Examination of the Shoulder

Thomas M. DeBerardino, MD, COL, US Army (Ret), FAOA
Professor of Orthopaedic Surgery
Division Chief, Sports Medicine
Head Orthopaedic Team Physician,
UTSA Roadrunners & San Antonio Brahmas

1

I have something to disclose

All relevant financial relationships have been mitigated

Detailed disclosure information is available via:
AAOS Disclosure Program on the AAOS website at
http://www.aaos.org/disclosure

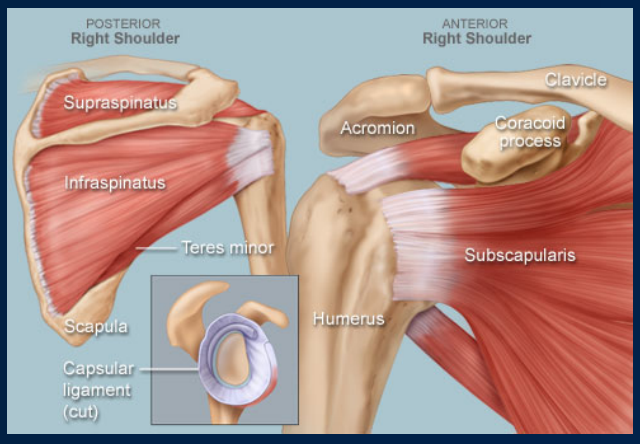
2

Overview

- Anatomy
- Epidemiology
- Instability
- Biceps
- Rotator Cuff/Impingement
- Acromioclavicular Joint
- Adhesive Capsulitis

3

Anatomy



4

Epidemiology

- Shoulder pain- 3rd most common MSK complaint behind low back pain and cervical pain

5

Shoulder Instability

- Translation of the humeral head against the glenoid
- Instability, Subluxation, Dislocation
- Anterior, Posterior, Multidirectional
- Traumatic, Atraumatic

6

Anterior Instability

- By far most common
- Typically, trauma to arm in position of abduction, extension, external rotation (person throwing) or by a blow to the posterior shoulder
- Present with abnormal contour and fullness at anterior shoulder, arm abducted

UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER
UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

7

UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER
UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

8

Anterior Instability

- Exams
  - -Apprehension
  - -Relocation
  - -Load and Shift
- Diagnostics
  - -X-ray Views: AP, axillary and scapular-Y
  - -can be performed before for diagnosis or after reduction for confirmation of relocation depending on clinical setting

9

Apprehension/Relocation

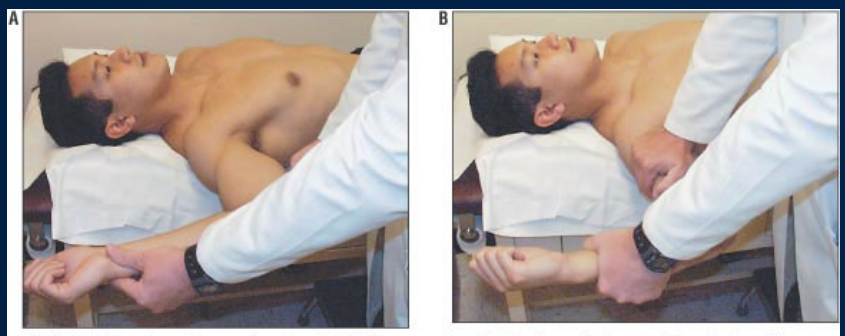
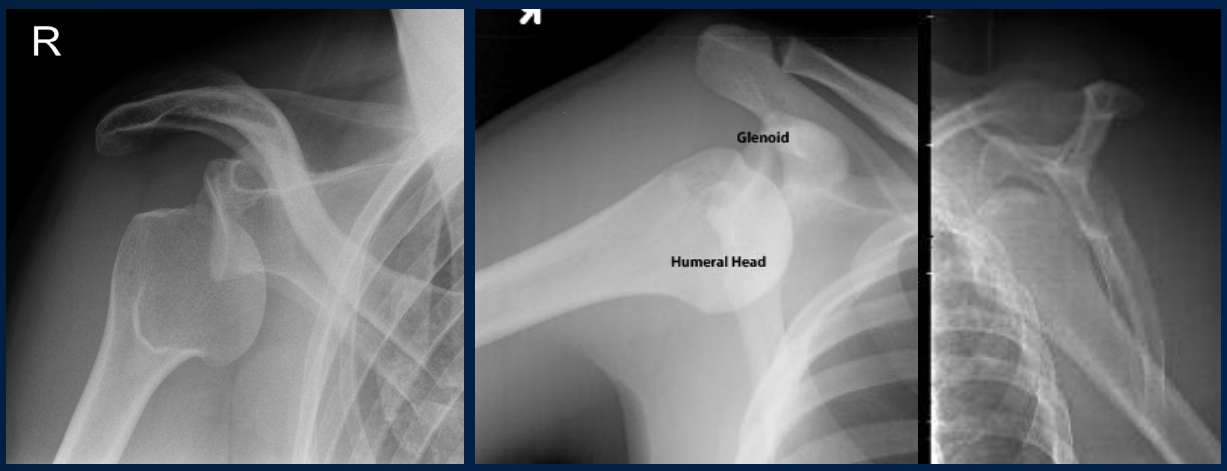


