

Unstable Elbow Fracture-Dislocations: An Algorithmic Approach



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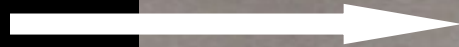
Elbow Stability dependent upon:

1. Bony congruity
2. Soft-tissues



Bony structures

Coronoid process

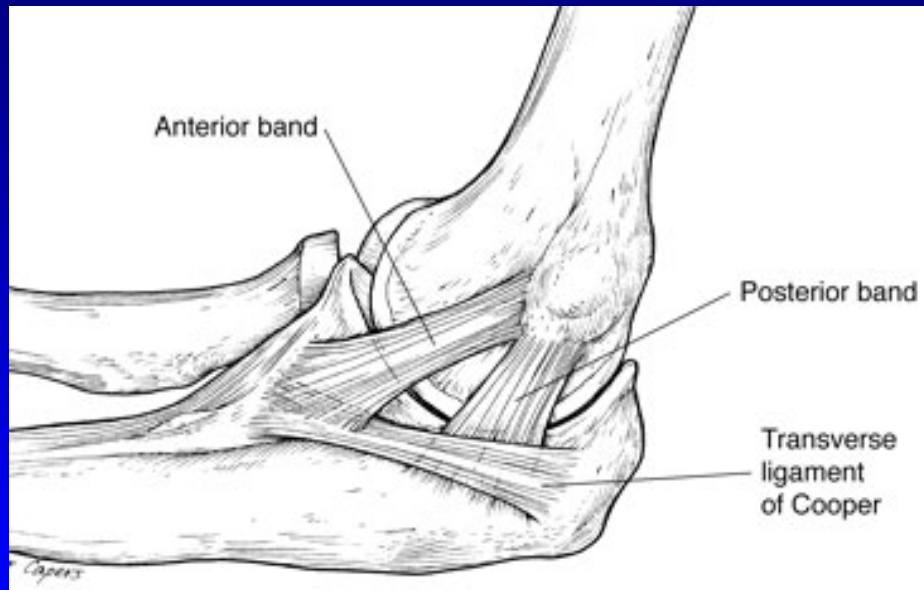


Radial head



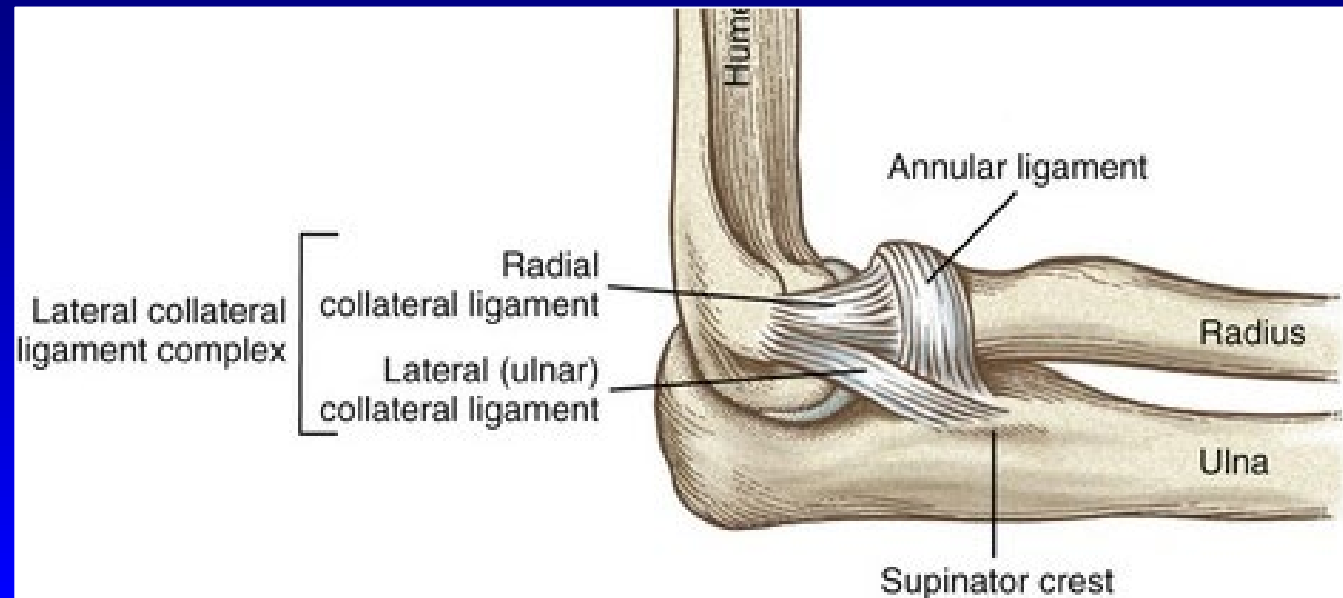
Soft tissue structures

- MCL - Medial (ulnar) collateral ligament
- Medial epicondyle to tubercle on medial aspect of coronoid
- Anterior band most important



Soft tissue structures

- LCL - Lateral (ulnar) collateral ligament
- Lateral epicondyle to tubercle of supinator crest on lateral side of ulna



Terrible Triad

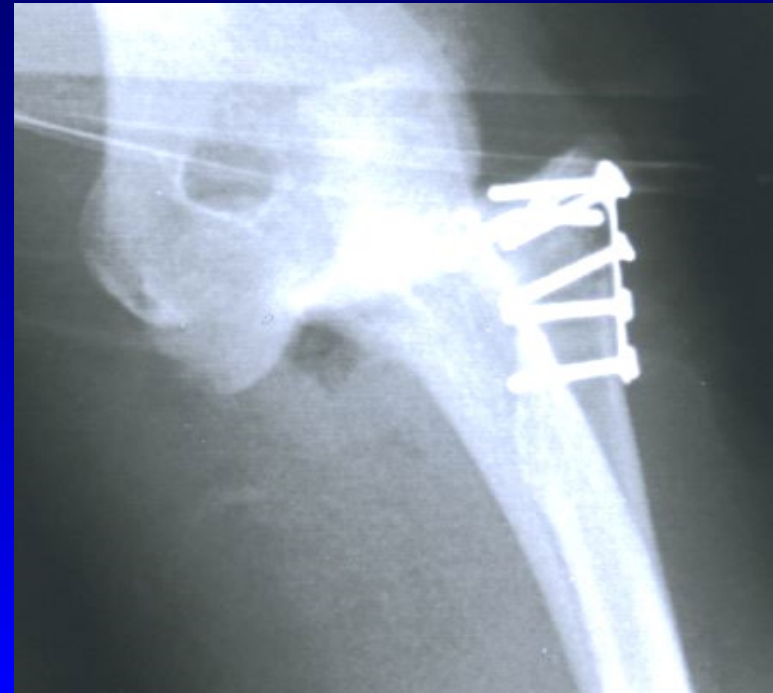
1. Elbow dislocation
2. Coronoid fracture
3. Radial head fracture



“Terrible Triad of the Elbow”

Results of conventional treatment: Terrible!

- Regan, Morrey - type III coronoid # - 20% good
- Adler, Shaftan 10% of cases, but 50% of bad results
- Heim - AO group - 8/11 poor
- Josefsson - 4/4 poor results
- Ring JBJS 2002: 7 / 11 poor



Elbow Stability

- ~~Coronoid~~
- ~~Radial head~~
- ~~LCL~~
- ~~MCL~~



THE JOURNAL OF BONE & JOINT SURGERY

JB&JS

This is an enhanced PDF from The Journal of Bone and Joint Surgery

The PDF of the article you requested follows this cover page.

Standard Surgical Protocol to Treat Elbow Dislocations with Radial Head and Coronoid Fractures

Michael D. McKee, David M.W. Pugh, Lisa M. Wild, Emil H. Schemitsch and Graham J.W. King
J Bone Joint Surg Am. 2005;87:22-32. doi:10.2106/JBJS.D.02933

Improved results with routine repair of coronoid, repair or replacement of radial head, and LCL repair. MCL repair rarely necessary.

