Shoulder Disorders

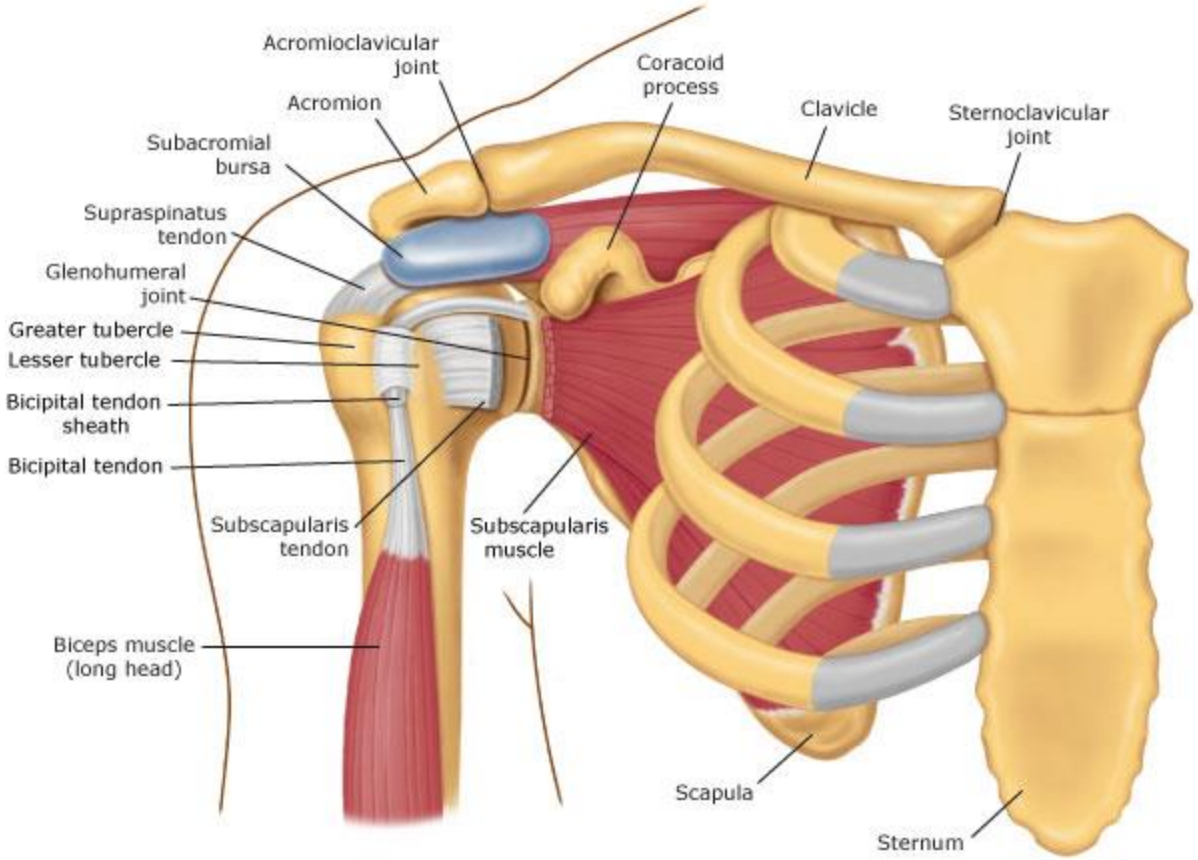
Simranjit Singh, PGY-3

Shoulder Pain - Basics

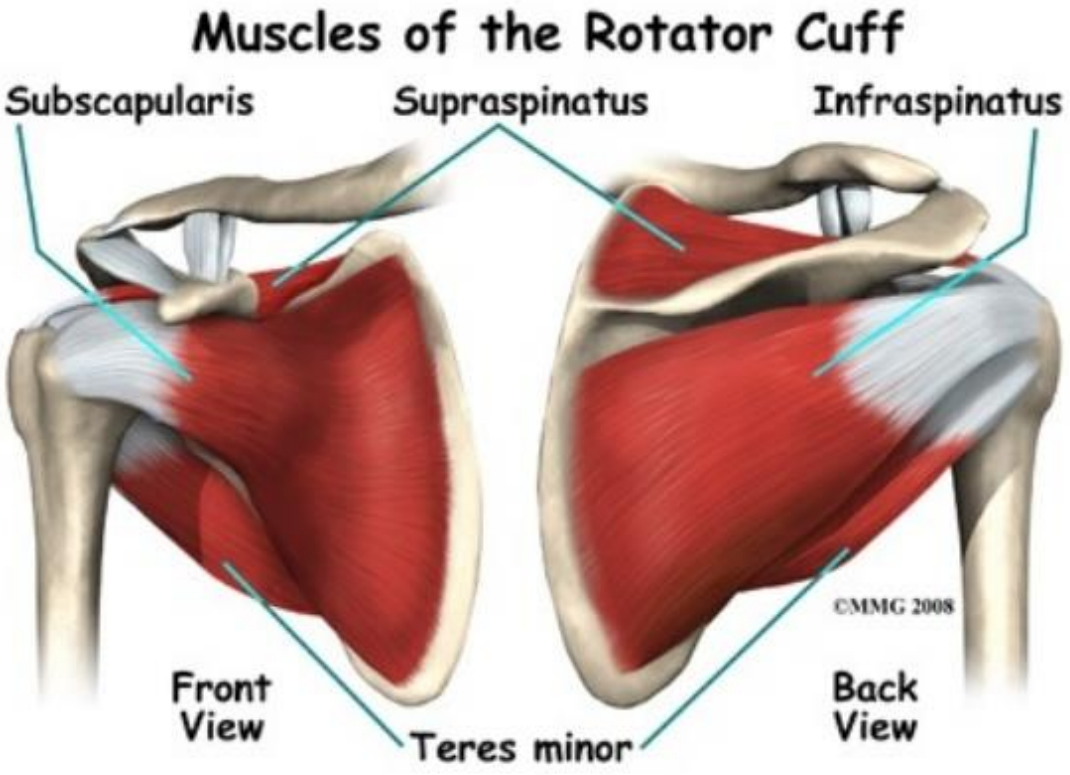
- Initial step: pain from shoulder or referred site?
  - Pain with shoulder movement + stiffness and limited ROM: intrinsic d/o
  - Normal shoulder exam: referred
  - Neck pain + neck stiffness + decreased neck ROM + pain extending below elbow: referred from C-spine

