PAOS Anterior Sports Shoulder

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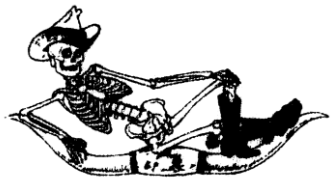
AAOS Disclosure



I have nothing to disclose.

AAOS Orthopaedic Disclosure Program on the AAOS website at:

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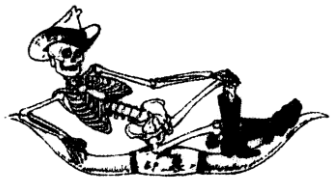
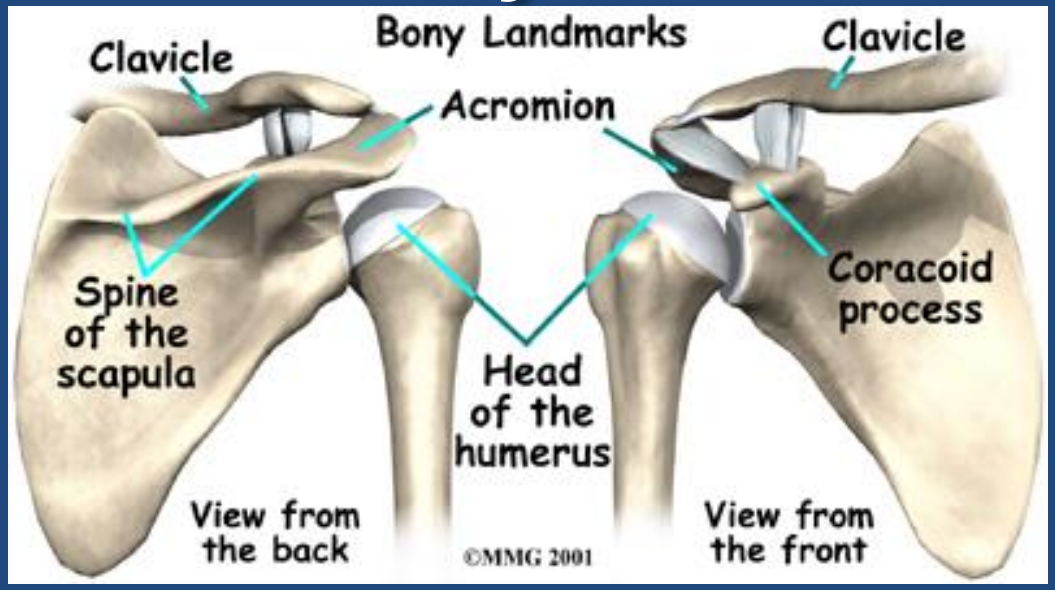
Outline

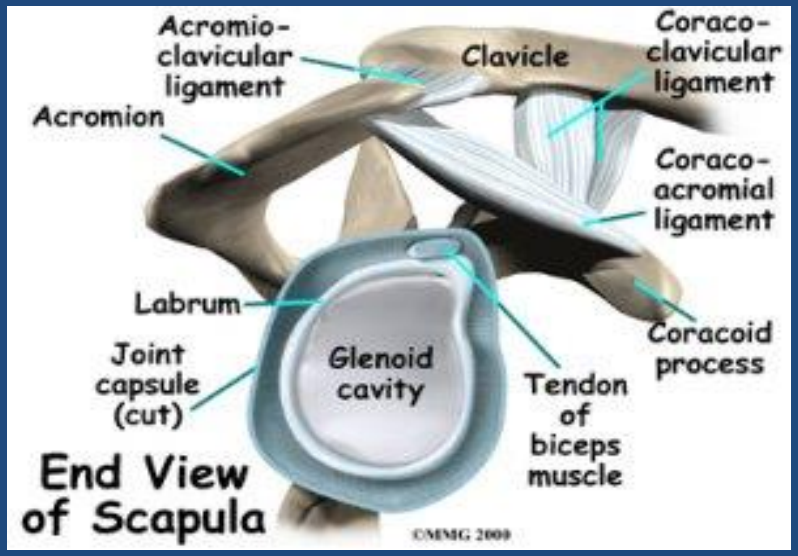


- Review normal shoulder anatomy
- Review evaluation
  - History
  - Physical exam
  - Radiographic evaluation
- Review anterior shoulder instability
- Review of SLAP tears

Basic Anatomy

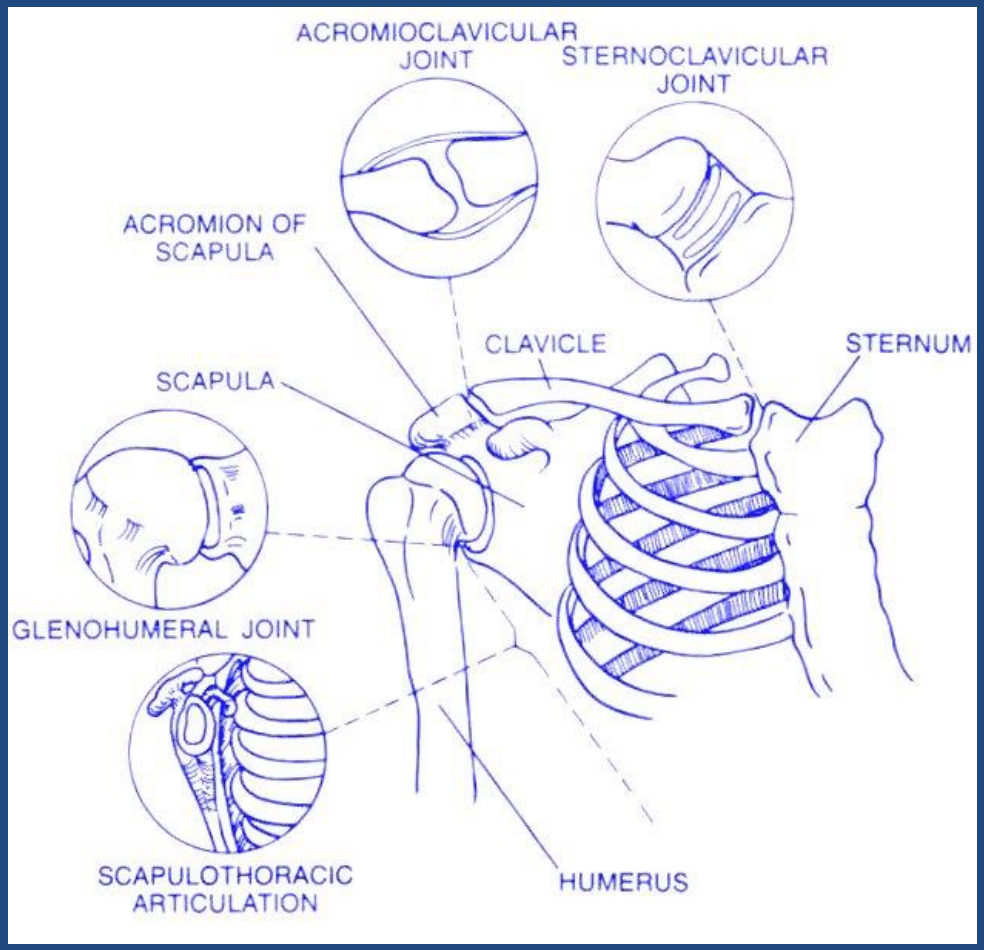
- Bones
  - Clavicle
  - Scapula
    - Spine
    - Body
    - Acromium
    - Coracoid
  - Humerus
    - Head
      - GT/LT
    - diaphysis



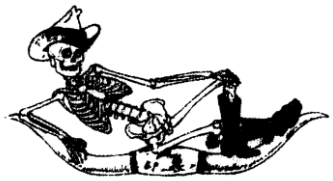


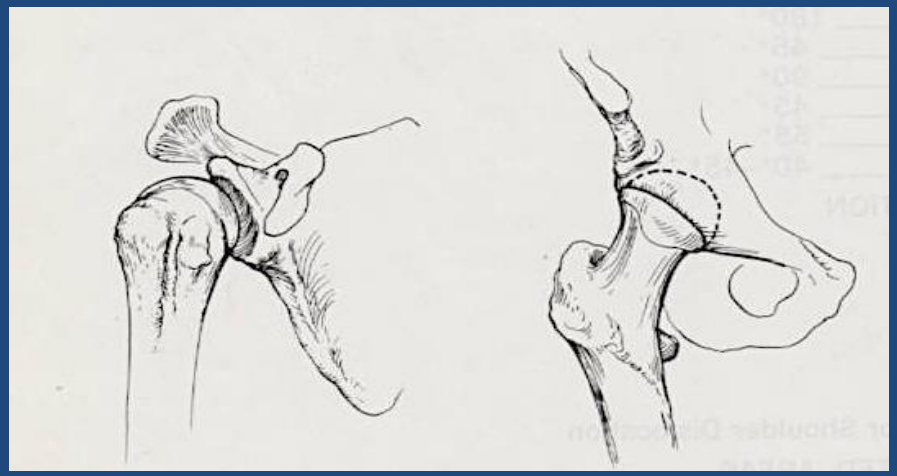
Shoulder Joints

- Acromioclavicular joint
  - Diarthrodial
  - Horizontal (A-P) stability
    - Superior, posterior AC ligaments
  - Vertical (Superior) stability
    - CC ligaments
      - Conoid
      - Trapezoid
- SC joint
  - Diarthrodial
  - Rotates 30 degrees with G-H elevation
- G-H joint
- Scapulo-thoracic joint

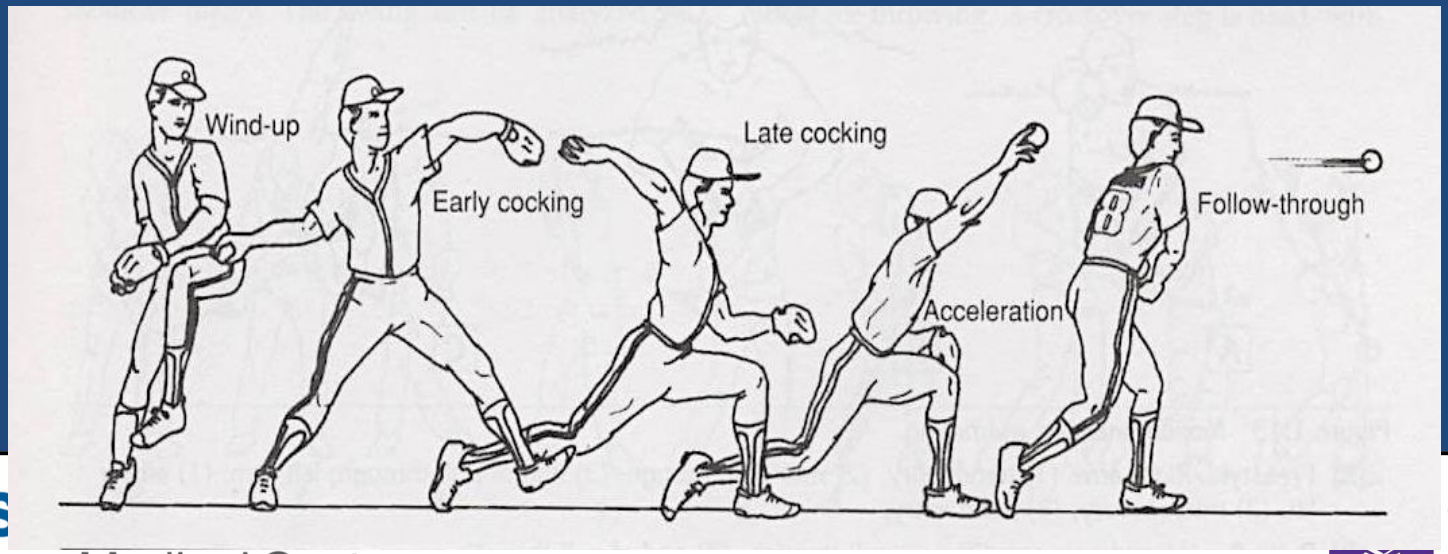


Ball and socket joint





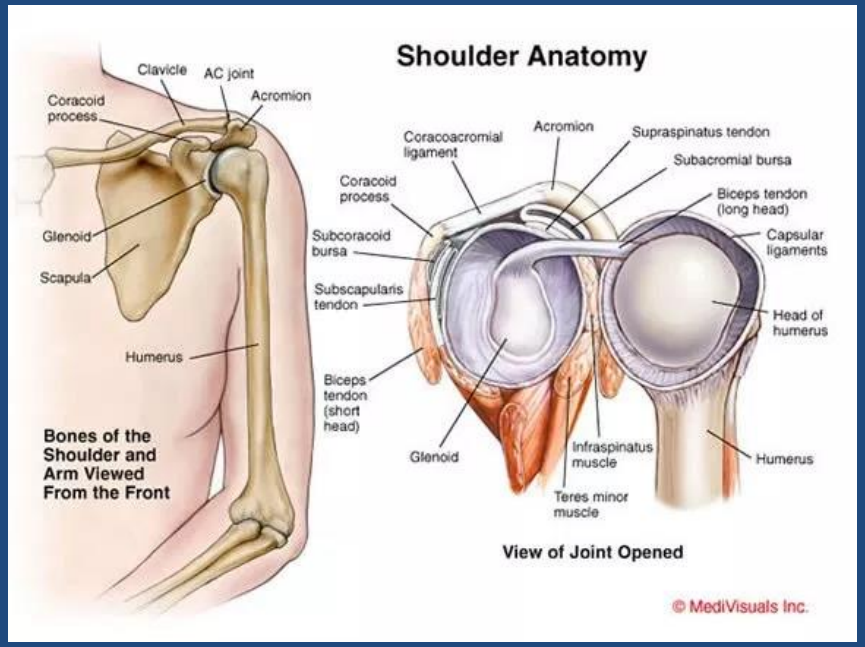
- Only 25-30% of the humeral head contacts the glenoid fossa at any time
- Relies on static and dynamic stabilizers to keep the head at the center of the glenoid cavity



Shoulder Stabilizers

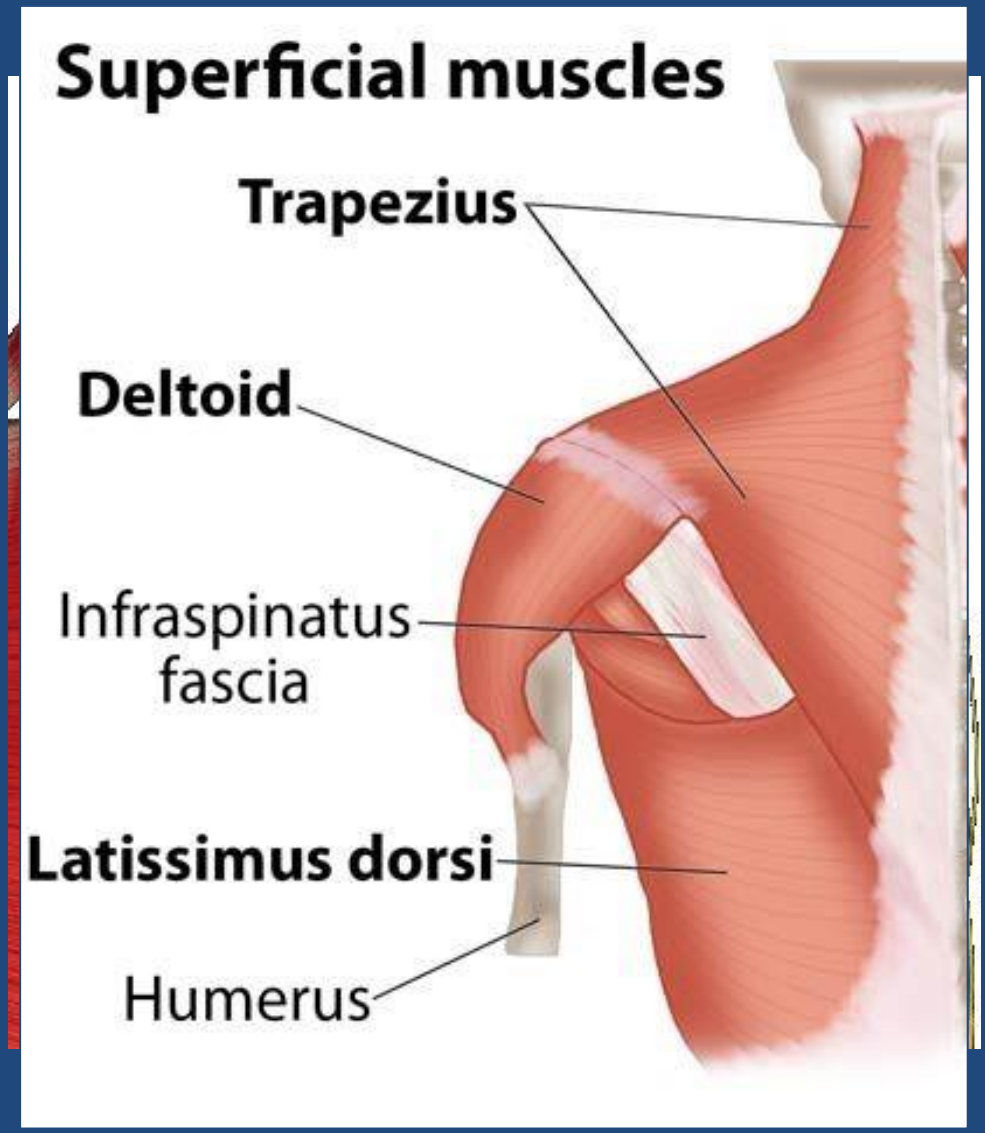
- Dynamic Stabilizers
  - Rotator cuff
  - Long head biceps tendon
  - Periscapular musculature

- Static Stabilizers
  - Glenohumeral bony articulation
  - Negative intraarticular pressure
  - Labrum
  - Capsular Ligaments
    - SGHL
    - MGHL
    - IGHL (A,P)



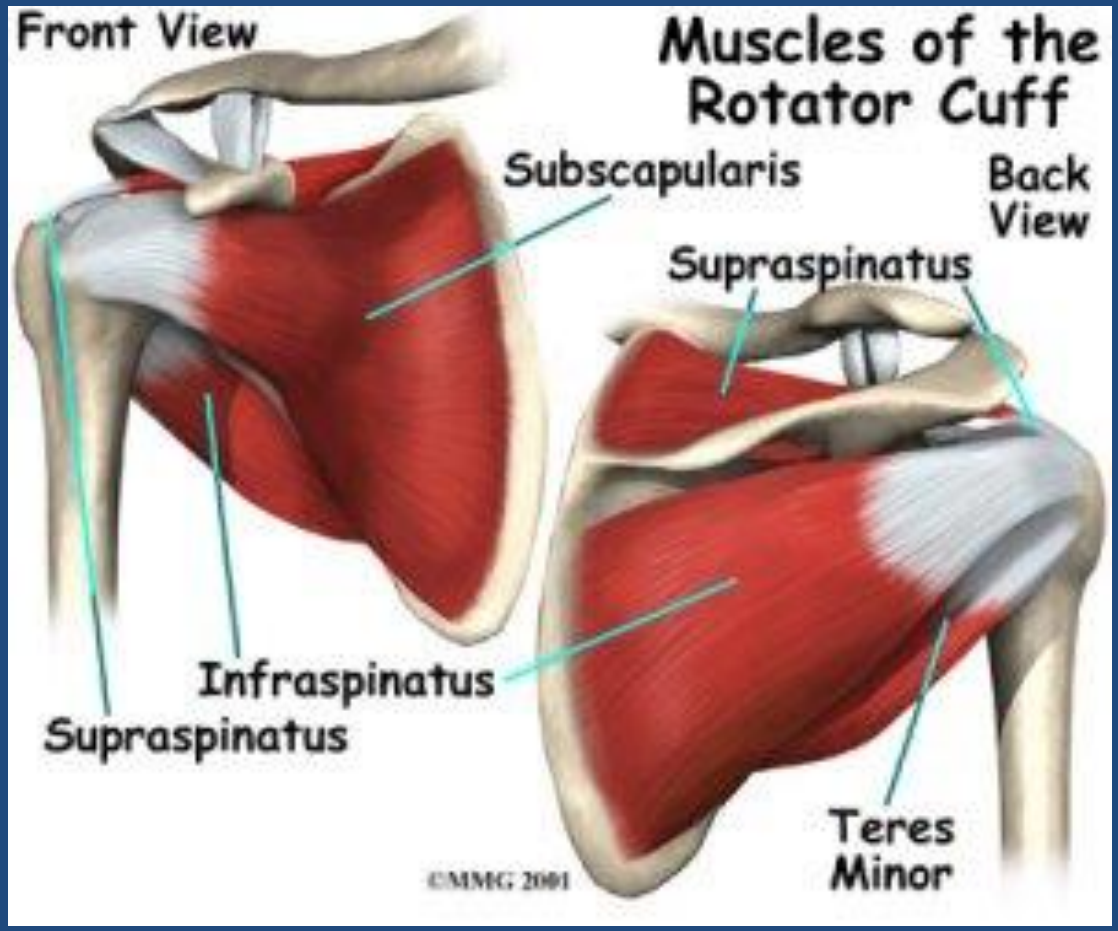
Exterior Shoulder Muscles

- Anterior
  - Deltoid
  - Pectoralis major
- Posterior
  - Deltoid
  - Trapezius
  - Latissimus

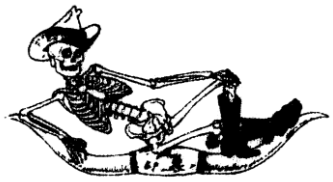


Rotator Cuff Muscles

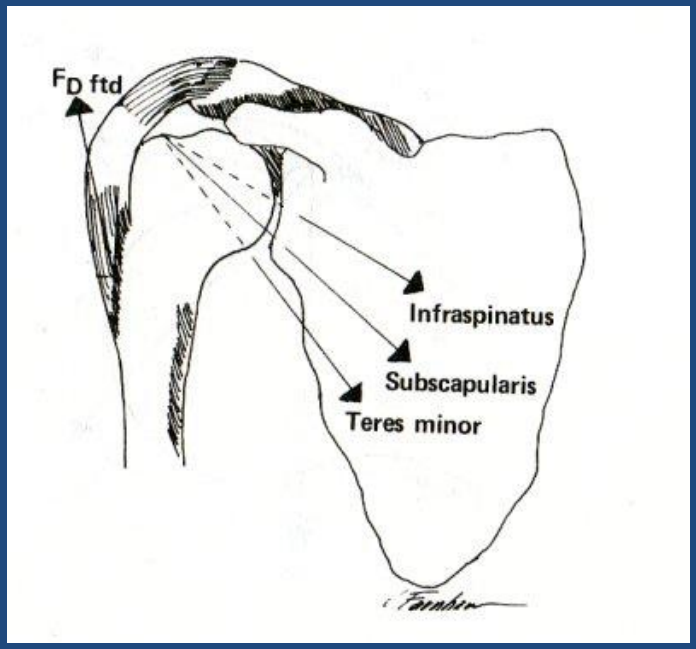
- Rotator cuff muscles
  - Subscapularis
  - Supraspinatus
  - Infraspinatus
  - Teres minor