Terrible Triad – Surgical Tactics

1. Fix coronoid
 2. Fix / replace radial head
 3. Repair LCL
-

1. Repair MCL
2. External fixator (static / hinged)

Standard Surgical Protocol to Treat Elbow Dislocations with Radial Head and Coronoid Fractures

Surgical Technique

BY MICHAEL D. MCKEE, MD, FRCS(C), DAVID M.W. PUGH, MD, FRCS(C), LISA M. WILD, BScN,
EMIL H. SCHEMITSCH, MD, FRCS(C), AND GRAHAM J.W. KING, MD, MSc, FRCS(C)

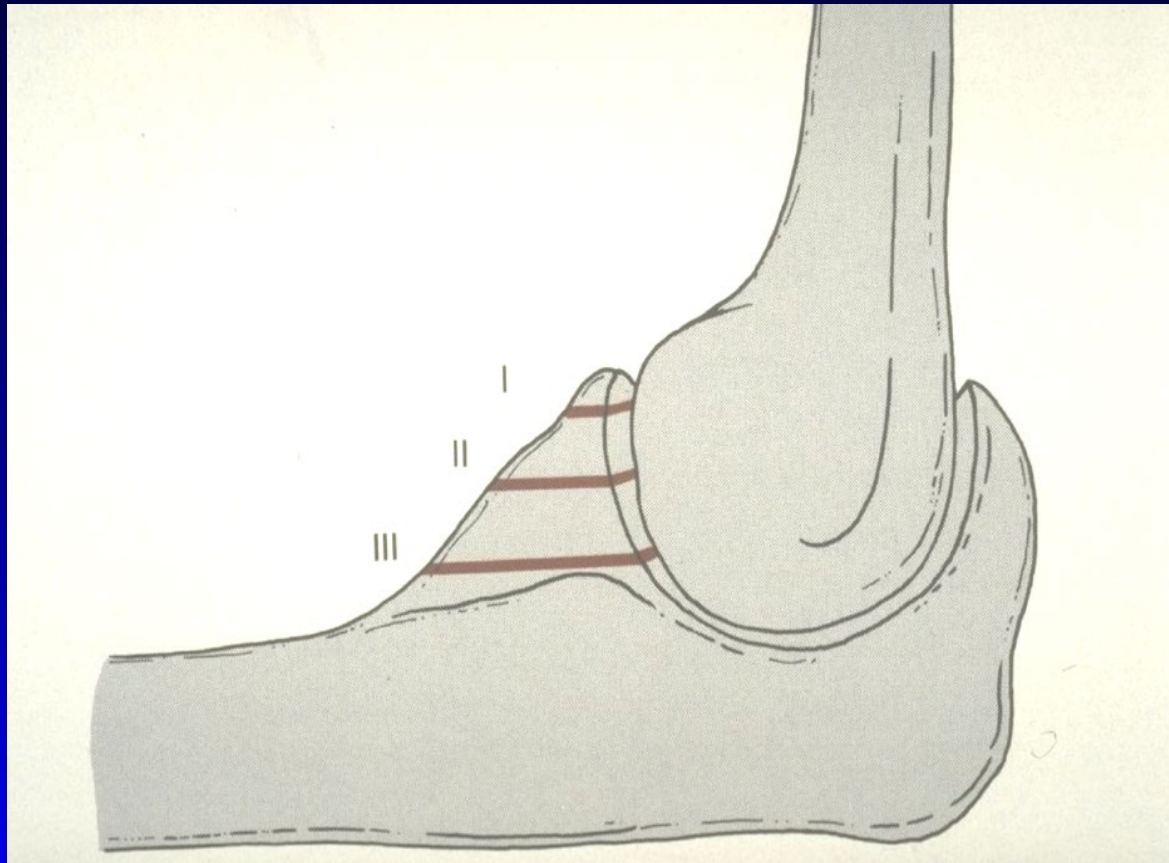
*Investigation performed at Upper Extremity Reconstructive Service, St. Michael's Hospital, and University of Western Ontario,
Hand and Upper Limb Centre, London, Ontario, Canada*

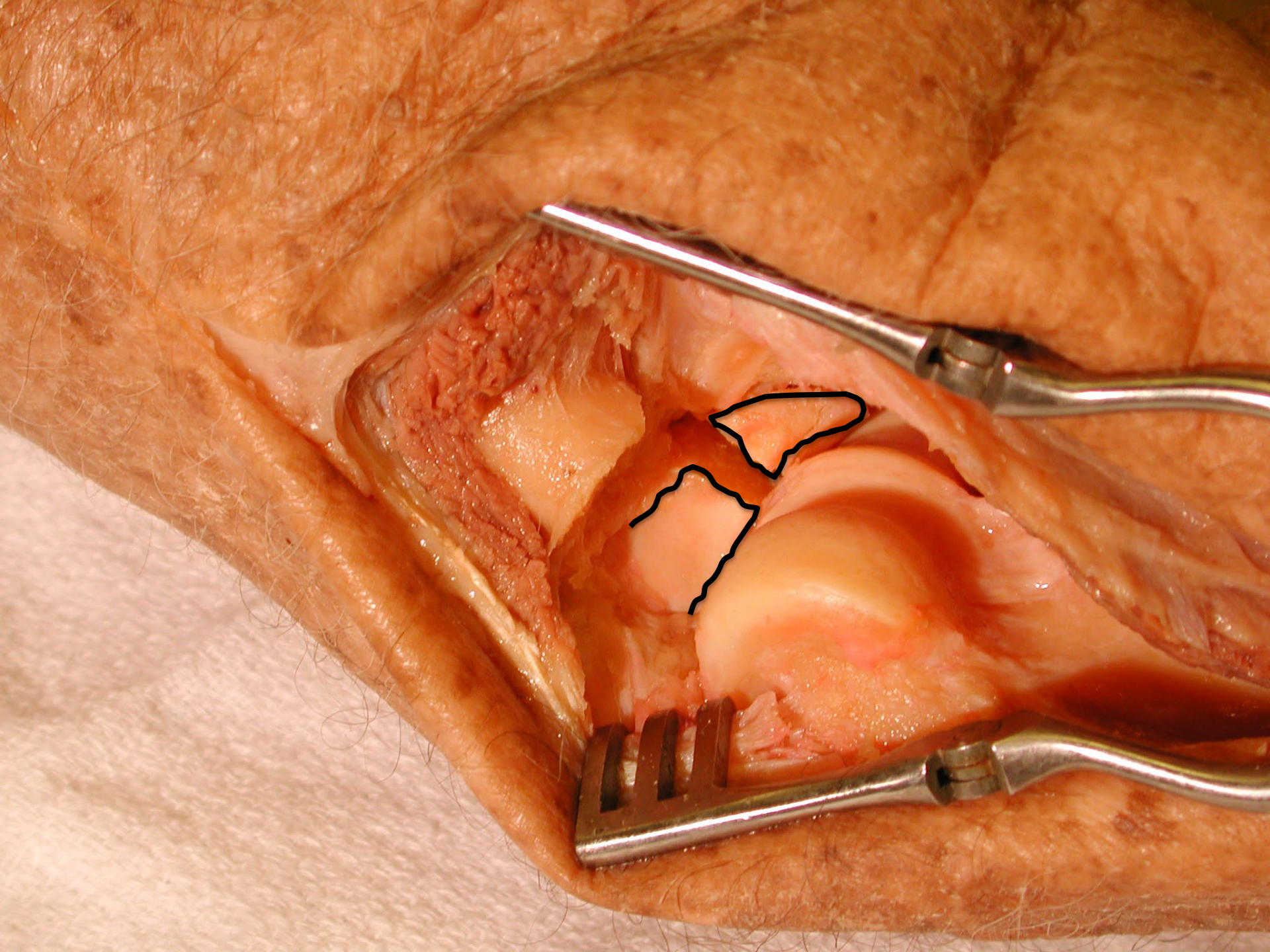
The original scientific article in which the surgical technique was presented was published in JBJS Vol. 86-A, pp. 1122-1130, June 2004