Shoulder Exam - Basics

- Inspection, palpation, range of motion testing, specific test maneuvers



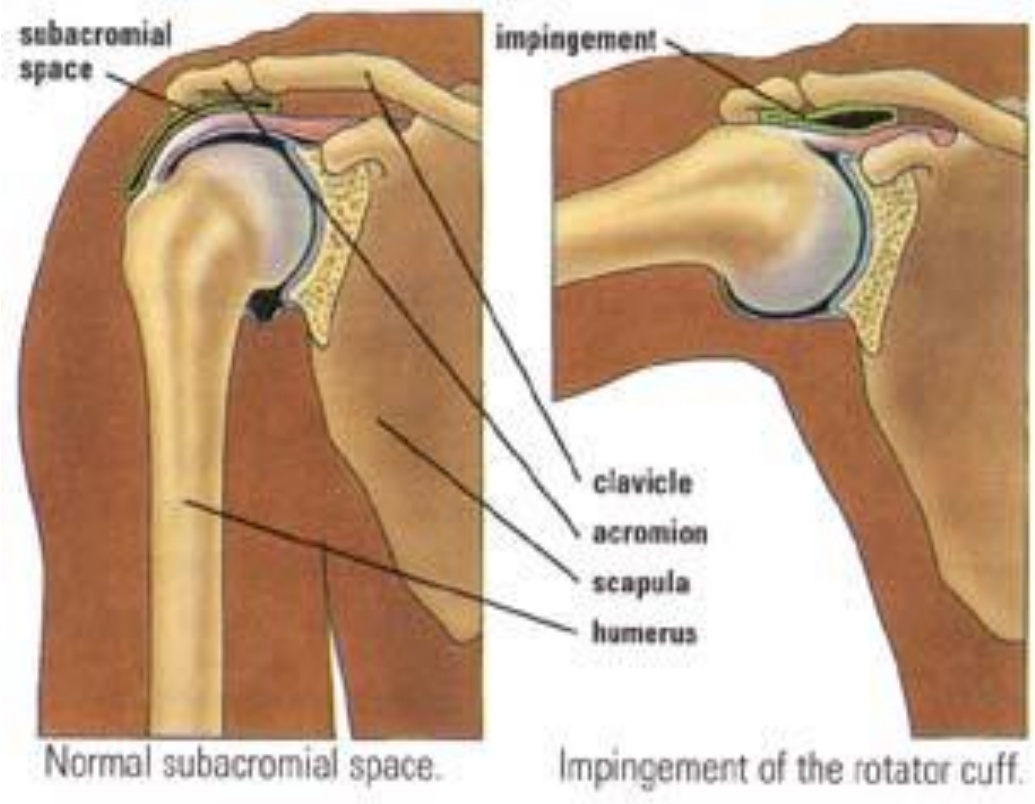
Rotator Cuff Disorders



Impingement/Rotator Cuff Syndrome

- **Spectrum including:**
  - Rotator cuff tendinitis
  - Rotator cuff tears
  - Subacromial bursitis

- **Subacromial impingement syndrome**
  - from compression of soft tissues of shoulder, leading to rotator cuff tendinitis and subacromial bursitis



