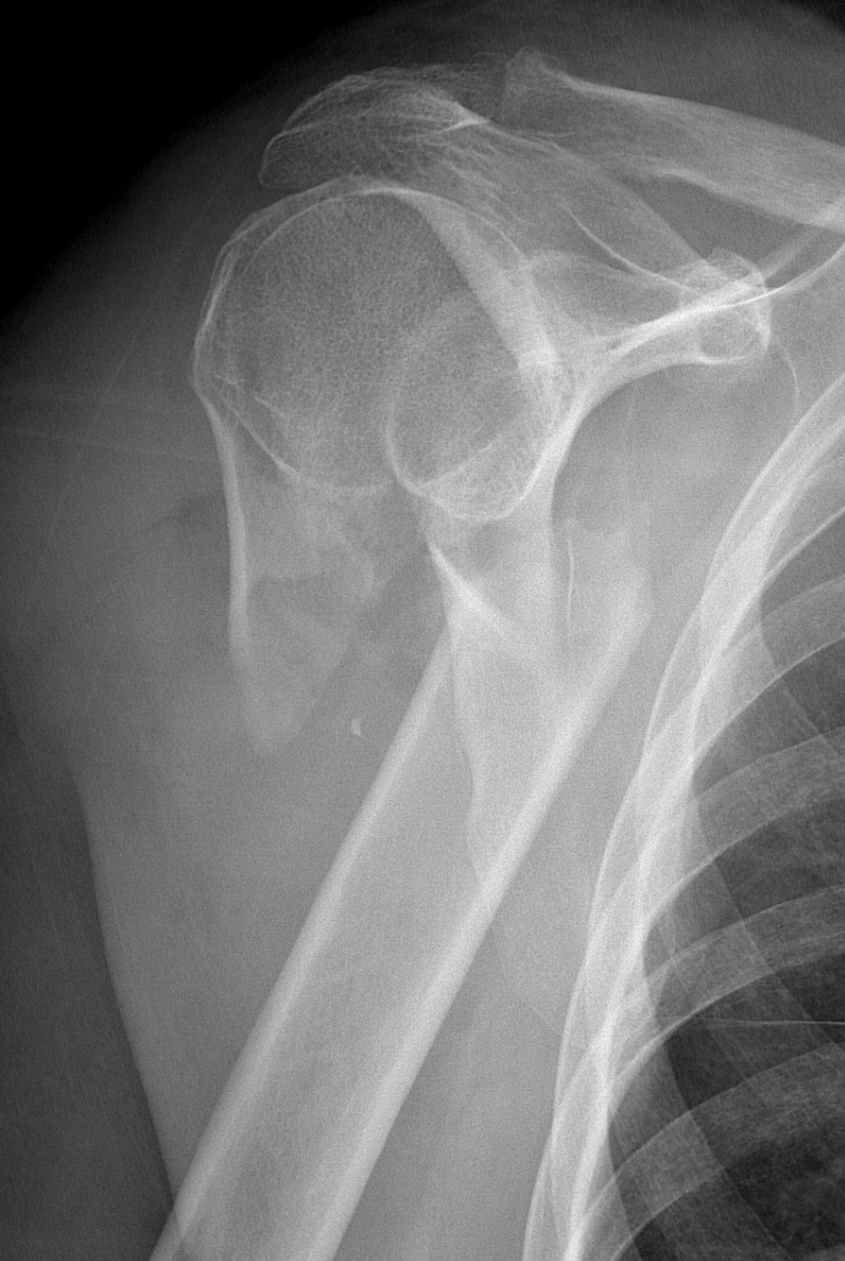
Male, 50 yrs old



Male, 50 yrs old



47 yr old male

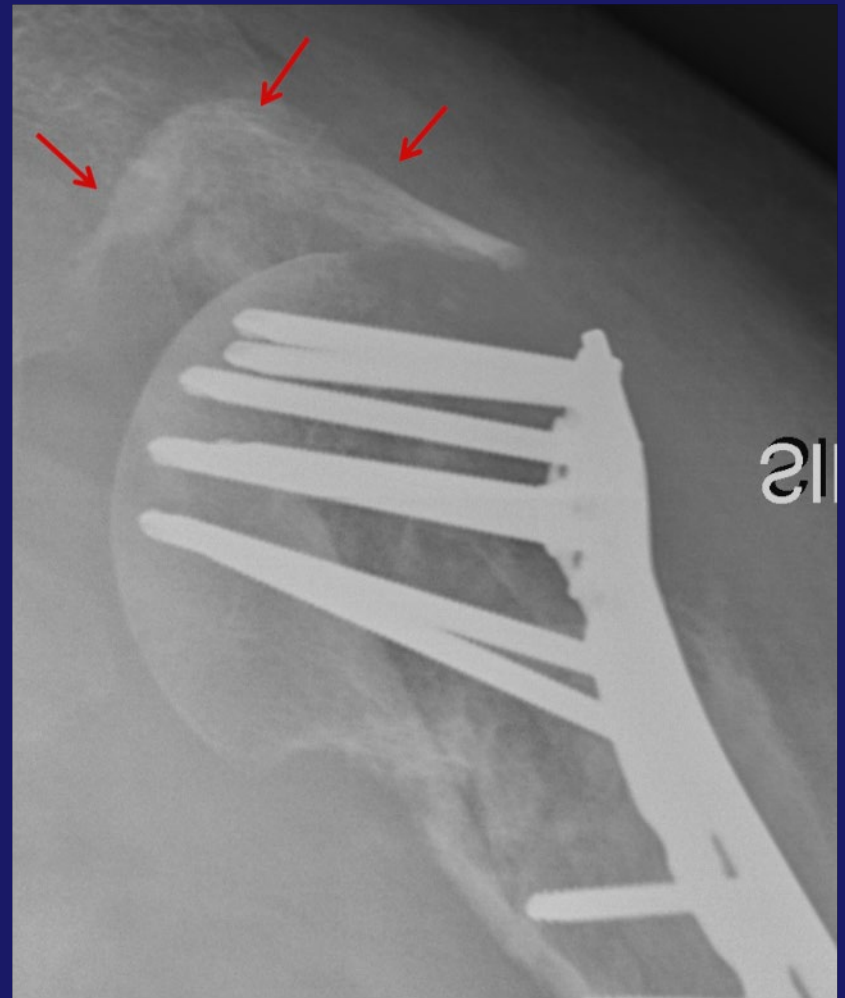