RC Function

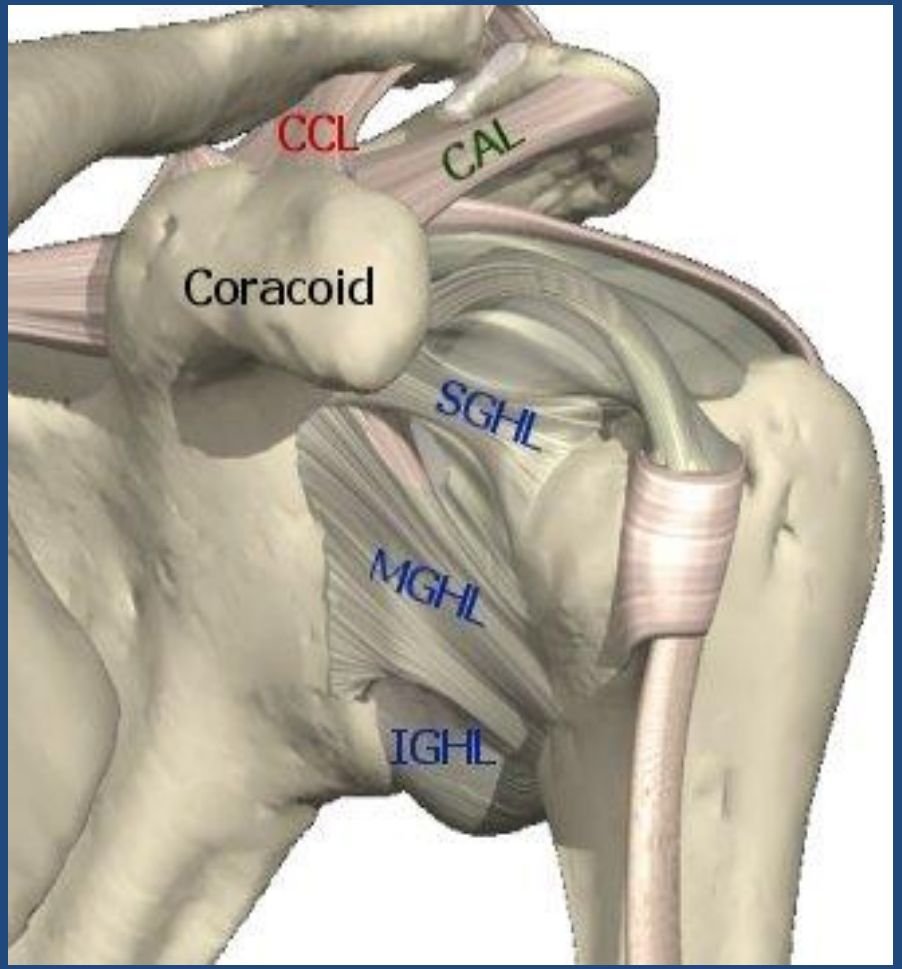


- Serves as a force couple with the deltoid
- Dynamic stabilization
- Keeps the humeral head centered within the glenoid during range of motion

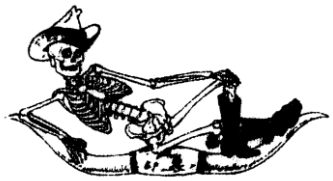


Anterior Shoulder Ligaments

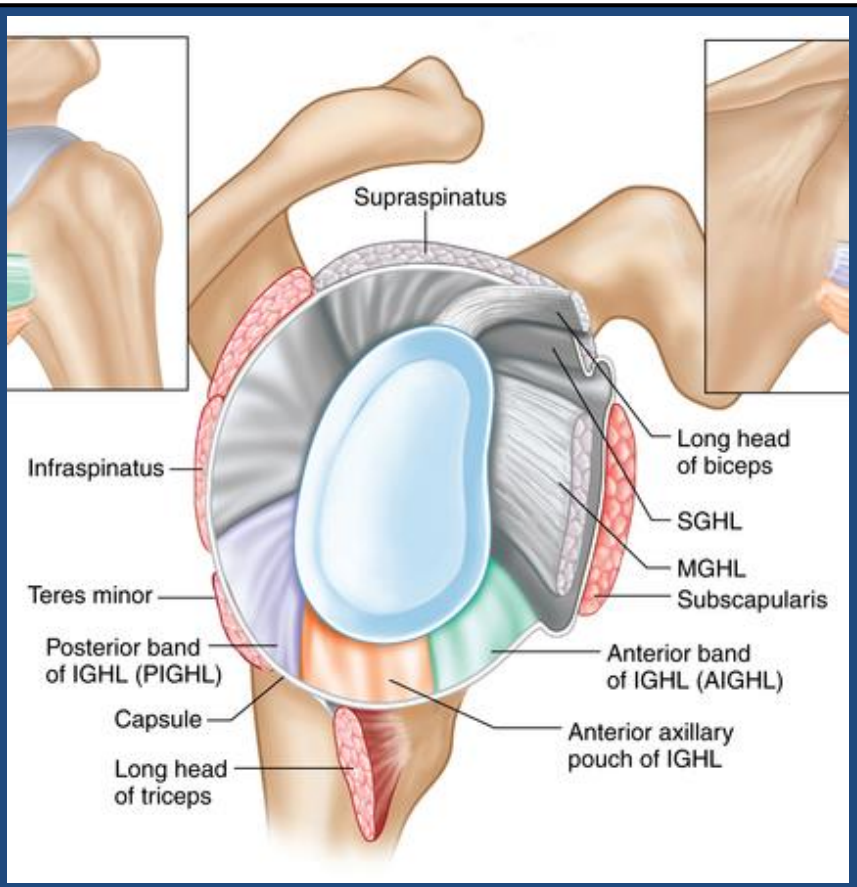
- Coraco-clavicular
  - Conoid
  - Trapezoid
- Coraco-acromial
- Coraco-humeral
- Gleno-humeral
  - Superior
  - Middle
  - Inferior



Glenohumeral Ligaments



- SGHL- resist inferior translation w/ arm at side
- MGHL- resist A/P translation with arm at 45/45
- IGHL- resist at 90/90
  - Anterior- resist ant/inf translation at 90 and ER
    - Bankart lesion
  - Posterior- resist posterior subluxation with flexion and IR



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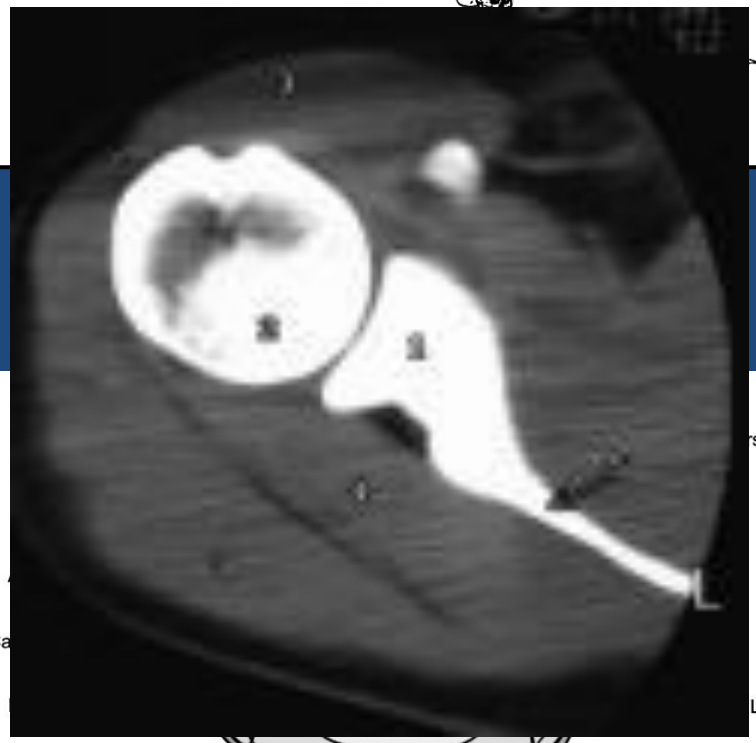
Shoulder Labrum

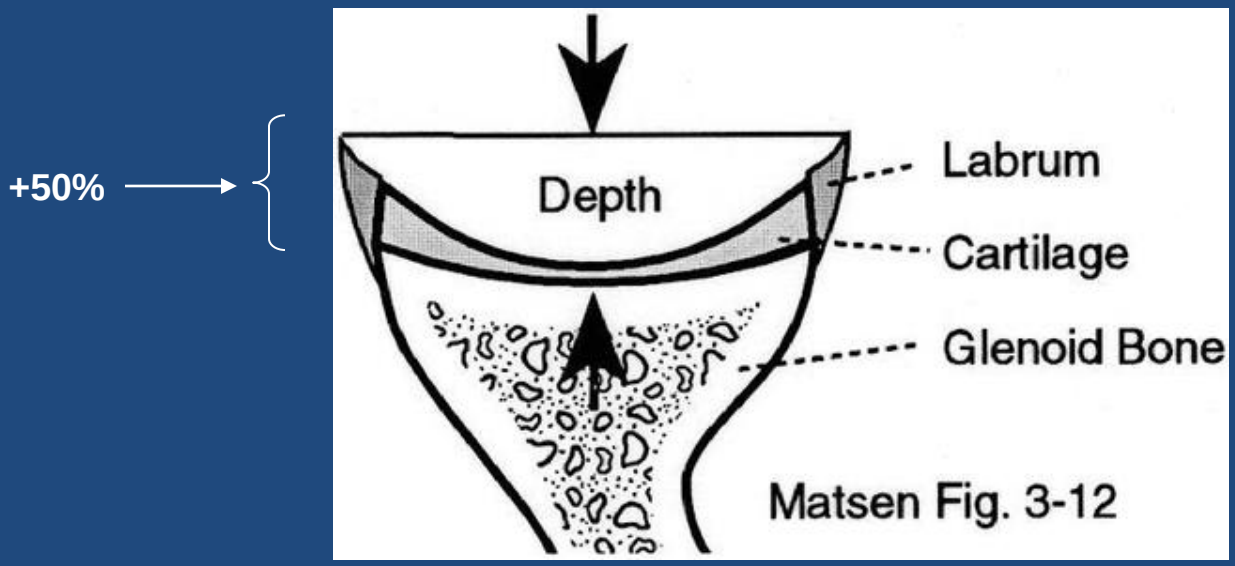
- Circumferential attachment to the glenoid
- 3 purposes of labrum
  - Increase glenoid surface contact area
  - Buttress
  - Attachment site for the GH ligaments
- Labrum keeps the “ball” on the “tee”

- Increases glenoid dimensions to 75% of humeral head vertically, 57% horizontally
- Contributes 20% to glenohumeral stability

- Inferior labrum = adherent
- Superior/anterosuperior = mobile
- Decreased vascularity anterosuperior labrum

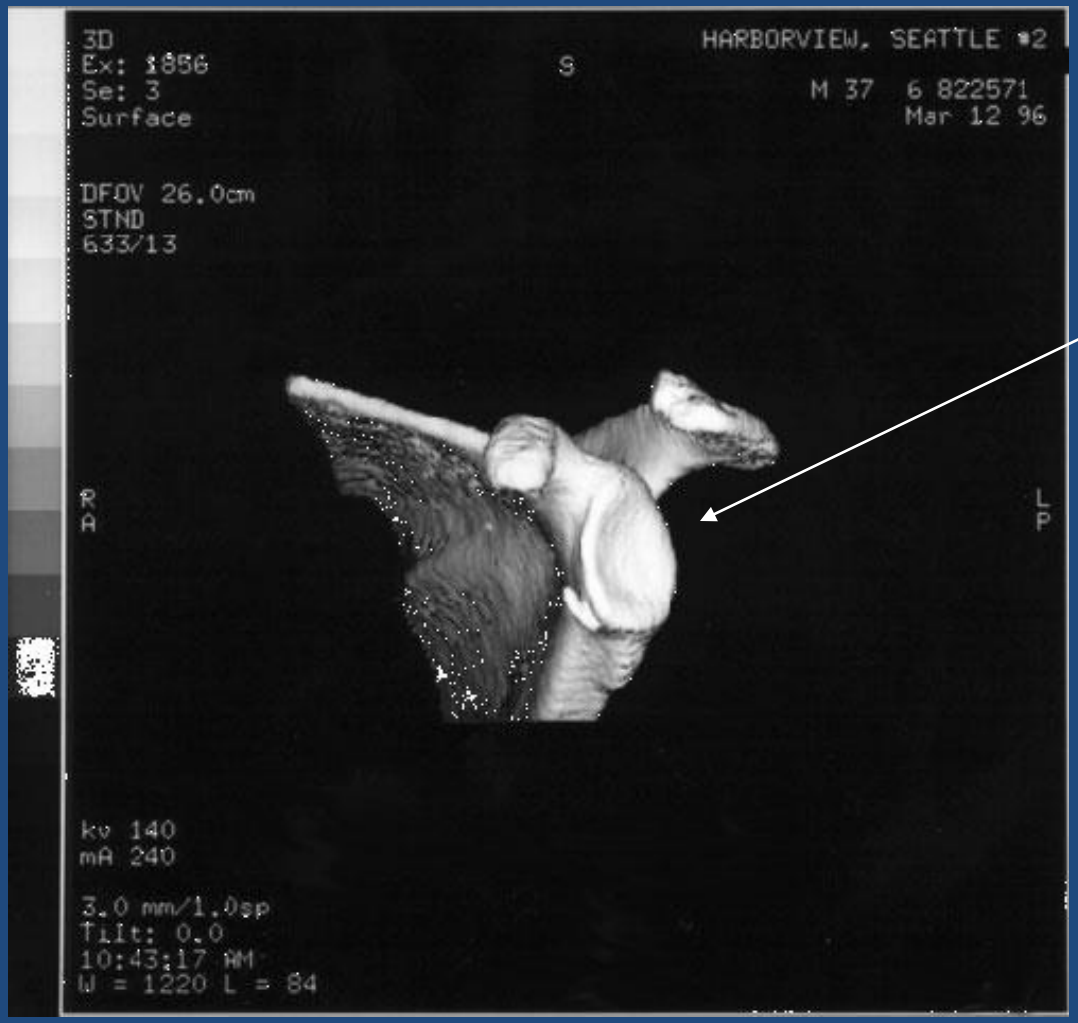


Concavity in the Glenoid



The intact Labrum increases the concavity of the glenoid 50%, thus increases the concavity compression element of glenohumeral stability

3-d CT of Glenoid



Glenoid—
Slightly concave

Evaluation of the shoulder

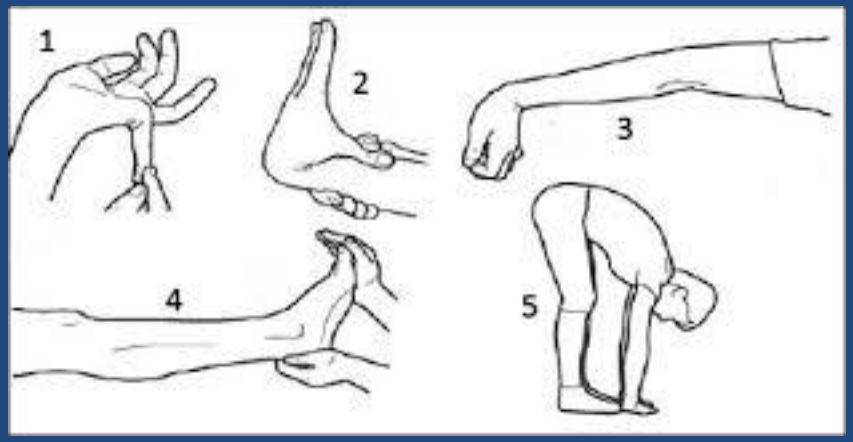
Standardized, systematic approach to the shoulder evaluation

- Adequate exposure
- Group your testing
- Compare to the contralateral side

- Take advantage of every opportunity you have to perform an EUA

Evaluation of the shoulder

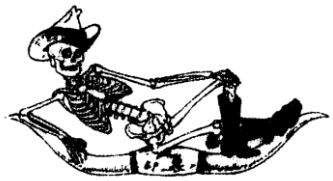
- History
  - Age
  - Gender
  - Trauma
  - Limitations
  - Instability
    - Other joints?? Think Beighton's
    - Voluntary subluxation?
  - Aggravating activities
  - Relieving activities
  - Assisted reductions
  - Treatment and work-up to date



Physical Examination of the Shoulder

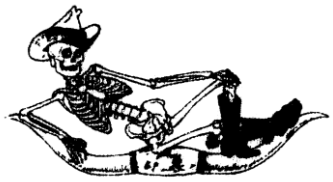
- Physical examination
  - Inspection/observation
  - Palpation
  - AROM/PROM
  - Strength testing
- Specific tests
- Do not forget the C-spine

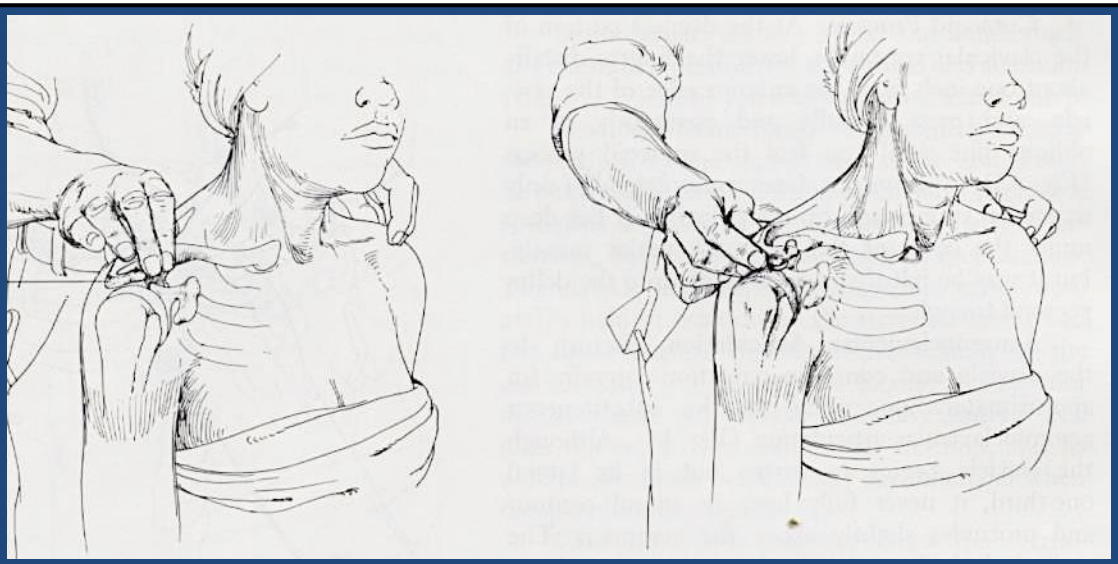
Inspection

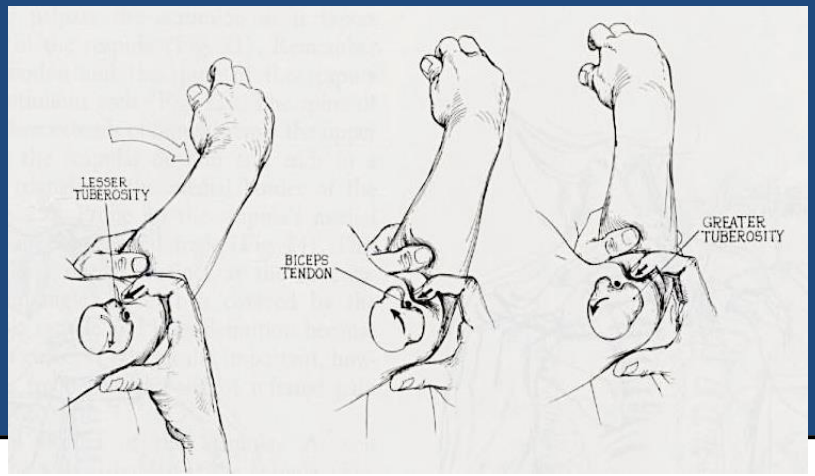


- View the shoulder from the front, back and side
- Look for atrophy, bony prominences, winging, asymmetry, bruising

Palpation







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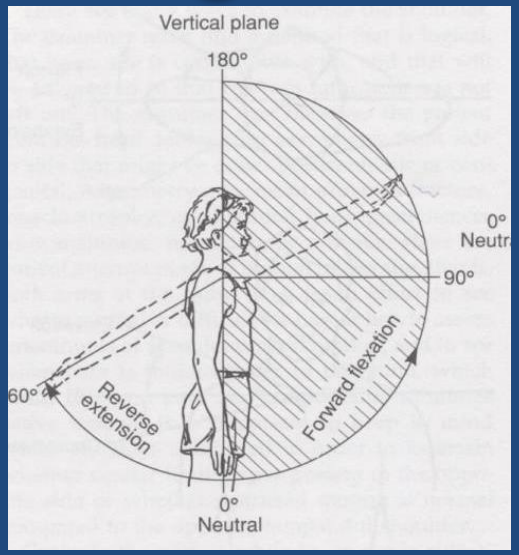
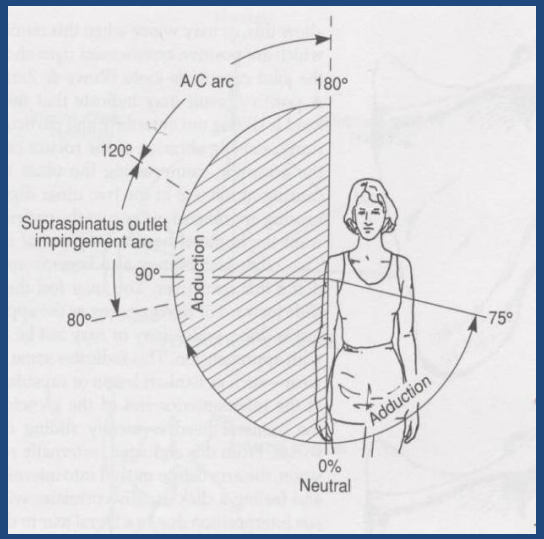
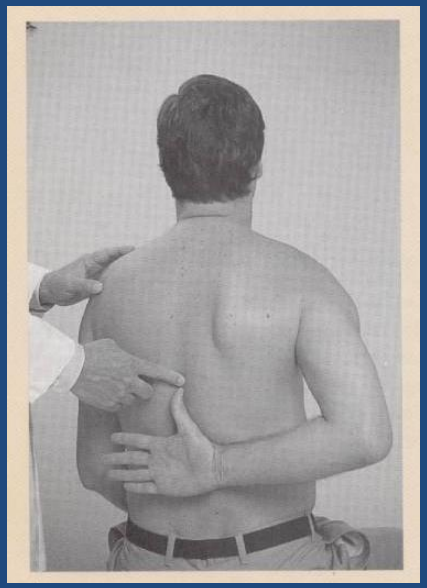
Shoulder Ranges of Motion

- Forward flexion
- Extension
- Abduction
- Adduction
- External rotation
- Internal rotation