FIGURE 2. To perform the apprehension test (A), the examiner abducts the patient's arm 90° and externally rotates it 90°. The test is positive if the patient senses the shoulder slipping out of the joint, not just pain. To perform the relocation test (B), the examiner posteriorly directs force on the anteriorly subluxated humeral head. The test is positive if the humeral head relocates in the joint.

10

AP Axillary Scapular Y



OFFICIAL SPORTS MEDICINE PARTNER

OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

11

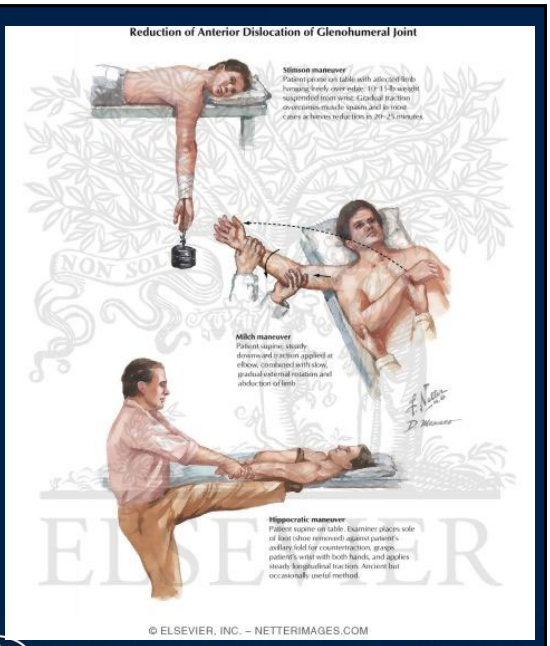
Anterior Instability

- Reduction (several methods)
  - -Stimson technique
  - -Traction on arm at the wrist and forward flexion with counter traction at the chest
  - -Westing, Milch, Kocher…
- Surgery
  - -depends on age and activity level
- Associated Injuries-
  - -Hill-Sachs lesion- compression of ant glenoid on posterior humerus
  - -Bankhart- lesion on anteroinferior glenoid

OFFICIAL SPORTS MEDICINE PARTNER

OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

12



UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER
UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

