



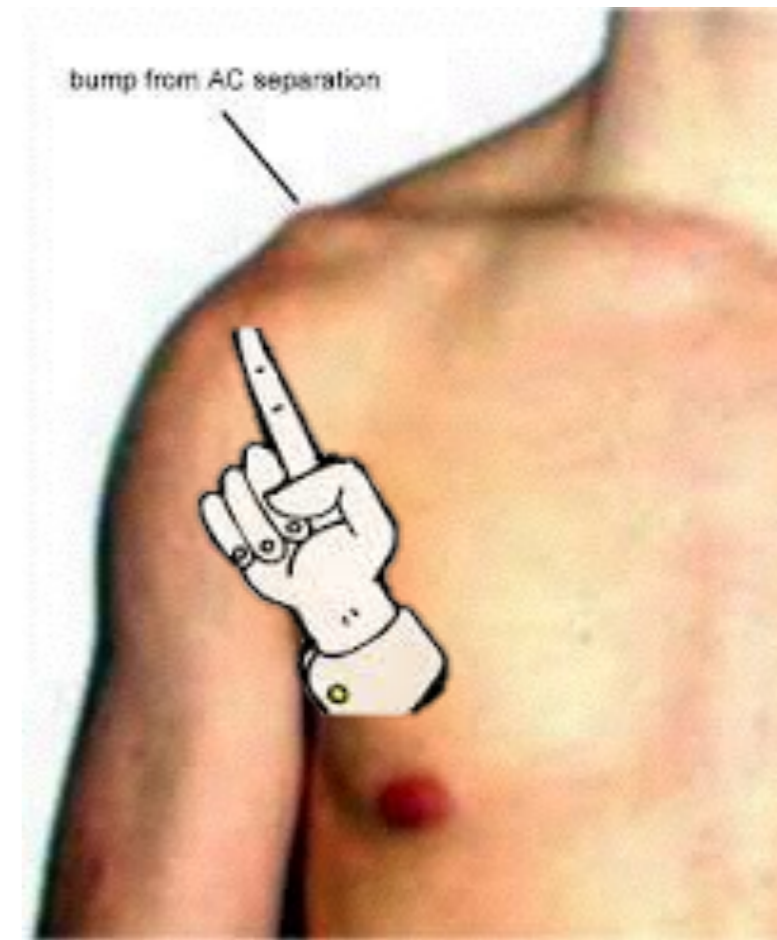
AC jt Instability



- Ashish Babhulkar
- Deenanath Mangeshkar Hospital, Pune

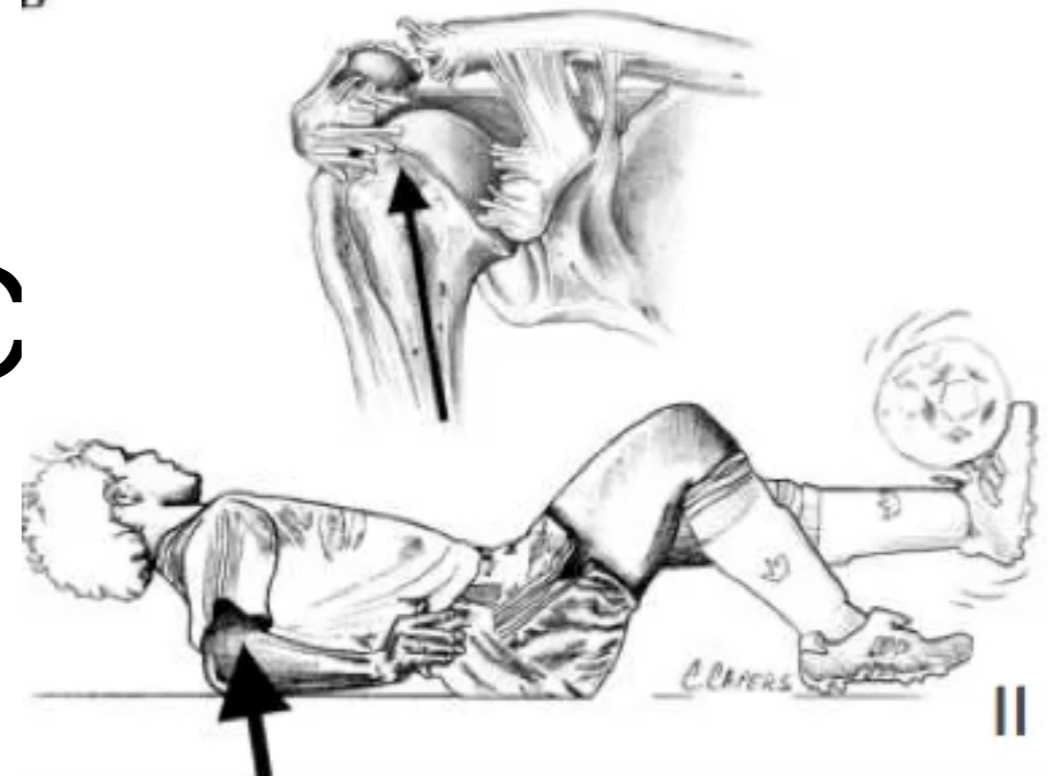
History

- Terminal Movement pain
- Finger sign
- Lateral Sleeping on Both Sides +ve

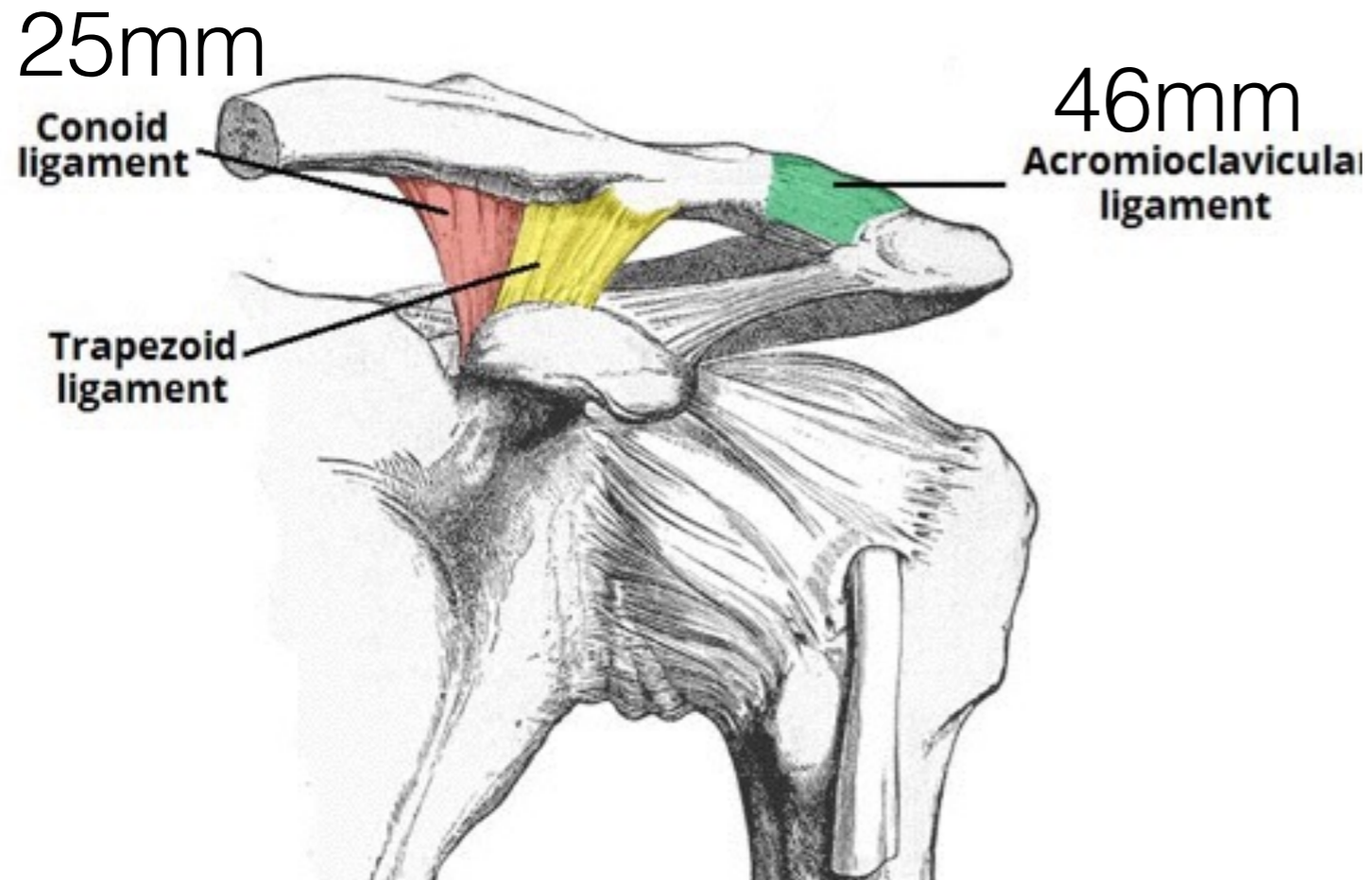


AC jt disloc

- 43.5% > in Males 5:1
- Dislocations more incomplete than complete
- Static
 - AC /CC
- Dynamic
 - Deltoid & Trapezius



Anatomy



- Conoid anterior constrained
- Trapezoid Posterior Constrained
- Load to failure AC 828N
- Load to failure CC 500 - 725

Superior stability

- CC lig – Conoid & Trapezoid
- Coraco-Clavicular space 11-13mm
- Conoid is stronger
- Function
 - Guide Scapulo-Humeral motion
 - Strengthen AC jt

ROM

Biomechanics

- 5° - 8° rotation when Flexion to 180°
- Elevation 11° - 15° & retraction 15° - 29°
- Scapular rotation coupled with arm pivoting on AC jt
- Hence never fuse AC jt or Transfix K wire / plate