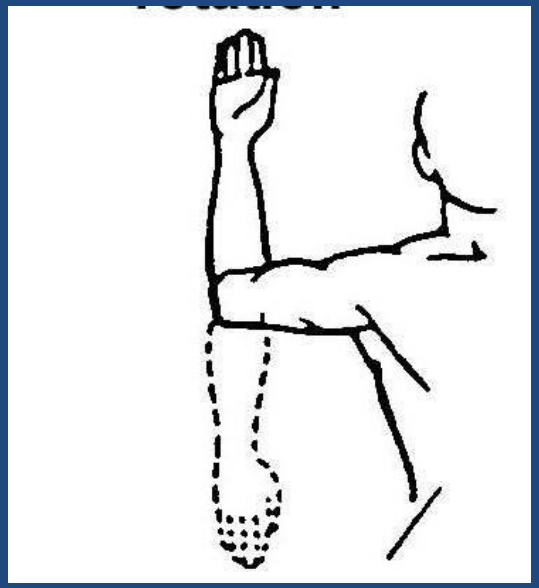




- Evaluate scapula-thoracic motion & scapular dyskinesis



- Check both AROM & PROM

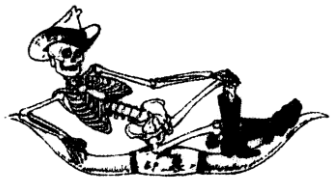


Special Instability Shoulder Tests

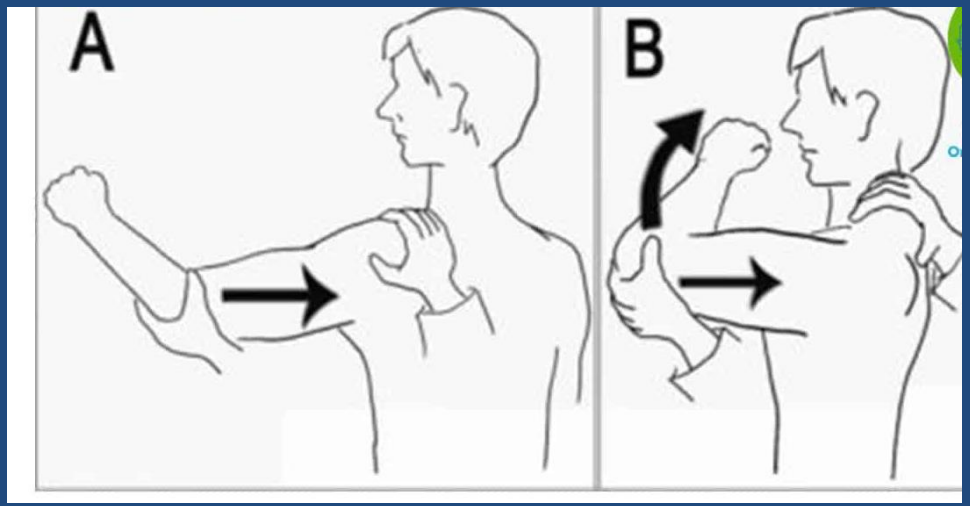
Anterior Gleno-humeral Instability – Apprehension/Relocation

- Can be tested either seated, standing, or supine
- Tested at 90 degrees of abduction with ER
- Relocation test = posteriorly directed force reduces the apprehension

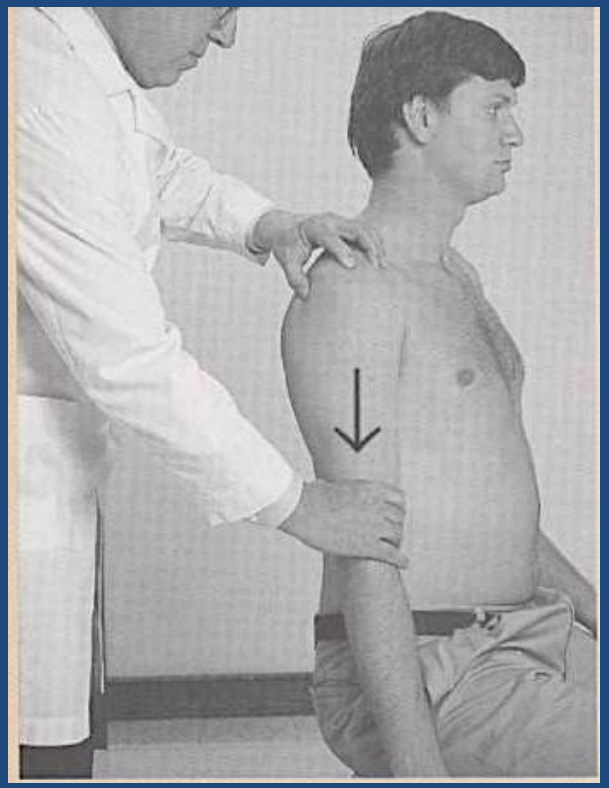
Posterior Gleno-humeral Instability

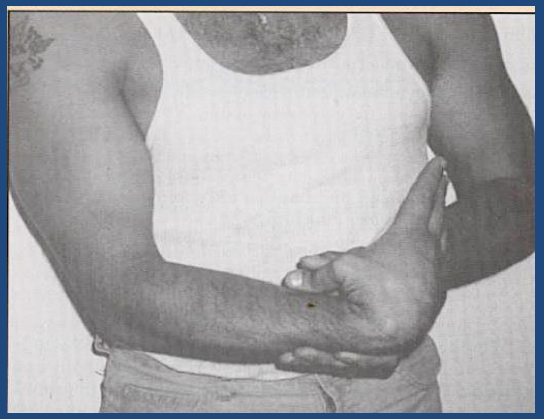


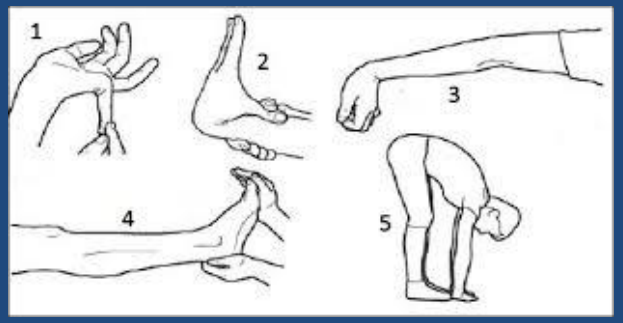
– Posterior Apprehension/Jerk Test



Sulcus Sign—
Multi-Directional Instability (MDI)







O’Brien’s test— FF/Crossarm Adduction/IR = SLAP tear

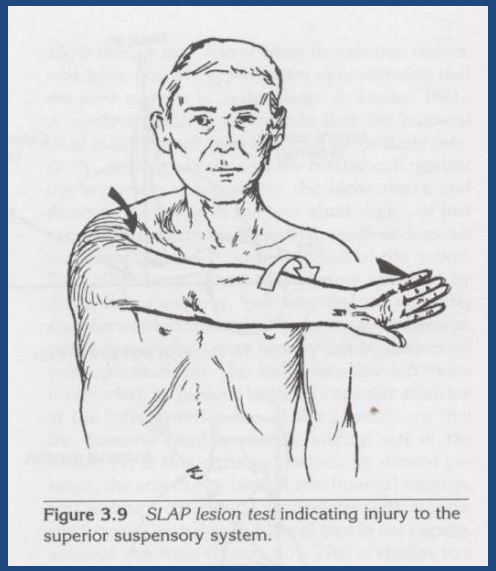
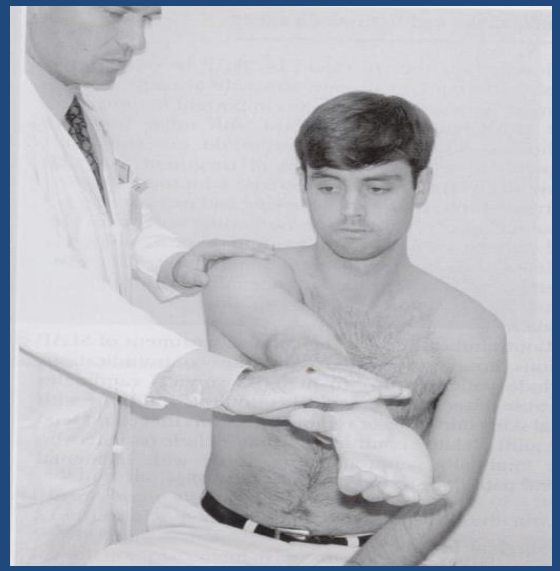


Figure 3.9 *SLAP lesion test* indicating injury to the superior suspensory system.

Pain

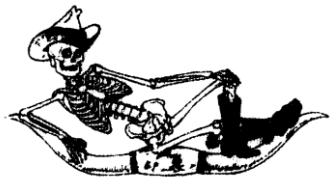


No pain

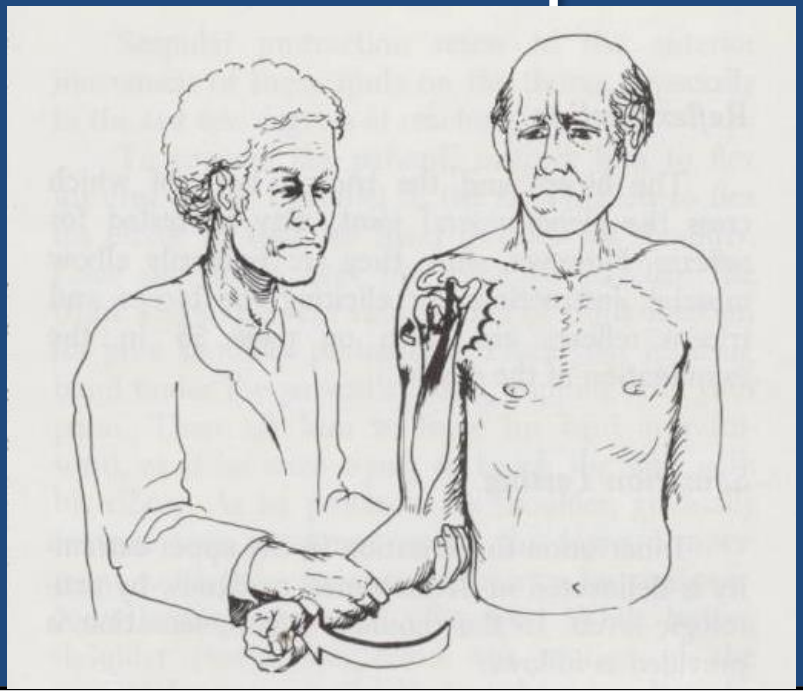
Speed's test— FF/Abduction/Supination = SLAP tear/Bicipital tendonitis

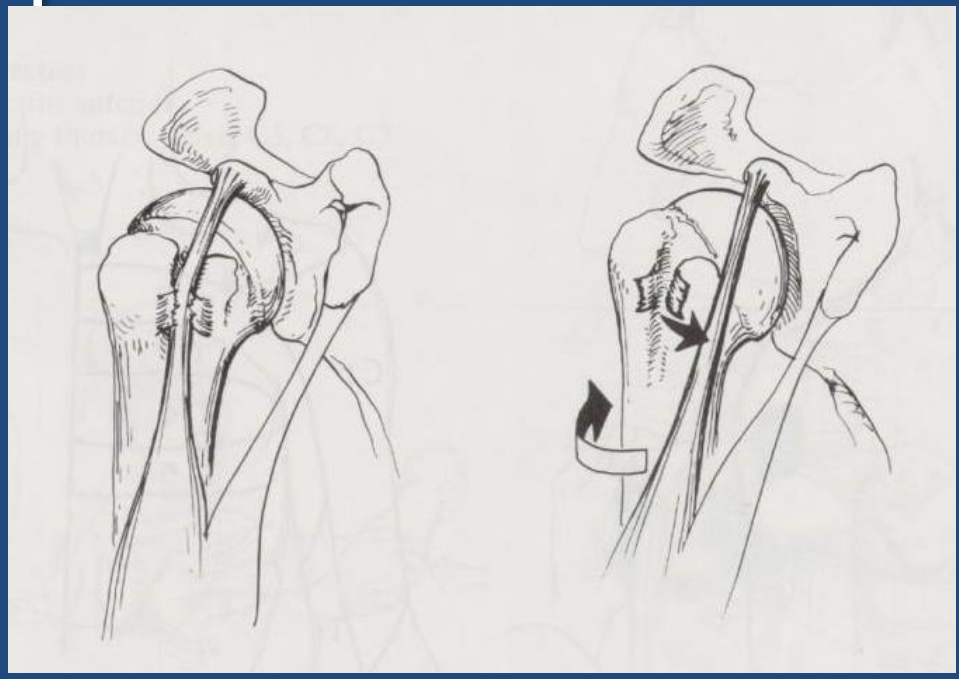
Pain

Yerguson's Test—



Bicipital groove pain/biceps subluxation with arm supination/pronation





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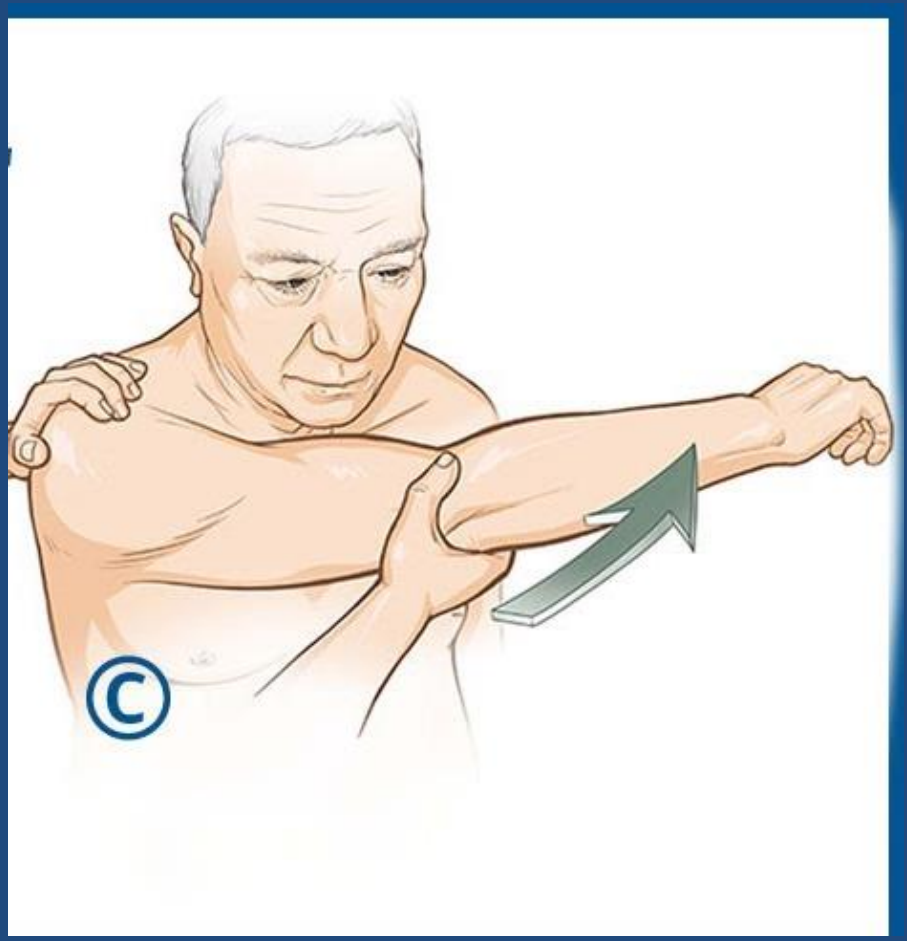
Crossarm Adduction Test = AC joint



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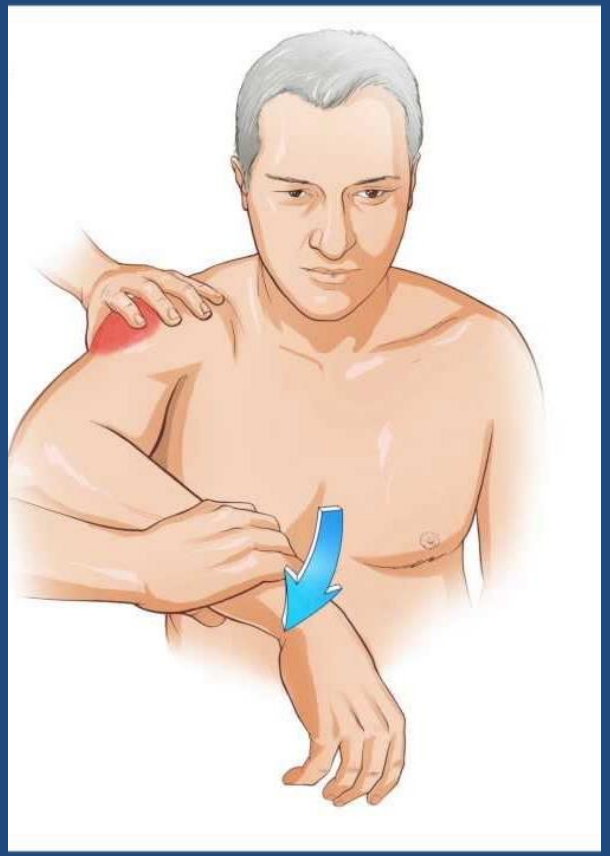
Special Rotator Cuff Shoulder Tests

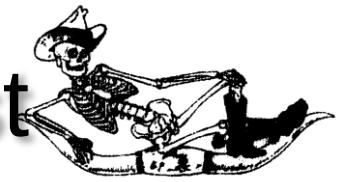
Impingement Tests = Subacromial bursitis, RC tendonitis

Neers

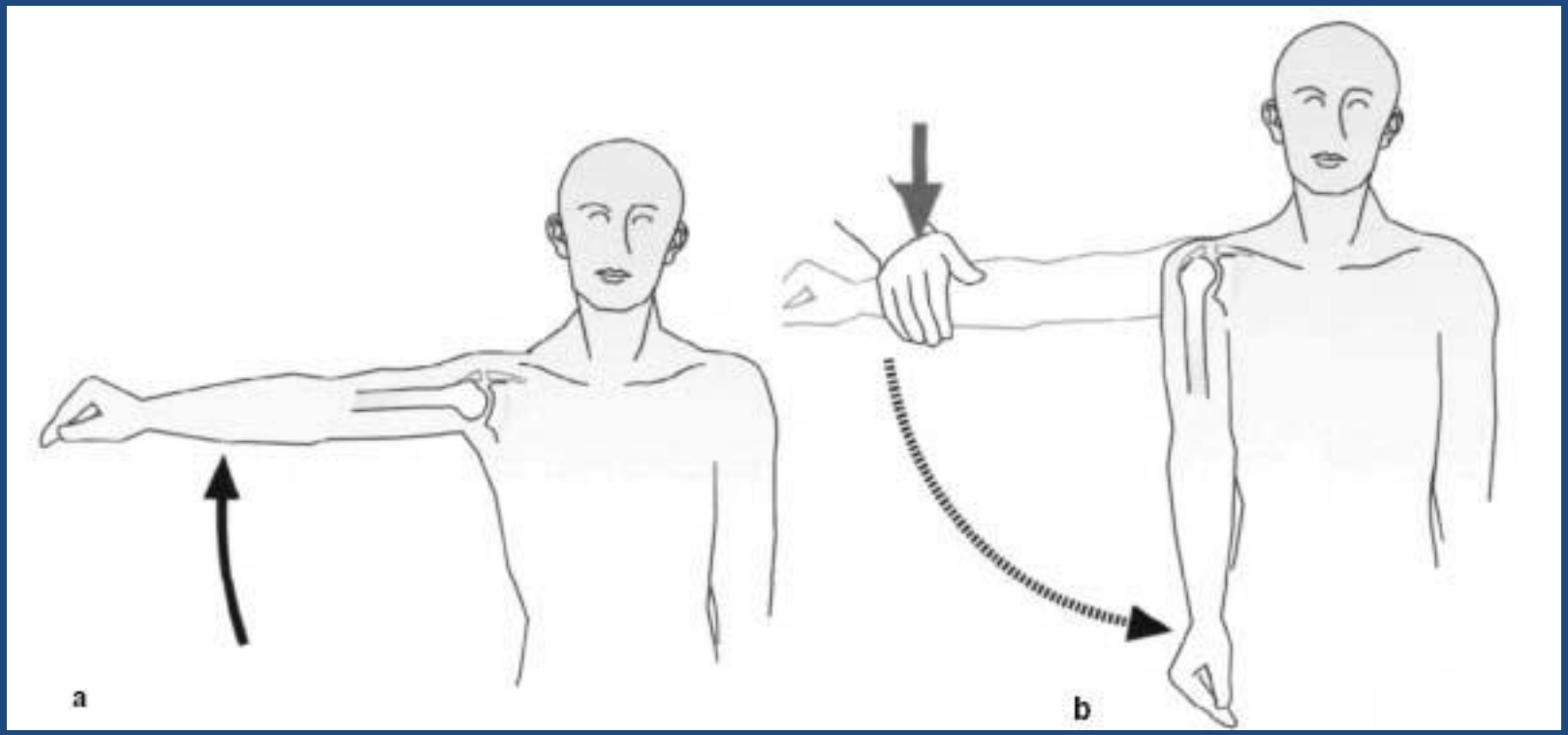


Hawkins

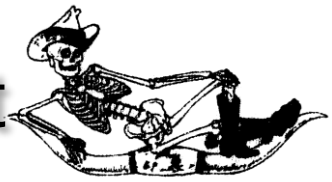
Rotator Cuff Testing –Drop Arm Test



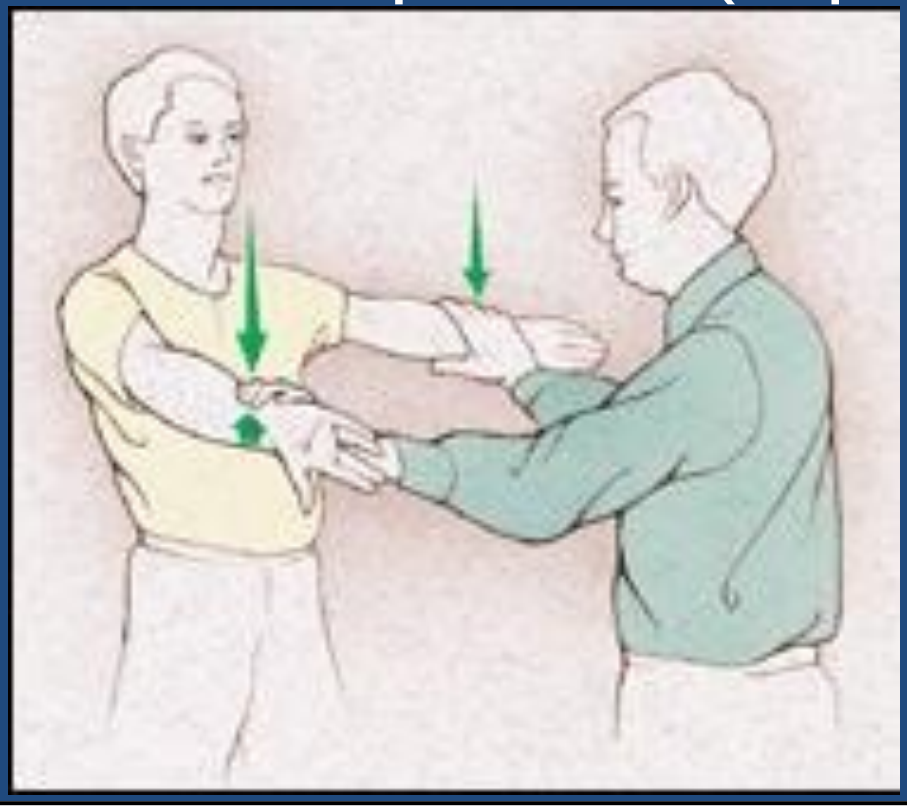
- Unable to lower the arm in a controlled fashion (supraspinatus)