13

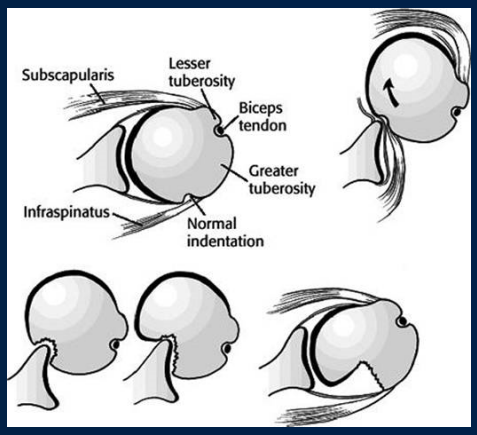
Davos Method

Boss A, Holzach P, Matter P. Eine neue Selbstrepositionstechnik der frischen, vorderen-unteren Schulterluxation [A new self-repositioning technique for fresh, anterior-lower shoulder dislocation]. Helv Chir Acta. 1993 Sep;60(1-2):263-5. German. PMID: 8226069.

UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER
UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

14

Hill Sachs Lesion



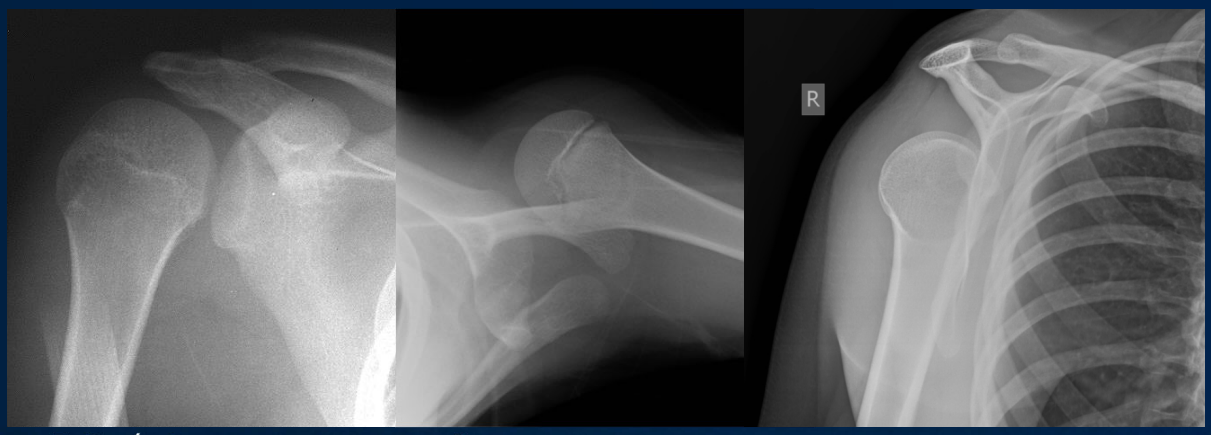
15

Posterior Dislocation

- Much less common
- Flexion, adduction, internal rotation- offensive lineman
- "Lightning strikes and seizures"
- Easy to miss, especially on AP film
- Reduction is more difficult- apply traction in line and try to manipulate humeral head back into place

16

Radiographs



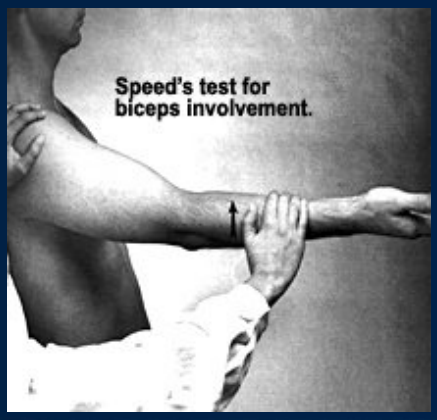
17

Biceps Tendonitis

- Primary occurs as inflammatory condition at bicipital groove
- Secondary (more common) results from changes to surrounding structures like rotator cuff impingement or tears
- Overuse injury
- Tender to palpation along anterior aspect of shoulder, that may radiate down biceps
- Exam- Yergason's, Speeds and possibly Neer's and Hawkin's due to impingement association