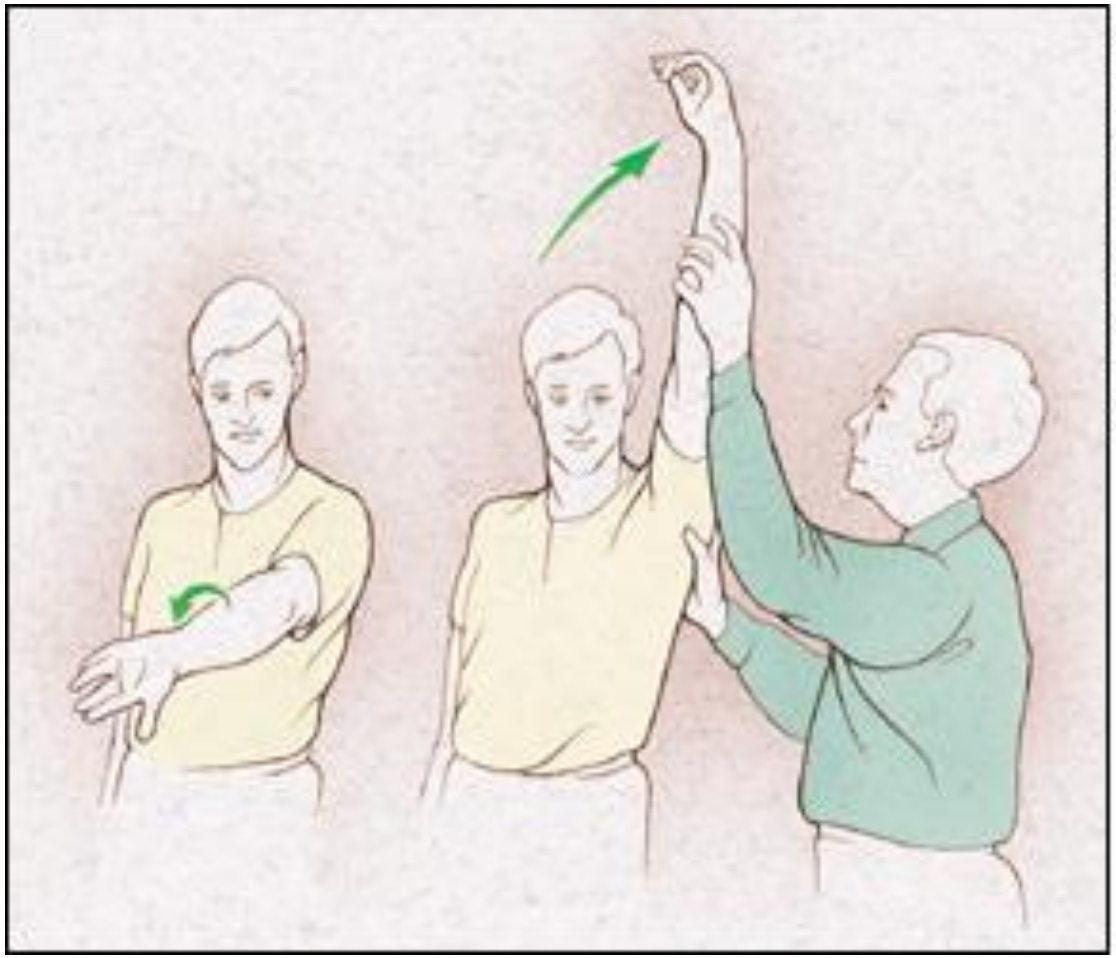
Rotator Cuff Disorders

- Pain is usually dull, worse with activities, worse at night
- Sometimes, weakness/ decreased ROM/stiffness also reported
- On exam, inspect for supraspinatus and infraspinatus muscle atrophy, tenderness along biceps tendon (bicipital tendinitis)
- Strength is preserved, unless there is full-thickness rotation cuff tear

Rotator Cuff Disorders

- Diagnosis:
  - Usually physical exam maneuvers: painful arc test, drop arm test (assess strength)
  - Imaging (usually MRI) typically not needed unless
    - full-thickness rotator cuff tear suspected
    - there is diagnostic uncertainty

Neer Test



Patient's scapula is stabilized and shoulder is flexed, with arm fully pronated

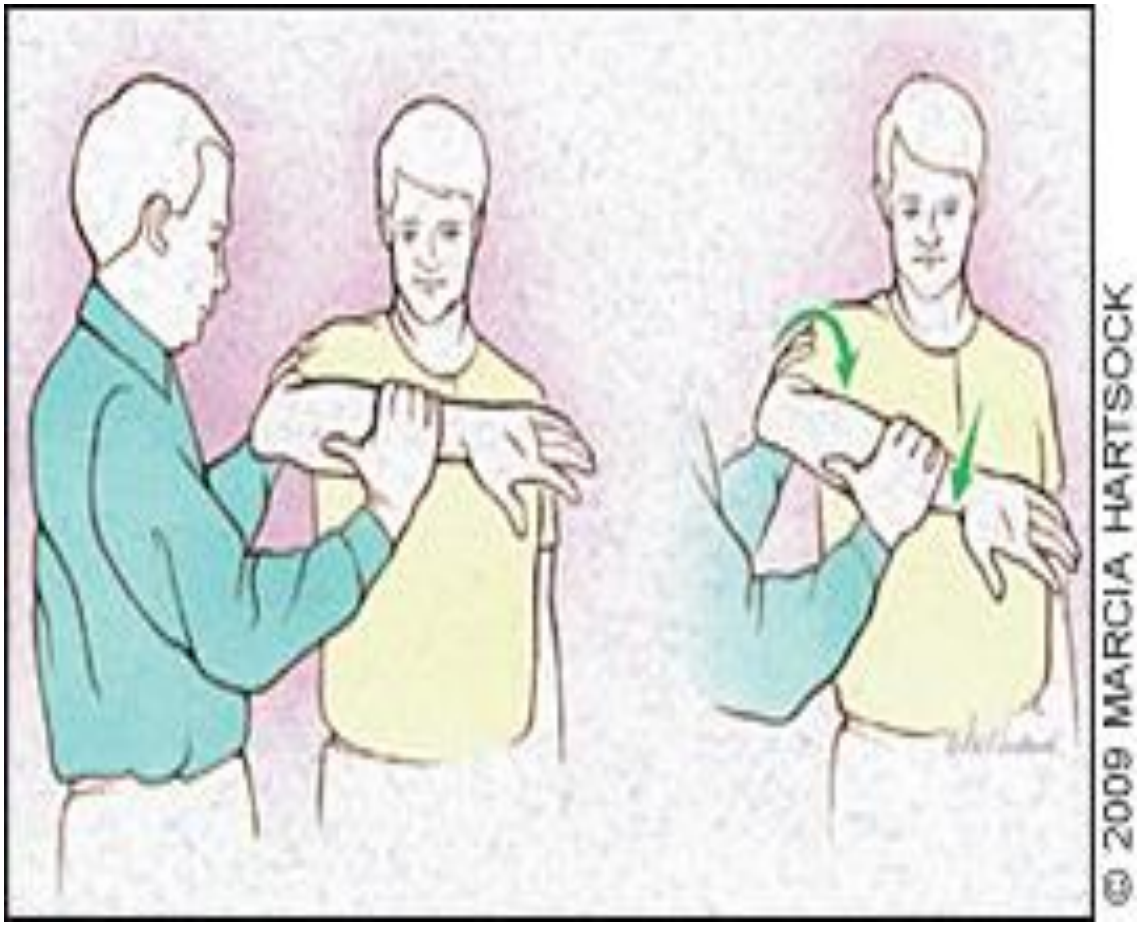
Positive test: pain suggests subacromial impingement or rotator cuff tendinitis