Tuberosity escape

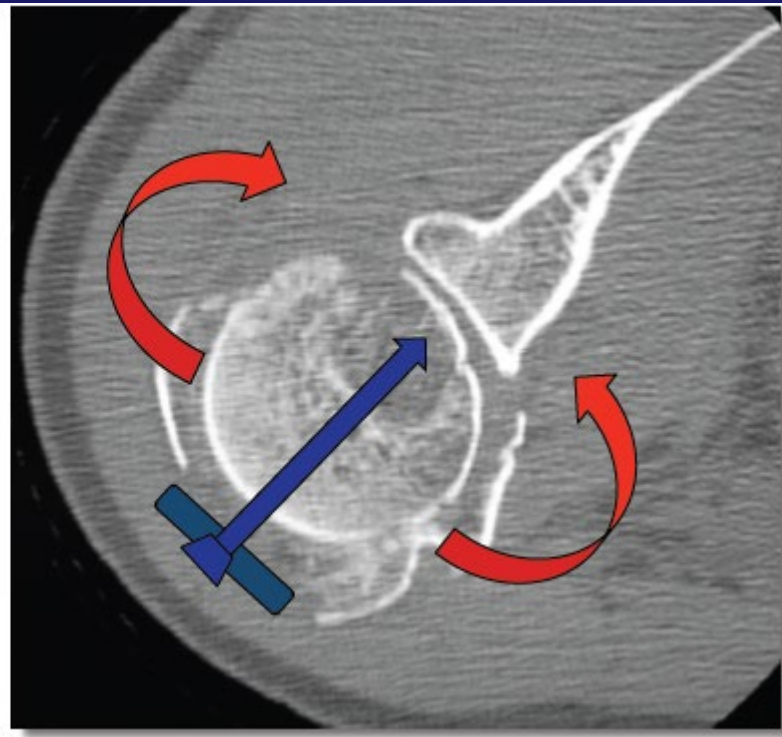
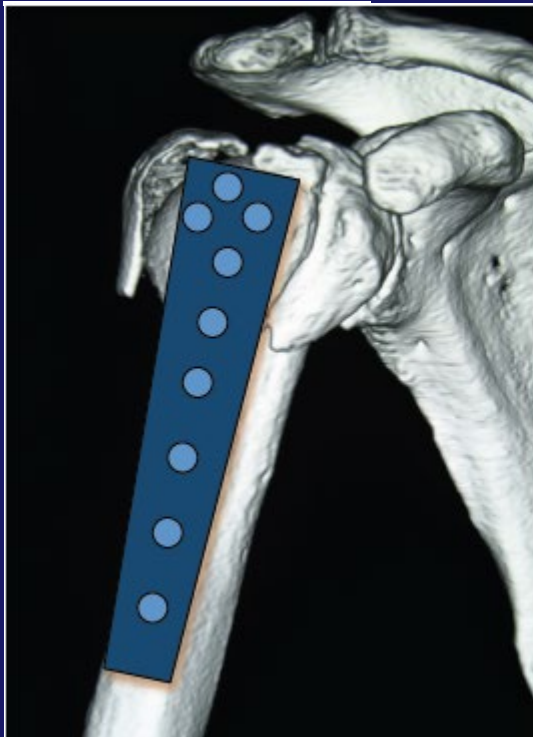