Rotator Cuff Testing –Jobe Empty Can Test



- Unable to resist a downward pressure with the arms in an abducted position (supraspinatus)



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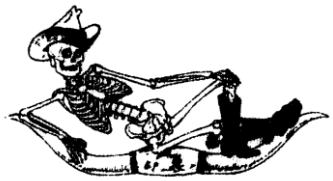
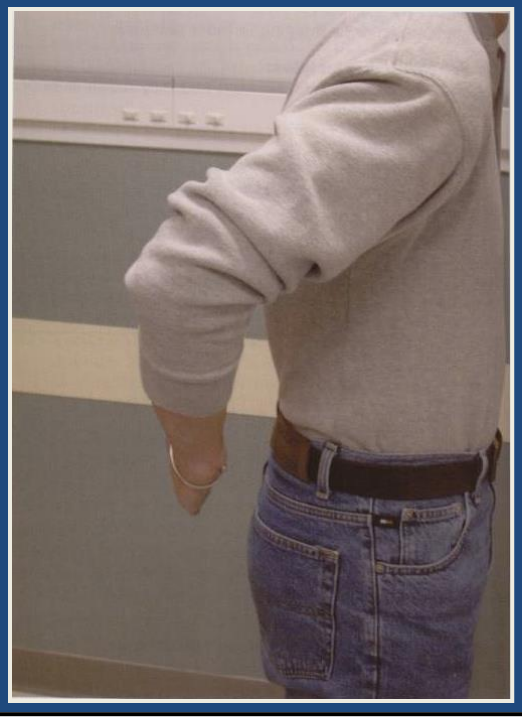
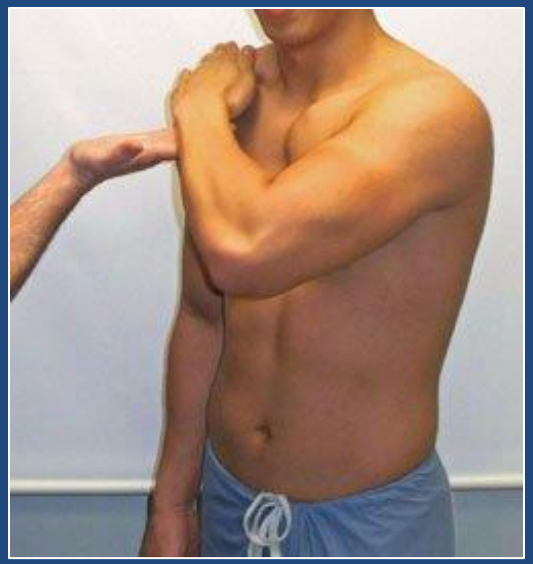
Rotator Cuff Testing

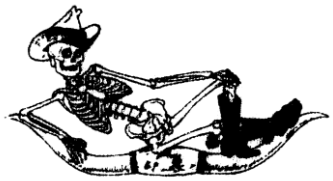


- Subscapularis
  - Belly press test
  - Lift-off test
  - Bear hug test





Rotator Cuff Testing



- Teres Minor – Hornblower's test

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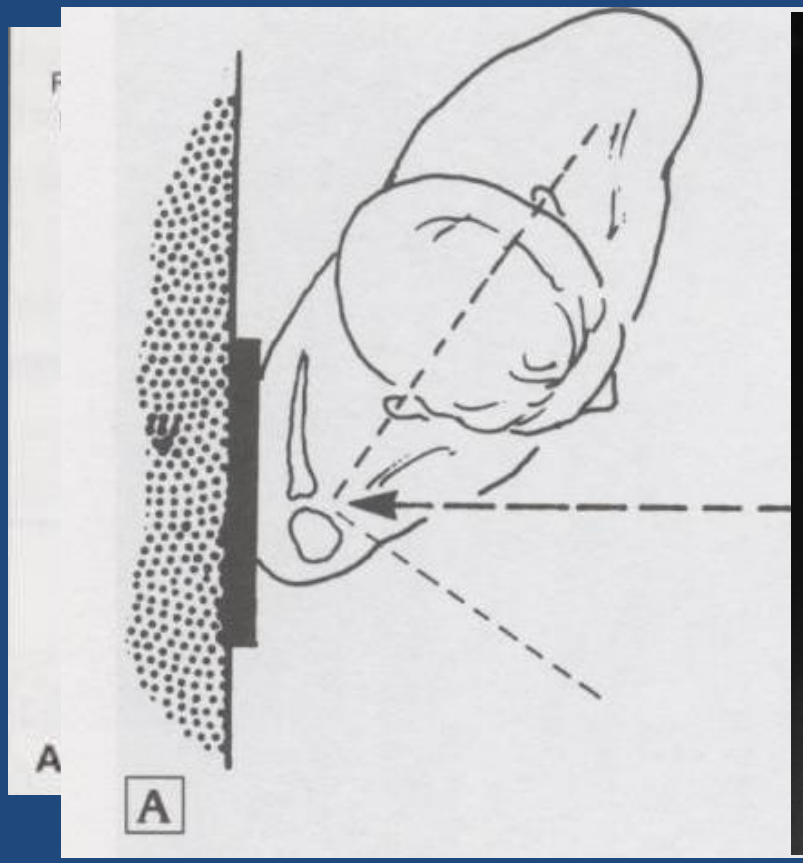
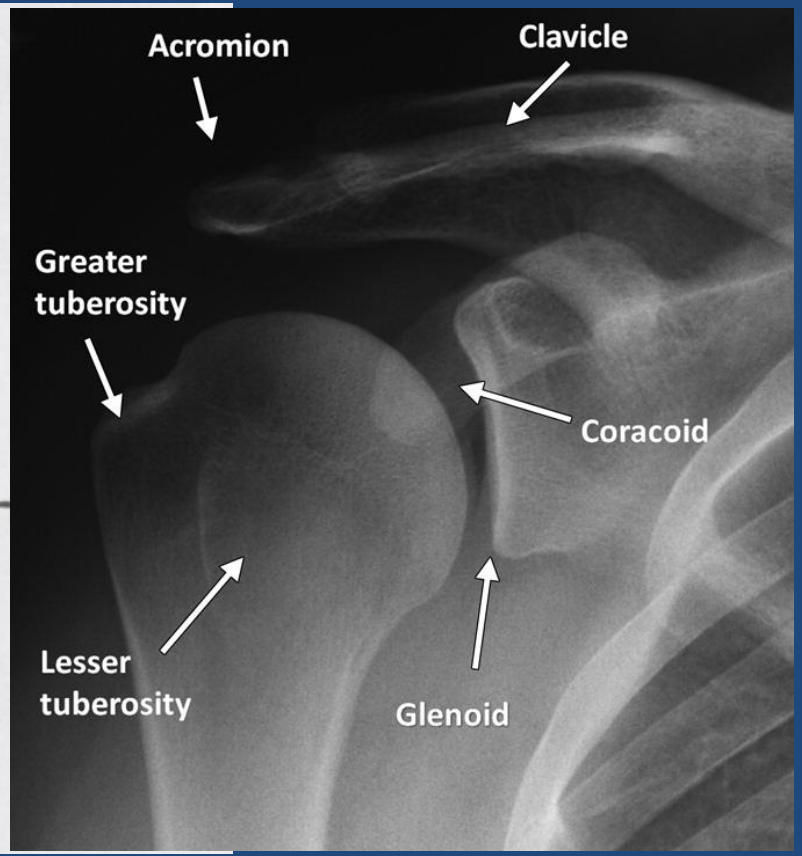
Radiographic Evaluation of the Shoulder

- Radiographic evaluation
  - Minimum 3 orthogonal views

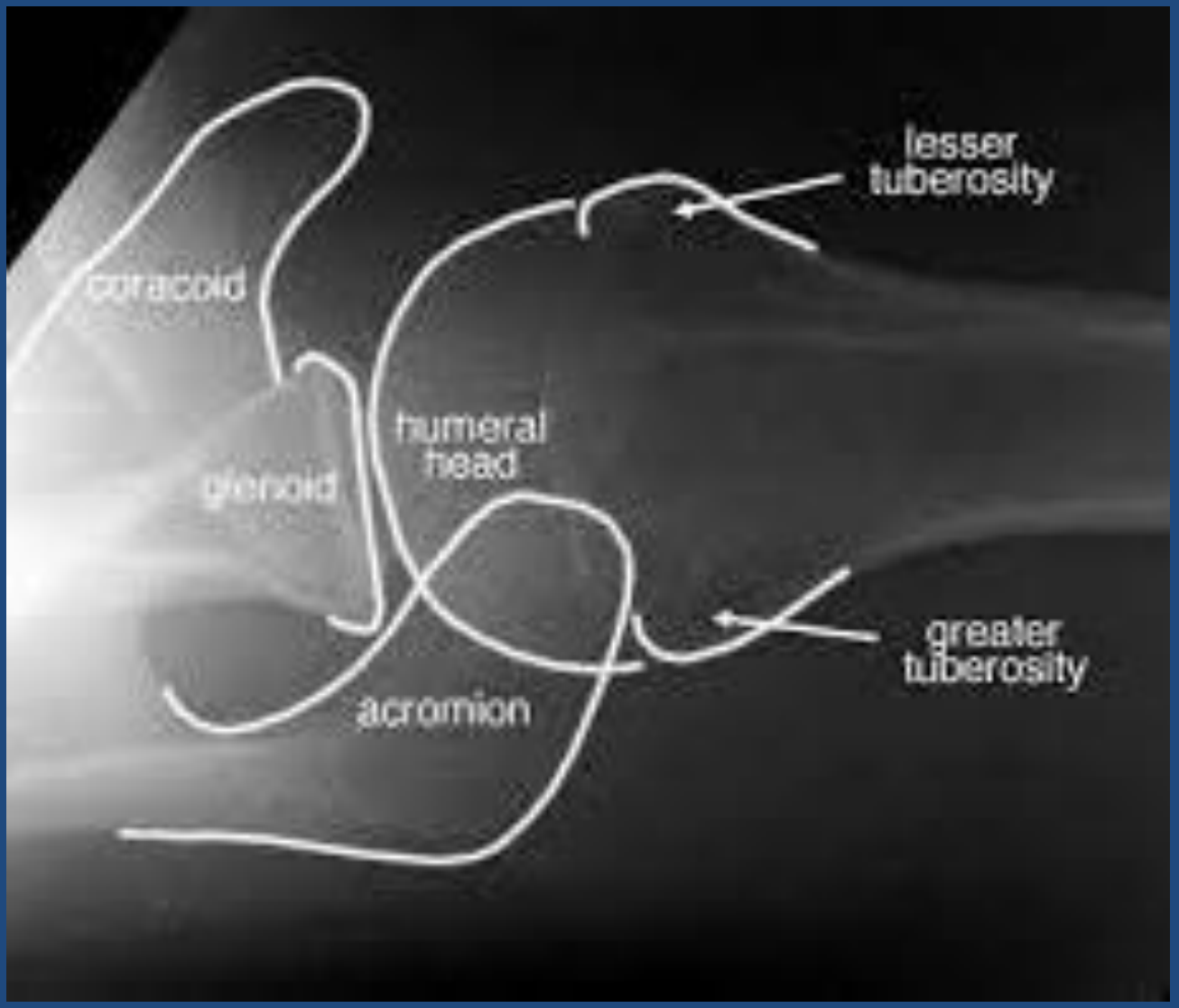
- AP



- True AP (Grashey view)



Radiographs—axillary



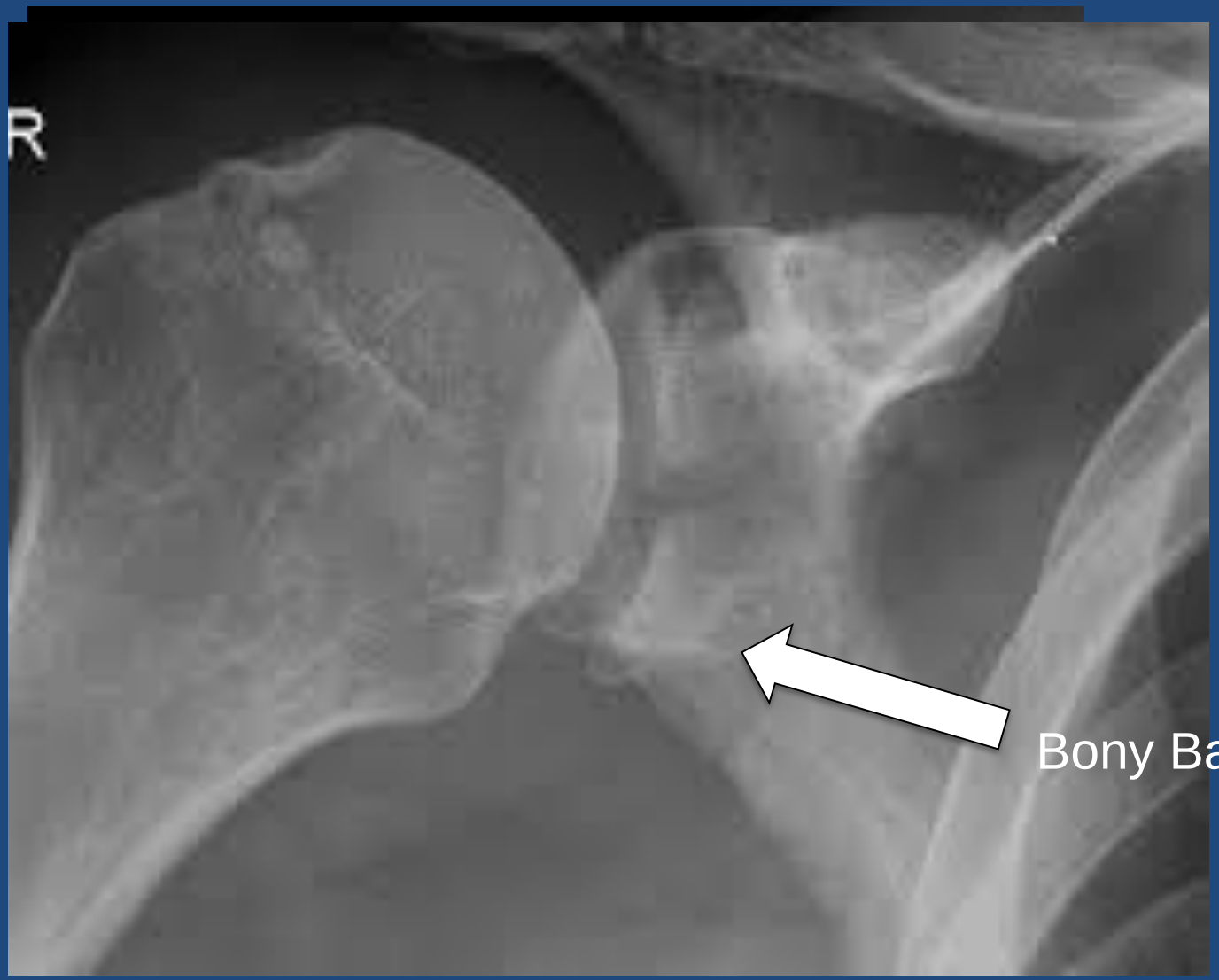
Radiographic Evaluation of the Shoulder

- Minimum 3 [illegible]illary, outlet)
- Supraspina[illegible]teral)

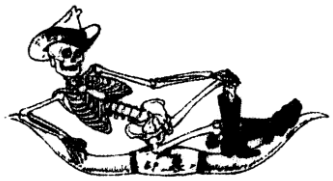
Radiographs—dislocations

Hill-Sach's lesion

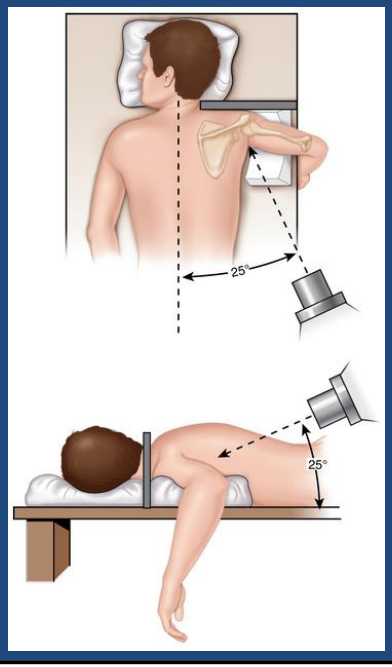
Radiographs—dislocations (cont)



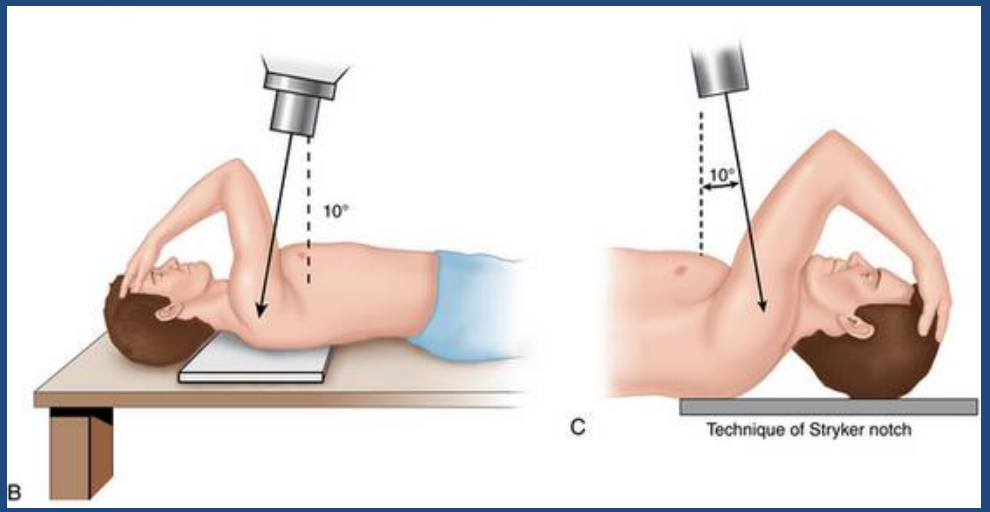
Additional Radiographic Views



- West Point View
  - Modified axial view
  - To assess the anterior-inferior glenoid rim



- Stryker Notch View
  - Modified AP
  - To assess the Hill-Sachs of the posterior humerus



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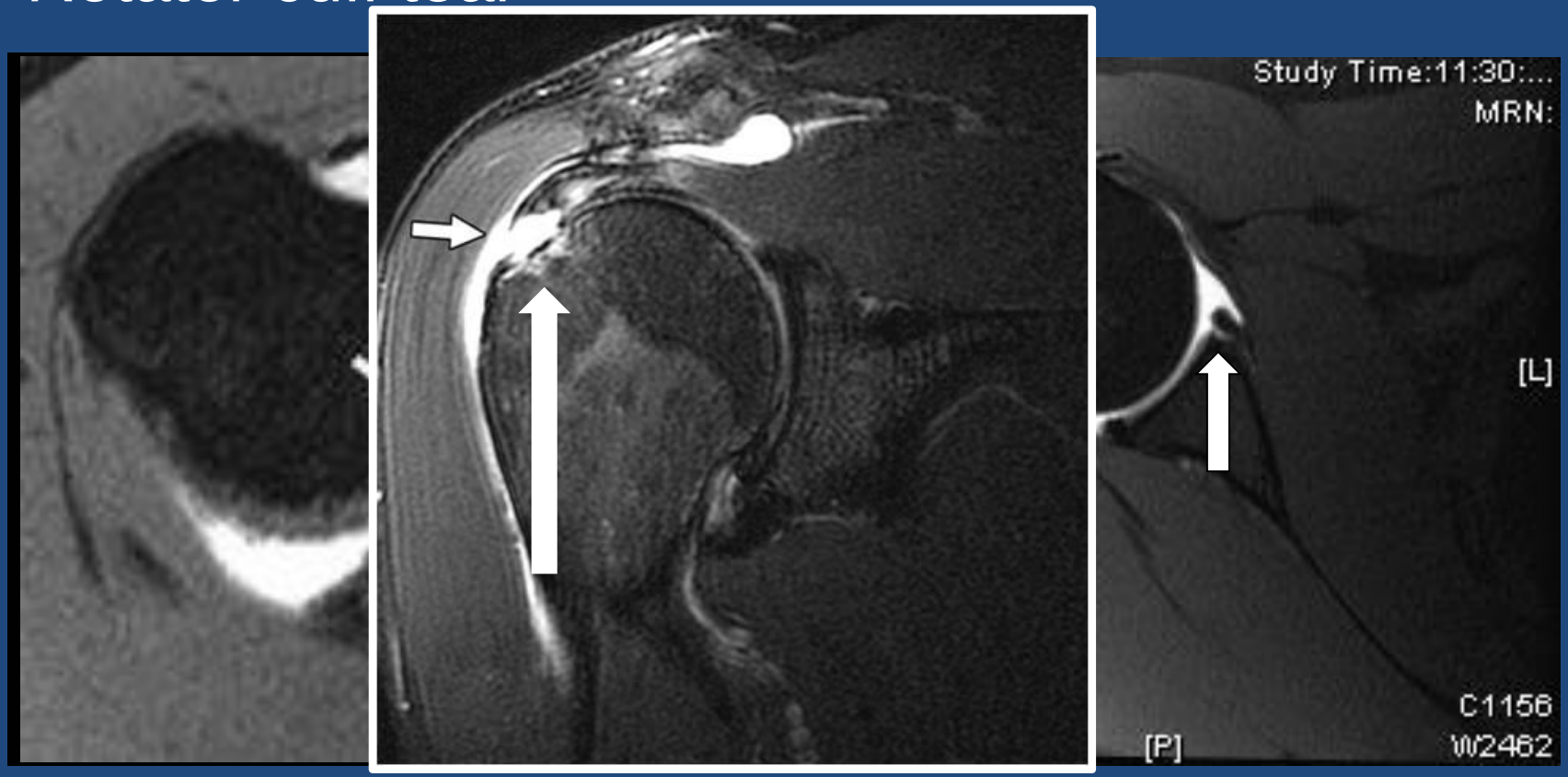
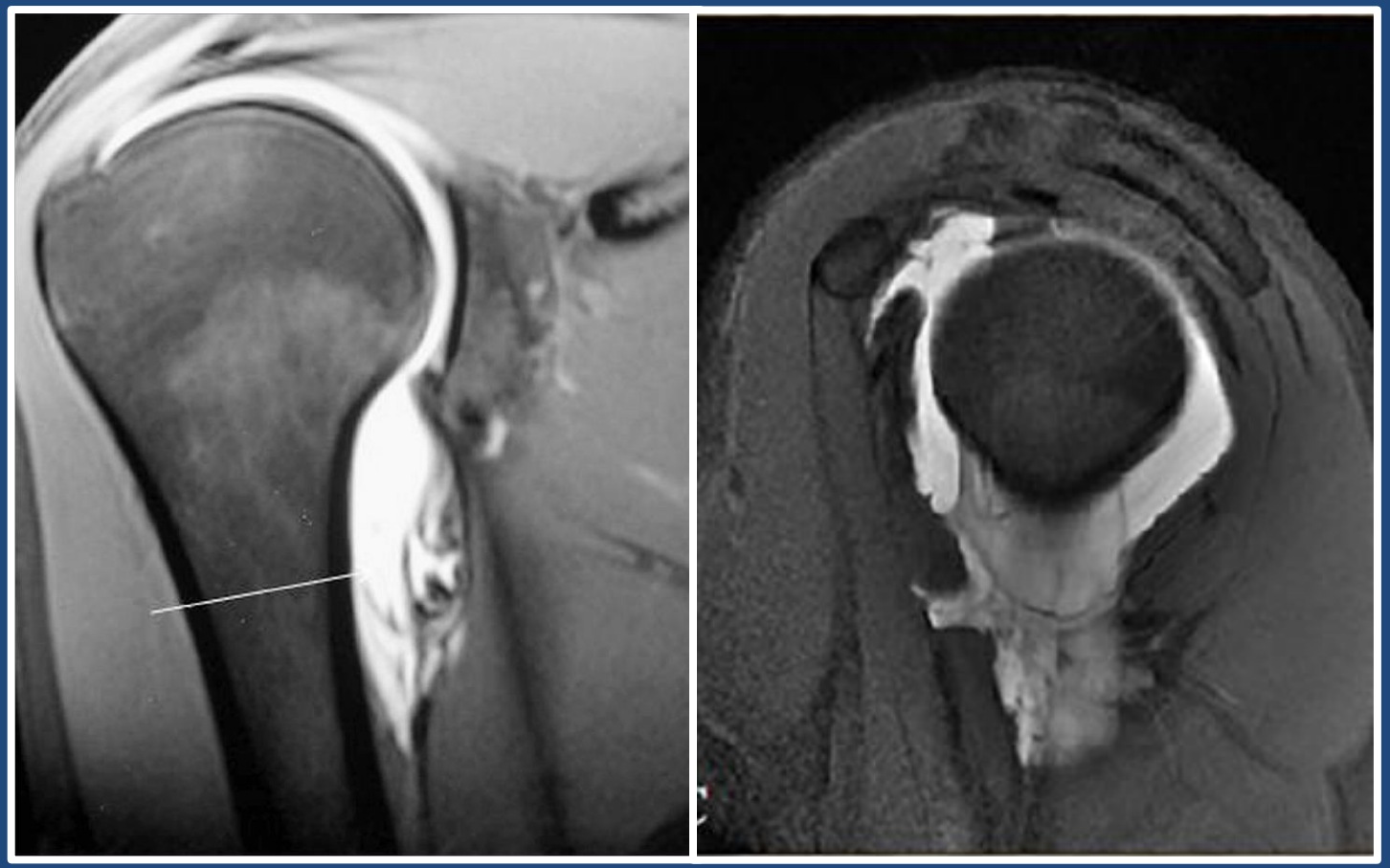
MRI/MRA of the shoulder