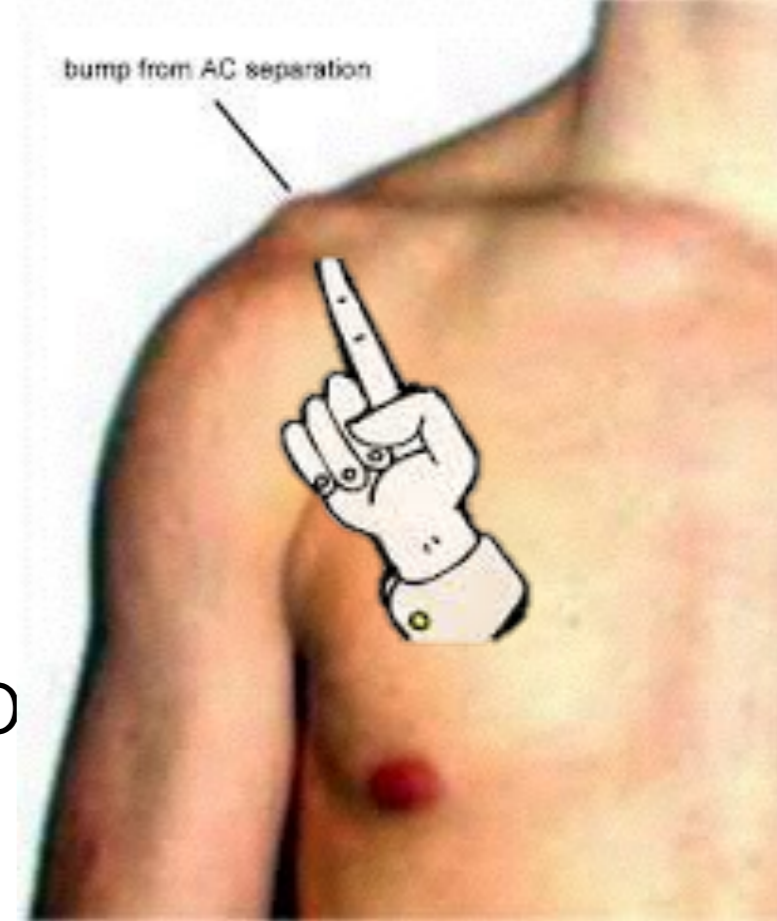
Antero – Posterior Stability

- Less emphasised
- Ant. Capsule of AC jt imp.
- More symptomatic – Shoulder pain
- Posterior Instability – Clavicle into Spine of scapula
- Superior lig 56% & posterior provides 25% Resistance to posterior stability

- Klimkiewicz et al superior and posterior AC capsule ligaments are the most imp in preventing posterior translation of the clavicle
- So Intact CC lig cant compensate for damaged AC capsule

Clinical

- Superior deformity / Worse later due to wasting
- Piano key sign / Reducibility
- Type V – Tenting of skin, Potential ulceration
- Collateral damage to Deltoid & Trapezius
- Check Horizontal stability in AP plane



Collateral Damage

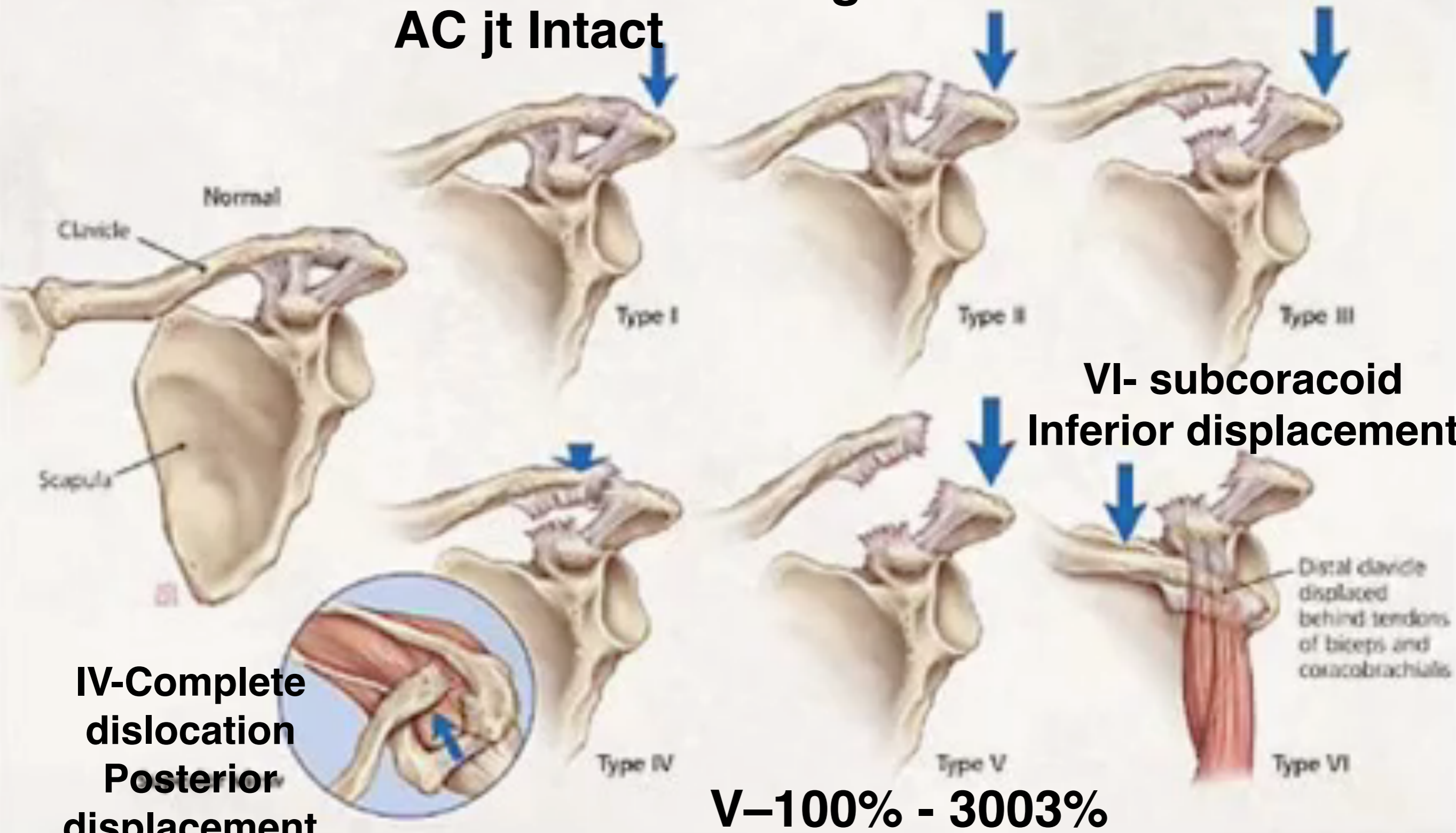
Clinical

Stephen Pauly, Scheibel JSES 2013

- Concomitant intra articular injuries 30%
- Hence Diagnostic A'scopy & Open AC jt reconstruction may be advised