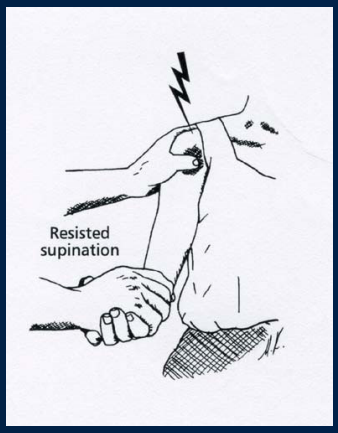
18

Speed's



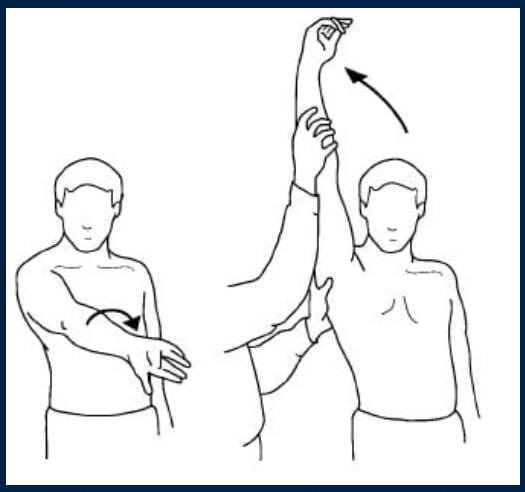
19

Yergason's



20

Neer's

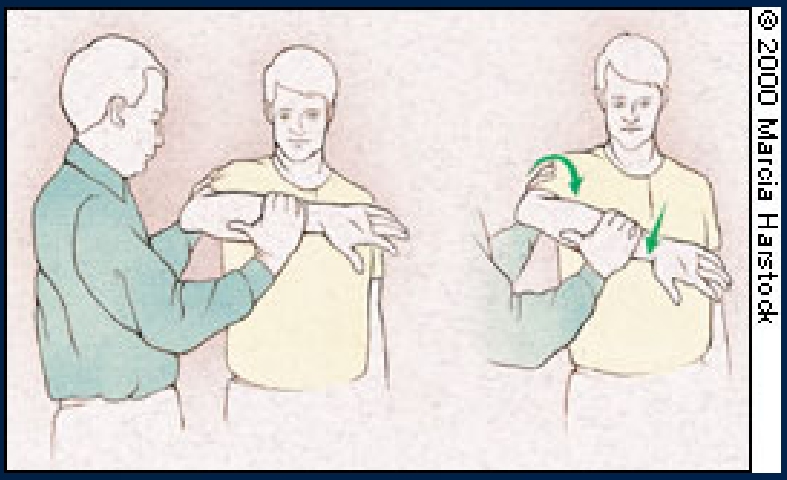


UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

21

Hawkins'



UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

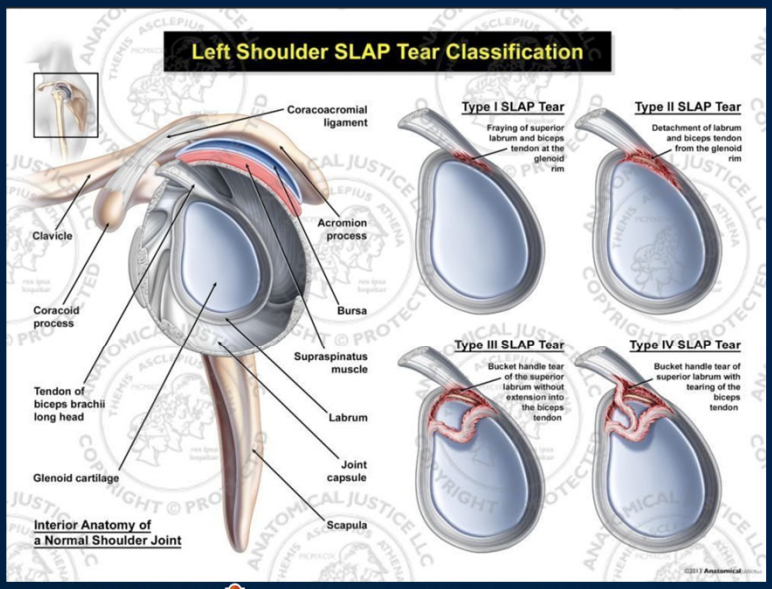
22

Proximal Bicep's Rupture

- Forceful elbow flexion against resistance or abrupt eccentric contraction
- Pain, swelling over anterior arm
- "Popeye" deformity
- Elderly may be asymptomatic
- Treat with pain control and therapy for mobility in elderly
- Surgery may be performed for young/active or those concerned with cosmesis