- Define soft tissue anatomy and pathology
- Bankart lesion—anterior-inferior labral detachment
- Rotator cuff tear



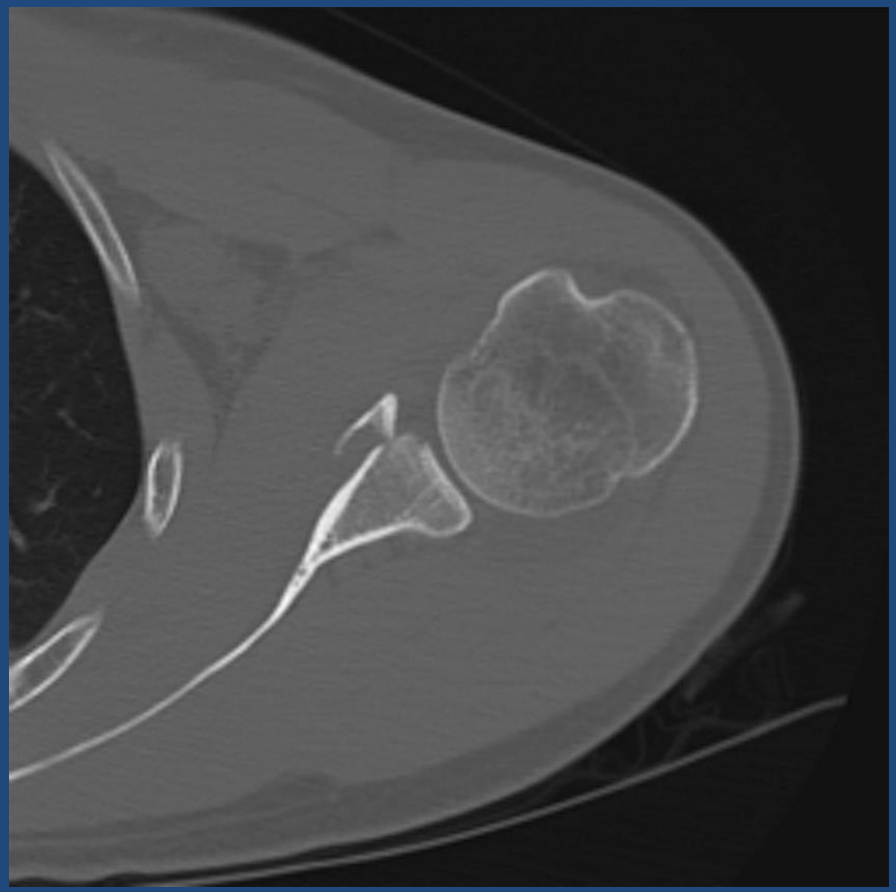
MRI/MRA of the shoulder

- HAGL—Humeral avulsion of the gleno-humeral AIGL
- Estimated in 7-9% of instability patients



CT Scan/3-D CT

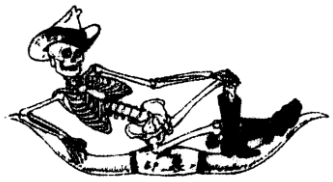
- Define bony anatomy
- Characterize fractures and bone loss



CT Scan/3-D CT – define bony anatomy

- Bony Bankart – fracture of the anterior – inferior glenoid associated with a shoulder dislocation

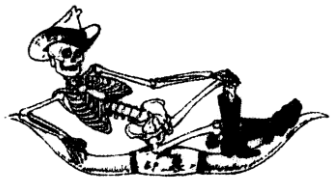
Glenohumeral Instability



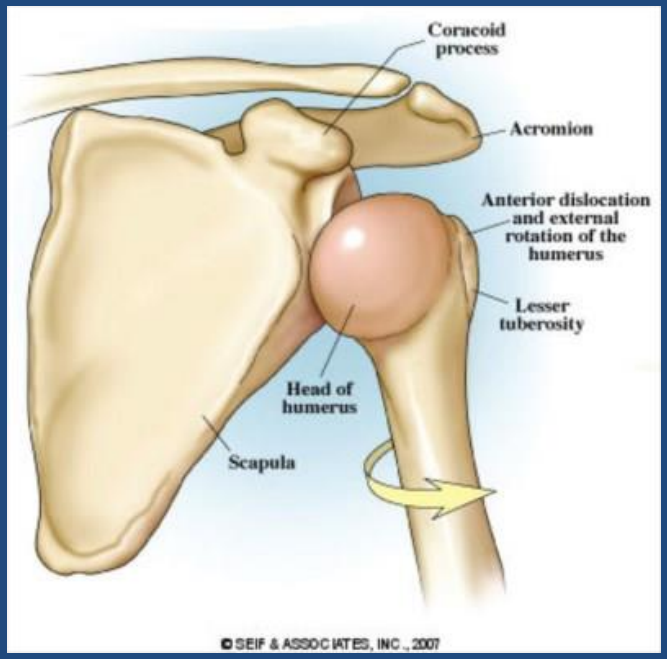
- Definition – inability to maintain the humeral head in the glenoid fossa
- Most unstable joint in the body
  - No bony stability
  - Humeral head is 3x larger than the glenoid fossa

- TUBS
  - Traumatic, unidirectional, Bankart, surgery
- AMBRII
  - Atraumatic, multidirectional, bilateral, rehab, inferior capsular shift, rotator interval

Anterior Glenohumeral Instability



- >95% of glenohumeral instability
  - Mechanism: anteriorly directed force with the shoulder abducted and externally rotated
- 3% posterior instability
  - Seizures, shock, fall onto flexed & adducted arm
- Can cause injury to capsule, labrum, IGHL, rotator cuff, glenoid, humeral head
- Predominately young males



Anterior Glenohumeral Instability Pathoanatomy

- Bankart lesion – not all labral lesions as the sam
  - Detachment of the anterior-inferior labrum and IGHL
  - Present in 90% of all traumatic dislocations
  - Present 100% of the time in pts <30 yo
- Bony Bankart
  - Anterior-inferior glenoid bone avulsed with labrum
- HAGL lesion
  - 7-9% of anterior instability patients
- Hill Sachs Lesion
  - Humeral head impacts anterior glenoid rim, causing i
  - Occurs in 80% of anterior dislocations

- Associated Injuries:
  - RC tear:
    - 30% in pts > 40 yo
    - 80% in pts > 60 yo
  - Greater tuberosity fracture (increases w/ age)
  - Axillary nerve injury
    - Est. 16-48%
    - Highest in patients > 60 yo

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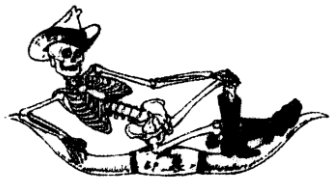
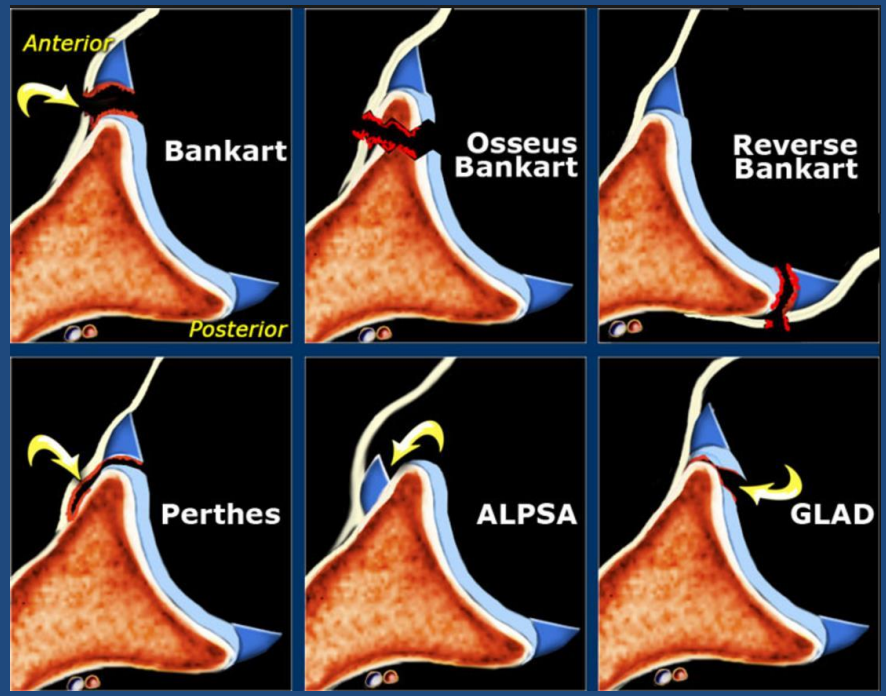
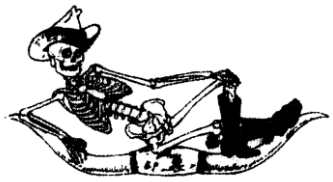
Labral Soft Tissue Injury—Alphabet Soup



- Bankart Lesion/Bony Bankart
- HAGL
  - Humeral Avulsion of the Glenohumeral Ligament
  - High rate of recurrence if not repaired
  - Requires open repair
- PERTHES
  - Anterior inferior labrum still attached to the glenoid periosteum
- ALPSA
  - Anterior Labral Periosteal Sleeve Avulsion
  - Torn labrum that heals medially along glenoid neck
- GLAD
  - Glenoid Labral Articular Defect
  - Articular cartilage sheared off with the labrum

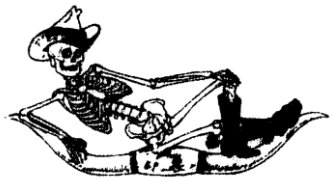


Anterior Glenohumeral Instability



- Treatment Choices
  - Non-operative
    - PT, rehab, activity modification
- Rowe, JBJS, 1957
  - 324 young patients with an anterior dislocation
    - 94% recurrence if <20 yo
    - 62% recurrence if <30 yo
    - 14% recurrence if <40 yo
- Burkhead & Rockwood (textbook)
  - 40 patients with an acute dislocation/vigorous rehab
  - 16% good/excellent result (1 in 6)

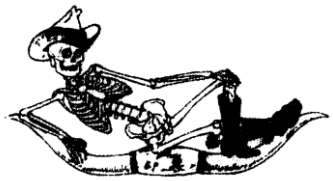
Anterior Glenohumeral Instability



- Non-operative Treatment in ‘young athletes’
- Overall, ~80% recurrence rate
  - Non-operative treatment is unacceptable

- Haelen, J Arch Orthopaedic Trauma Surgery, 1990
- Arciero, Arthroscopy, 1995
- DeBerardino, JSOA, 1996
- Wheeler, Arthroscopy, 1998
- Hovelius, J Orthopaedic Science, 1999
- Kirkby Arthroscopy, 1999
- Deny, Injury, 2002

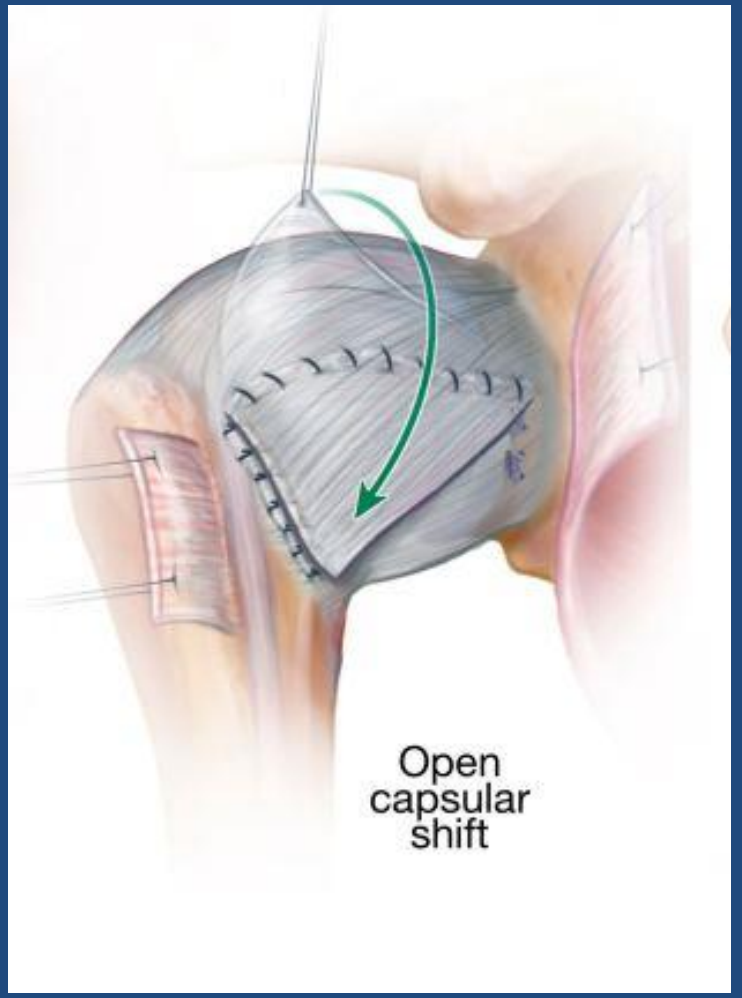
Open Bankart Reconstruction/ Capsular Shift



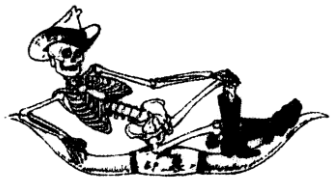
- Delto-pectoral split
- Subscapularis tenotomy
- Direct repair of labrum (Bankart lesion)
- Open capsular shift
- Repair Subscapularis tenotomy

- Multiple authors (Steinbeck 1998, Field 1999, Cole 1999, Hayes 1999)
  - 90-95% good – excellent results
  - <10% recurrent instability

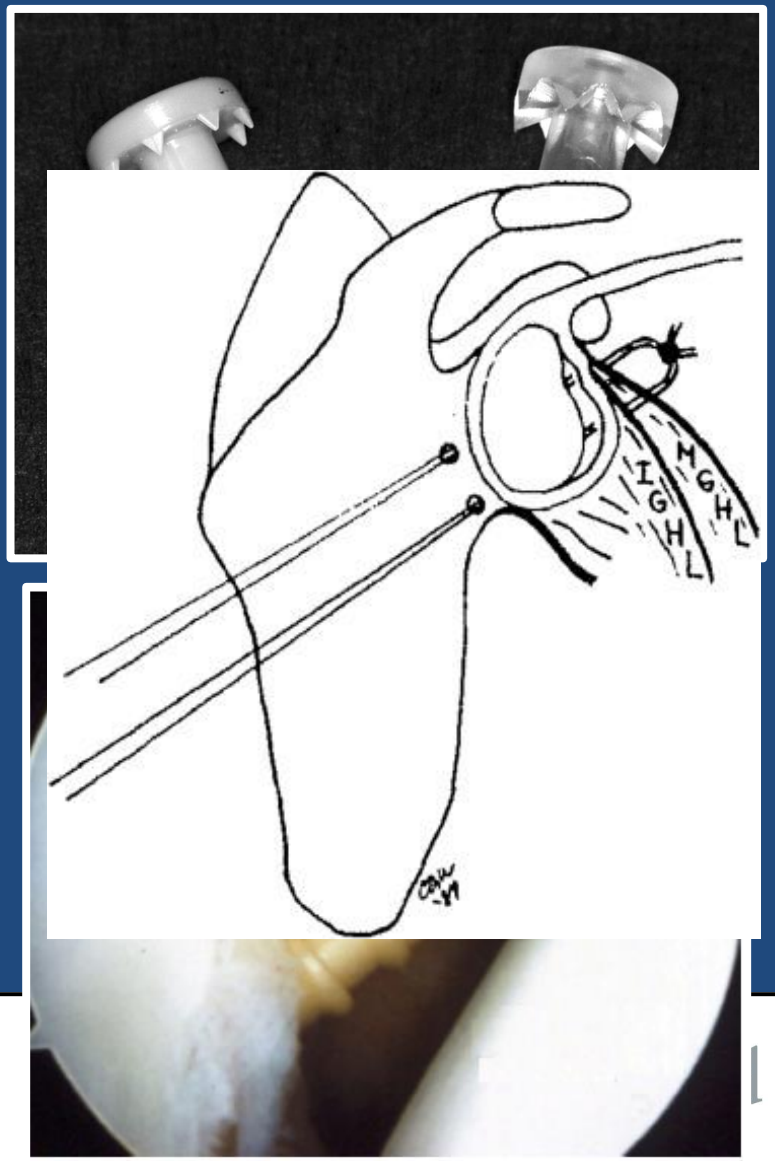
- The ‘GOLD” standard



Early Arthroscopic Reconstruction



- Multiple techniques
  - Arthroscopic staples
  - Arthroscopic tacks
  - Transglenoid suturing
- Multiple authors
  - Up to 20% recurrent instability



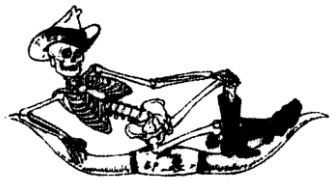
Early Arthroscopic Bankart vs. Non-op

- Arciero, AJSM, 1994
  - 36 patients, 1st dislocation, 32 month f/u
  - 15 non-op
    - 80% recurrent instability
  - 21 arthroscopic transglenoid suturing
    - 14% recurrent dislocation

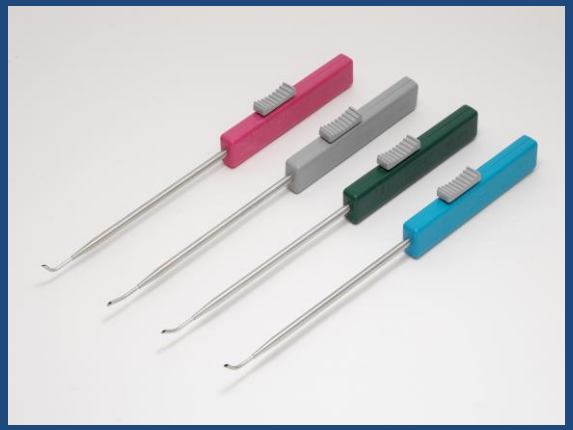
- Bottoni, AJSM, 2002
  - 24 patients, 1st dislocation, 36 month f/u
  - 14 non-op
    - 75% recurrent instability
  - 10 arthroscopic Bankart
    - 1 patient had post-op recurrent dislocation

- "Arthroscopic repair is inferior to open repair'

Arthroscopic Advances



- New instruments/new implants



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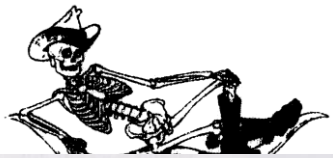
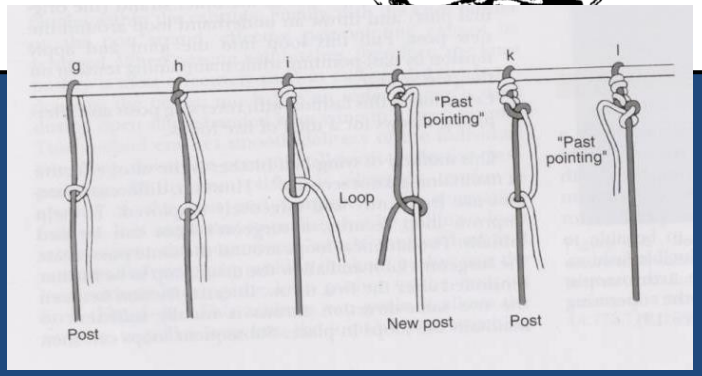
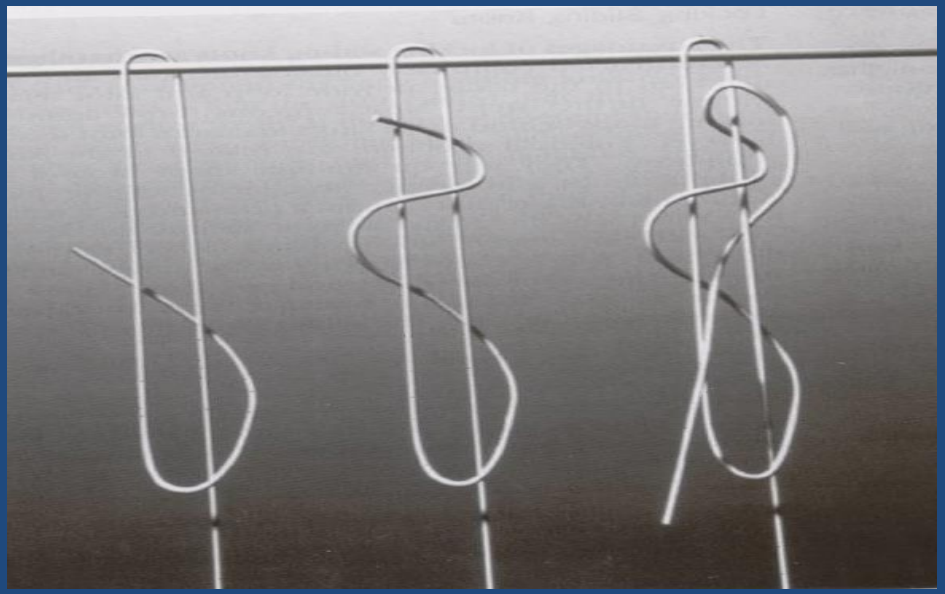
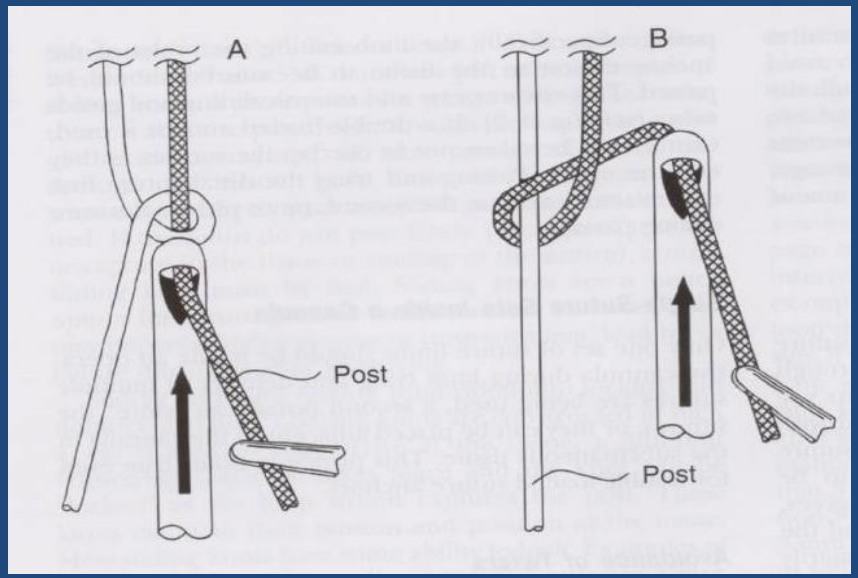
Arthroscopic Advances