Rockwood Classification

I-Lig. Sprain AC jt Intact
II-AC lig tear CC lig intact
III-AC & CC torn 100% Dislocation



IV-Complete dislocation Posterior displacement thru Trapezius

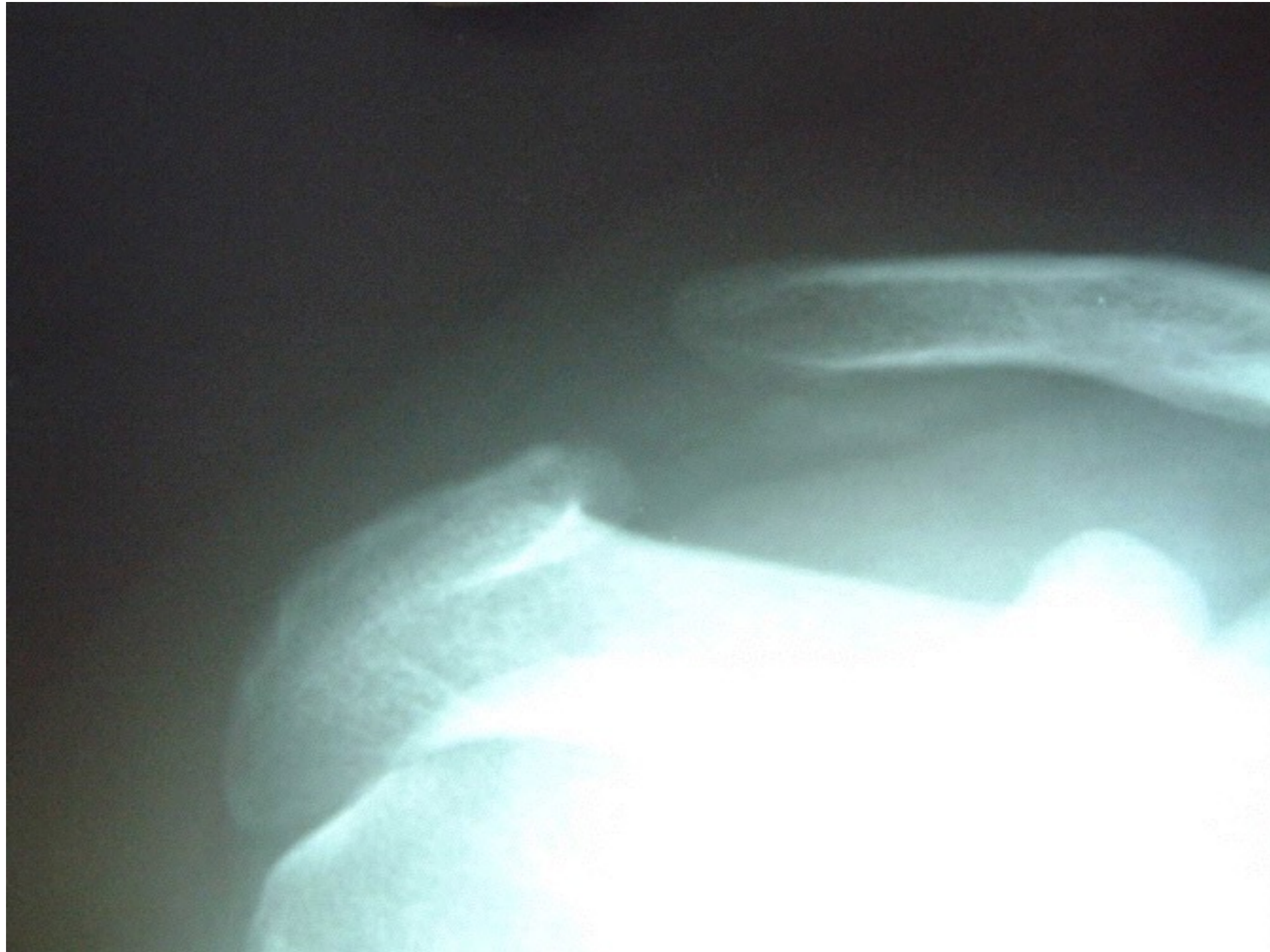
V-100% - 3003% Superior displacement

VI- subcoracoid Inferior displacement

Distal clavicle displaced behind tendons of biceps and coracobrachialis

X-rays - Deceptive

Imaging



Same Pt. Comparative “Zenca Views”