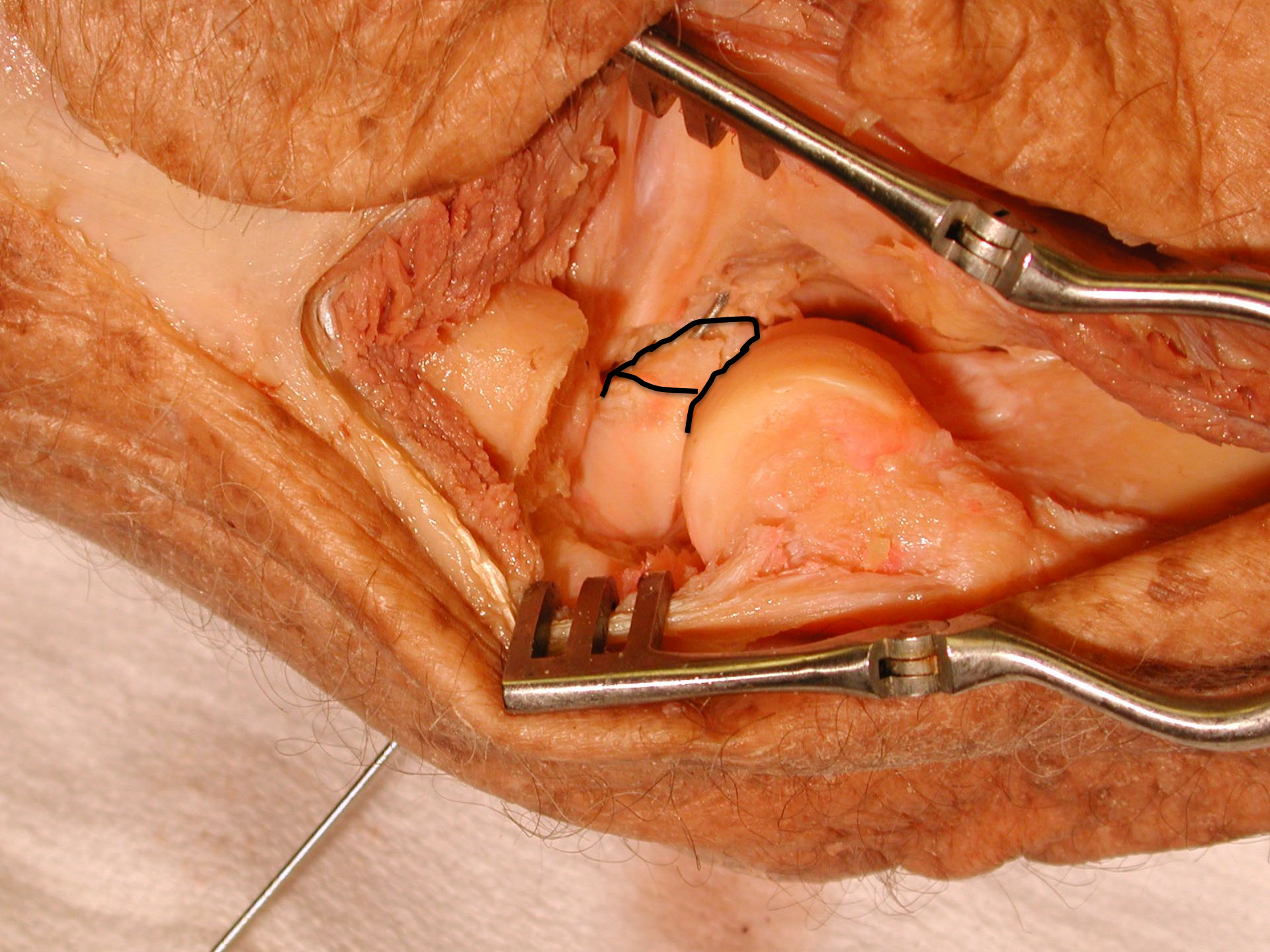
Approach

- Start from deep to superficial
 - Fix deep structure first – coronoid
 - Then radial head
 - Then LCL on way out