- New knot tying techniques







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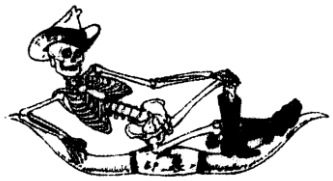
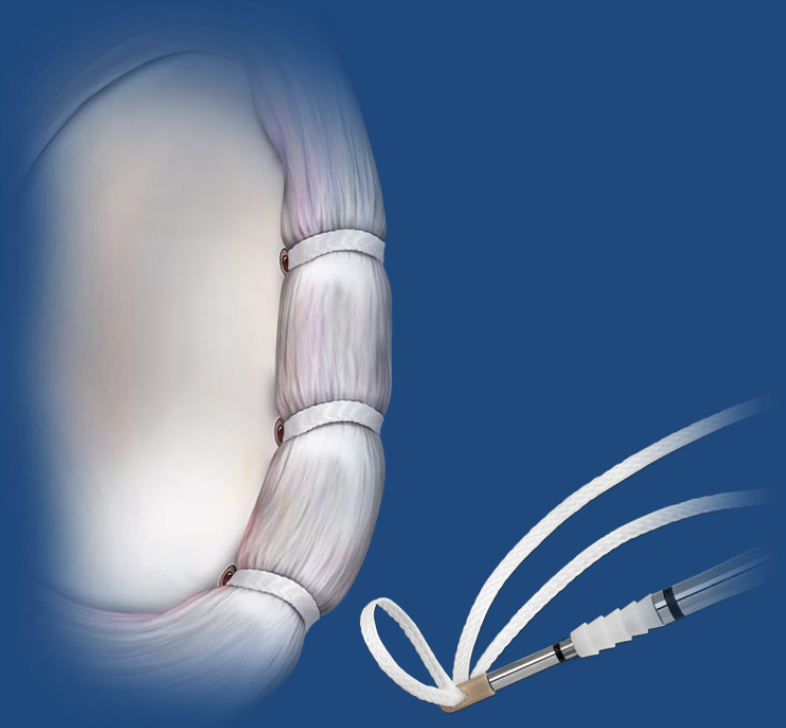
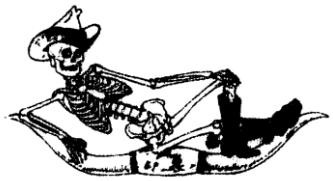
Arthroscopic Advances



- New knotless anchors



Updated Modern Arthroscopic vs. Open Results

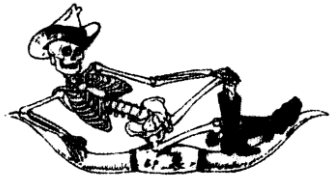


- 2011 – Systematic review – no difference in recurrent instability, return to activity, or functional outcomes Sports Health

- 2016 – Systematic review – Contact athletes higher failure rate; non-contact athletes with no increased failure rate

- 2021 – randomized, study open vs. arthroscopic Bankart with 15 year f/u – no difference in recurrent instability

Recurrent Anterior Glenohumeral Instability

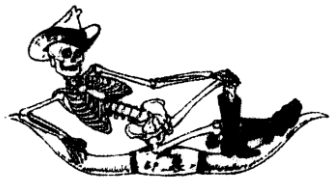


- While standard soft tissue Bankart reconstruction works well for most patients, we have recognized more and more causes of failures

- Risks of recurrent instability
  - Age
  - Gender
  - Sport/Activity
    - Contact sports
  - Shoulder hyperlaxity
  - Glenoid Bone Loss
  - Humeral Head Bone Loss
    - Leading to an ‘off-track’ lesion

Zhang, M: Risk factors for recurrence after Bankart repair: a systematic review and meta-analysis. J Ortho Surg and Research,17(113), 2022.

Recurrent Anterior Instability – Age/Gender



- Recurrence rates:
  - 80% in patients < 20
  - 50% in patients 20-30
  - 30% in patients > 30

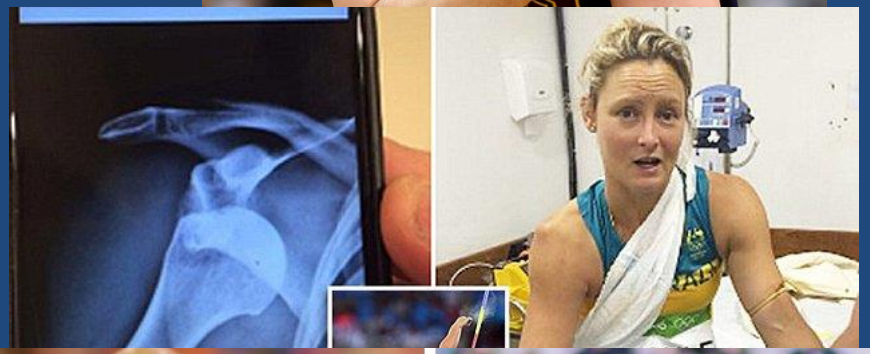
  - Males>>Females

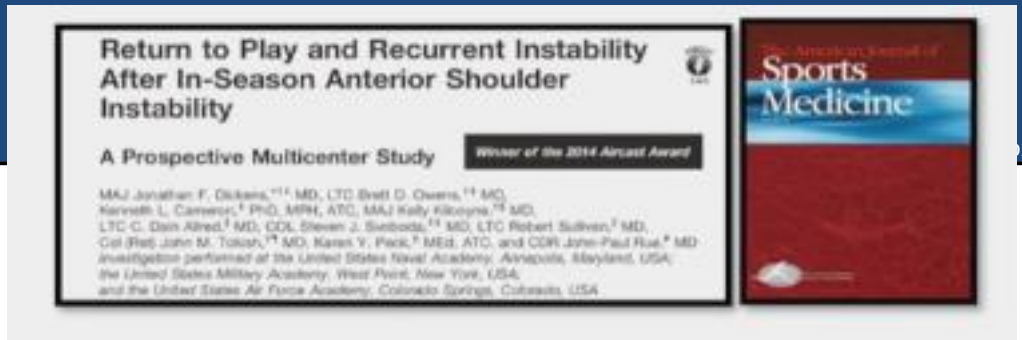
Age, y	Percent Recurrence in 2 Years After FTASD With Nonoperative Treatment	
	Male	Female
18	80	45
19	75	40
20	70	40
21	70	35
22	65	35
23	60	30
24	60	30
25	55	30
26	55	25
27	50	25
28	45	20
29	45	20
30	40	20
31	40	15
32	35	15
33	35	15
34	30	15
≥35	30	15

[a]Data from Robinson et al[29] and rounded to nearest 5%.
FTASD, first-time anterior shoulder dislocation.

Recurrent Anterior Instability – Sports/Activities

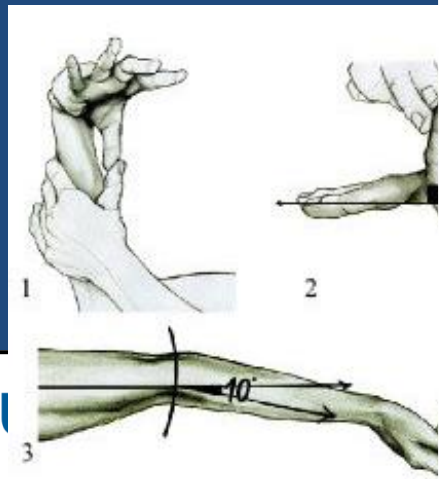
- Contact/collision sports
  - Higher risk of recurrent trauma
  - In-season athletes
    - Majority of athletes who return to sport complete the season, recurrent instability events are common



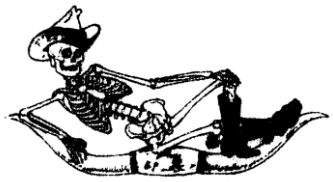


Recurrent Anterior Instability – Hyperlaxity

- Global soft tissue laxity
  - Beighton score
- Be aware of the ‘double-jointed’ patient
  - With ‘party tricks’
- Increased risk for arthroscopic failure



Glenoid Bone Loss



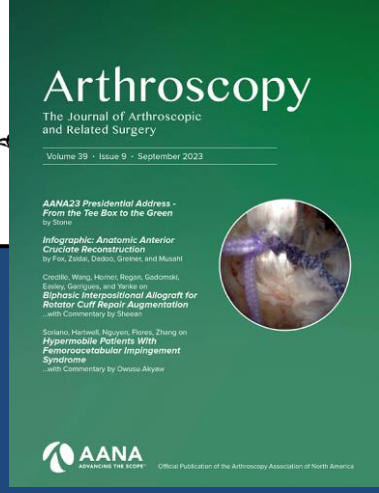
- After initial shoulder dislocation
  - 22% of patients have an osseous defect
- After recurrent instability/dislocation/subluxation
  - 90% have an osseous defect

- Unrecognized GBL leads to recurrent glenohumeral instability
  - Altered function as a static stabilizer
  - Humeral head more easily subluxates over the glenoid in abduction and ER
  - Seen as a reason for failed arthroscopic reconstructions

Traumatic Glenohumeral Bone Defects and Their Relationship to Failure of Arthroscopic Bankart Repairs: Significance of the Inverted-Pear Glenoid and the Humeral Engaging Hill-Sachs Lesion

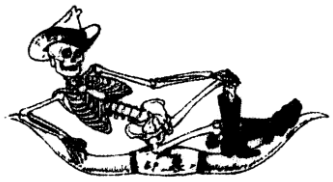
Stephen S. Burkhart, M.D., and Joe F. De Beer, M.D.

2000



- 194 consecutive arthroscopic suture anchor Bankart repairs
- Contact & non-contact athletes, 27 month f/u
- 'Significant' bone defects
  - Glenoid BL causing an inverted pear shape
  - 'Engaging' Hill-Sachs deformity of the humerus
- 67% failure rate with 'significant bone' defects
- 89% recurrence in contact athletes with bone defects
- 4-6 mm can = 20-25% of the glenoid

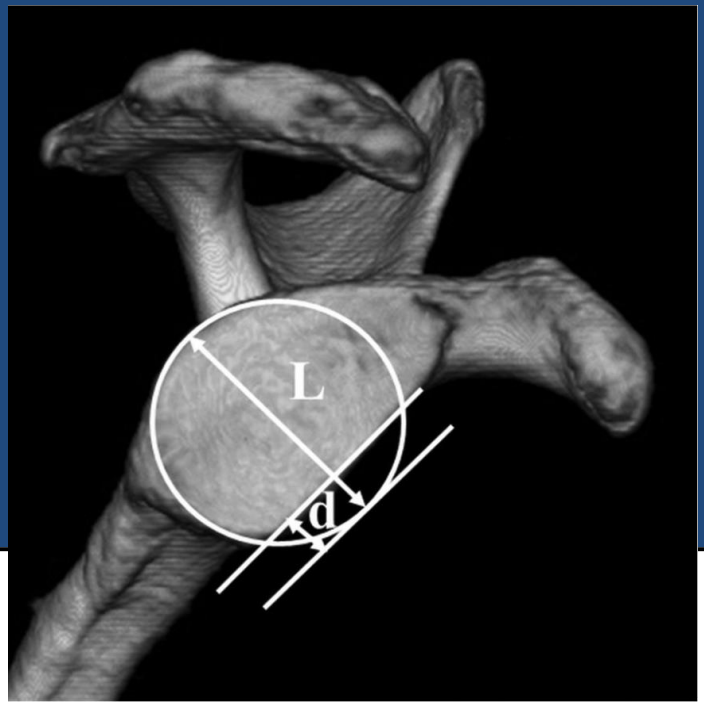
3-D CT – Chronic Anterior Instability



- Chronic instability leads to attritional bone loss
- Historically, critical bone loss ~20–25%
- 3-D CT “en face” – GOLD standard
- Best fit circle method to determine bone loss
  - Too large/small circle can alter the bone loss estimate
  - Glenoid Bone Loss (GBL) = $\frac{\text{defect width (d)}}{\text{diameter of inferior glenoid circle (L)}}$

$$\frac{8}{32} \times 100\% = 25\%$$

$$\frac{4}{32} \times 100\% = 12.5\%$$



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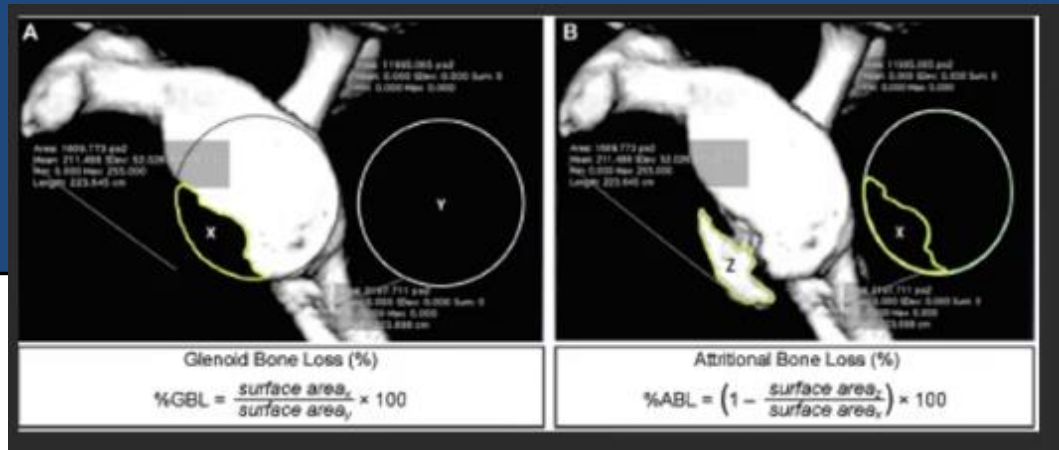
Classification and Analysis of Attritional Glenoid Bone Loss in Recurrent Anterior Shoulder Instability

John W. McNeil,* MD, Brendin R. Beaulieu-Jones,† BA, Andrew S. Bernhardson,† MD, LCDR Lance E. LeClere,§ MD, MC USN, Christopher B. Dewing,‖ MD, Joseph R. Lynch,† MD, Petar Golijanin,† BS, George Sanchez,¶ BS, and CAPT Matthew T. Provencher,¶#** MD, MC USNR
Investigation performed at Naval Medical Center San Diego, San Diego, California, USA

- Specialized software to map out glenoid bone loss
- Great research tool, not readily available on commercial PACS systems
- Not feasible to perform in clinic during patient encounters



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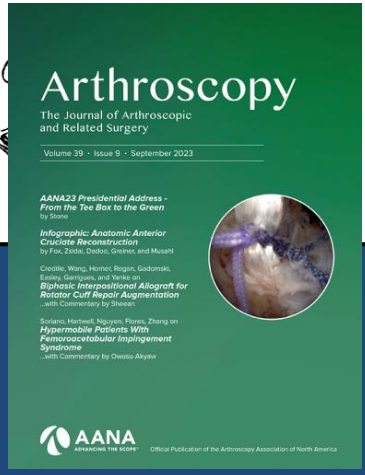
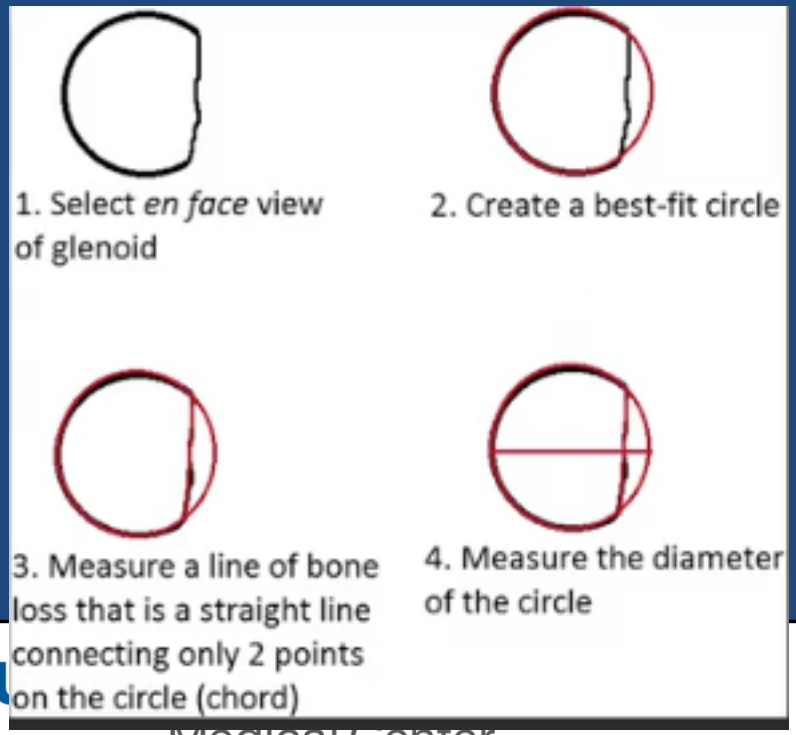
Accuracy and Reliability of a Simple Calculation for Measuring Glenoid Bone Loss on 3-Dimensional Computed Tomography Scans

Stephen A. Parada, M.D., Josef K. Eichinger, M.D., Guillaume D. Dumont, M.D., Carrie A. Parada, B.S., P.E., Alyssa R. Greenhouse, B.A., Matthew T. Provencher, M.D., Laurence D. Higgins, M.D., and Jon J. P. Warner, M.D.

2018



Perfect circle = 2/3 glenoid height



Redefining "Critical" Bone Loss in Shoulder Instability

Functional Outcomes Worsen With "Subcritical" Bone Loss

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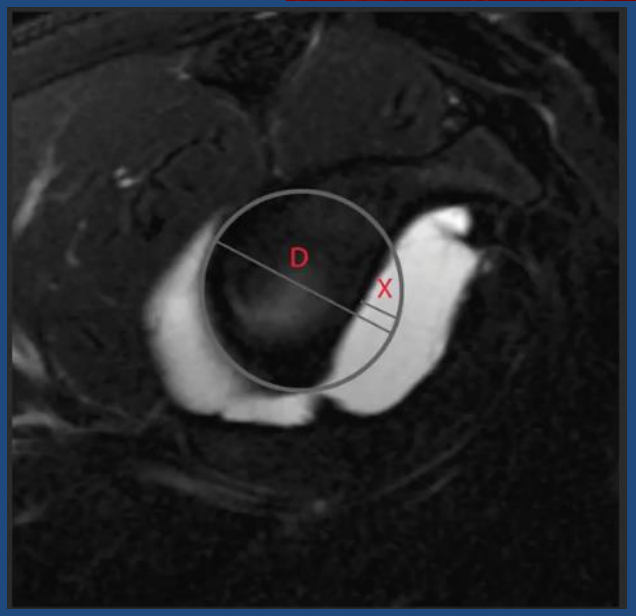
CDR Douglas J. Rowles,† MD, Craig R. Bottoni,† MD,
Steven H. Shaha,‡ PhD, DBA, and COL John M. Tokish,† MD
Investigation performed at Tripler Army Medical Center, Honolulu, Hawaii, USA

2015

- 73 patients
- Isolated anterior arthroscopic labral repair
- GBL calculated and divided into quartiles
  - I: 0 – 7%
  - II: 7 – 13.5%
  - III: 13.5 – 20%
  - IV: 20 – 36%
- Failure defined as a recurrent dislocation
- Worse WOSI scores in quartiles 3 & 4
  - Consistent with a 'clinical failure'
- Used a linear measurement % on sagittal MRI
  - Most often used technique
  - Tends to overestimate GBL, so critical BL may be less than 13.5%



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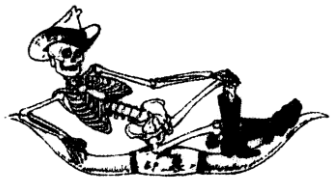
Glenoid Bone Loss Treatment



- Latarjet
  - Coracoid bone block, biceps sling, capsular repair
  - Multiple auuthors
- Distal tibial allograft
  - Provencher
- Distal clavicle transfer
  - Tokish
- Iliac crest bone graft
  - Warner

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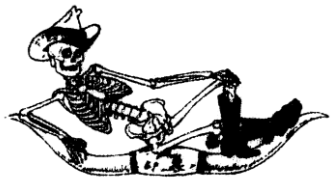
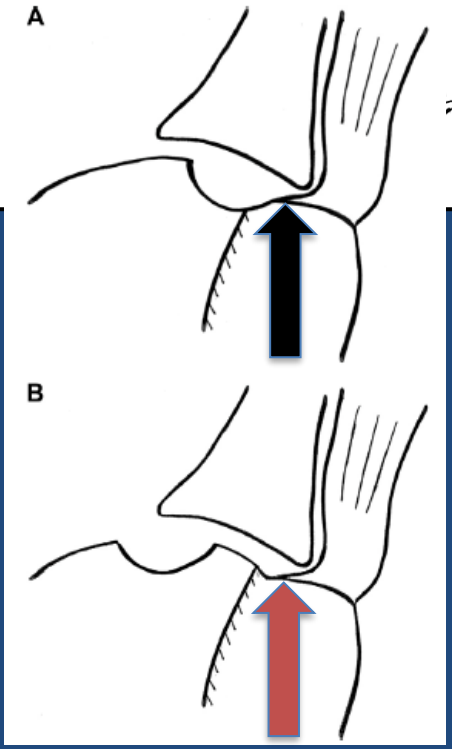
Humeral Head Hill-Sachs Lesion