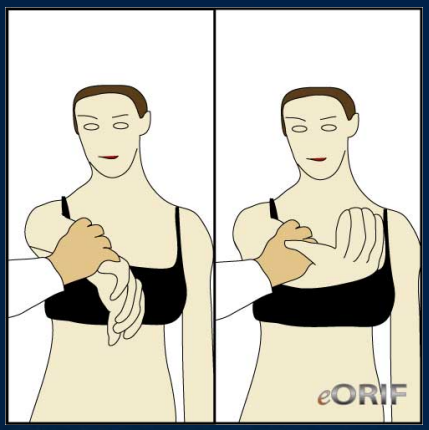
SLAP Lesion

- Superior Labrum Anterior and Posterior
- Can be insidious and acute trauma
- Traction from overhead throwing athletes, FOOSH
- Pain with overhead activities; popping, clicking, catching (difficult to differentiate from rotator cuff)
- Exams debatable- O'Brien's, biceps load, anterior slide



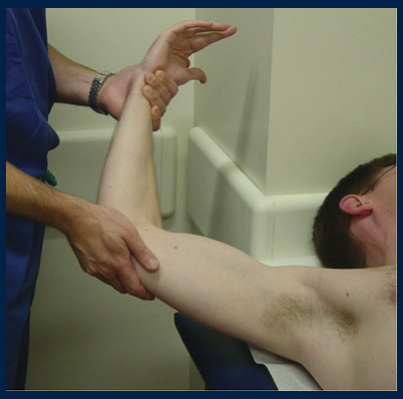
25

O'Brien's



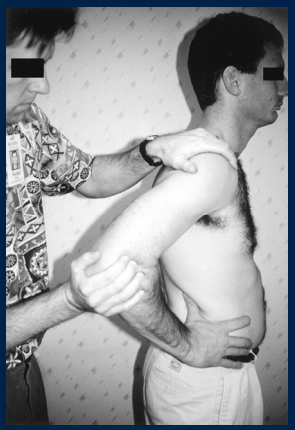
26

Biceps Load



27

Anterior Slide



28

SLAP Treatment

- Rest, ice, NSAID's
- Physical Therapy focusing on rotator cuff strength and scapular stability
- Surgical referral if fails conservative treatment