Tuberosity escape



Plating for 3 & 4 Part Fx

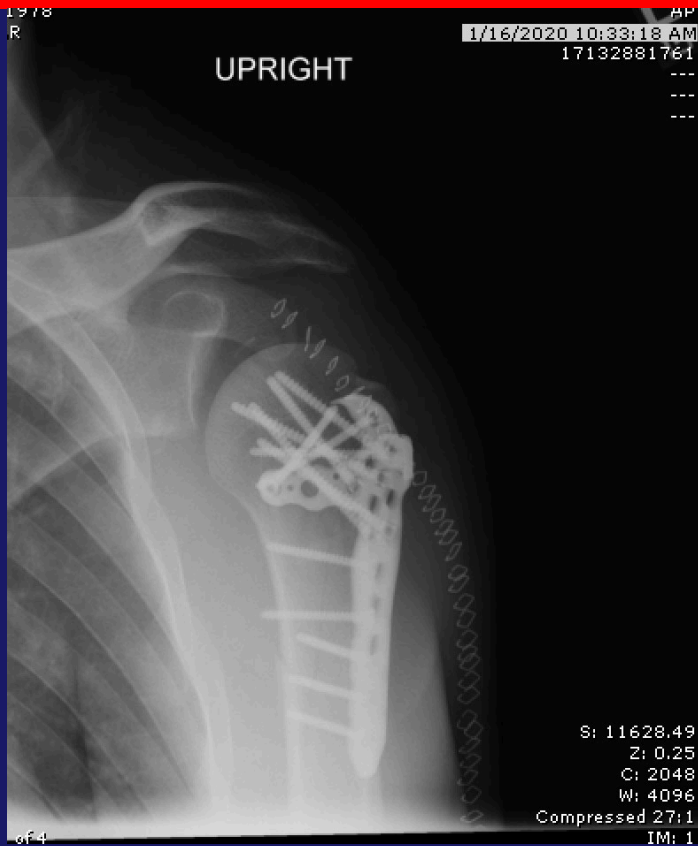
Humeral Head Based Fixation =
No or Poor Tuberosity
Fixation