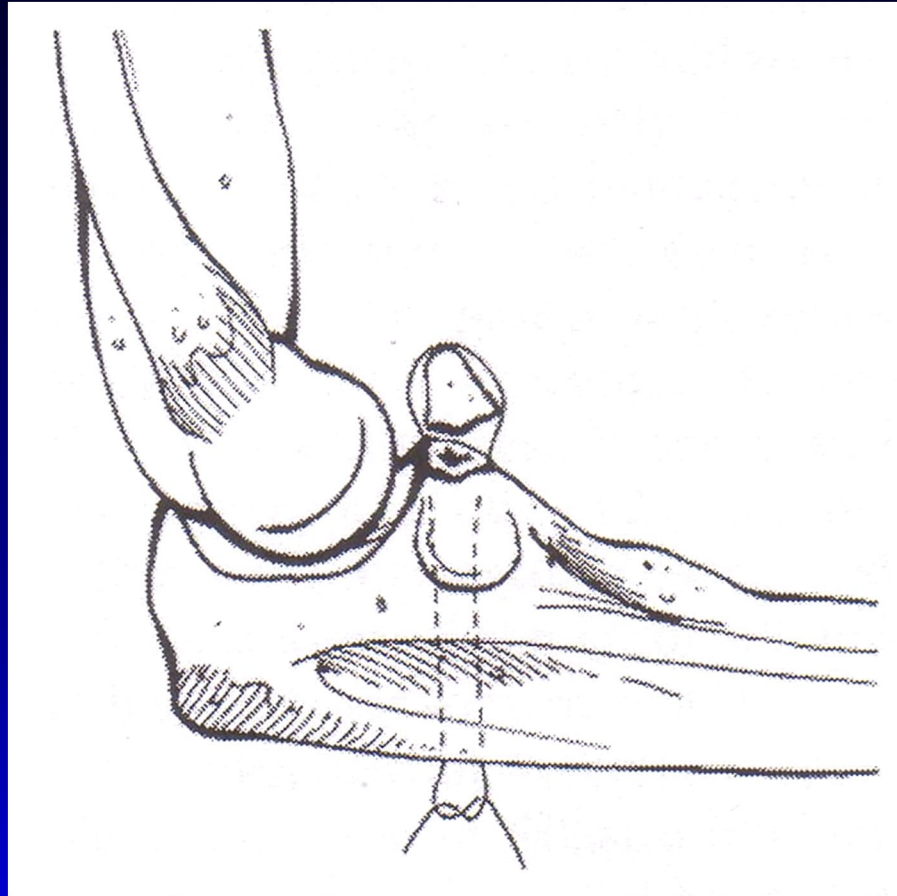
1. Coronoid



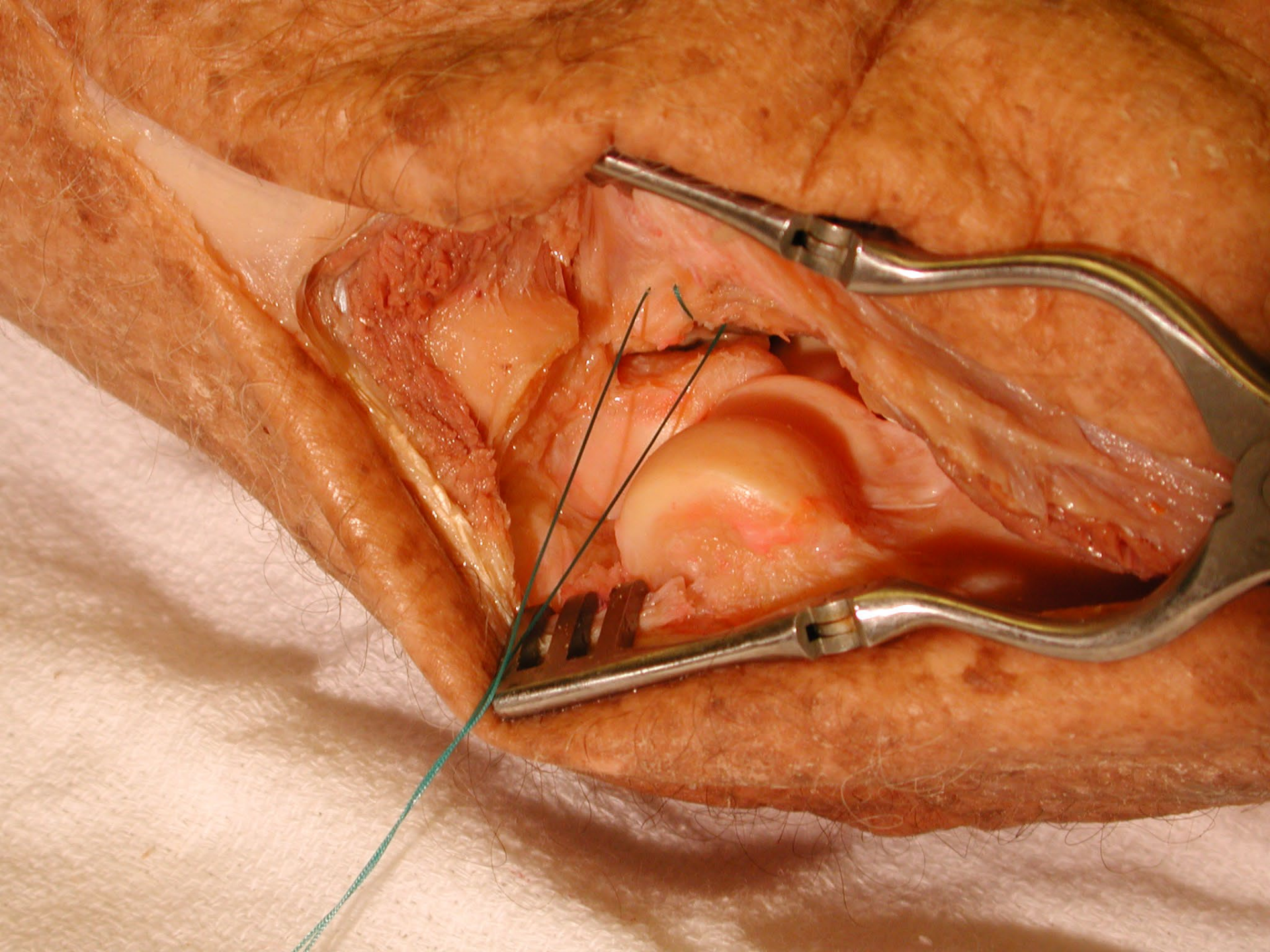




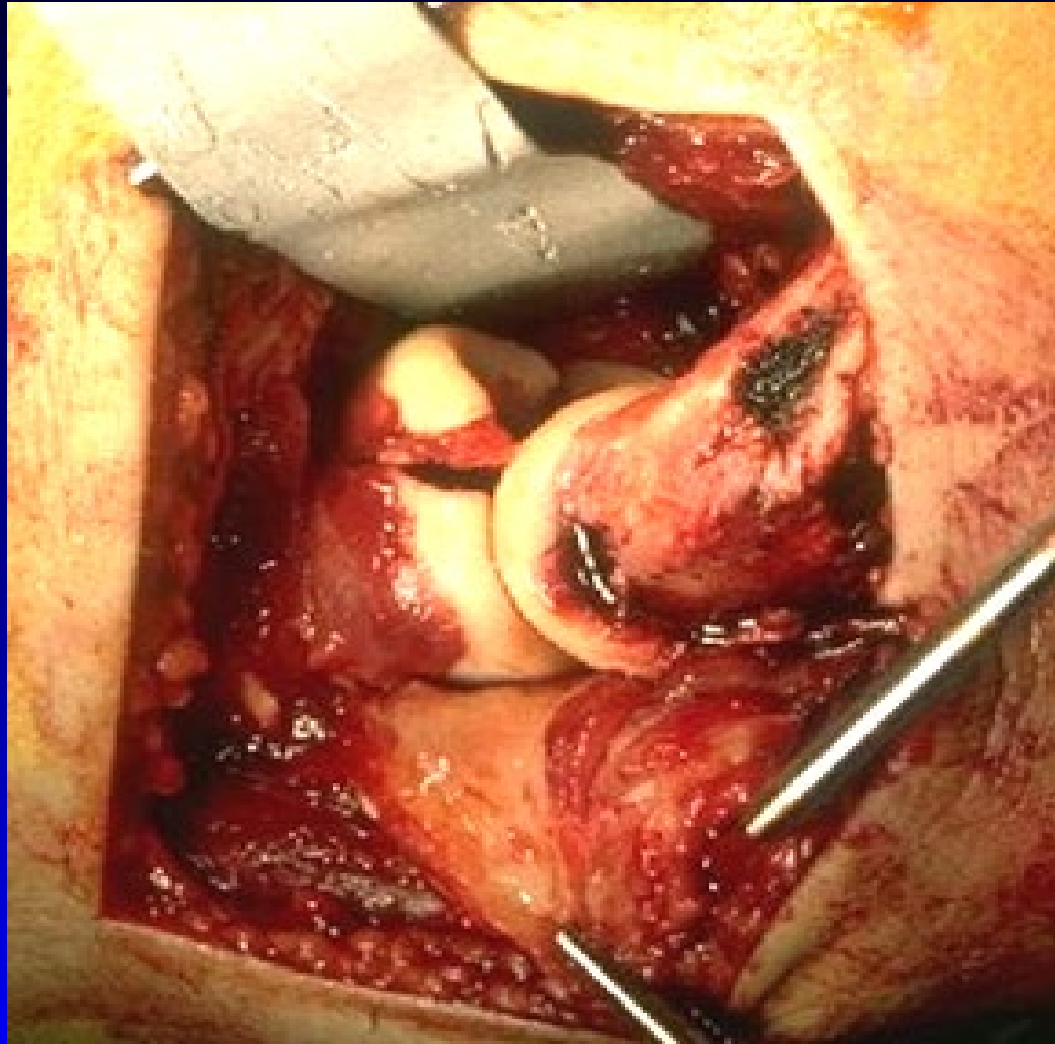
What if too small to fix with screws?



Anterior capsular repair, using a “Lasso” of non-absorbable suture



2. Radial head



Radial Head Excision

No!!!!!!

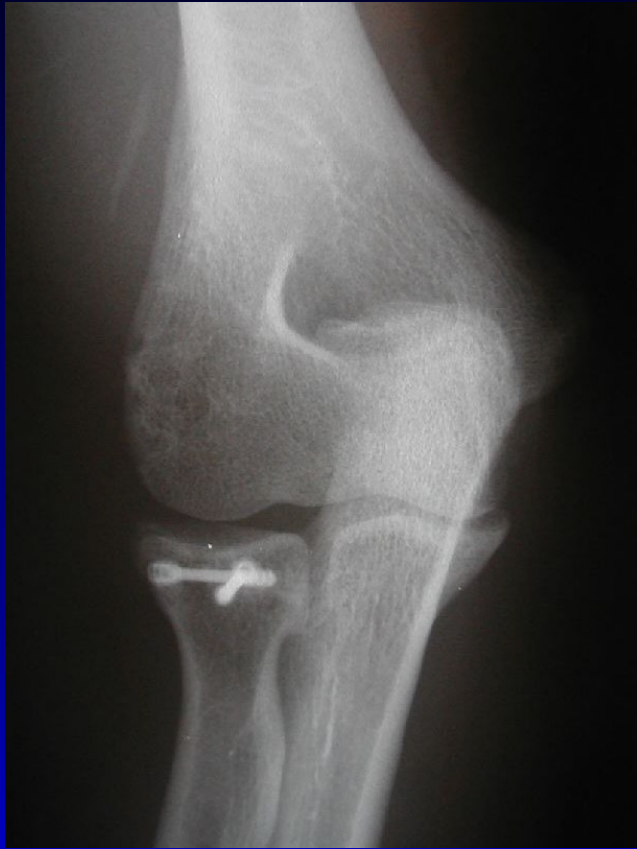
Immediate elbow
instability

Important 2° stabilizer

- Valgus instability
- Proximal migration
- Posterior translation
- PLRI



Fix or replace the radial head

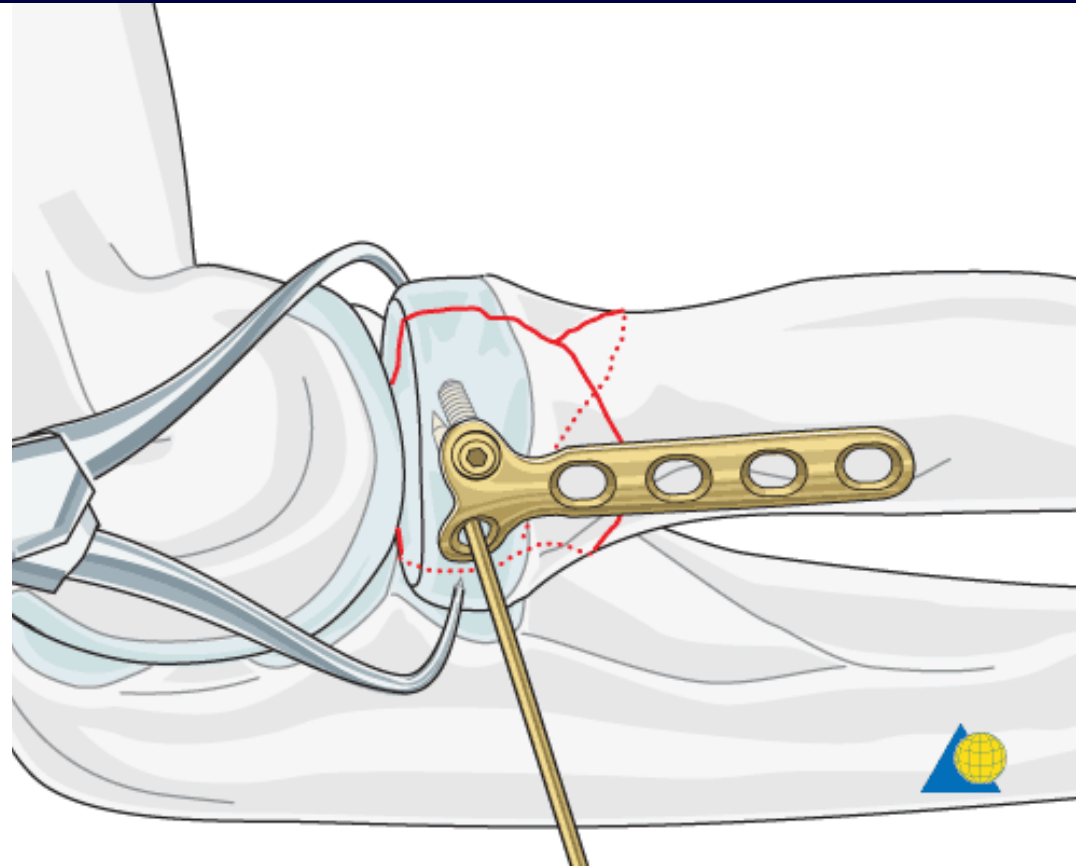
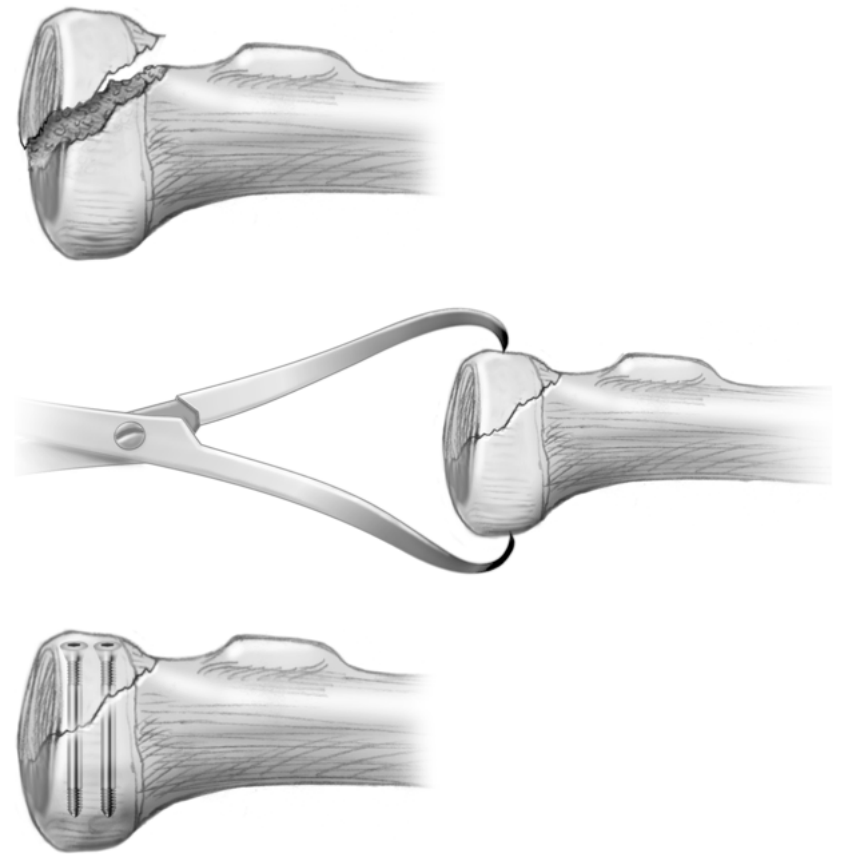