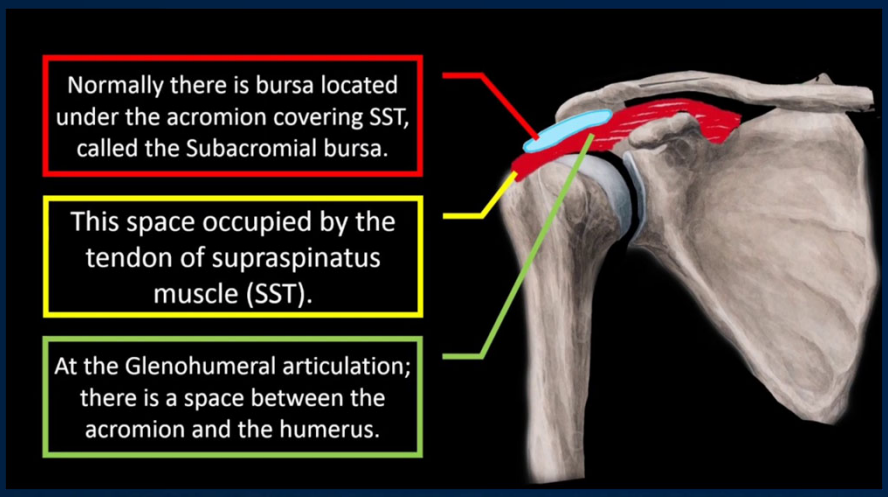
29

Impingement/Rotator Cuff Syndrome

- Spectrum including subacromial bursitis, rotator cuff tendinopathy, rotator cuff partial tears
- Subacromial impingement occurs on rotator cuff from undersurface of acromion and coracoclavicular ligament (cuff fatigue, tendinopathy, AC spurring)
- Internal impingement occurs from rotator cuff on superior glenoid
- Coracoid impingement occurs between cuff and a prominent coracoid

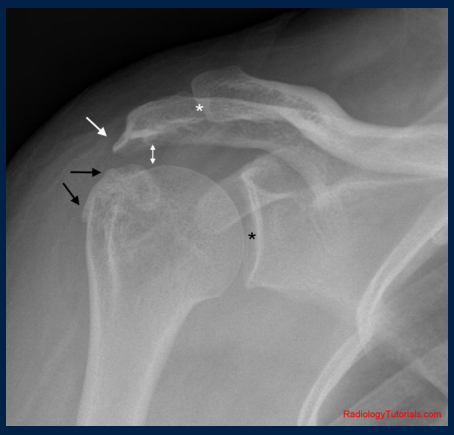
30

Subacromial Impingement



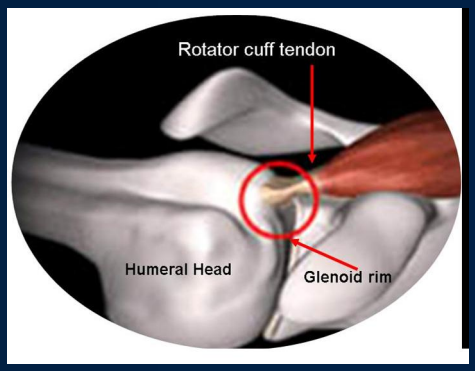
31

Subacromial Impingement



32

Internal Impingement

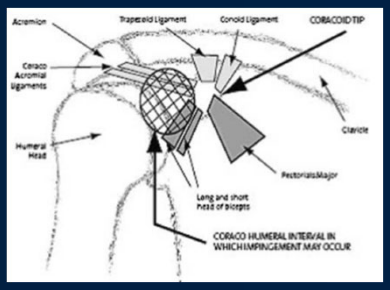


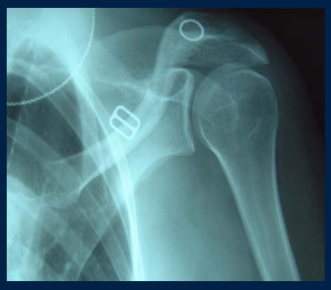
UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER

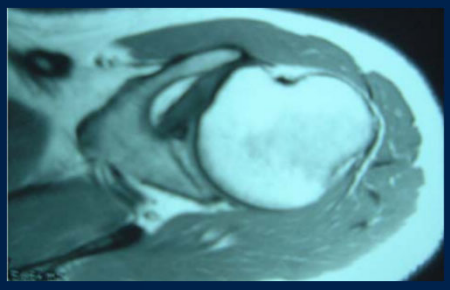
UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

33

Coracoid Impingement







UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

34

Impingement/Rotator Cuff Syndrome

- History-
  -SI- anterior shoulder pain, radiates to lateral shoulder; pain with overhead activities; pain at night, when lying on affected side
  -II- posterior or deep pain; pain in throwing motion
  -CI- anterior pain, exacerbated by forward flexion and internal rotation
- Exam- Neer's, Hawkins', Painful arc
- X-rays- AP, Outlet, Axillary- to look for GH arthritis, at AC and coracoid
- MRI will show tendinopathy, tears (full or partial), subacromial bursitis