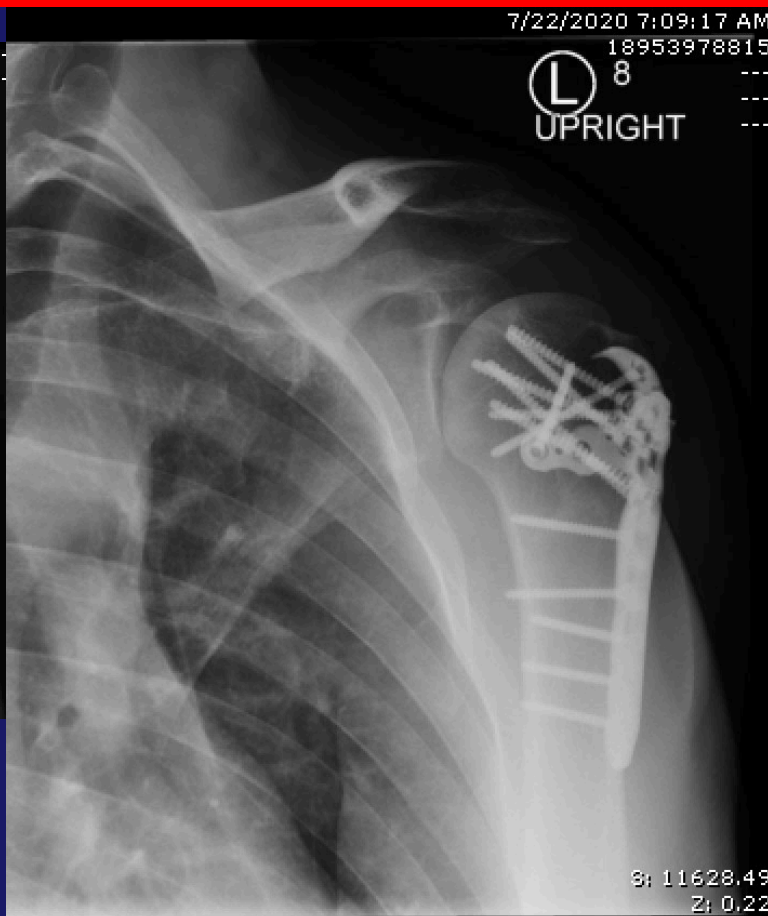
41 year old male 12/29/19



1/16/20

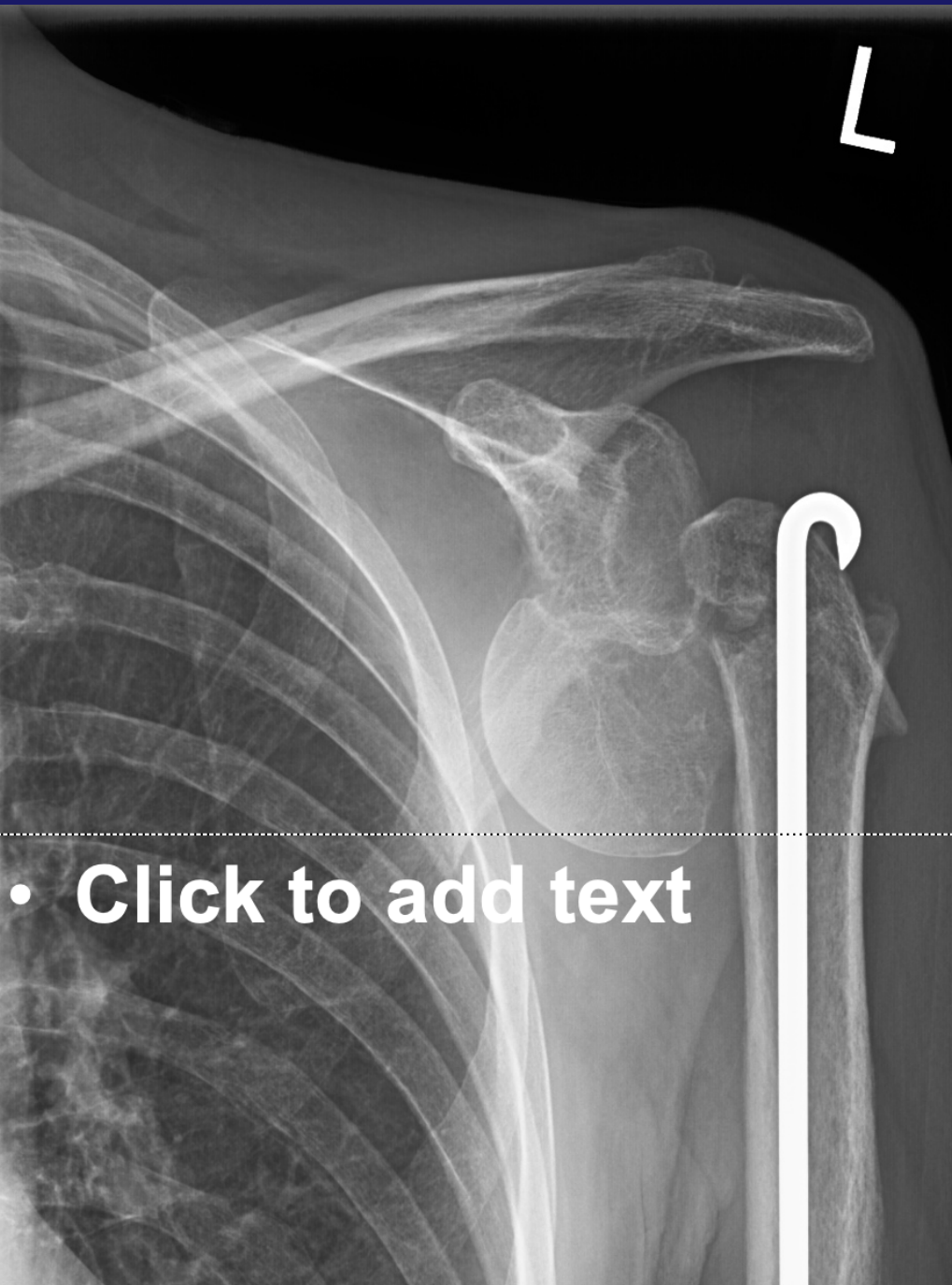