Simple fracture – fix

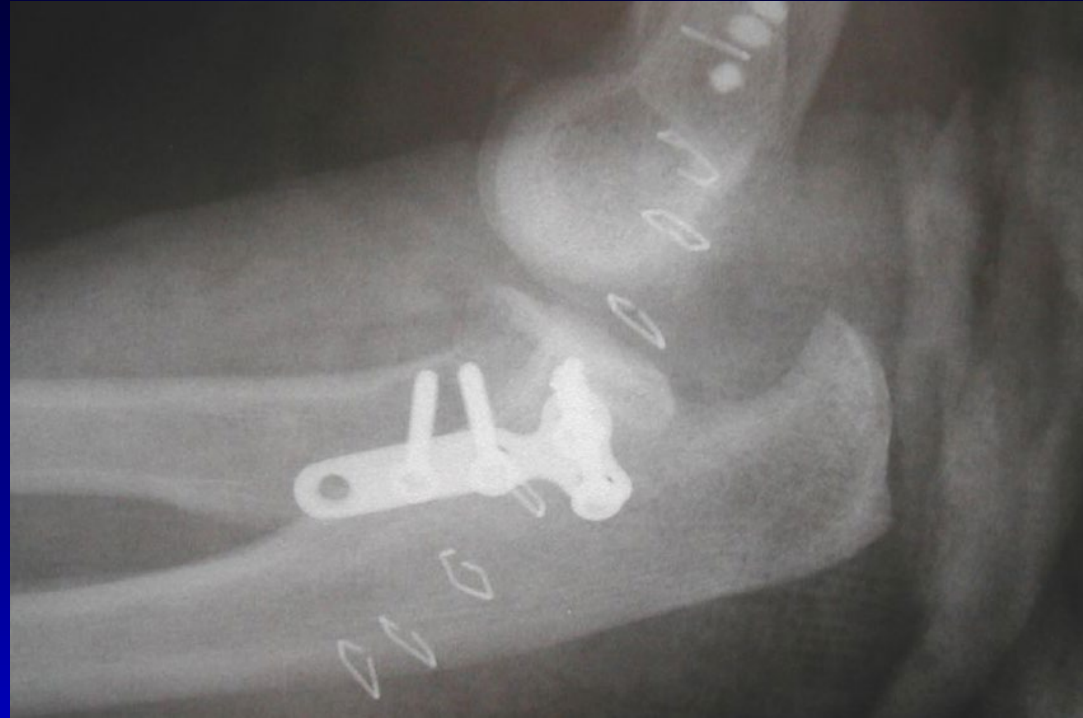


>3 fragments – replace
(metal, modular implant)