35

Impingement/Rotator Cuff Syndrome

- Treatment- NSAIDs and PT to strengthen cuff and scapular stabilizers; corticosteroid injection for subacromial impingement or bursitis
- Surgery can be option if failure to improve, but majority improve with conservative therapy

36

Rotator Cuff Tears

- MRI studies show 34% of asymptomatic individuals have rotator cuff tears (>60 yrs- 26% have partial thickness tears and 28% have full thickness)
- Acute from traumatic event or chronic tendinopathy that progresses to tear
- Presentation similar to subacromial impingement
  -anterolateral shoulder pain
  -overhead activites
  -night pain
  -weakness
- Supraspinatus most common

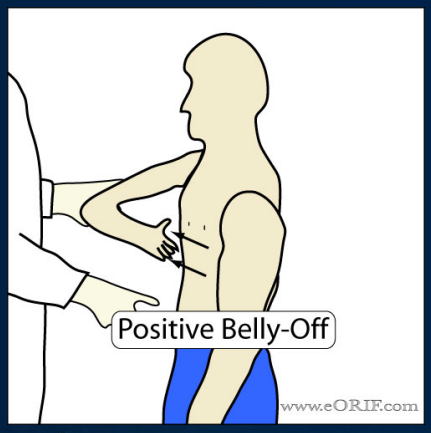
37

RC Tears

- Exam
  -palpate for atrophy (chronic)
  -external/internal rotation, flexion, abduction
  -belly off test (subscapularis)
  -external rotation lag sign (supraspinatus and infraspinatus)
  -shrug sign (better negative predictive value)
  -drop-arm sign

38

Belly Off

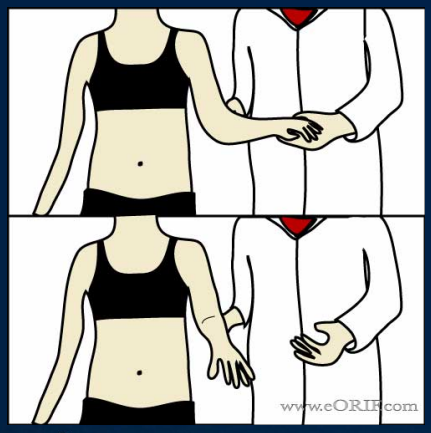


UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

39

External Rotation Lag Sign



UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

40

Rotator Cuff Tears

- Imaging
  - -X-rays: AP may show humeral head proximal migration (chronic tears); look for signs of arthritis or calcific tendonitis
  - -MRI: can distinguish full vs partial thickness; level of fat infiltration and atrophy (not good for surgery)
  - -U/S: cheaper, but tech dependent (not common here)

41

Rotator Cuff Tears

- Treatment
  - -Individualized based on age/activity level
  - -Conservative Non-Surgical: similar as for impingement (PT, NSAIDs, injection); less successful for patient's with symptoms >1yr or significant weakness
  - -Surgical referral recommended for younger/active and those with acute traumatic tears

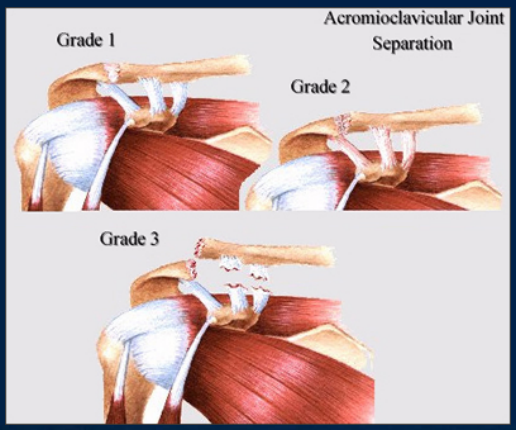
42

Acromioclavicular Joint

- AC Sprain/Separation- trauma (acute or repetitive) causing damage/tearing of acromioclavicular and coracoclavicular ligaments
- Tenderness over AC joint; possibly elevation of clavicle on palpation
- Classification:
  - -Type I: sprain of AC ligament (CC intact)
  - -Type II: tear of AC (CC intact); slight elevation of clavicle on xray
  - -Type III: complete tear of AC and CC ligs and elevation of clavicle
  - -Types IV-VI: keeps getting worse and damage to surrounding structures