7/22/20

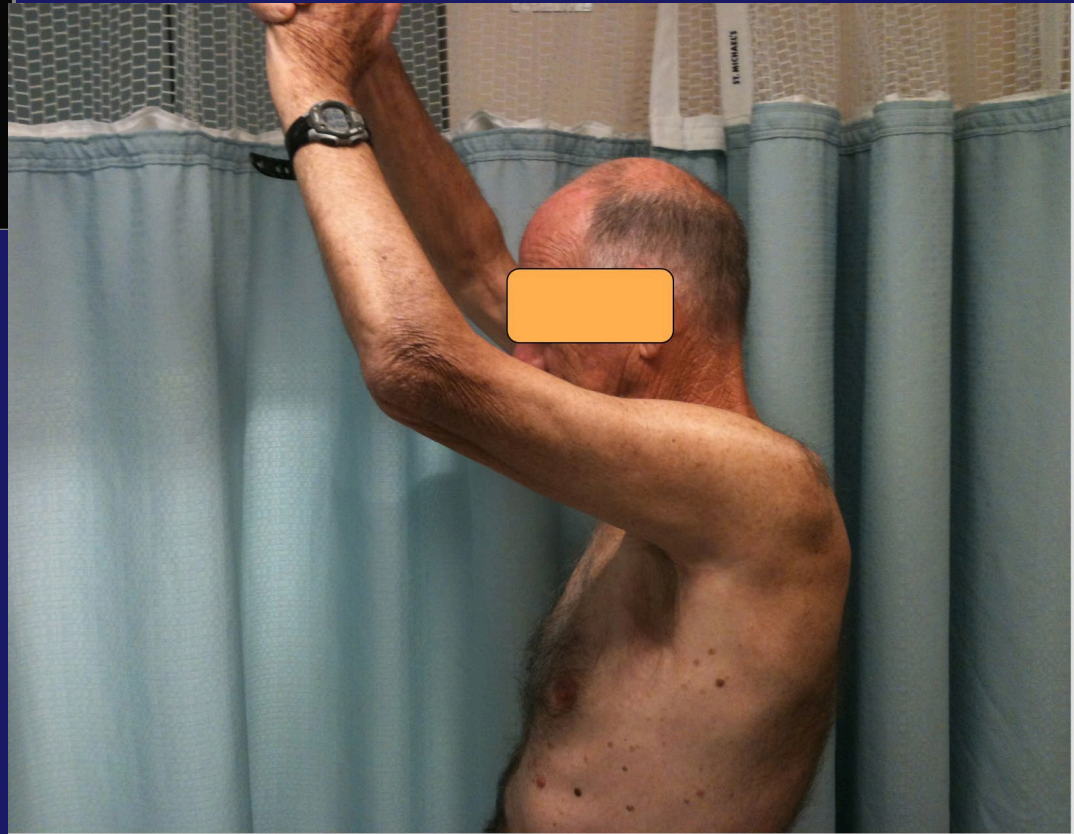


Outcome – 7/22/20



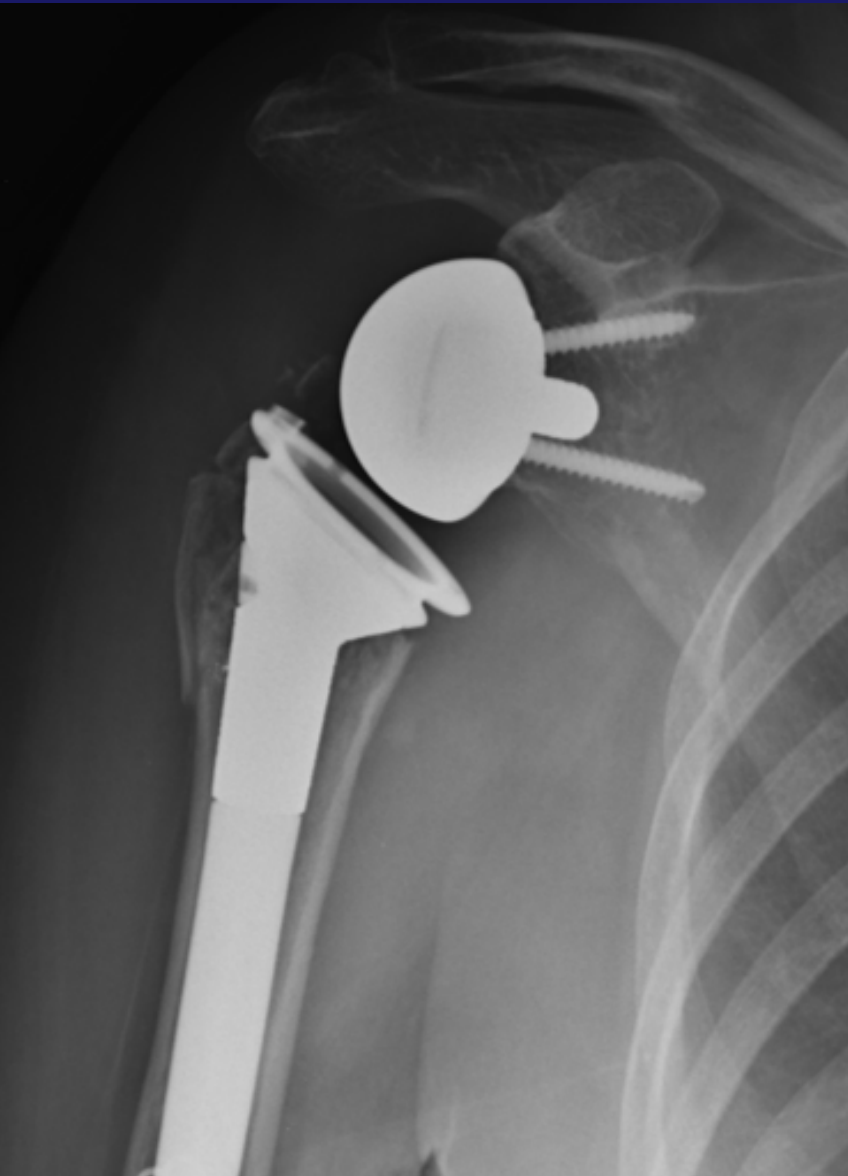


• **Click to add text**



**78 yr old female, active,
healthy, no prior shoulder pain**





doi: 10.2106/JBJS.19.01071.