Painful Arc Test

Patient actively abducts arm

Positive Test: pain between 60 and 90 degrees of abduction – suggests subacromial impingement

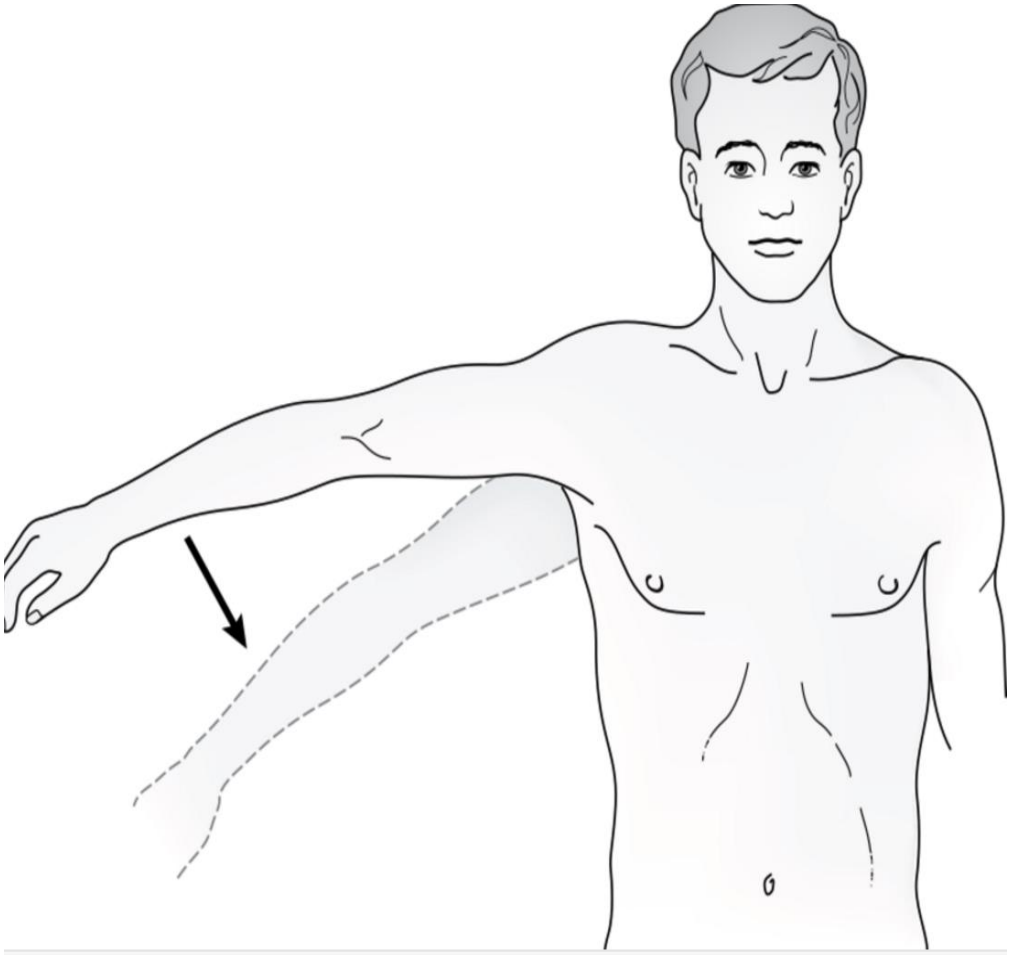
Hawkins Test



Patient's shoulder is flexed to 90 degrees, elbow flexed to 90 degrees, forearm placed in neutral position. Then, while supporting the arm, the humerus is rotated internally.

