Evaluation and Treatment/Injection of Common Shoulder Complaints

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Disclosures

- None

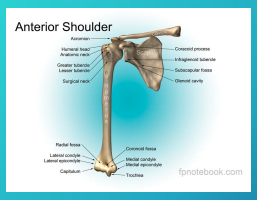
Learning Objectives

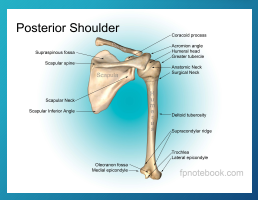
- Identify the most common causes of shoulder pain in the geriatric population
- Differentiate amongst shoulder ailments based on pain location and provocative maneuvers on exam
- Attain level of comfort performing office-based, anatomy guided shoulder injection directed by physical exam findings

Geriatric Shoulder Pain

- Most common causes
  - Subacromial Impingement
    - Spectrum of disease from rotator cuff tendinitis/tear to subacromial bursitis
  - Adhesive capsulitis
    - Also known as frozen shoulder
  - Acromioclavicular Joint Arthritis
  - Glenohumeral Joint Arthritis

Anatomy





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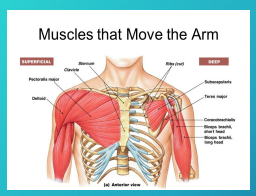

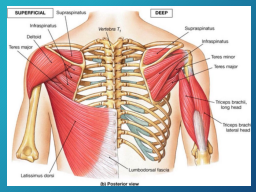

Workup

- Patient presents to office with complaints of shoulder pain
- Stick to the basics
  - History
    - Activities related to the onset of pain
    - Location and character of symptoms
  - Physical Exam
    - Covered in upcoming slides
  - Radiography
    - Beneficial to have X-rays before considering injection

Pain Location

- Generally speaking:
  - Anterior Shoulder Pain
    - Impingement Syndrome, Rotator Cuff Tear, Frozen Shoulder, Glenohumeral Arthritis
  - Superior Shoulder Pain
    - Acromioclavicular Injuries
  - Lateral Shoulder Pain
    - Rotator Cuff Tear, Impingement Syndrome, Frozen Shoulder
  - Posterior Shoulder Pain
    - Rotator Cuff Tear, Glenohumeral Arthritis

Physical Exam

- Inspection and Palpation
  - Anterior View
    - Abnormal contours and bony prominences
    - Palpate anterior joint line
  - Posterior View
    - Symmetry between left to right (shoulder height, scapula)
      - Dominant shoulder usually slightly lower
    - Atrophy
      - Trapezius, deltoid, infraspinatus
    - Palpate posterior joint line
  - AC joint
    - Palpate distal clavicle to the acromion
      - Tenderness or spurs
  - Subacromial Bursa
    - Palpate anterolateral acromion and move down till sulcus

Range of Motion

- Active and Passive
  - Performed by patient on their own first then by examiner
  - Look for discrepancy
    - Rotator cuff tear - loss of active with preserved passive
    - Frozen shoulder - loss of active and passive equally
- Flexion
  - Elbow extended with arm at side
  - Patient raises arm forward in the sagittal plane
  - Normal is 160°-170°
- Abduction
  - Elbow extended with arm at side
  - Patient raises arm outward into coronal/frontal plane with palm down
  - Normal is up to 150°

Range of Motion (cont'd)

- External Rotation - Arm at Side
  - Elbow flexed to 90°; palm facing body; forearm parallel to sagittal
  - Measure maximum lateral rotation of arm
  - Up to 90° is normal
- External Rotation - Arm Abducted 90°
  - Elbow flexed 90°; forearm parallel to floor; arm supported by examiner
  - Arm moved up to point towards ceiling
- Internal Rotation - Arm Abducted 90°
  - Elbow flexed to 90°; forearm parallel to floor; arm supported by examiner
  - Arm moved down to point towards floor
  - Up to 90° is normal