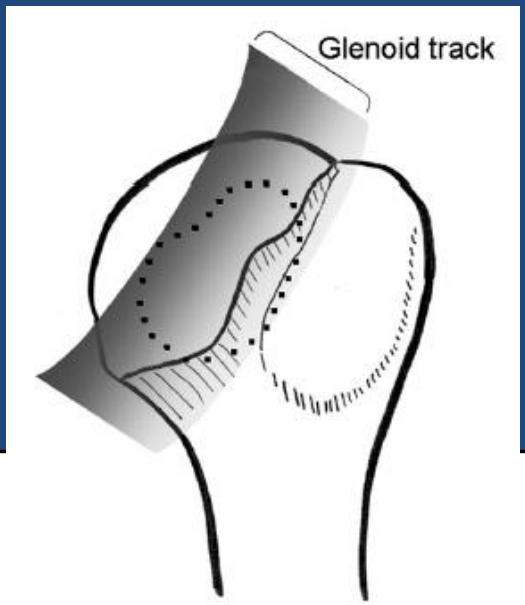
- H-S lesion in 66% 1st time dislocators
  - ~90% after subsequent dislocations
- Size and location are important with relationship to the glenoid
- Burkhart (2000) introduced the term 'Engaging Hill-Sachs'
- Yamamoto (2012) introduced 'Glenoid Track Concept'

Glenoid Track Concept – Surgical Implications

- Glenoid Track
  - Area of the posterior humeral articular surface in contact with the glenoid when the arm moves along the posterior end-range of movement



- Track Width
  - Distance between the medial margin of the glenoid defect and the medial margin of the RC footprint



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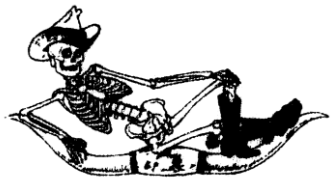
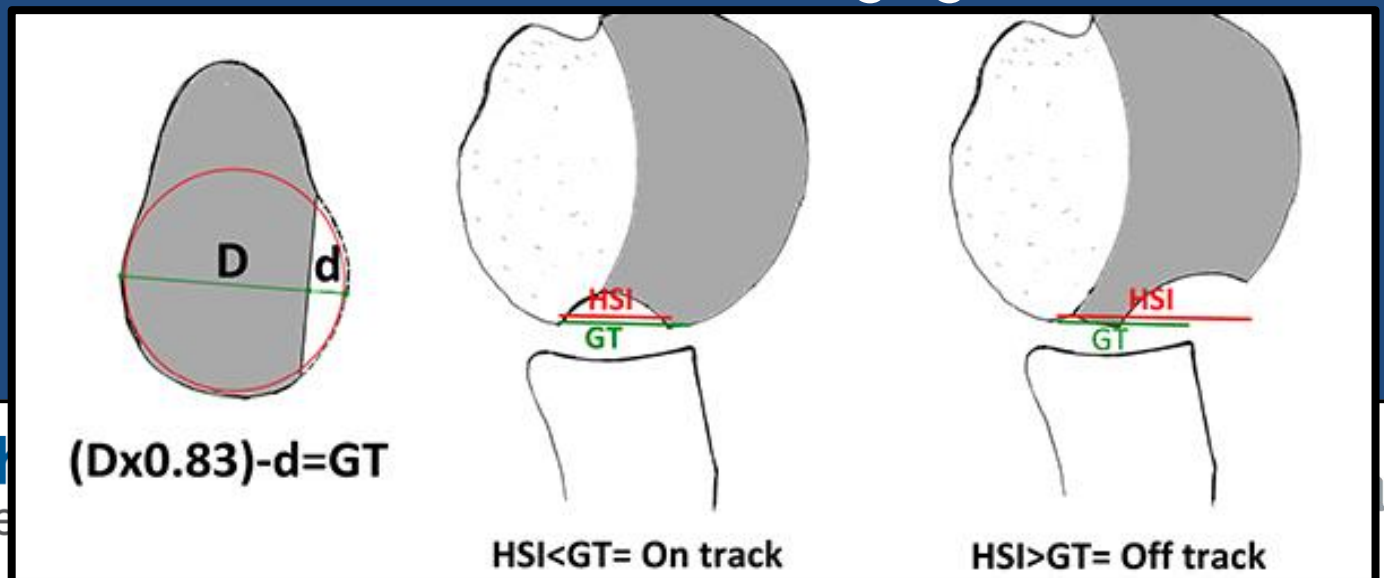
On-Track vs. Off-Track – Bipolar Bony Lesions



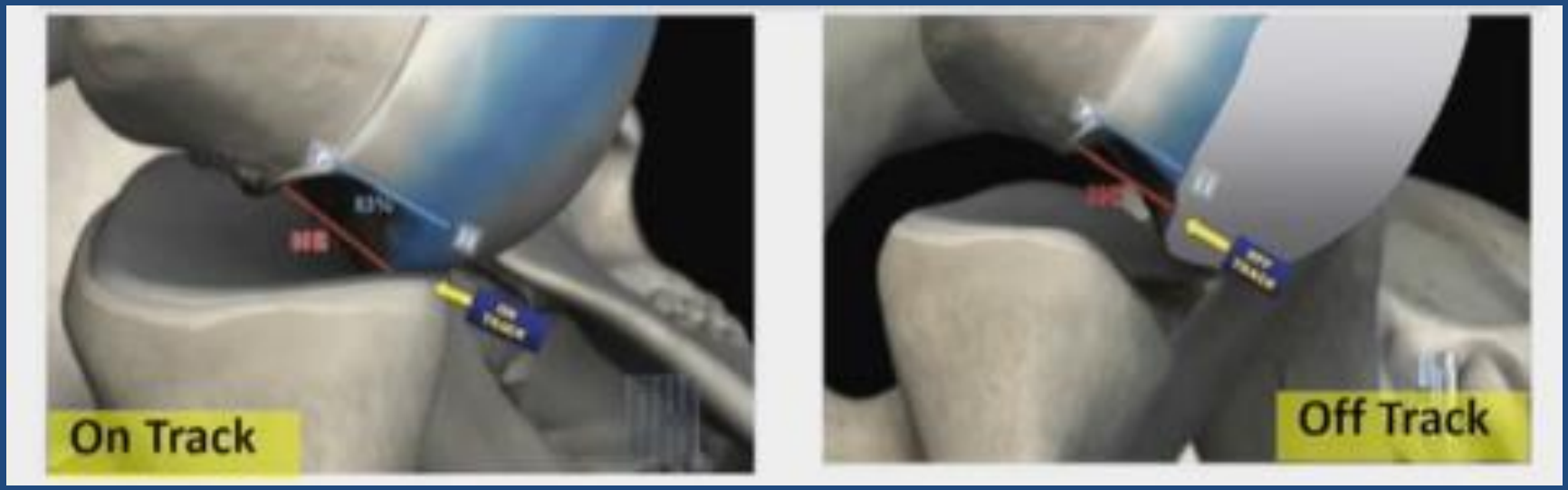
- Hill-Sachs defect is "off-track" and will "engage" on the glenoid if the size of the Hill-Sachs defect > glenoid track (HSI > GT)
- Conversely, the Hill-Sachs defect is "on track" and will NOT "engage" if the size of the Hill-Sachs defect < glenoid articular track (HSI < GT)
- GOAL is to convert on off-track lesion into an on-track lesion – to eliminate engagement



Clinical Validation of the Glenoid Track Concept in Anterior Glenohumeral Instability

James S. Shaha, MD, Jay B. Cook, MD, Douglas J. Rowles, MD, Craig R. Bottoni, MD, Steven H. Shaha, PhD, DBA, and John M. Tokish, MD

THE JOURNAL OF BONE & JOINT SURGERY
JB&JS



On track = 8% failures (non-engaging)

Off track = 75% failures (engaging)

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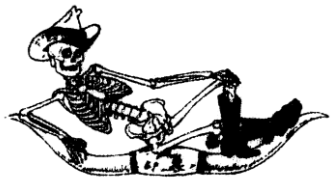
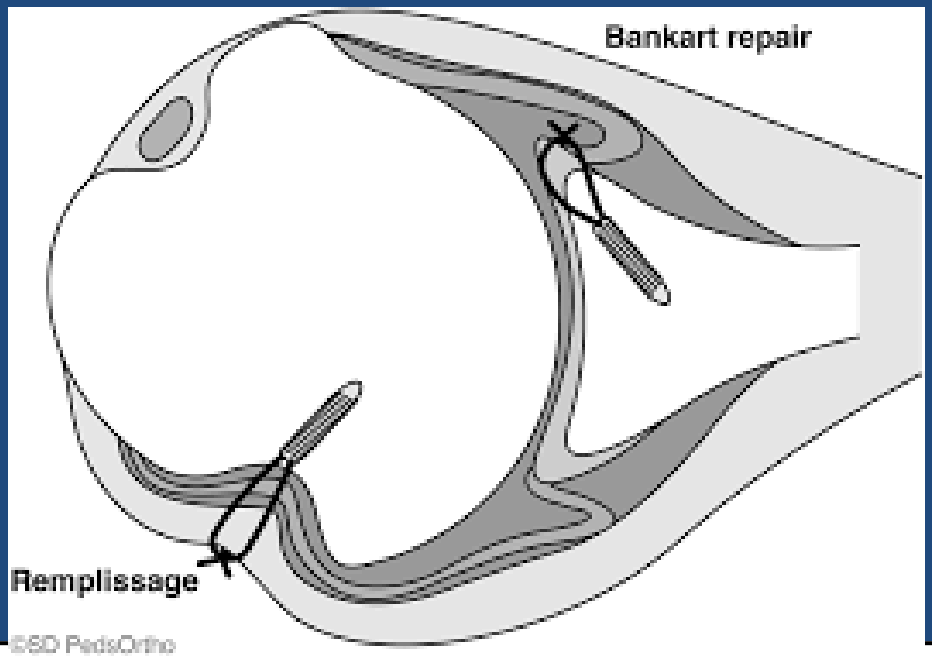
Humeral Head – Remplissage

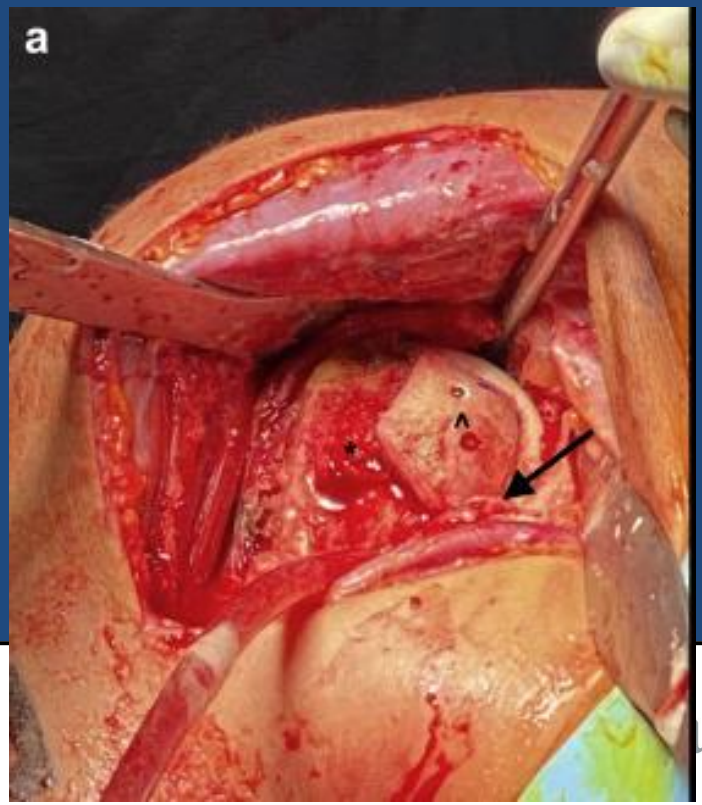
- Convert on off-track lesion into an on-track lesion – to eliminate engagement
- Remplissage (French) = ‘filling the defect’
- Infraspinatus tenodesis into the Hill-Sachs lesion

Operative Options



- Hill Sachs
  - Remplissage technique (posterior capsule, IS)
  - Osteochondral allograft reconstruction





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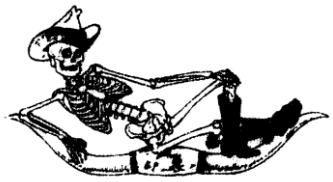
Instability Severity Index Score



The instability severity index score

A SIMPLE PRE-OPERATIVE SCORE TO SELECT PATIENTS FOR ARTHROSCOPIC OR OPEN SHOULDER STABILISATION

Instability Severity Index Score

PROGNOSTIC FACTORS	POINTS
Age at surgery (yr)	
≤ 20	2
> 20	0
Degree of sport participation (preoperative)	
Competitive	2
Recreational or none	0
Type of sport (preoperative)	
Contact or forced overhead	1
Other	0
Shoulder hyperlaxity	
Shoulder hyperlaxity (anterior or inferior)	1
Normal laxity	0
Hill-Sachs on anteroposterior radiograph	
Visible in external rotation	2
Not visible in external rotation	0
Glenoid loss of contour on anteroposterior radiograph	
Loss of contour	2
No lesion	0
Total (points)	10

From Balg F, Boileau P: The instability severity index score, J Bone Joint Surg 89B:1470, 2007. Copyright British Editorial Society of Bone and Joint Surgery.

- Score > 6 points had an unacceptable recurrence risk with arthroscopic repair (70%)
- Risk Factors:
  - Hill-Sachs lesion
  - Glenoid bone loss
  - Age at time of surgery
  - Age at 1st dislocation
  - Competitive sports

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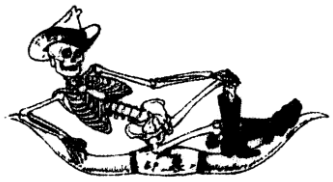
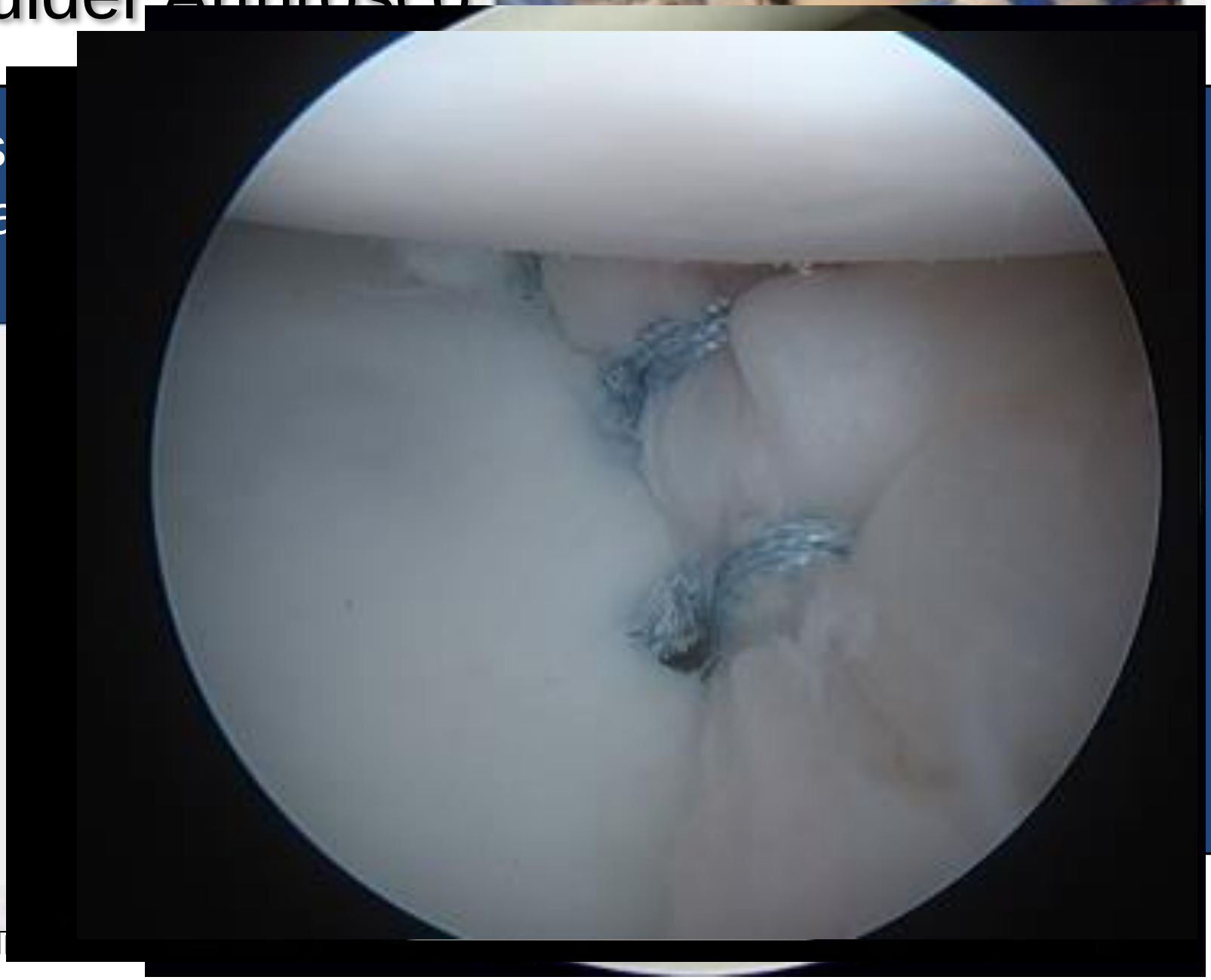
Where are we in 2023?



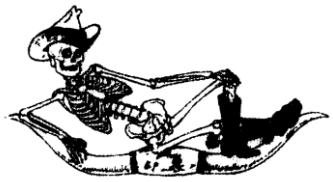
- First time anterior dislocation –
  - ~ 90% Bankart lesion
  - ~ 66% Hill-Sachs lesion
  - ~ 10% Slap tear
  - ~ 80-90% recurrence
- GOAL: minimize risk of recurrence & return to sport
- Surgery
  - ↓ Recurrence <10%
  - ↑ Quality of life
  - ↑ Cost effectiveness

Shoulder Arthrosco

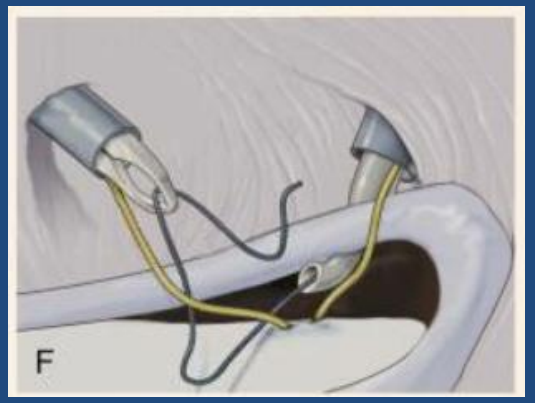
- Pos
  or la
-



Treatment Algorithm 2023



- Non-surgical treatment:
  - Older patients with uncomplicated primary anterior shoulder dislocation
- Arthroscopic Surgery (<13.5% GBL):
  - Athletes, younger than 25 yo
  - Patients with bony injuries or rotator cuff tears
  - Failure of non-surgical management
  - Recurrent episodes of instability
  - Remplissage for an engaging Hill-Sachs



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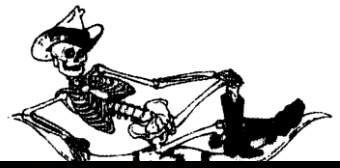
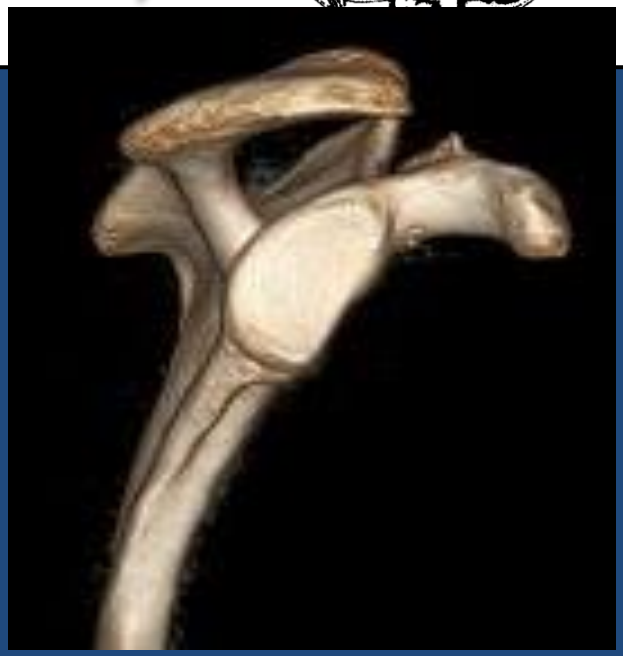
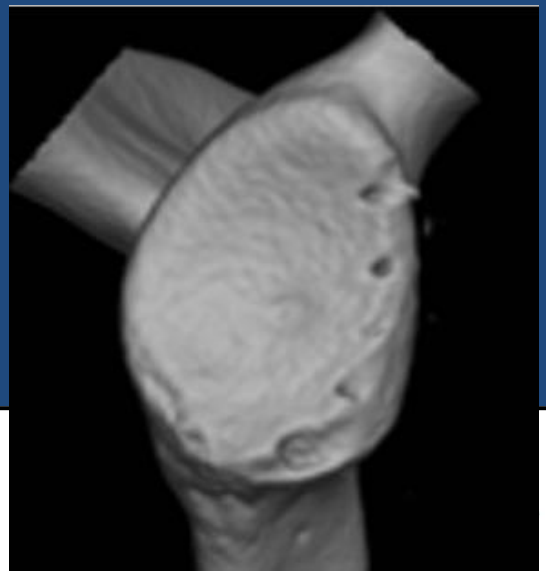
Treatment Algorithm 2023 (cont)



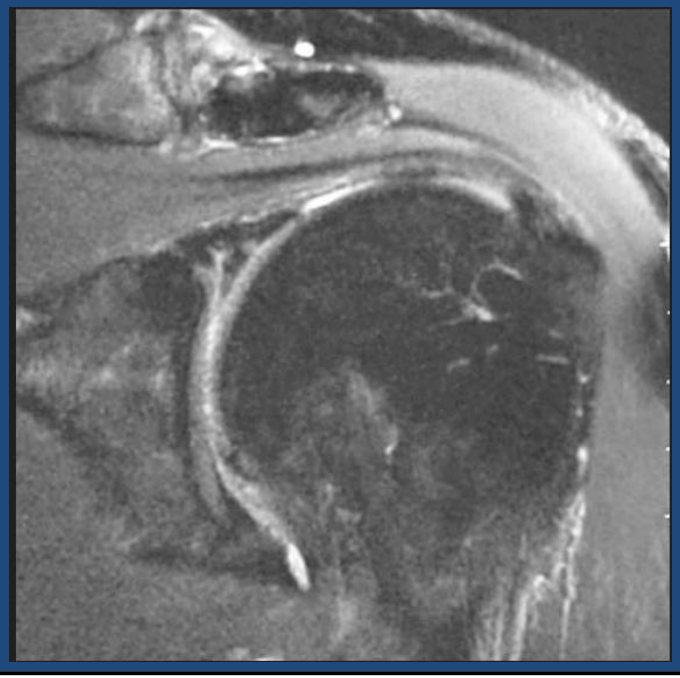
- Open surgical treatment
  - >13.5% GBL
  - Failed arthroscopic stabilization
  - Subcritical bone loss with significant at-risk activity
  - Contact athlete

