Examination and Diagnosis of Common Shoulder Injuries

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Most Common Shoulder Problems

- Impingement Syndrome
- Rotator Cuff Disease
- AC joint arthritis
- Proximal Biceps tendon tears
- Glenohumeral arthritis
- Instability
- Stingers
Most Common Shoulder Problems

- Frozen Shoulder
- Labral tears
- Throwing injuries
- Calcific tendonitis
- Neck
Impingement syndrome (subacromial bursitis)

- RC disease spans continuum from edema and hemorrhage to chronic inflam. and fibrosis to partial to full thickness tears
- Pain, exacerbated by overhead activities is due to bursitis
- Painful arc btw 90-120 abduction
- + Hawkins and Neer signs
- With strength testing, may be weak due to pain (strength improves following lidocaine)
Rotator cuff disease

- Supraspinatus, infraspin., subscap., and teres minor
- Can occur due to acute injury, most are a result of age related degeneration
- Rare in patients <40
- One study 22% of pts >65, another study 54% >60. (Most are asymptomatic)
- Weakness ext rotation freq correlates with size of tear
Impingement vs Cuff tear

- May present identical to impingement syndrome since much of pain due to bursitis
- Night pain frequent (more than with imping. syndrome) - many pts sleep better in recliner
- Ext rotation weakness suggestive of tear
- Impingement test (subacromial lidocaine)
- X-rays typically normal with cuff tears, but if there is a massive tear, the acromial-humeral head distance is decreased
- PT, NSAIDs can help both, MRI if not improving
AC joint arthritis

- AC joint is probably most frequent joint in body to have painless DJD. Finding of DJD on X-ray or MRI not significant if not painful
- Point tenderness at AC joint
- + cross arm adduction test
- Injection can be done both diagnostic/therapeutic
Proximal Biceps tendon tears and tendonitis

• When ruptures, it is the long head
• Typically, but not always, associated with pain when ruptures. Pain resolves 1-2 weeks
• Biceps balls up distally
• Frequently associated with RCT
• Since short head still intact, do not lose much function
• Fix distal ruptures, not proximal ones
Contour of biceps

• Proximal rupture
  Distal rupture
Glenohumeral arthritis

- Typically > 50 yrs old
- Insidious onset
- Decreased and painful ROM
- Frequently a grinding can be appreciated
- X-ray is diagnostic
Frozen Shoulder (Adhesive Capsulitis)

- Idiopathic loss of shoulder ROM- both active and passive
- Most commonly women in 50’s (40-60)
- Diabetes, hypothyroidism, Parkinson’s are some of the risk factors
- Runs course over ½- 2 years
- Frequently not painful except at extremes of motion
- X-rays normal (differentiate from DJD)
- A distension arthrogram and PT help speed recovery
Instability

- Anterior dislocations most common
- TUBS: Traumatic, Unidirectional instability, associated with Bankart lesion (ant labral tear), treatment is Surgery
- AMBRI: Atraumatic, Multidirectional, Bilateral sx, Rehab 1st line of rx, if surgery necessary, Inferior capsular shift
- Ability to voluntarily dislocate is freq assoc with multidirectional, poor prognostic factor
- Check for generalized ligamentous laxity
Stingers (burners)

• Usually a transient stretch injury to the upper trunk of the brachial plexus involving the C5 and C6 nerve roots
• Football most common sport
• Check strength of shoulder abduction and biceps- do not let player go back until strength is normal
Labral tears

- Labral tears that involve the superior labrum are called **SLAP** lesions. (superior labrum lesions anterior-to-posterior) They are the most significant. This involves the anchor of the long head of the biceps.
- Difficult to diagnose, often a diagnosis of exclusion.
- Other labral tears range from degenerate fraying to frank tears.
- If suspect a SLAP tear, get MRI arthrogram (dye) rather than just MRI.
The labrum is torn from front to back (anterior to posterior)
Throwing injuries

• Can include impingement syndrome, SLAP lesions and other labral tears, partial thickness cuff tears, also:
  • Internal impingment, cause posterior pain, result of extreme external rotation during throwing motion. Can develop contracture and lose internal rotation- initial rx is PT

• Biceps tendonitis
Throwing injuries

• Suprascapular nerve entrapment
  – Volleyball, tennis
  – May be painful, frequently painless loss of strength (loss of ext rotation most common, abduction less frequent)
  – May of atrophy infraspinatus alone, or both infraspinatus and supraspinatus
  – EMGs, NCVs may not be diagnostic
  – MRI may show ganglion
Calcific tendonitis

• Calcium deposits within rotator cuff noted on X-rays
• Frequently asymptomatic
• Most resolve with time
• Higher incidence in diabetics
Differentiating from neck

• Shoulder pathology can cause pain distal to elbow, but typically doesn’t
• Other than transient numbness with a “stinger”, shoulder problems do not cause numbness
• Cervical disc patients frequently more comfortable holding arm overhead (shoulder pathology typically worse with arm overhead)
Examination
Common Landmarks

• Should be able to palpate the clavicle, spine of the scapula, acromion, AC joint
• Even in slender person, unlikely to palpate biceps tendon (but can still test for tenderness over it)
Inspection

• Atrophy
  – Generalized wasting- Chronic RCT, DJD
  – Infraspinatus only- entrapment of the suprascapular nerve by ganglion
  – Infra. and supraspinatus- entrapment at suprascapular notch
Contour of biceps

- Proximal rupture
- Distal rupture
Prominence of AC joint

• Arthritis

• History of trauma?