Strength Testing

- General principles
  - Always compare to unaffected side
  - Can be difficult to discern weakness from tear itself vs pain
- Deltoid (Abduction)
  - Patient's arm in 90° of abduction with elbow flexed at 90°; forearm parallel to floor
  - Push down on elbow against resistance
- Supraspinatus (Abduction)
  - Arm in 90° abduction, 30° of horizontal adduction, internally rotated with elbow extended
  - Push down on distal arm as patient resists

Strength Testing (cont'd)

- Infraspinatus and Teres Minor (External Rotation)
  - Arm at side and elbow flexed to 90°
  - Support the elbow and try to internally rotate while patient resists
- Hornblower's Test
  - Evaluates the Teres Minor
  - Arm supported in 90° abduction, elbow flexed to 90°, and adducted between 30 and 45° from the coronal plane (scapular plane)
  - Ask patient to rotate arm externally 90° against resistance
  - Teres minor injury if unable to maintain that position and arm drops
- Gerber Lift-off Test (Internal Rotation)
  - Tests subscapularis
  - Hand behind back, palm facing away from body, lift away against resistance

Special Tests

- Neer Impingement Sign
  - Primarily for shoulder impingement or rotator cuff tear
  - Also positive in adhesive capsulitis and arthritis
  - Examiner places one hand on scapula to stabilize
  - Other hand internally rotates arm and flexes it
  - Compresses greater tuberosity against acromion
- Hawkins Impingement Sign
  - Reinforces Neer sign
  - Flex arm and elbow to 90°
  - Support elbow and internally rotate humerus
  - Pain = rotator cuff tear or tendinitis

Special Tests (cont'd)

- Cross-Body or Horizontal Adduction Test
  - Flex arm to 90° then horizontally adduct arm across the body
  - Pain over AC joint suggests arthritis, sprain, or separation
- O'Brien Test
  - Arm in 90° flexion and 30° horizontal adduction
  - Fully internally rotate the arm and point thumb down
  - Patient resists downward physician force
  - Then patient externally rotates arm and points thumb up
  - Patient again resists downward force
  - Pain with thumb down but not up = positive test
  - Pain at top of shoulder = AC joint; internal shoulder pain = labral pathology

Special Tests (cont'd)

- Jobe Supraspinatus Test and Empty Can Test
  - Elbow in full extension, shoulder abducted to 90° and horizontally adducted 30° to the scapular plane
  - Maximally internally rotate arm so thumb points down
  - Patient resists downward pressure on arm
  - Pain/weakness = supraspinatus weakness/inflammation

Impingement/RTC tendinitis/subacromial bursitis

- Inflammation of the subacromial bursa/RTC tendons
- Confined by the coracoacromial arch
  - Coracoid process, coracoacromial ligament, acromion, and AC joint capsule
- Loss of microvascular blood supply with repeated mechanical insult
- Gradual onset/overhead activity/night pain/atrophy
- Pain on palpation of greater tuberosity and subacromial bursa and lateral deltoid to lateral upper arm
- Pain on 90-120° abduction and when lowering
- Positive Neer/Hawkins
- Radiographs usually normal

Impingement/RTC tendinitis/subacromial bursitis

- How to differentiate from:
  - AC joint pathology - pain over AC joint
  - Adhesive capsulitis - active and passive ROM loss
  - Glenohumeral OA - pain with any motion; evidence seen on imaging
- Treatment
  - NSAIDS
  - Rest/activity modification
  - Stretching/PT program
  - Subacromial injection

Adhesive Capsulitis/Frozen Shoulder

- Loss of at least 50% active and passive ROM
- 40-60 y/o; female; DM (esp type I) most common risk factor
- Long recovery - 6 months-2 years; usually minimal long-term deficit
- Exam reveals painful motion in all planes at the extremes
- Loss of external rotation with arm at side is hallmark
  - Contracture of coracohumeral ligament limits external rotation
- Pain/tenderness at deltoid insertion
- Radiographs usually normal

Adhesive Capsulitis/Frozen Shoulder

- How to differentiate from:
  - Impingement - pain with elevation but motion preserved
  - Glenohumeral OA - evidence seen on imaging
  - Rotator cuff tear - normal passive ROM
- Treatment
  - NSAIDs
  - Heat
  - Gentle stretching program/PT program with ice after treatment
  - Intra-articular steroid injection