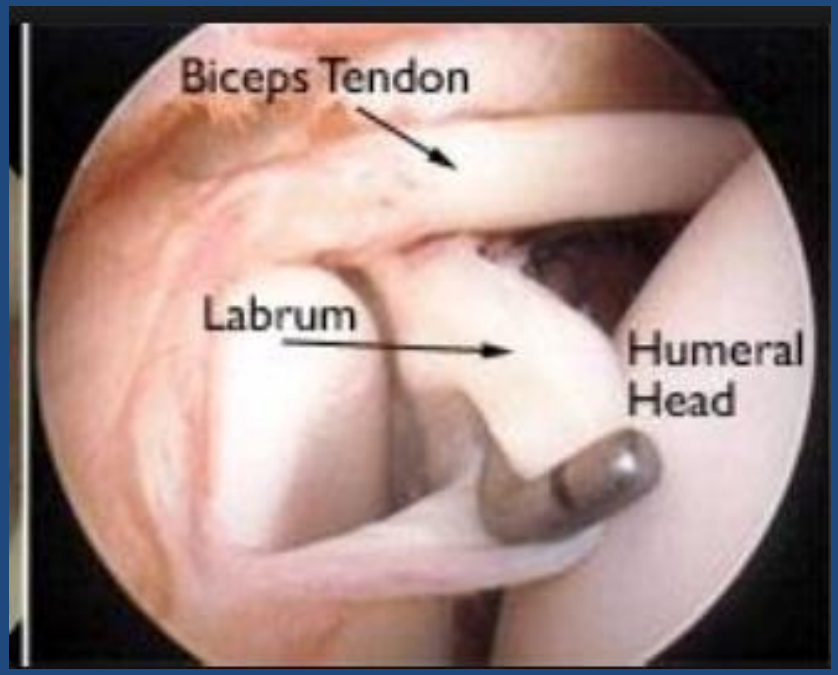




SLAP tear

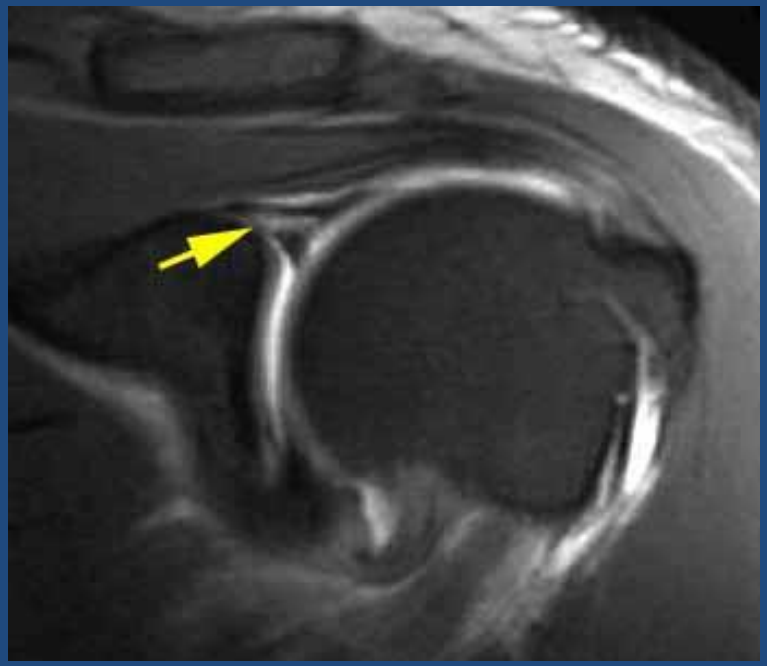
- Superior labrum tear from anterior to posterior tear

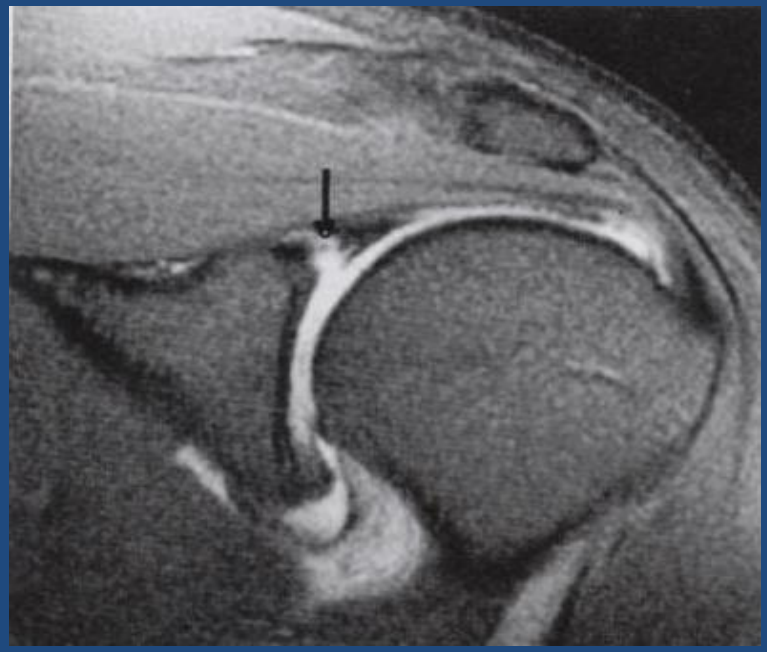




Radiographic Findings

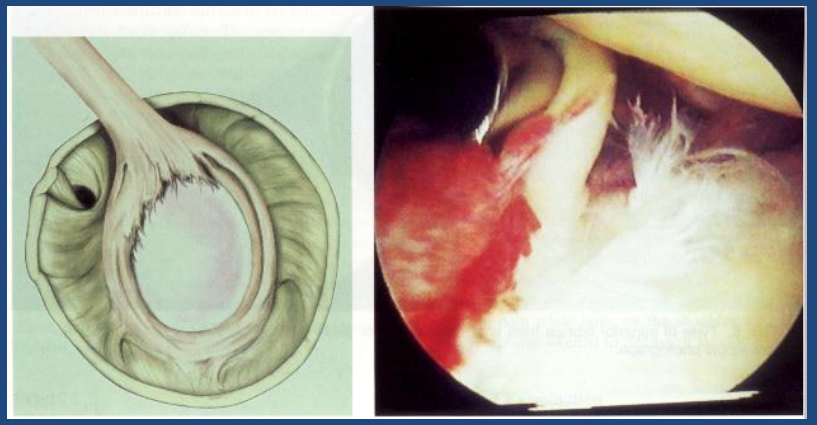
- MRA 89% sensitivity, 91% specificity
- Labral contour more specific than signal change

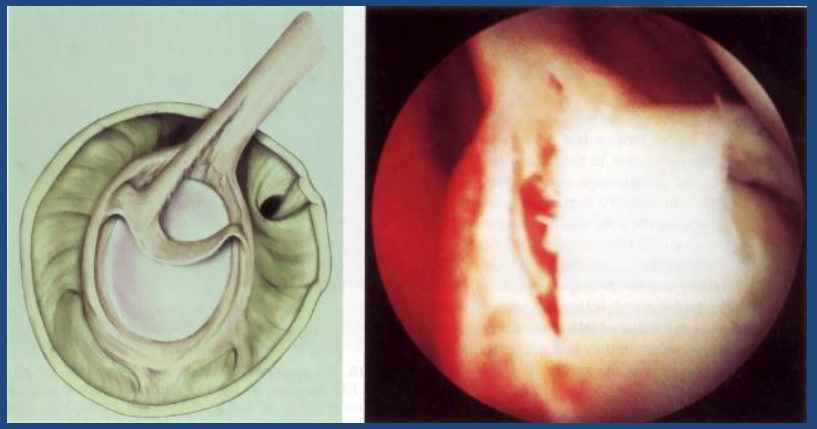




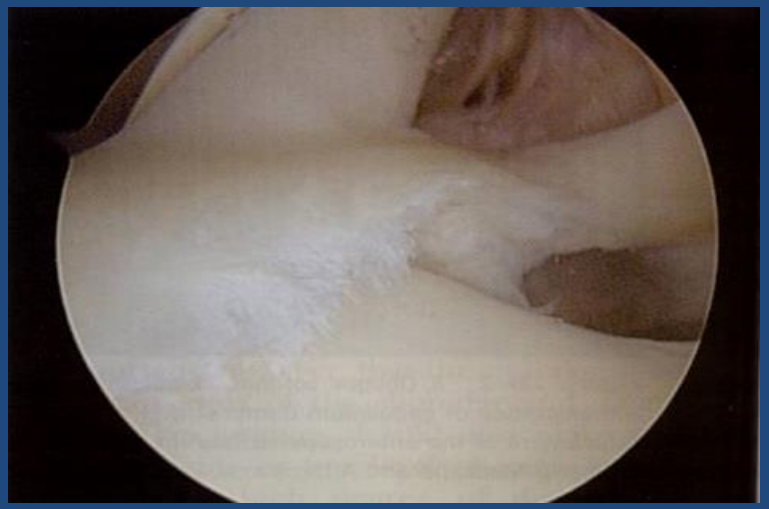
SLAP Tears

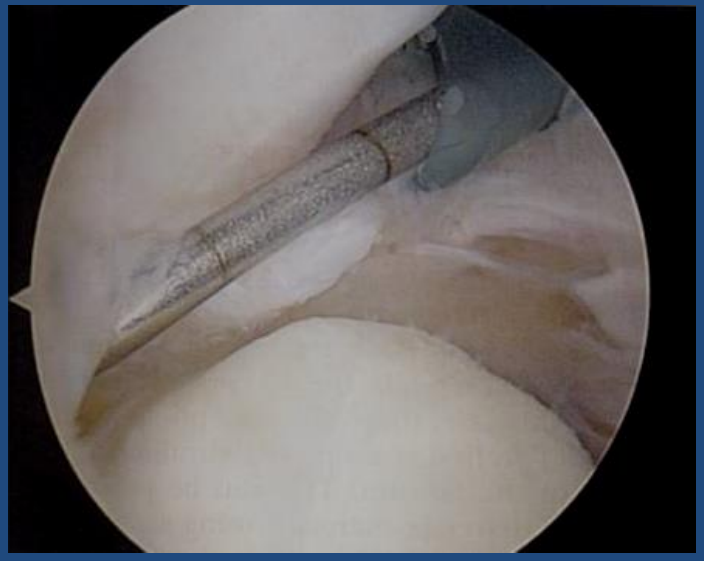
- Anterosuperior labrum; deceleration injury
- Can be associated with anterior dislocations
- "SLAP" tear – at biceps attachment to superior labrum
- Multiple types described

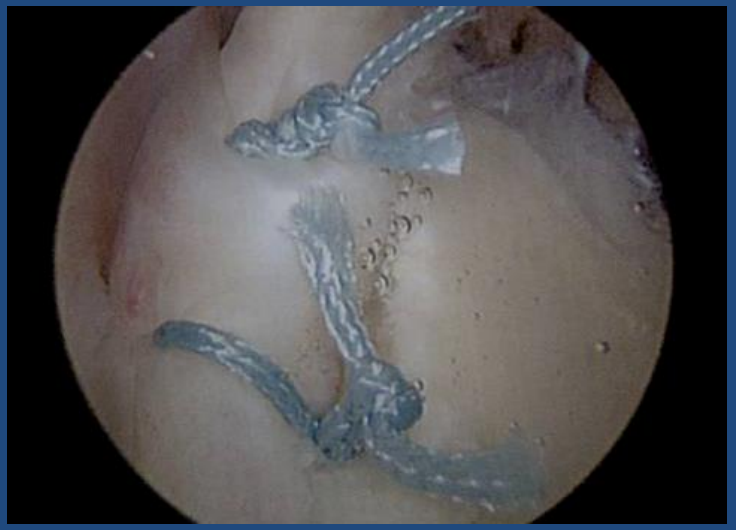




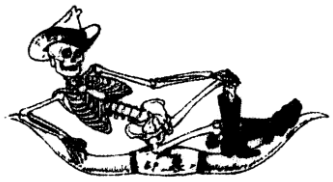
Arthroscopic SLAP evaluation—repair or debridement/BT



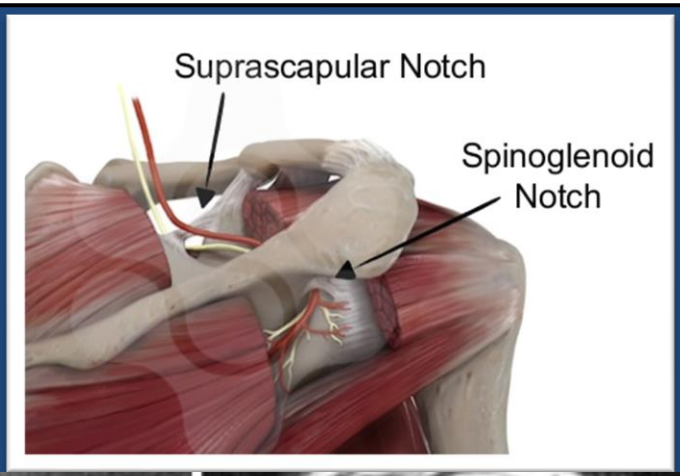


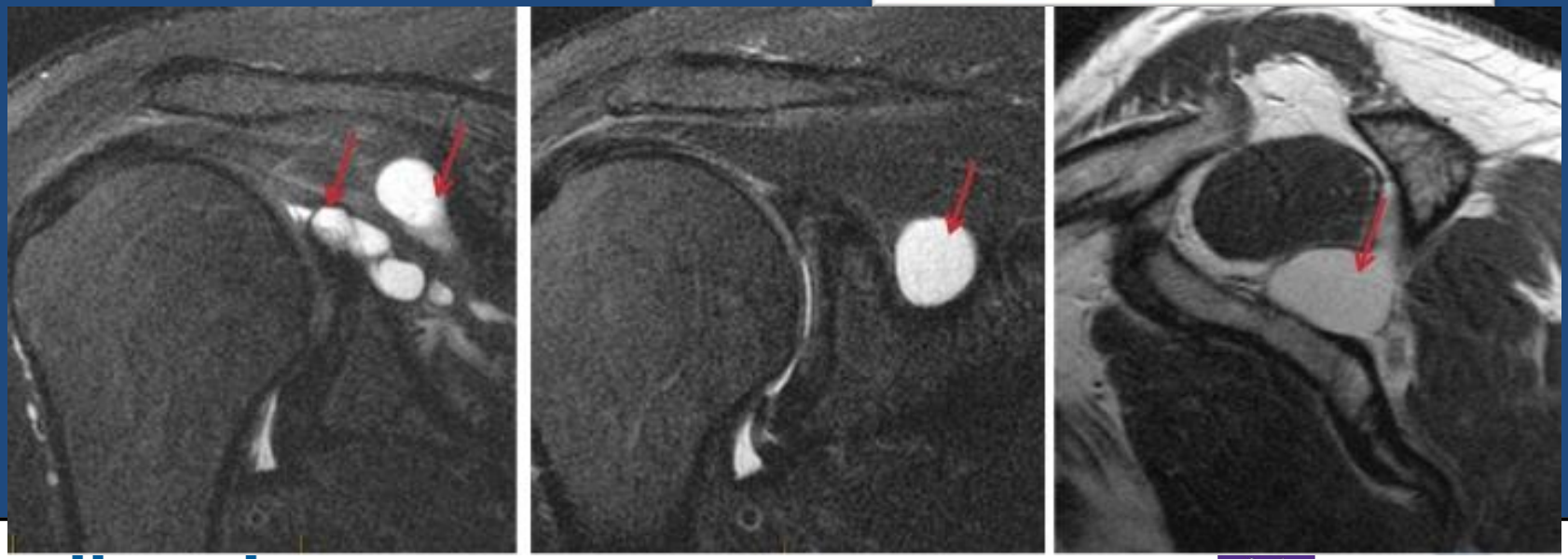


Anatomy - notches

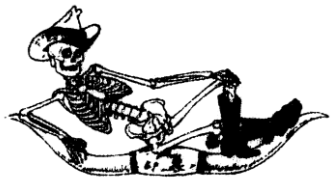


- Suprascapular notch
  - See atrophy of supra and infraspinatus
  - Superior transverse scapular ligament *army over navy

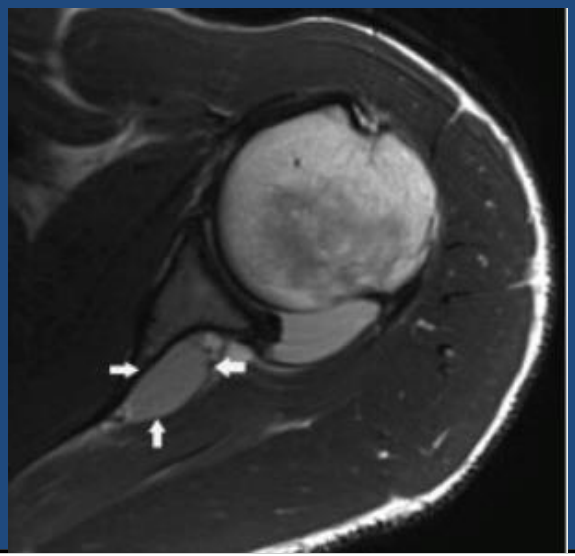


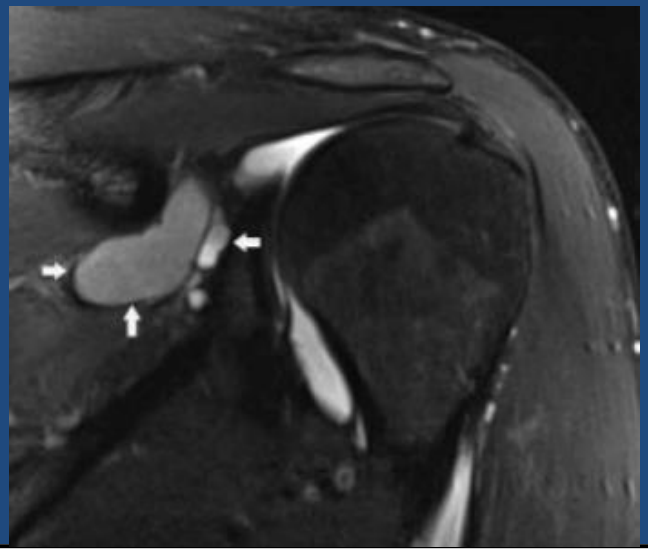


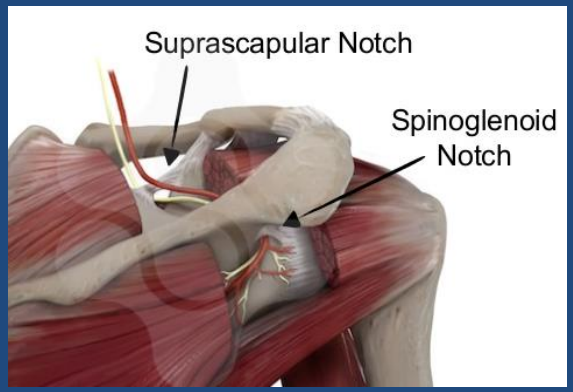
Anatomy - notches



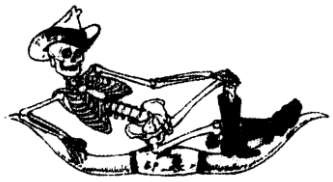
- Spinoglenoid notch
  - See atrophy of infraspinatus only



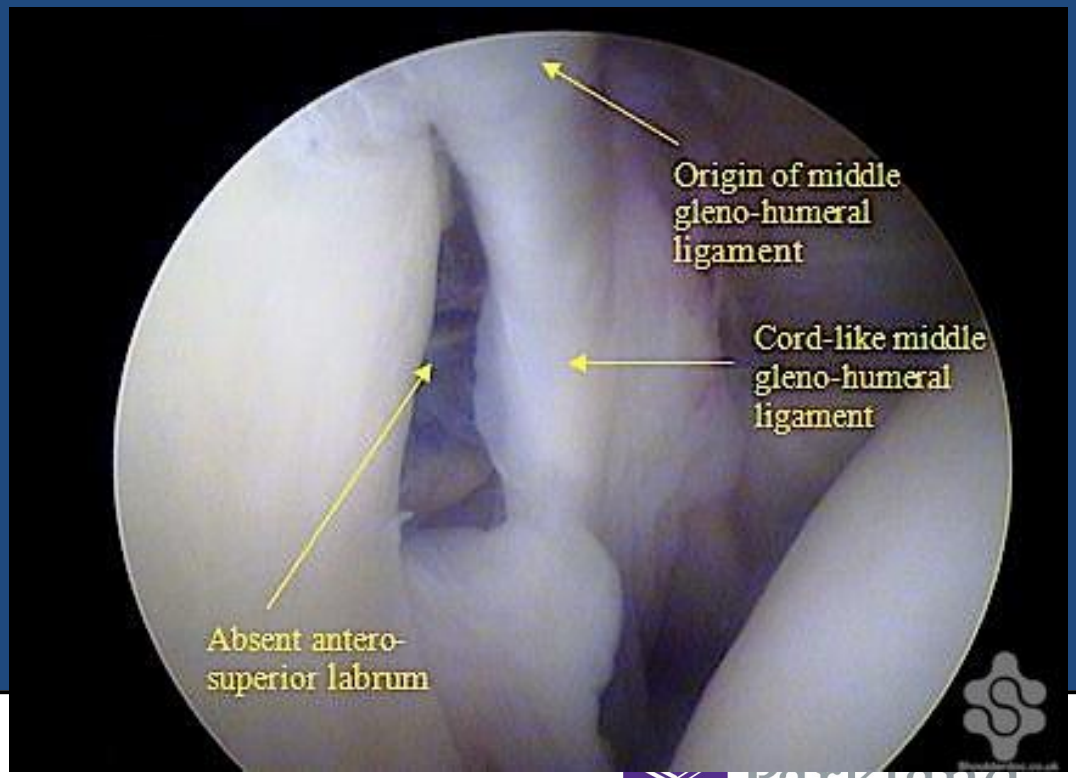




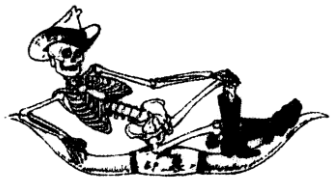
Beware



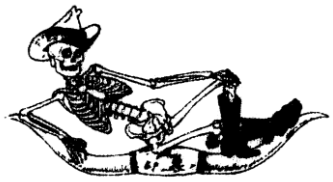
- Anatomic variants of the anterior-superior labrum
  - Cord-like MGHL



Summary



- Shoulder is a complex ball and socket joint
- Shoulder instability is a common problem
- Initial work-up includes a thorough history, physical examination, and radiographic evaluation
- Treatment algorithms help decision making in shoulder instability patients
- Operative treatment is tailored to the specific diagnosis



QUESTIONS??

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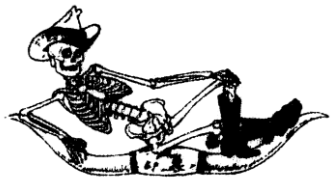

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