R

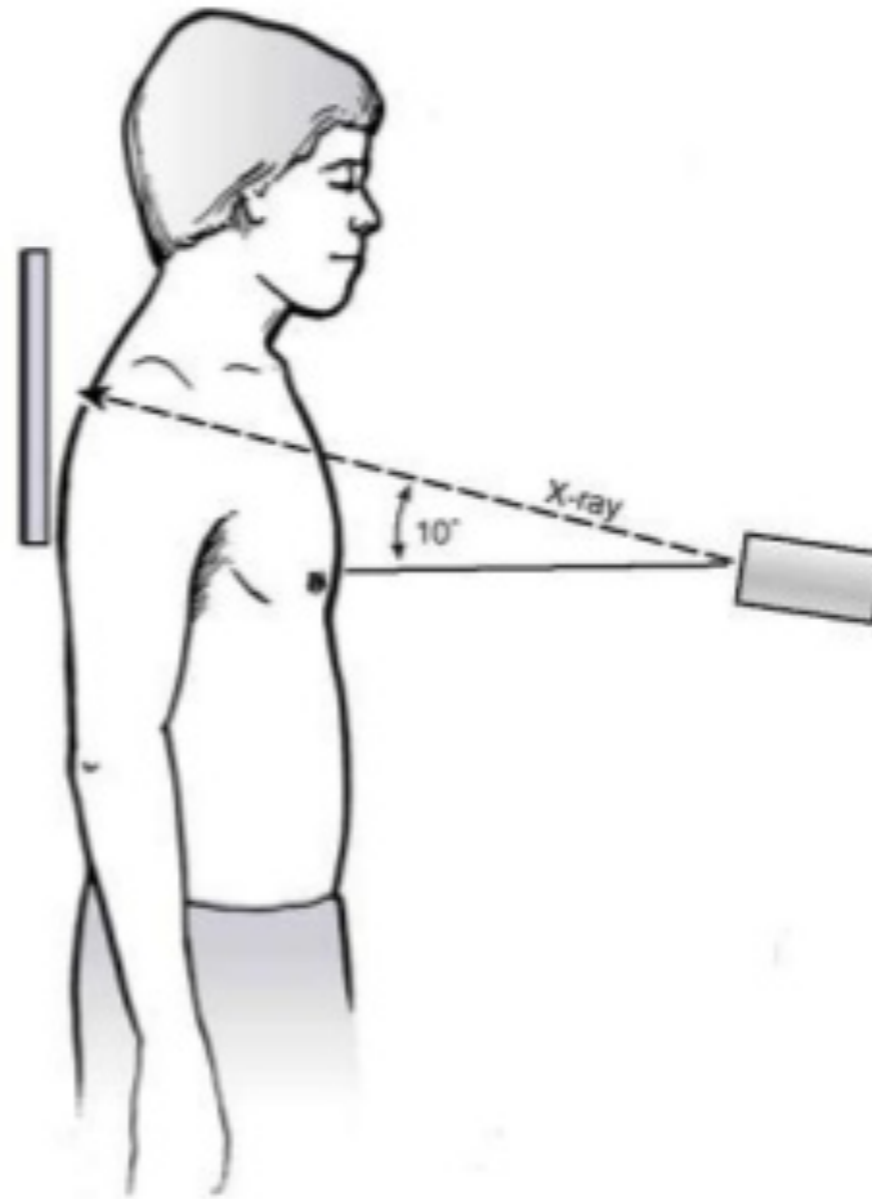


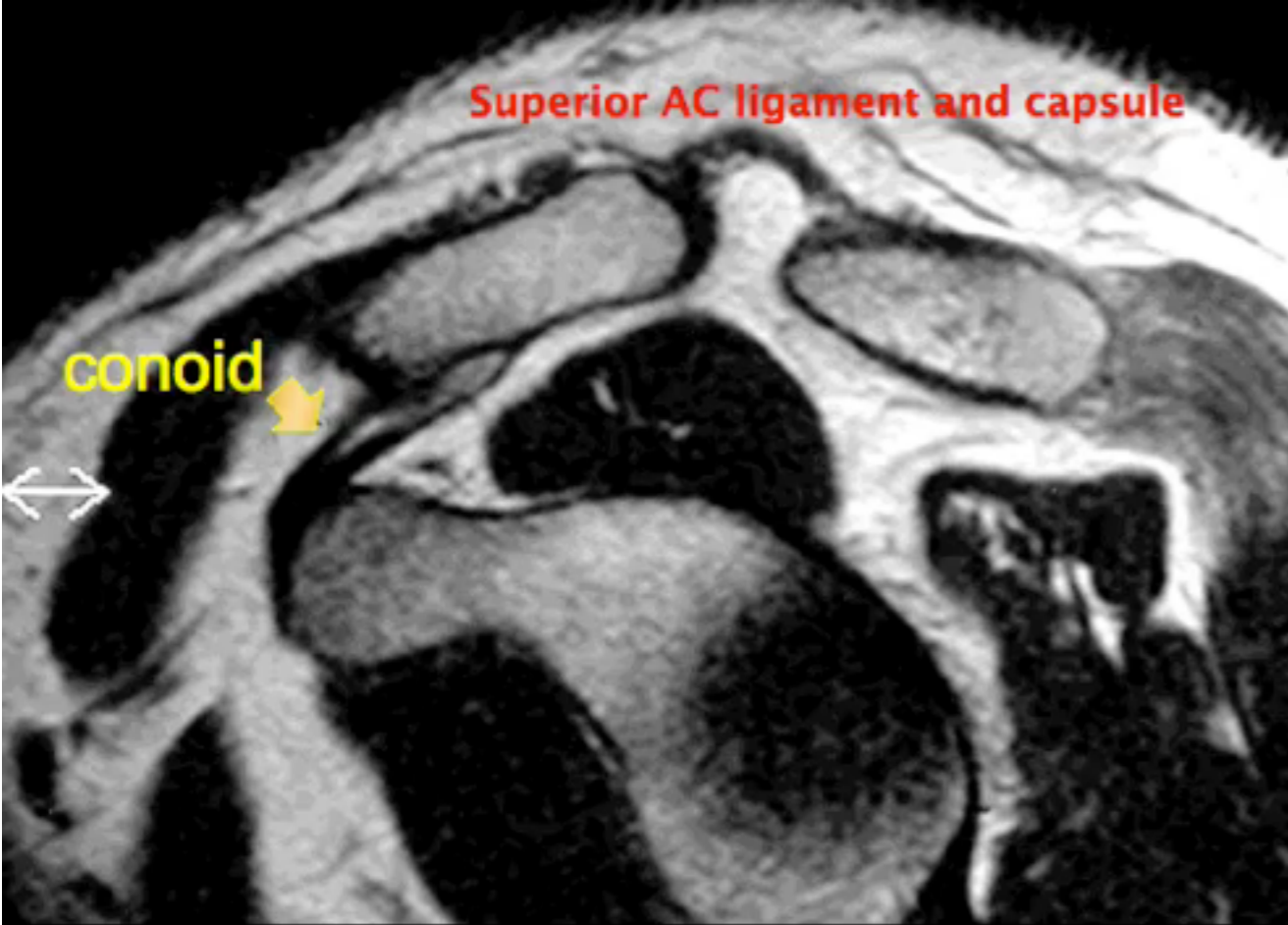
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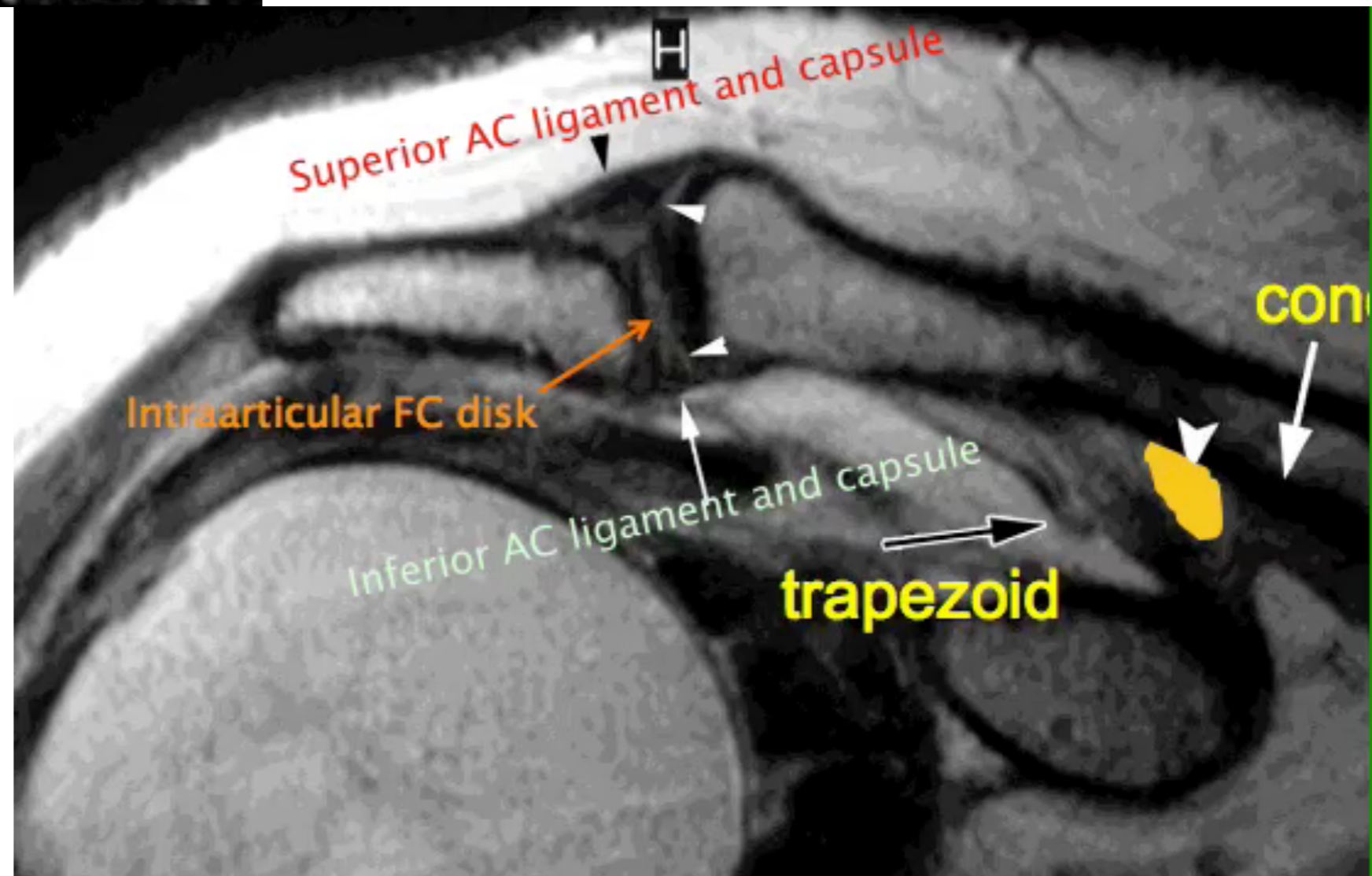
Only Grd I Strain