ORIF radial head

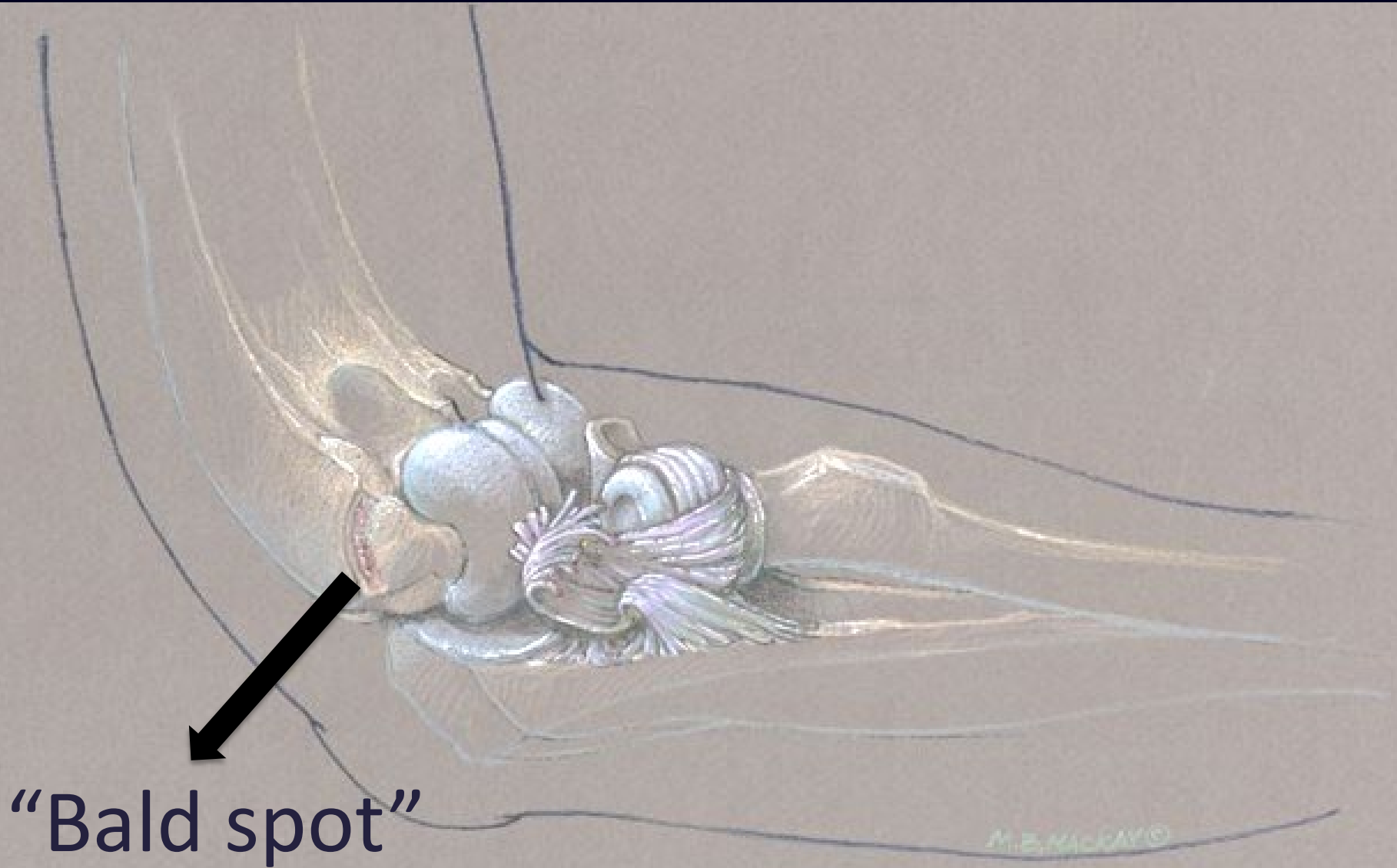


Failure of ORIF

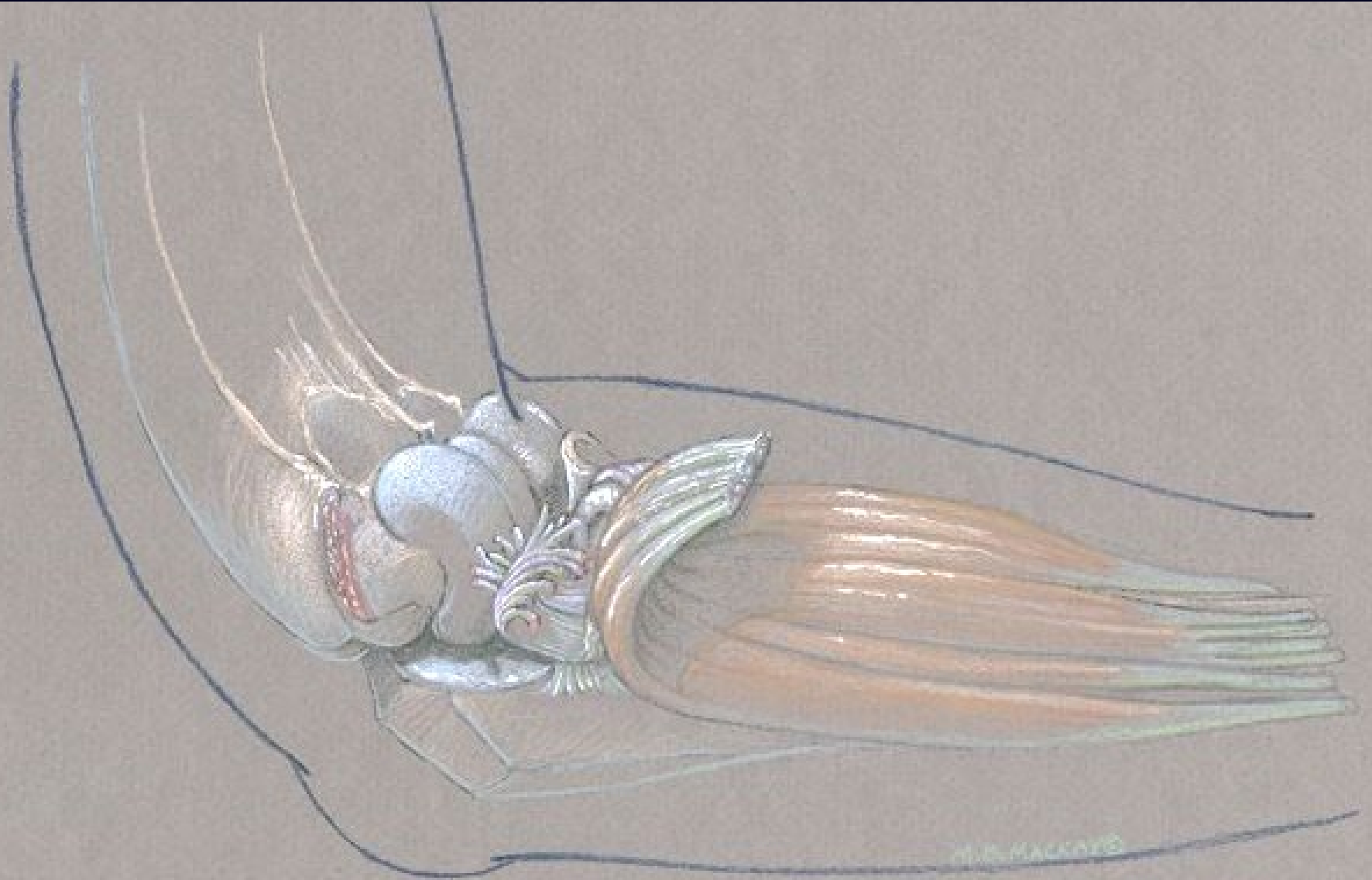


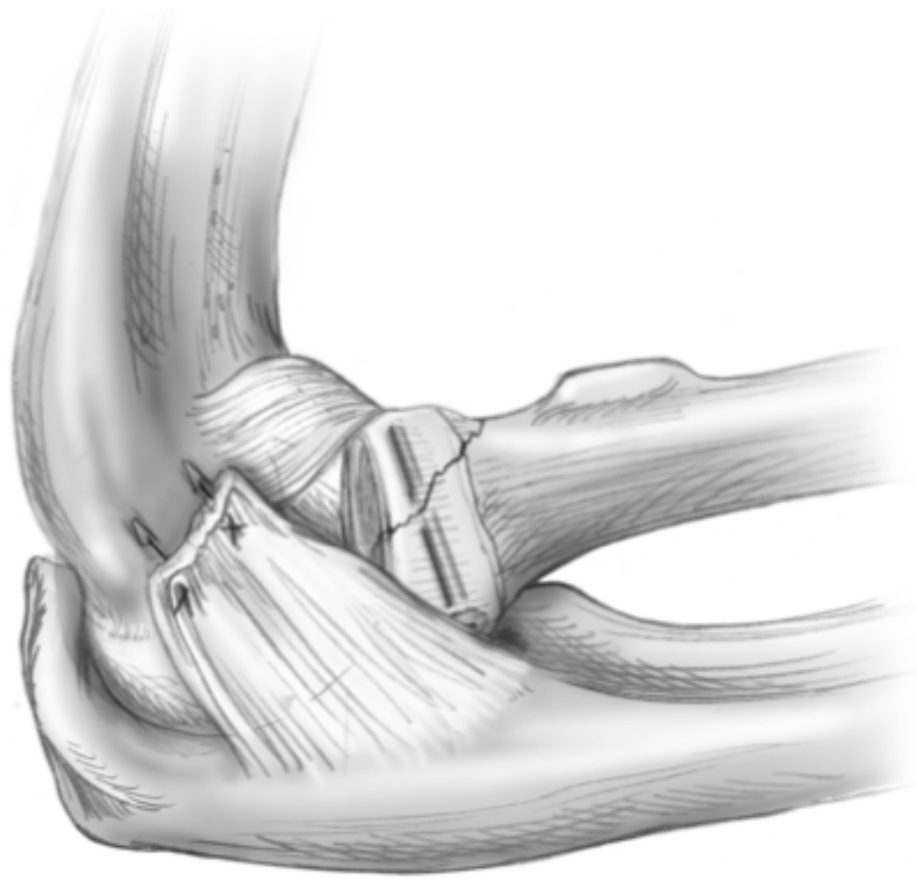
Poor results when comminuted, or associated with elbow instability

LCL avulsion from lateral condyle



Tear of common extensor origin





To fix MCL or not?

Forthman C., Henket M., Ring D. C. Elbow dislocation with intra-articular fracture: the results of operative treatment without repair of the medial collateral ligament. J Hand Surg [Am], 2007;(32):1200-9

If can repair/reconstruct the fractured structures to resemble a simple elbow dislocation, repair of the MCL will not be necessary.