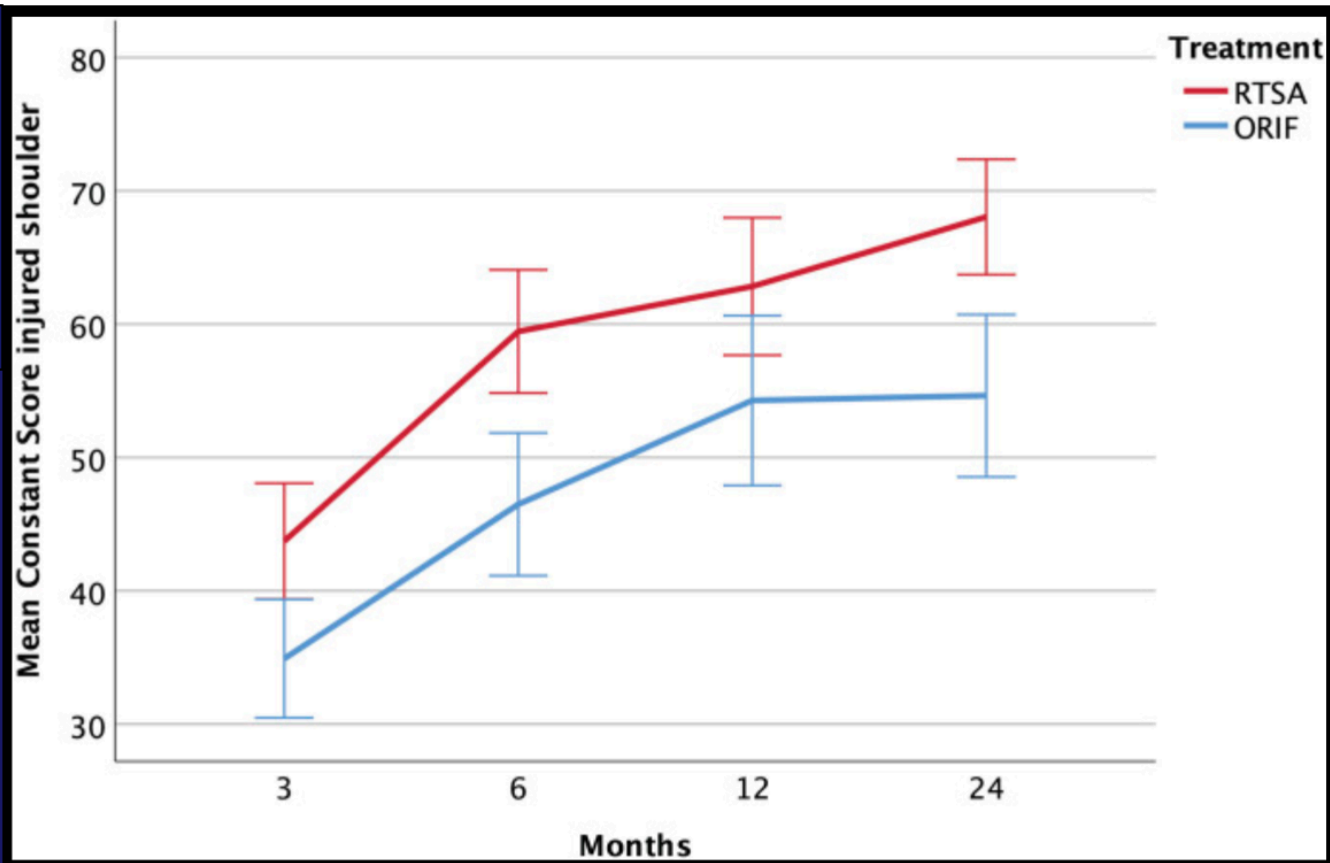
Reverse Shoulder Arthroplasty Is Superior to Plate Fixation at 2 Years for Displaced Proximal Humeral Fractures in the Elderly: A Multicenter Randomized Controlled Trial

124 patients over 65

years

Constant scores better in

RTSA group



Proximal Humeral Fractures: Conclusions

- **Calcar reduction**
- **No varus**
- **Calcar screw**
- **Greater tuberosity repair / fixation**
- **The tuberosity-based fixation may be helpful**
- **Reverse TSA for primary treatment and salvage**