Weighted Zenca view





MRI Rarely



Options

- ✱ Conservative – strapping, sling
No Evidence
- ✱ Surgical repair – type 3 onwards
ACUTE
- ✱ Type 3 – meta analysis, 88% op
satisfied
Skin problems 1% vs 6%
Cosmetic def. 37% vs 3%



Keeny Brace



Type I & II

- ✓ Conserve
- ✓ Immobiliser /Simple sling 1-3 wks.
- ✓ Strapping – aggressive – Young
- ✓ Limited Dynaplast
- ✓ Return to sports -6-8wks
- ✓ No role for Sx
- ✓ Pain after Rx – Chondral injury / 2ndry OA

Type III

- Controversial
- Non Operative preferred
- Rehab critical, Start after 6-8 wks.
- 17% loss of bench press strength
- Bannister 42 Pts 4yrs F up – **CC screw Vs Sling** Type III
- Non OP full ROM - Return to work early, Less unsatisfactory results
- No study of CC lig reconstruction Vs Sling

Sx Options

- HARDWARE Pins, Screws, Wires, Hook Plates
- CA lig transfer- Weaver Dunn & modifications
- CC interval fixation
- CC lig. reconstruction

AC Jt Fixations

- No wires or screws – Pin migration & loss of fixation
- Hook Plate popular – Must be removed by 4 Mths
- Hardware complications & Infections
- Hook Plate acromial erosion as early as 32 days
- Windhamre – Weaver Dunn Vs Hook Plate –
- Hook plate patients had more pain & Stiffness

Weaver Dunn

- Transfer of CA lig. To Inferior clavicle
- Weinstein AJSM 1995 20% Loss of reduction
- Grutter 2005 / Lee AJSM – Inferior biomech. Strength of CA lig
- Historical values

Reconstruction CC lig

- With Screw fixation
- Suture loop
- Tightrope / Dogbone / Graft rope
- Transfer of forces upper Limb to Clavicle
- Hardware makes AC jt rigid
- Concentrated forces on fixed points – Osteolysis or fracture

CC Hardware

- Hardware deleterious – *Calvo* 2006, *Salzmann* 2008 AJSM, *Wellman A'scopy* 2007
- Screw pull out / Clavicle Fracture – *Mcconnell* j Orth Tr 2007
- Flip Buttons – Erosion, Fractures, infection, Ossification
15%-56% Midterm!!
- *Salzmann Imhoff* 2010 AJSM

Reconstruction

- ✓ C-C ligament – 815N Grutter AJSM 2005
- ✓ Only FCR comparable
- ✓ CA lig & Palmaris L inadequate
- ✓ Disability variable



Semi T

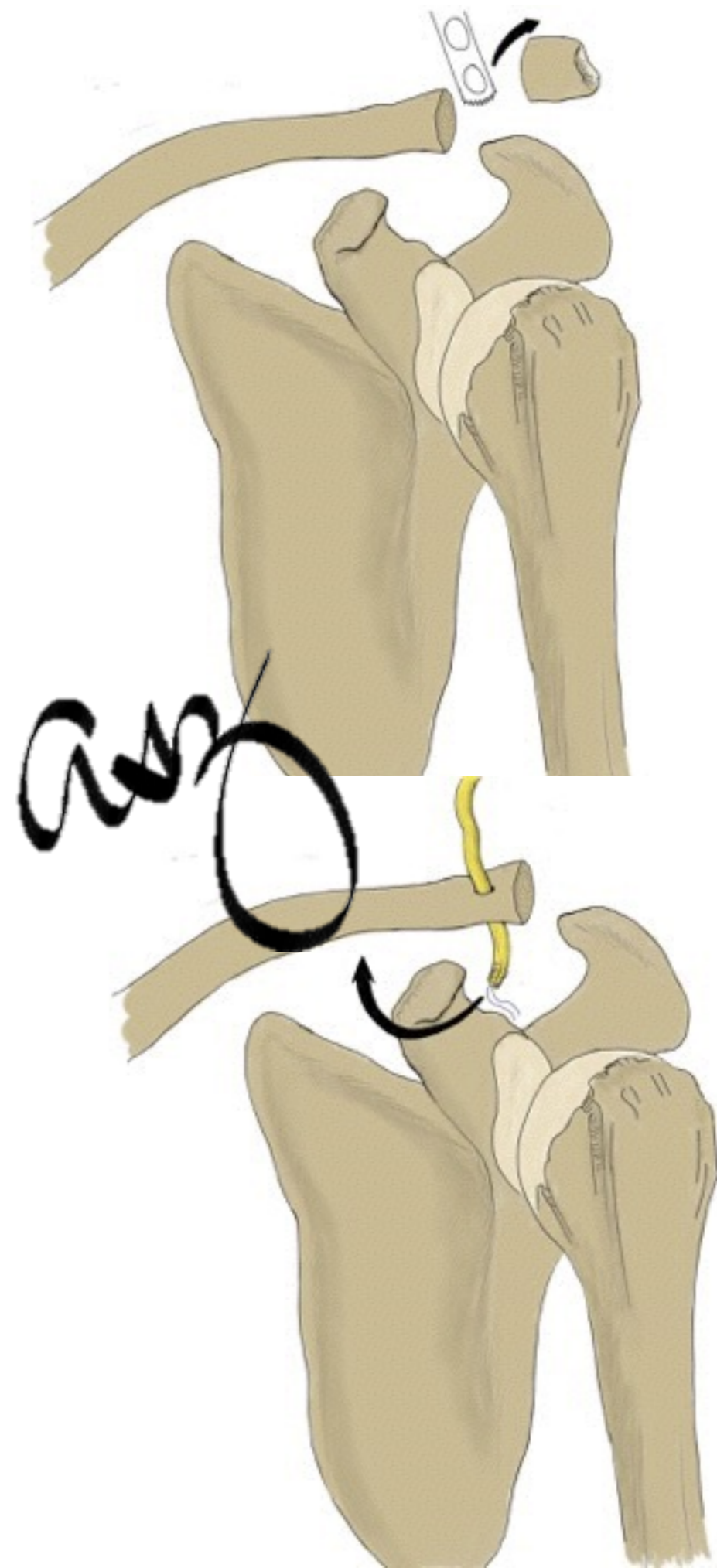
- *Yoo* JC AJSM 2010
- SemiT + 3 strands of Ethibond 48% excellent, 52% good, 81% pts maintaining reduction, 1 complete loss of reduction
- *Tauber* AJSM 2009 – Prospective case control SemiT superior to Weaver Dunn
- *Mazocca* 3 failures of 17 pts but none had fractures or osteolysis