Positive test: pain suggests subacromial impingement or biceps tendinitis

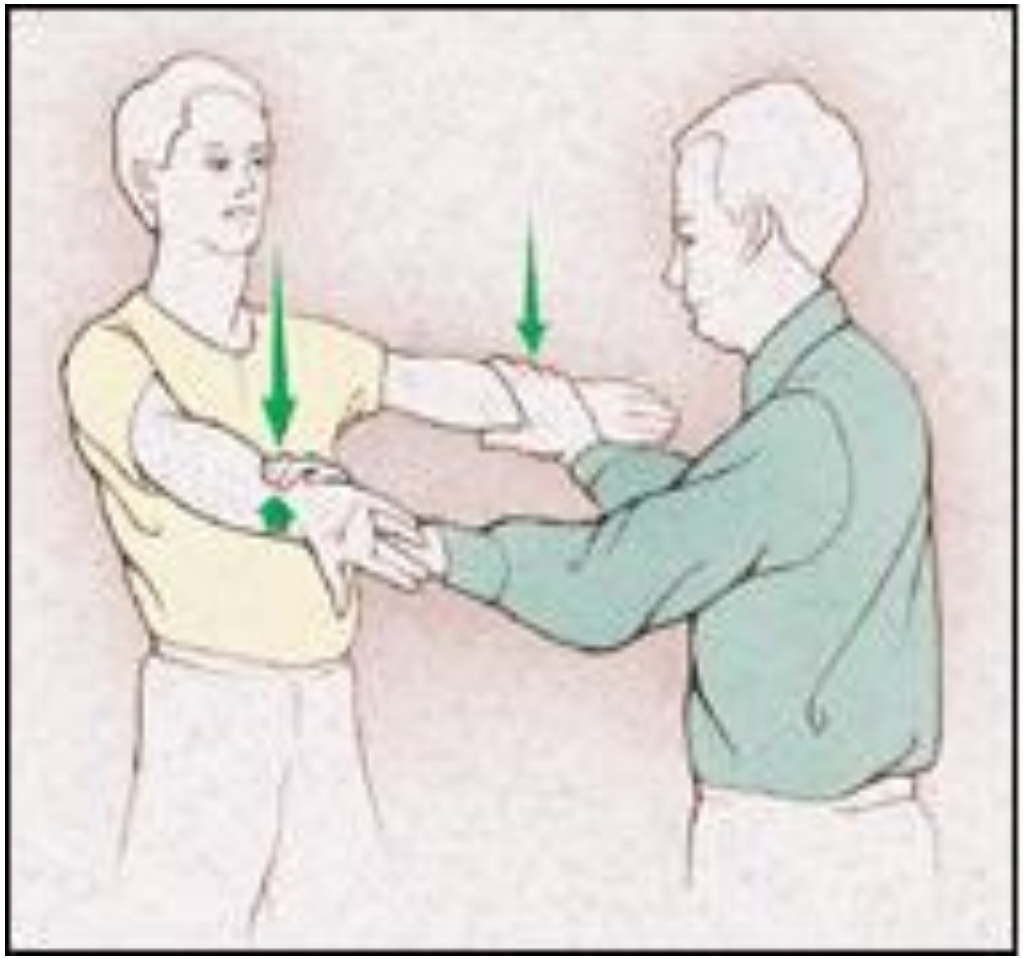
Drop Arm Test



Patient's arm is passively abducted to 90 degrees, then asked to slowly lower down to waist

Positive test: arm will drop down (indicates supraspinatus tear)