Early motion post-operatively

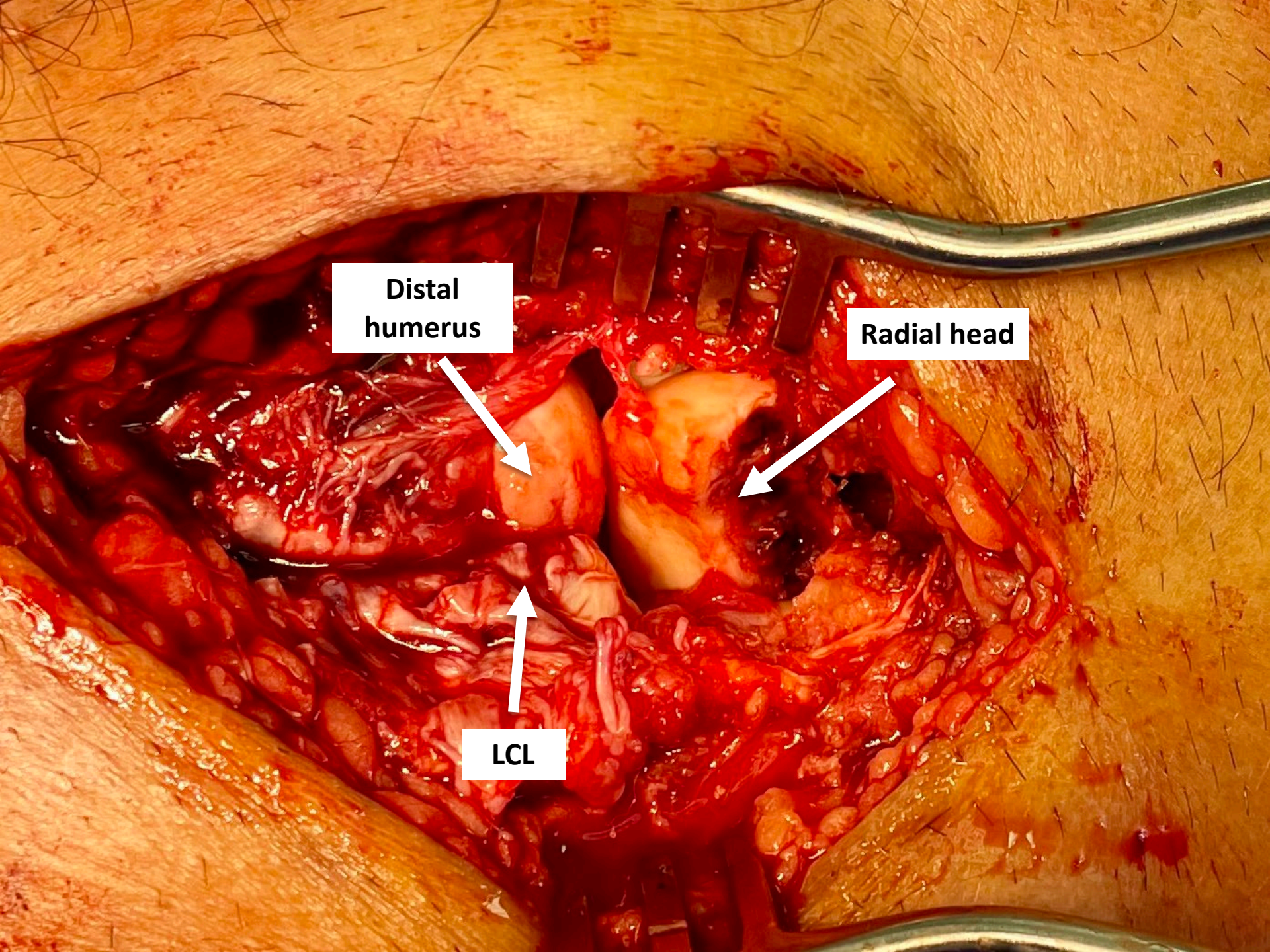


Don't immobilize longer than 2 weeks

See! It's so easy!!!