Strap Incision, Sitting position

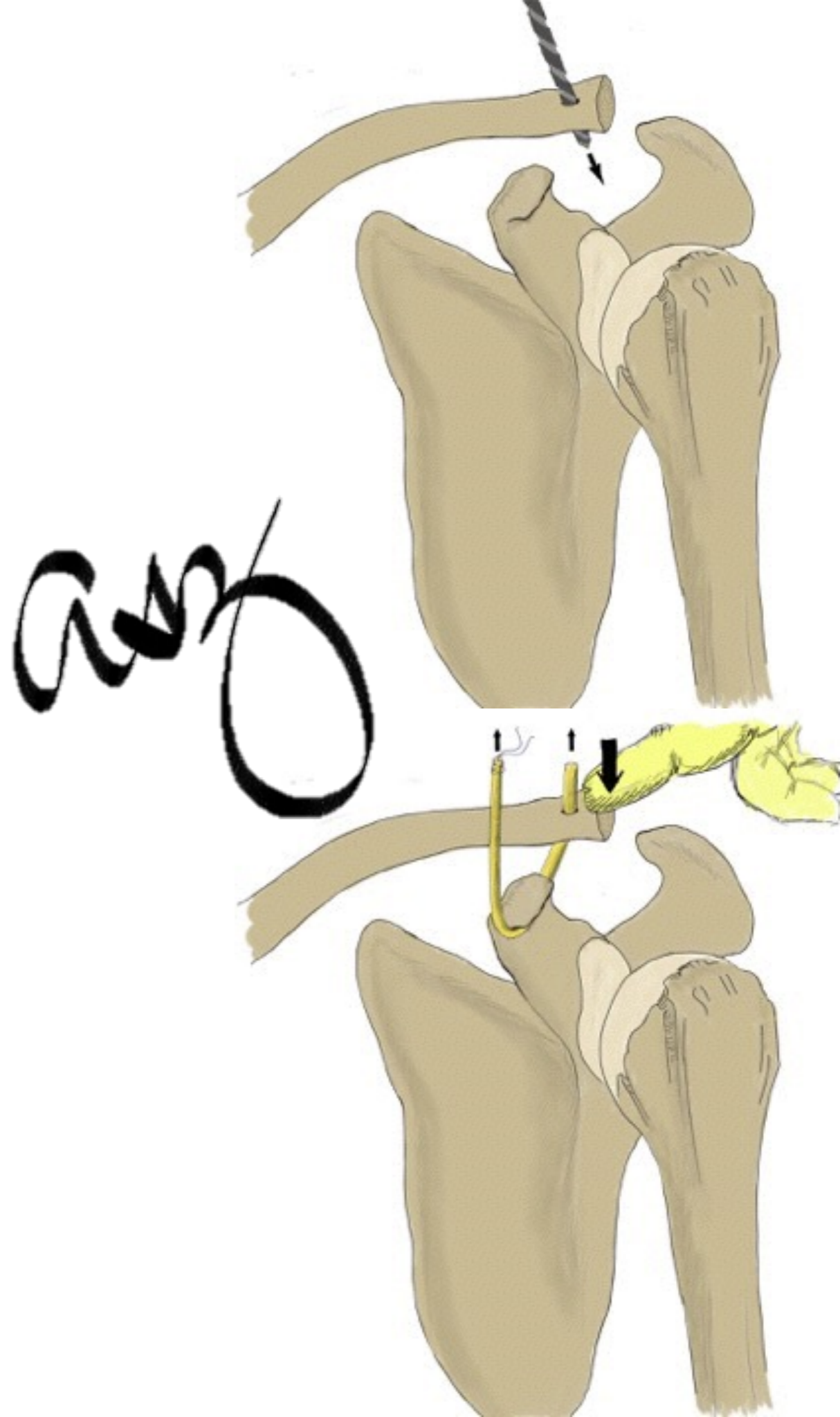
Expose Coracoid, Rent in Pec M & CA lig – Avoid cutting them

Excise Lateral End only in Chronic cases – Optional

Loop SemiT + Merselene tape around coracoid – Use Satinsky (or Mixer) forceps to facilitate