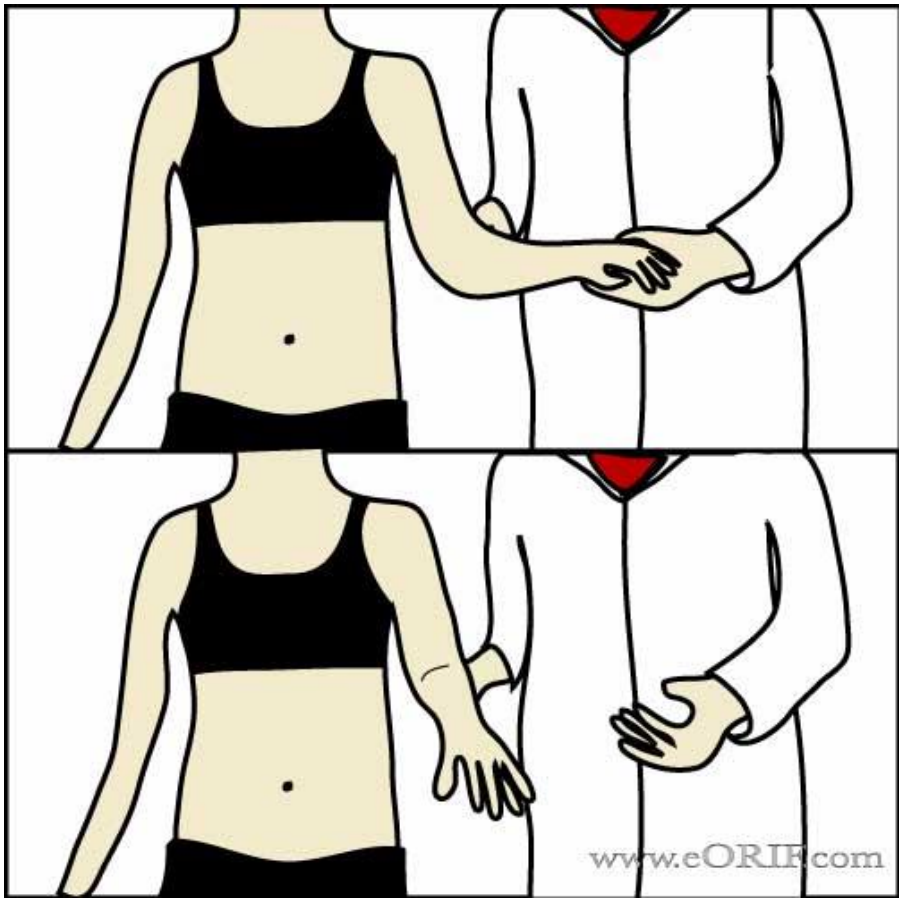
Empty Can Test



Patient's shoulder is passively abducted to 90 degrees in forward flexion, then maximally internally rotated with thumb pointing down. Examiner applies downward pressure at wrist or elbow while patient resists

Positive test: weakness suggests supraspinatus tendon tear

External Rotation Lag Test



Patient's arm is abducted to 20 degrees. Examiner passively externally rotates arm.

Positive test: patient is unable to maintain a position of full external rotation (suggests possible tear of supraspinatus and infraspinatus muscles)

Rotator Cuff Disorders

- Treatment (Rotator cuff tendinitis/subacromial bursitis):
    - Conservative rx for suspected rotator cuff tendinitis and subacromial bursitis
    - Avoid repetitive overhead activities
    - Refrain from lifting heavy objects
    - Exercises that strengthen rotator cuff muscles and improve flexibility
    - NSAIDs…also tylenol PRN
    - Glucocorticoid injections – yes or no?

Glucocorticoid Injection

- Conflicting data

- Per MKSAP, ok to give this to those who fail to respond after 4-6 weeks of the aforementioned measures or initially in patients whose pain is so severe that they are unable to participate in therapy

Rotator Cuff Tears

- **Treatment:**
  - Initial management similar
  - Immediate surgery for acute full-thickness tear in younger patients, but if older – consider conservative
  - Can consider surgery for people with partial tears who fail to respond to conservative therapy

MKSAP Question

A 38 yo woman is evaluated in ED for a 1-day history of right shoulder pain, which began after she fell on her right shoulder while running. She reports no shoulder problems before the fall. She is a highly active athlete who enjoys running, biking and playing racquetball. Medical history is unremarkable. Her only medication is acetaminophen for pain as needed.

On exam, vital signs are normal. BMI is 21. On musculoskeletal exam, the neck is normal. The right shoulder is normal in appearance, and there is no tenderness of bony structures. The patient is unable to actively abduct her right shoulder beyond 90 degrees. When asked to lower her arm progressively once it has been passively abducted to 90 degrees, her arm falls to her waist. When her arm is passively abducted to 20 degrees and externally rotated, she is unable to maintain external rotation. There is no pain with internal or external rotation. Grip strength and sensation in the hand are normal. Plain radiographs of the right shoulder shows no dislocation or fracture.

Which of the following is the most appropriate next step in management?

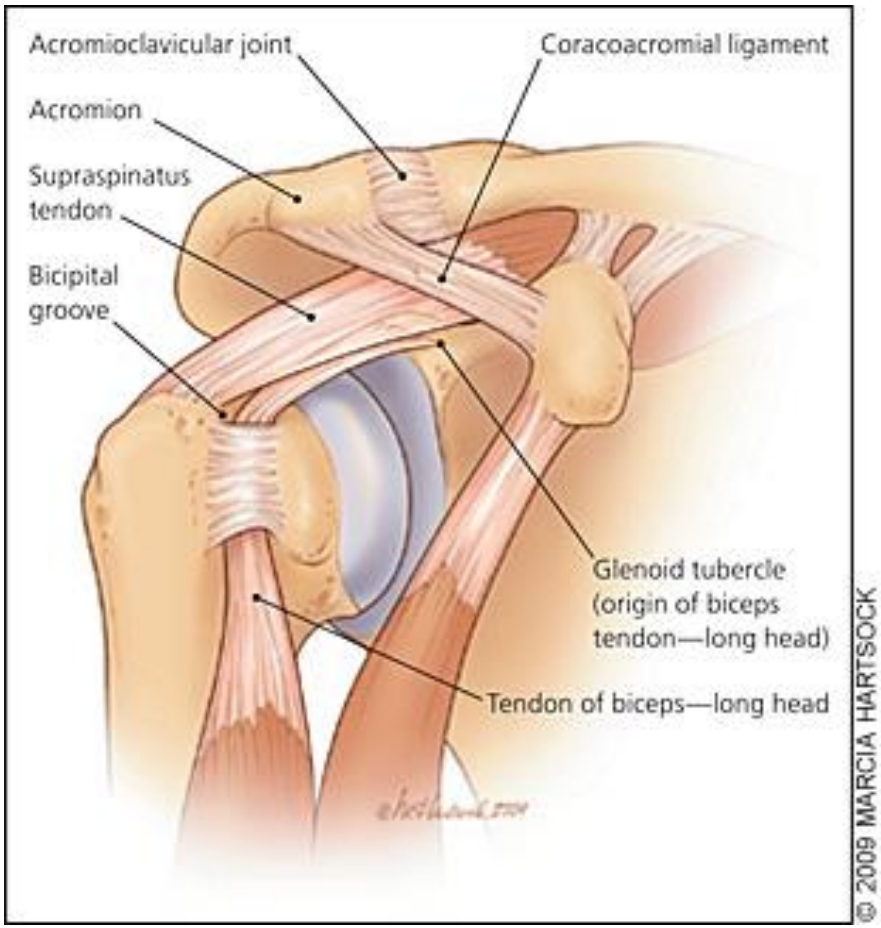
(A) Glucocorticoid injection
(B) MRI of the right shoulder
(C) Physical therapy
(D) Right upper extremity nerve conduction study