• Arthritis of AC joint is frequently not painful
Tenderness

- AC joint
- Over greater tuberosity
- Bicipital groove
- Clavicle
**AC joint tenderness** (check both sides)
A prominence on exam, or arthritis on x-ray +/or MRI, is NOT significant unless they have pain there.
Palpating over biceps tendon
There is an actual groove
Range of Motion

• Measure both active- sitting, plus active-supine and passive-supine
• Check for “painful arc”
• If limited in both active and passive- frozen shoulder or DJD
• If limited only active- due to pain +/-or weakness
Active flexion sitting

• Relative to thorax
Active supine

• With weakness only, much better
Passive supine

• If limited due to pain, likely will be improved
• Assess firmness of endpoint
• In all testing, note any grinding (DJD)
Internal rotation

• How high they can reach behind their back
• Arm abducted 90, measure
External rotation

• Measure with arms to side or abducted
Impairment rating
Strength testing

• Must be able to “break them” - use mechanical advantage
Strength Testing

• Note both any weakness and pain associated with the testing
• “Break-way” weakness due to pain can be seen with impingement syndrome, or bursitis due to rotator cuff tear
• Painless weakness more likely due to muscle injury (Rotator Cuff), or nerve compression
Strength Testing

- Most cuff tears are in supraspinatus, manifest in weakness of abduction
- Bigger tears extend into infraspinatus, also have weakness of external rotation
- Tears of subscapularis (rarer) manifest with weakness of internal rotation
Abduction Strength

- Abducted 90, forward flexed 30, thumbs down
Abduction Strength

- Drop arm test- they suddenly let go
- Related to “painful arc” of motion
- “positive drop arm test” Frequently seen with rotator cuff tears, is a “buzz word” for getting MRI’s approved
Internal Rotation Strength

• Elbows to side

Lift off test
External Rotation Strength

• Weakness of external rotation strongly suggestive of RCT- with impingement only, external rotation usually intact

• The more the weakness, the larger the tear

• Some can’t hold the arm in neutral- it drifts in due to marked weakness
External Rotation Strength

- Drift due to weakness
- Neutral

Drifting in
Biceps

• There may be weakness due to pain with biceps tendonitis, but if there is biceps or triceps weakness, suspect stinger or cervical etiology

• To test strength, get mechanical advantage, sometimes when testing football players weakness is not evident on first test, but is on 3rd or 4th done rapidly in a row (fatigue)
Biceps strength testing
Triceps Strength Testing
Special Testing

• Impingement signs- Hawkins, Neer
• O’Briens (AC joint, SLAP lesions)
• Cross Arm Adduction (AC joint)
• Instability- Apprehension, relocation
• Yergasson, Speed (Biceps tendon)
Neer Impingement (sub acr. bursitis): Internally rotate the maximally forward-flexed arm
Hawkins Impingement (sub acr. Bursitis): Abduct 90 in scapular plane, internally rotate upper arm
Impingement injection test

• Inject 5-6 ml 1% lidocaine into subacromial space of patient with positive Neer and Hawkins signs. If the pain from these tests is relieved or markedly decreased, test is positive for subacromial impingement
Yergason’s Test (biceps tendonitis): Elbow flexed 90, forearm pronated, patient attempts to supinate against resistance.
Positive of painful in region of bicipital groove
Speed’s Test (biceps tendonitis):
Elbow extended, forearm supinated and shoulder in 90 of abduction, patient flexes (raises) shoulder against resistance
**O’Brien Test** (AC joint or SLAP lesion) Shoulder in 90 forward flexion, elbow extended and arm in 15-20 adduction. Positive test if pain with thumb down, relieved with thumb up.
Cross arm adduction (AC joint): Shoulder flexed 90, then passively adducted across their chest. Reproduction of pain is positive
Apprehension test (anterior instability): External rotation of abducted arm, with anterior force, gives feeling of instability
Relocation test (anterior instability): With posterior directed pressure, pain and feeling of dislocating is relieved
Laxity of joint: index finger on coracoid, thumb on posterior acromion, slide shoulder forward and back. If patient is relaxed, there should be movement. (difficult to detect small differences)
Generalized laxity: With unstable shoulder, check for hyperextension of elbow and ability to pull thumb back to wrist
Spurling’s Manuever (cervical radicuopathy): The neck is tilted to the affected side, extended, and gentle downward pressure is applied to the head. A positive test reproduces the symptoms.