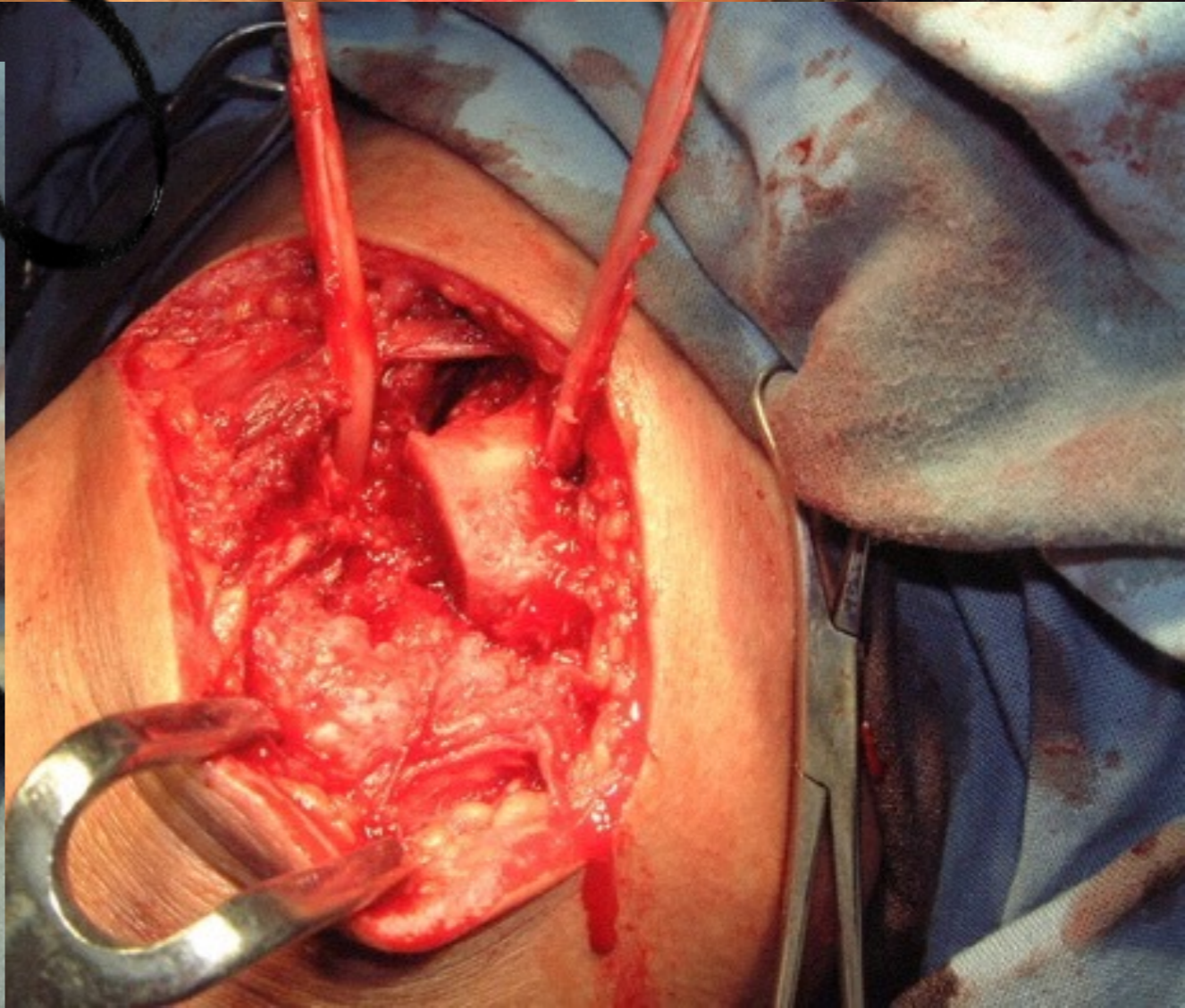
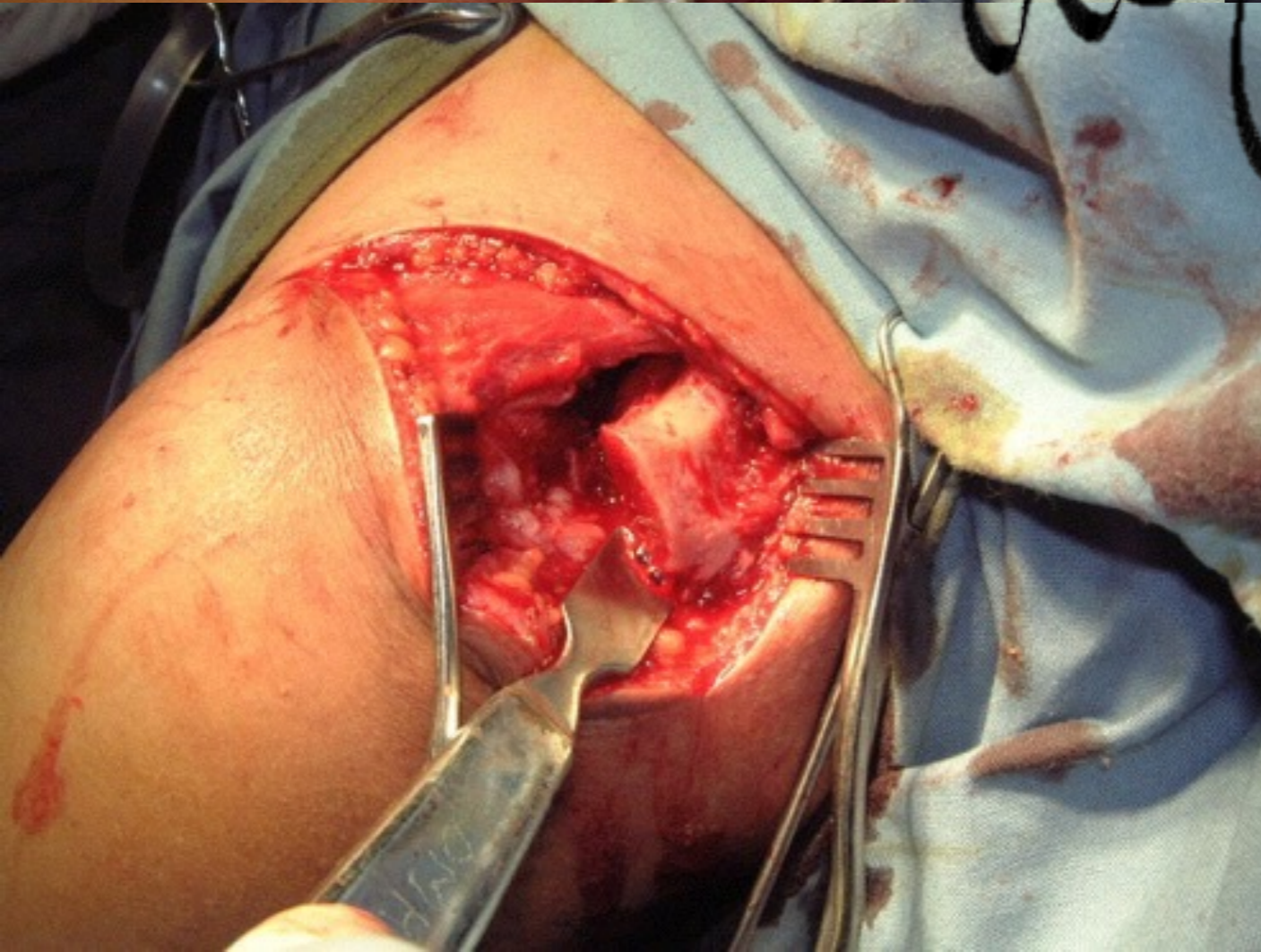
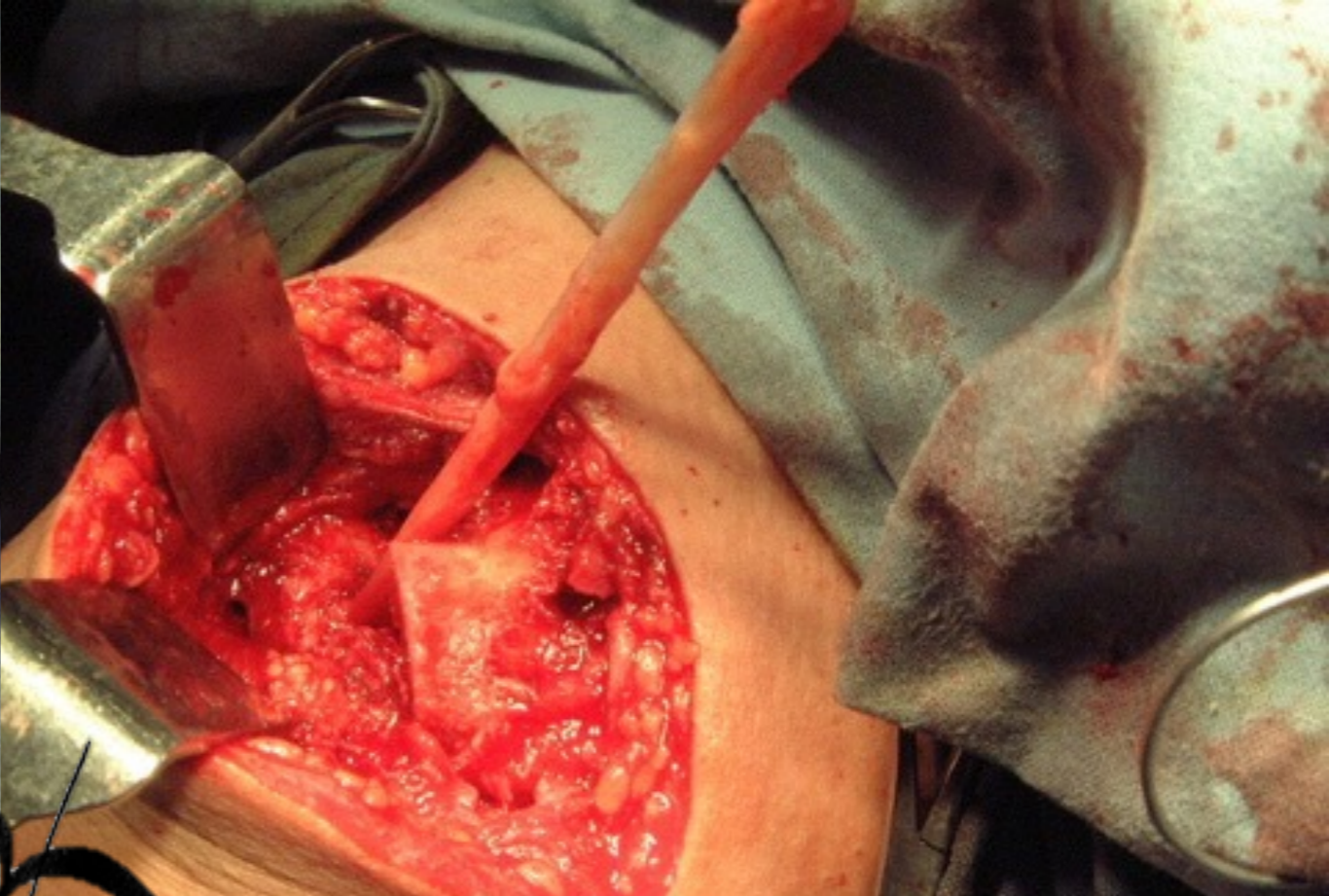
- Drill tunnel 4/5mm @ 35mm from AC jt - Mid Point of Conoid & Trapezoid
- Indirect Suture shuttle thin end of graft through clavicle – Inferior to superior
- Other limb of graft-anterior to clavicle