Biceps Tendinitis

- Primary occurs as inflammation condition at bicipital groove
- Secondary (more common) results from changes to surrounding structures like rotator cuff impingement or tears
- Overuse injury
- On exam, ttp along anterior aspect of shoulder, which may radiate down biceps
- Exam: Neer, Hawkin's

Biceps Tendon 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 for those who are young/active

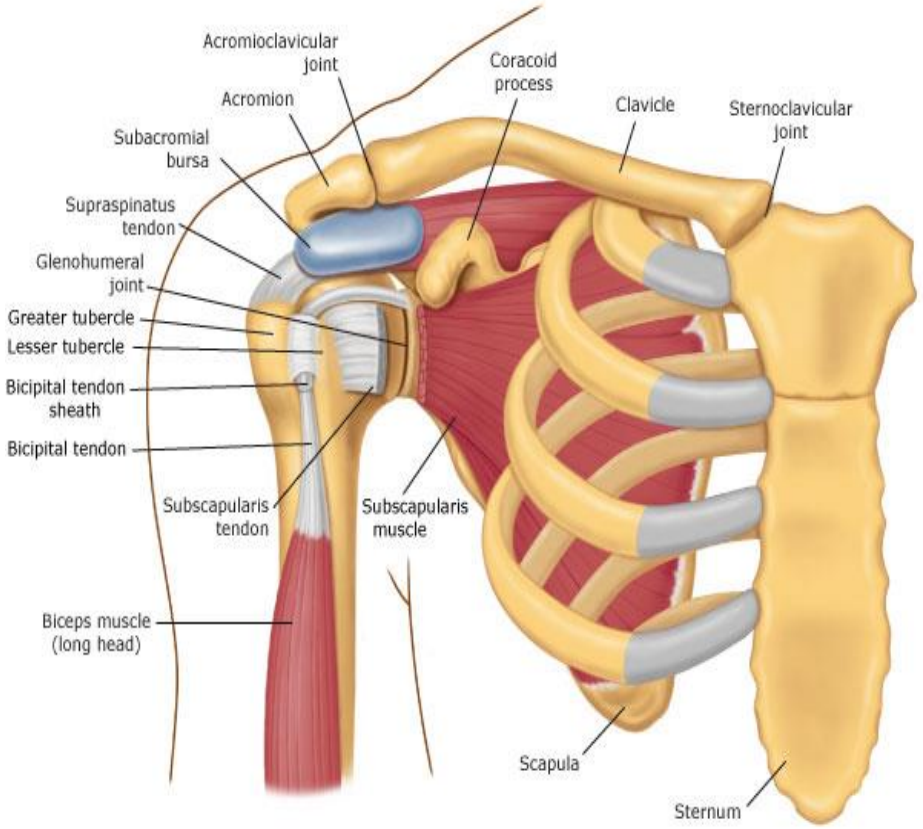


Biceps Tendon Rupture

Biceps Tendon Rupture

Adhesive Capsulitis ("Frozen Shoulder")

- Associated with development of glenohumeral joint capsule thickening and fibrosis
- F>M; ages 40-70
- Causes: idiopathic or s/p shoulder injury or shoulder surgery
- Pathophysiology: increased myofibroblasts and fibrosis



Adhesive Capsulitis

- Associated with:
  - DM
  - Hypothyroidism
  - Parkinson's disease
  - Stroke
  - Prolonged immobility
- Loss of shoulder movement + pain
- Exam: deltoid insertion site ttp, loss of active and passive ROM
- Xrays usually normal

Adhesive Capsulitis

- Treatment:
  - Injection of glucocorticoids to glenohumeral joint, to reduce intra-articular inflammation
  - Systematic review supports giving up to three intra-articular injections
  - PT less beneficial than these injections, although can be good if done following glucocorticoid injection
  - NSAIDs/tylenol for pain control
  - Surgery if do not improve 6-12 weeks of conservative measures; tell patients that ROM and pain may not improve till several years post-op

J Shoulder Elbow Surg. 2016 Aug;25(8):1274-9. doi: 10.1016/j.jse.2016.01.012. Epub 2016 Mar 31.

The effect of myofibroblasts and corticosteroid injections in adhesive capsulitis.

Hettrich CM[1], DiCarlo EF[2], Faryniarz D[2], Vadasdi KB[2], Williams R[2], Hannafin JA[2].