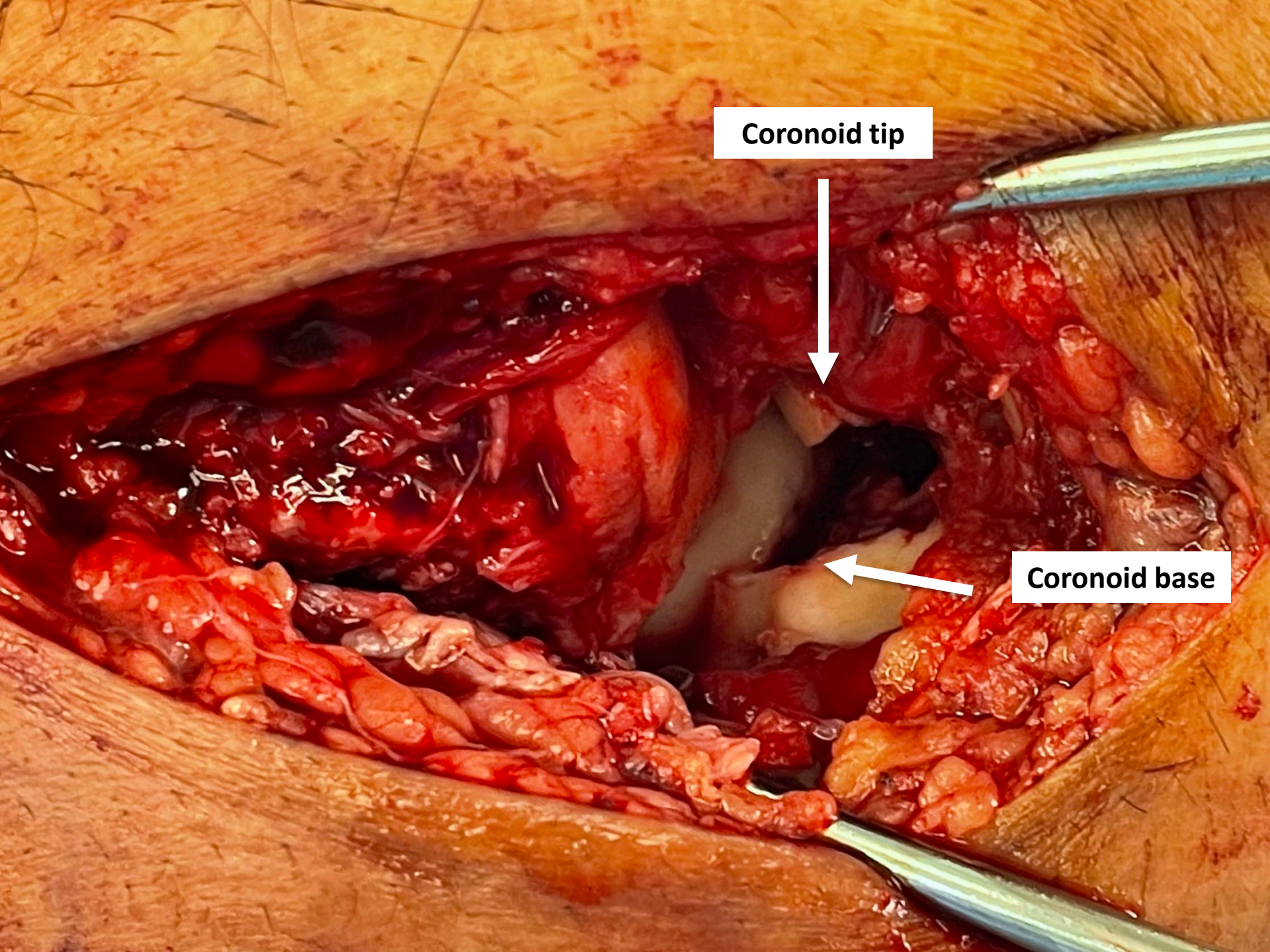




**Distal
humerus**

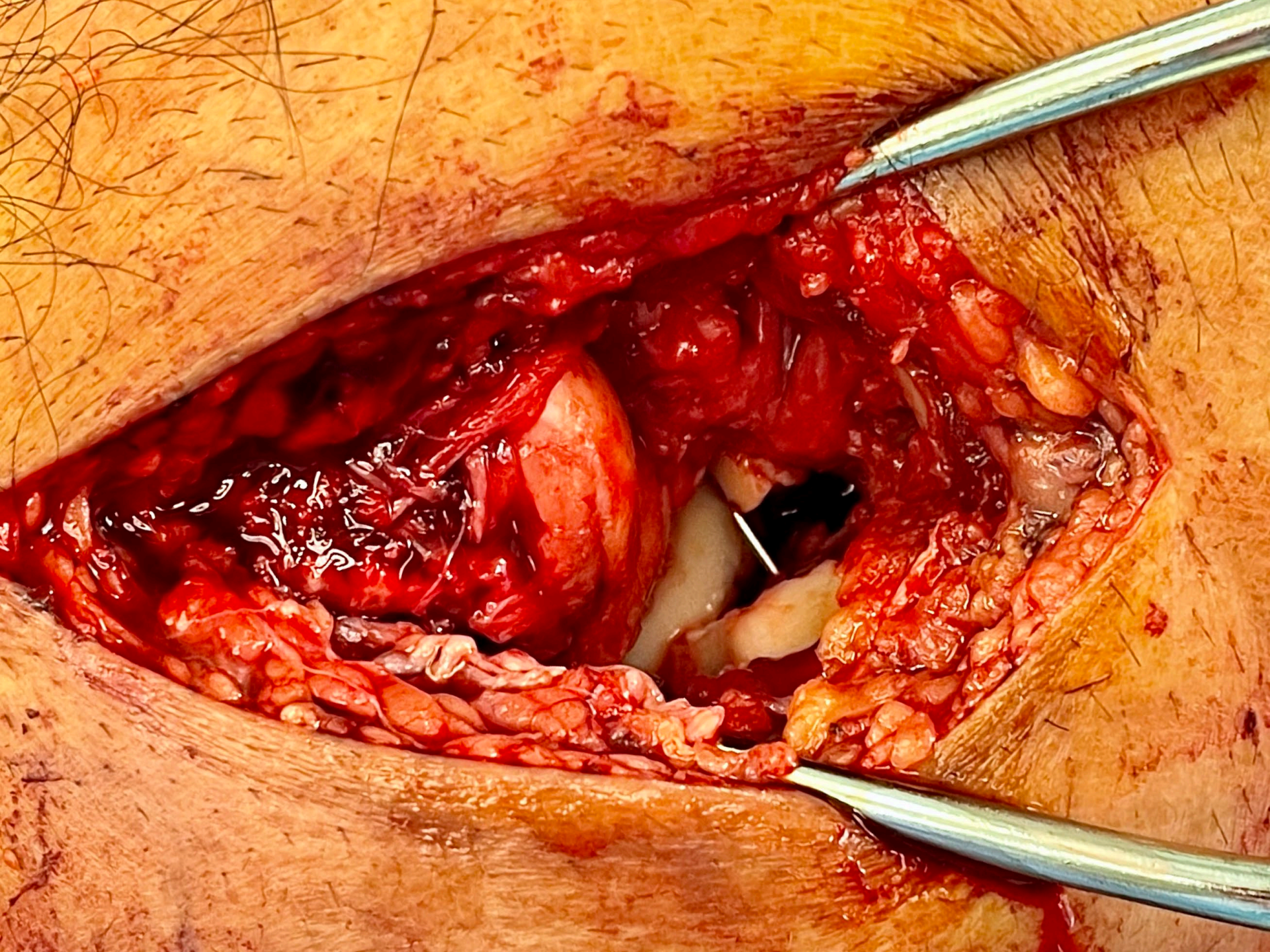
Radial head

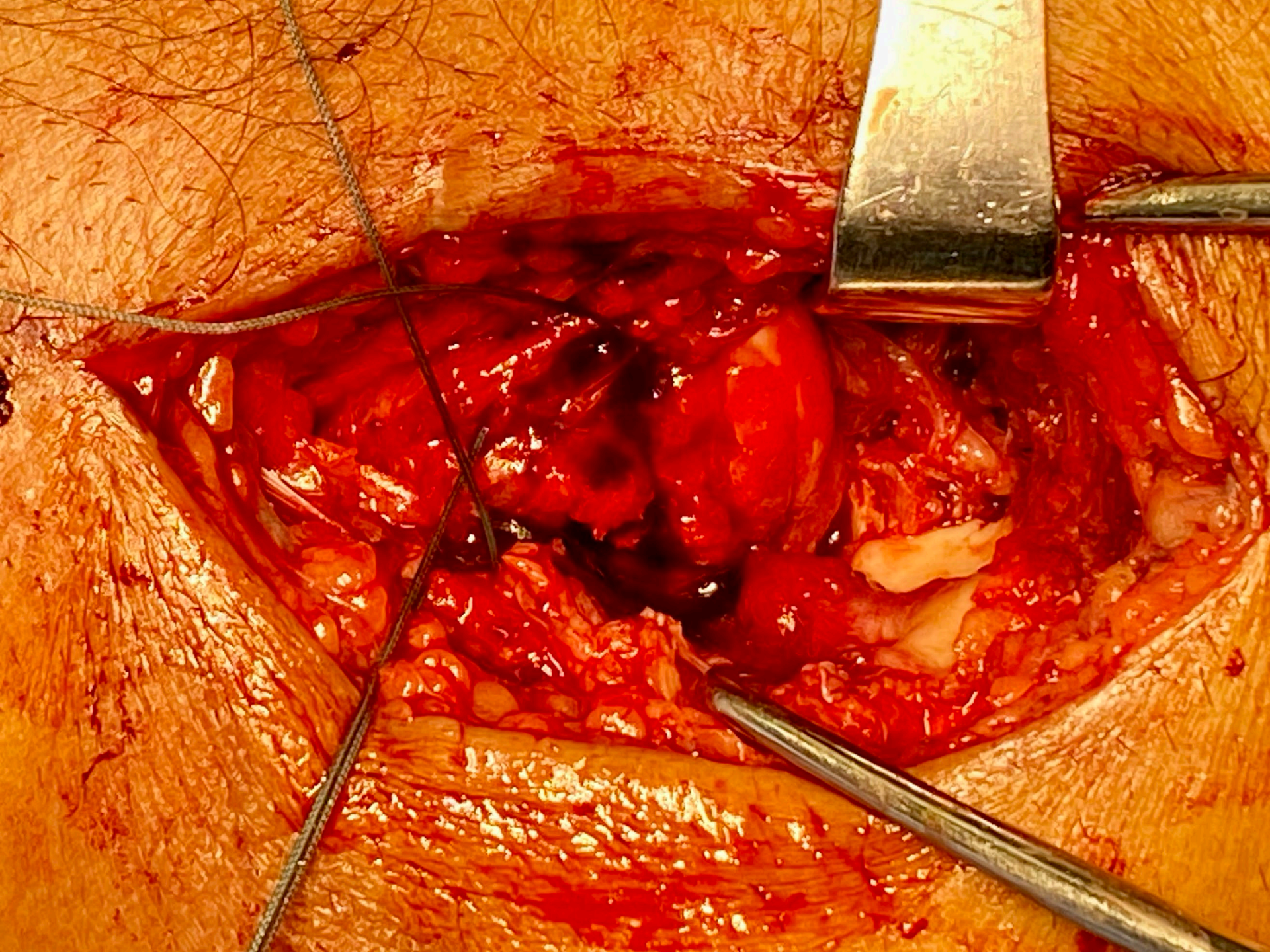
LCL

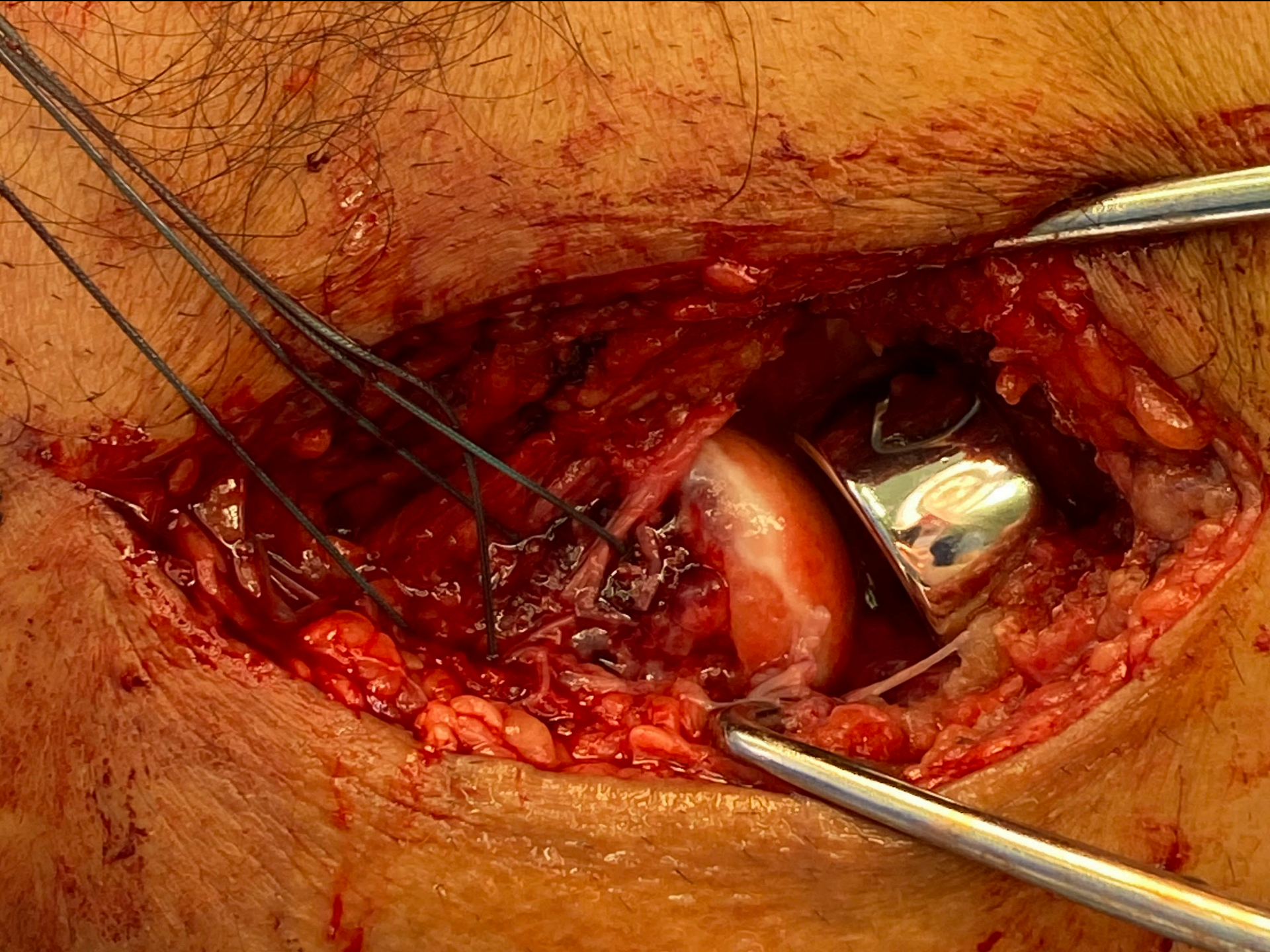


Coronoid tip

Coronoid base









qV4 82
Am TT.0



Conclusions

- Standard surgical protocol to repair structures injured – from deep to superficial:
 - 1) Coronoid
 - 2) Radial head
 - 3) LCL
- Rarely further stability required: 4) MCL 5) ex fix
- Achieve adequate stability to start early motion!

Thank you!

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