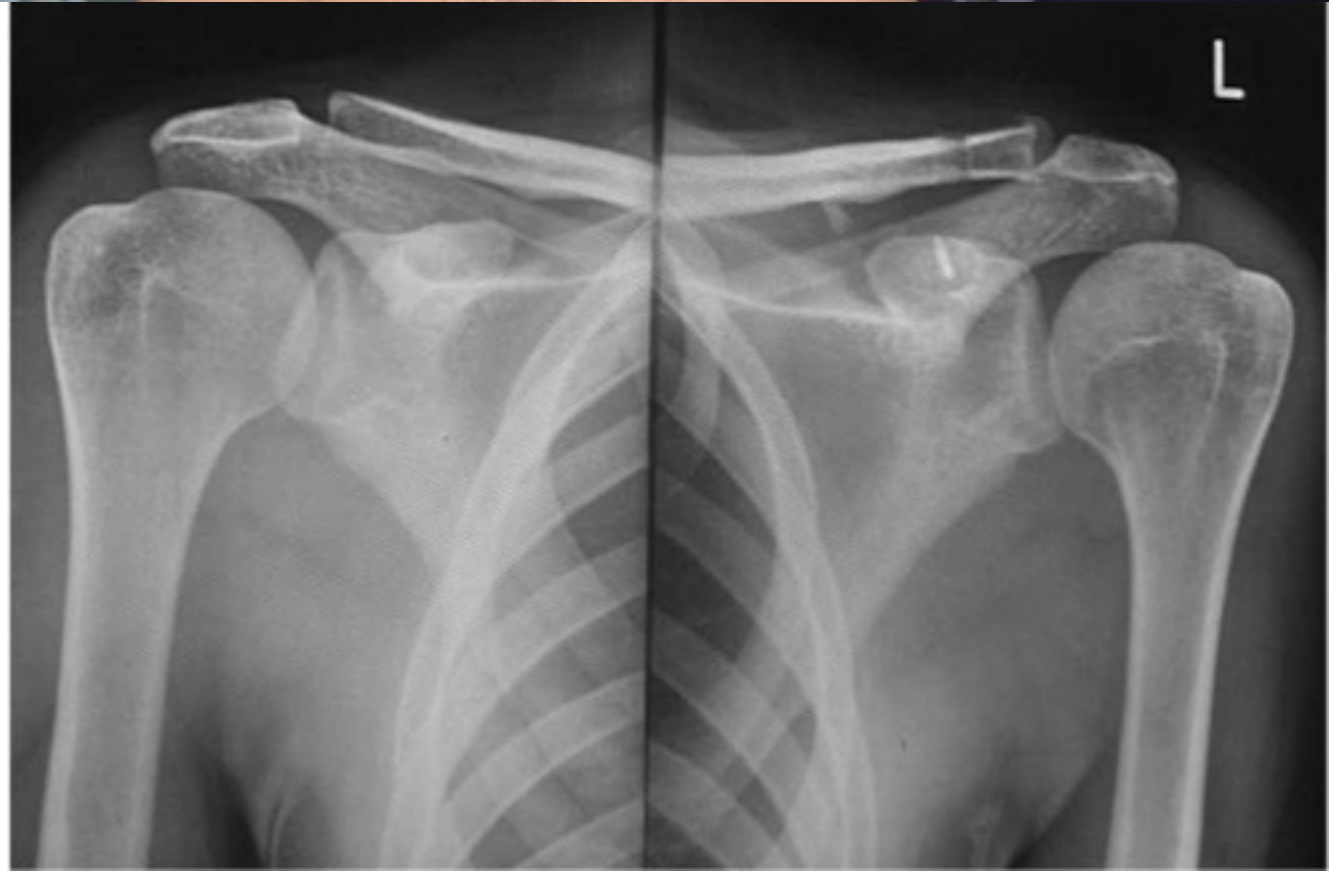


Synch Merselene tape along with reduction then Synch Semi T Graft

Excess SemiT may be looped across Acromion to reinforce AC jt.







61 yr old – Poor Rx





as no role

Hardware

- K wires Travel
- Bosworth – Coracoid complications
- Hook Plate needs second surgery for removal
- Tightrope – Clavicle #s / Rupture incidence

Chronic AC dislocations

Lateral end clavicle resection

+

Gracilis graft for CC lig

+

Coracoid fixation with anchor

+

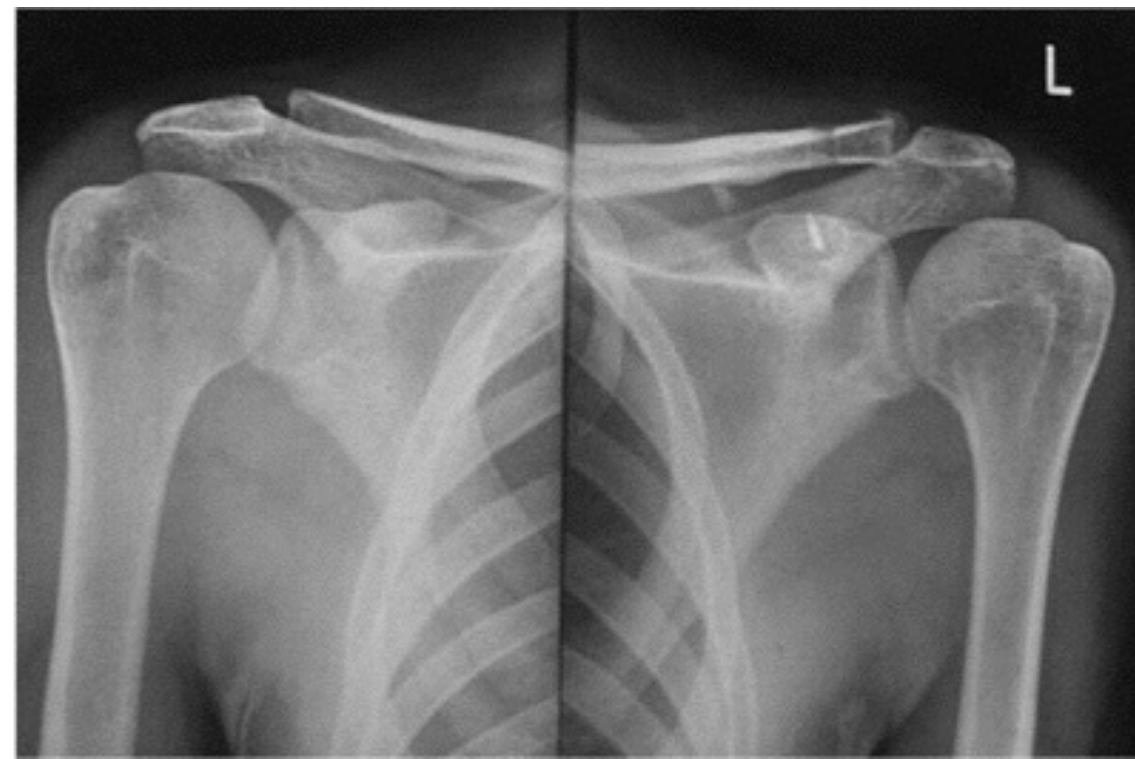
No Immobilisation

2 mths AC Reconstruction



Arthroscopic

- Arthroscopic Semi T with Merselene tape
- More cosmetic
- Musculocutaneous nerve at risk
- Instead of drilling coracoid – Loop graft around coracoid



Post Op

- 6-8 Wks Immobilisation
- But Full active Elbow, Wrist & Hand
- Post Op – Pendulum, Bracing allowed
- Can Drink cup of tea, Use Mobile & Eat
- Delay wt. bearing & Above 90deg ROM
- Active Physio @ 6wks
- Sports @ 6 mths

Conclusion

Aim for CC lig.
reconstruction

Type I, II & III
Conserve

Type IV, V, VI
Delayed CC
lig Reconstr

Can supplement with
Merselene tape


No Strapping
Or
elastoplast

Acute
reconstruction
Rarely

Avoid Hardware

Recommended Reading

- Evaluation and Treatment of Acromioclavicular Joint Injuries -*Augustus D. Mazzocca, Robert A. Arciero, and James Bicos* AJSM Vol 35, #2 2007
- Acromioclavicular joint injuries: indications for treatment and treatment options *John A. Johansen,, Paul W. Grutter,, Edward G. McFarland,, Steve A. Petersen* – JSES 2011

A close-up photograph of a person's bare back. A smudge of red lipstick is visible on the skin, positioned to the left of the text. The background is a plain, light-colored wall.

**We really love
what we do.**