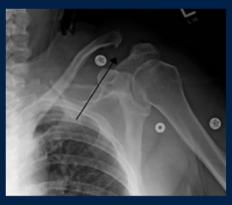
43

AC Separation



44

Grade 3



OFFICIAL SPORTS MEDICINE PARTNER

OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

45

AC Sprain

- History- fall on shoulder or on outstretched arm (hockey player checked into boards or FB player landing on shoulder; cyclist falling off bike)
- Exam- cross arm test and O'Brien's if localizes to AC joint
- Treatment- sling, ice, analgesics for Type I, II and usually III (sometimes III needs surgery); IV-VI need surgery
- Recovery- 1 to 6 weeks (or keep playing…)

OFFICIAL SPORTS MEDICINE PARTNER

OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

46

Adhesive Capsulitis

- "Frozen Shoulder"
- Pain and gradual loss of active AND passive ROM caused by soft tissue contracture
- Idiopathic; more common in women and diabetics
- Clinical diagnosis, but imaging can help rule out other causes; loss of flexion and external rotation >50% compared to unaffected side

47

Adhesive Capsulitis

- Stages
  - -1: Pain with active and passive ROM (<3 mo)
  - -2: "Freezing Stage" pain and progressive loss of ROM (3-9 mo)
  - -3: "Frozen Stage" significant stiffness, minimal pain (9-15 mo)
  - -4: "Thawing Stage" progressive improved ROM and minimal pain

48

Adhesive Capsulitis

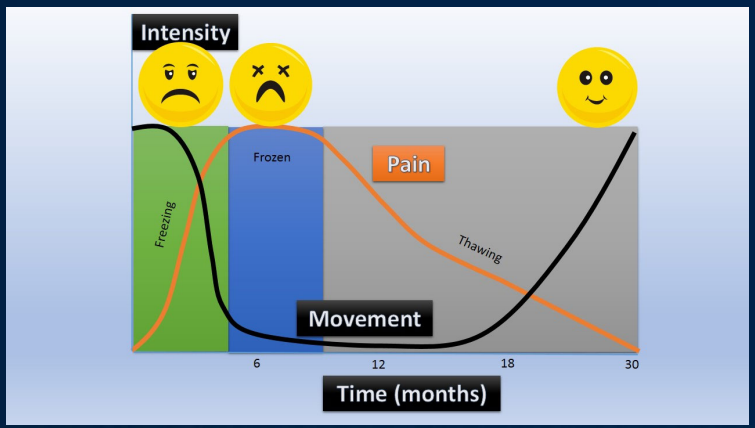
- Treatment- natural history is improvement in 12-18 months
- Options depend on stage
  - -Benign Neglect (all stages)
  - -PT (passive ROM early and more aggressive later)
  - -NSAIDs (inflammatory stages)
  - -Corticosteroid Injections (inflammatory stages)
  - -Manipulation under anesthesia (fail non-op)
  - -Surgical capsular release (fail non-op)

UT Health San Antonio OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

49

Adhesive Capsulitis



UT Health San Antonio OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

50

51

References

- Google Images, a lot.
- Madden, Christopher C. et al. *Netter's Sports Medicine*. 2010.
- Medscape. "Rotator Cuff Pathology."
- O'Connor, Francis G. et al. *ACSM's Sports Medicine, A Comprehensive Review*. 2013.
- O'Kane, John W. et al. "The Evidence-Based Shoulder Evaluation." Extremity and Joint Conditions. *Current Sports Medicine Reports*. 2014 American College of Sports Medicine.

UT Health San Antonio
OFFICIAL SPORTS MEDICINE PARTNER

UT Health San Antonio
OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS

52