Author information

Abstract

HYPOTHESIS: Adhesive capsulitis is a condition that results in restricted glenohumeral motion. Fibroblasts have been implicated in the disease process; however, their role as a contractile element in the development of fibrosis and capsular contracture is not well understood. We hypothesized (1) that myofibroblast prevalence in capsular biopsy specimens from patients with adhesive capsulitis would be increased compared with controls and (2) that patients treated with an intra-articular injection of corticosteroid would have fewer myofibroblasts.

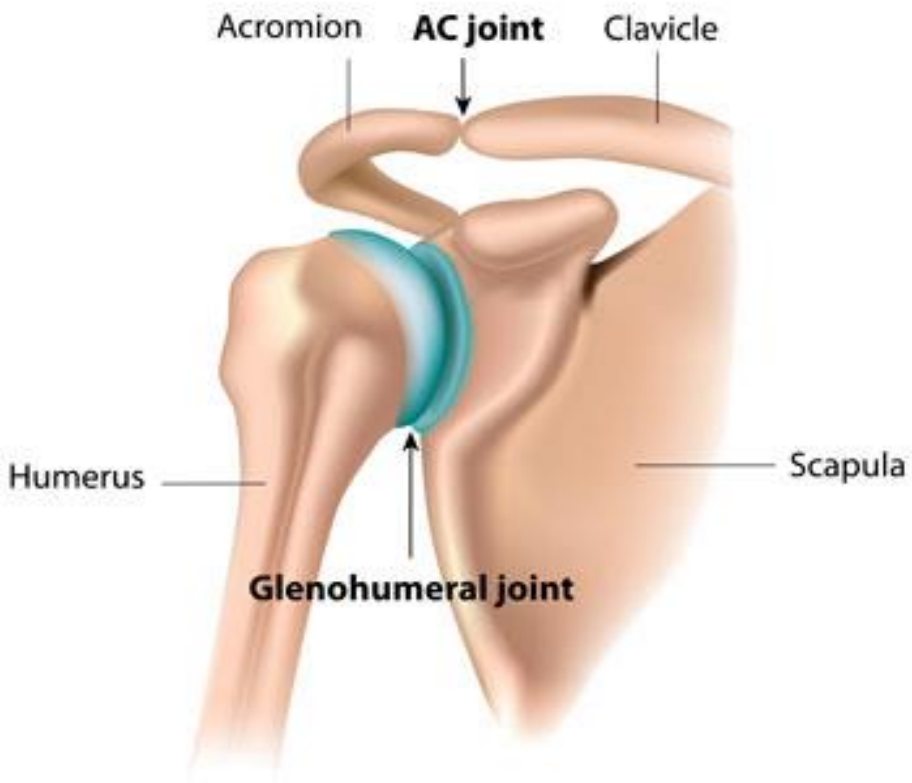
METHODS: The study prospectively enrolled 20 consecutive patients with adhesive capsulitis scheduled for capsular release and matched controls. Tissue samples were collected from the posterior and anterior capsule for histomorphologic and immunohistologic analyses. Identical sectioning and preparation was performed in 14 additional adhesive capsulitis specimens from patients who had not received corticosteroid injections.

RESULTS: Patients with adhesive capsulitis not treated with preoperative corticosteroid demonstrated more histologic evidence of fibromatosis, synovial hyperplasia, and an increase in positive staining for α-smooth muscle actin than patients who had received intra-articular injections of steroid. No specimens obtained from control patients demonstrated positive staining for α-smooth muscle actin.

DISCUSSION: There was a higher prevalence of myofibroblast staining in patients with adhesive capsulitis, implicating activation of the myofibroblast in the pathophysiology of capsular contracture. Intra-articular steroid injection decreases the presence and amount of fibromatosis, vascular hyperplasia, fibrosis, and the presence of fibroblasts staining for α-smooth muscle actin. This supports the use of steroid injections to alter the disease process by decreasing the pathologic changes found in the capsular tissue.

Acromioclavicular Joint Degeneration

- Pain in superior aspect of shoulder, although pain may be poorly localized
- AC joint is tender to palpation
- Cross arm test usually positive
- Pain with abduction beyond 120 degrees



Cross Arm Test

Pt abducts arm to 90 degrees, then actively adducts arms cross body

Positive test: pain in acromioclavicular joint = AC joint disorder

AC Joint Degeneration

- Treatment:
  - NSAIDs
  - Activity modification
  - Glucocorticoid injection – short term pain relief
  - Surgery rarely indicated

MKSAP Question

A 68 yo M is evaluated for 3-month history of pain on superior aspect of the right shoulder. The pain developed insidiously and has progressively worsened. He reports no trauma or other symptoms. Medical history is unremarkable. The patient has tried both acetaminophen and ibuprofen, with only minimal pain relief.

On exam, vital signs are within normal limits. BMI is 28. The right shoulder is normal in appearance. Pain is reproduced with adduction of the right arm across the body. The painful arc test and drop-arm test are negative. There is full active and passive range of motion; strength is 5/5 throughout the right arm. The remained of exam is unremarkable.

Which of the following is the most likely diagnosis?

(A) Acromioclavicular joint degeneration
(B) Adhesive capsulitis
(C) Rotator cuff tear
(D) Supraspinatus tendinitis

Thank you