Acromioclavicular Joint Arthritis

- Can be induced by prior trauma
  - Fall onto top of shoulder
- Chronic degenerative process
- Pain over AC joint/top of shoulder with palpation
  - Lifting arm/overhead activity also causes pain in this area
- Positive Cross-Body/Horizontal Adduction Test or O'Brien
- Radiographs reveal osteophytes and loss of joint space
  - Obtain Zanca view with 15° cephalic tilt

Acromioclavicular Joint Arthritis

- How to differentiate from:
  - Impingement – pain more lateral and with abduction; normal X-rays
  - Adhesive capsulitis – active and passive ROM loss; normal X-rays
  - Glenohumeral OA – pain with any motion; different location on X-rays
- Treatment
  - Activity modification
  - NSAIDS/topical anti-inflammatories
  - Physical therapy with focus on shoulder girdle strengthening
  - AC joint injection

Glenohumeral Joint Arthritis

- Joint destruction with associated cartilage loss
- Diffuse, deep pain but usually more posterior (along joint line)
- Pain at rest and at night; difficulty with ADLs
- Decreased active and passive ROM with atrophy
- Crepitus with rotation and flexion
- Pain with most provocative maneuvers
- Radiographs reveal joint space narrowing, osteophytes

Glenohumeral Joint Arthritis

- How to differentiate from:
  - Impingement – preserved motion; pain with overhead activity; normal X-rays
  - Adhesive capsulitis – normal X-rays; at least 50% restriction with active and passive ROM
  - AC joint arthritis – different location on X-rays; pain on lifting arm
- Treatment
  - NSAIDS
  - Rest/activity modification
  - Heat/ice
  - Physical therapy program
  - Intra-articular steroid injection

Subacromial Bursa Injection

- Stand behind seated patient (patient with hand resting on leg)
- Palpate the lateral and posterior aspects of acromion and find posterolateral corner
  - Mark an area 1cm inferior to posterior border of acromion – find soft spot medial and inferior to posterolateral corner
- Prepare injection
  - 3 cc 1% Lidocaine with 2cc Depomedrol (40mg/cc) in same syringe
  - Use a 25-gauge, 1.5-inch needle
- Prepare skin
  - Povidone-iodine swab stick
  - Alcohol swab
  - Freeze spray
- Insert needle with target being midpoint of underside of acromion
  - Advance needle aiming anteriorly, medially, and superiorly to a depth of 3-4 cm
- Aspirate to ensure not in blood vessel
- Inject solution – if met with resistance, pull back slightly and re-attempt. If still met with resistance, remove and reposition needle. Resistance could indicate needle is up against bone or in tendon.

Acromioclavicular Joint Injection

- Stand behind seated patient (patient with arm at side)
- Palpate the AC joint
  - Trace clavicle laterally and feel for slight depression at joint articulation. Mark area.
- Prepare injection
  - 0.5 cc of 1% Lidocaine with 0.5 cc of Depomedrol (40mg/cc) in same syringe
  - Use a 25-gauge, 1-inch needle
- Prepare skin
  - Povidone-iodine swab stick
  - Alcohol swab
  - Freeze spray
- Insert needle from a superior approach directed inferiorly through AC joint
- Aspirate to ensure not in blood vessel
- Inject solution

Glenohumeral Joint Injection

- Stand behind seated patient (arm at side and slightly in ER)
- Palpate coracoid and posterior corner of acromion
  - Mark an area 2cm medial and inferior to posterior corner of acromion – along the soft space of the joint line
- Prepare injection
  - 3 cc Ropivacaine with 2 cc Kenalog in same syringe
  - Use a 25-gauge, 2-inch needle
- Prepare skin
  - Povidone-iodine swab stick
  - Alcohol swab
  - Freeze spray
- With index finger of non-dominant hand on coracoid, insert needle at marked area pointing anteriorly toward coracoid.
- Aspirate to ensure not in blood vessel
- Inject solution. If met with resistance pull back slightly and re-attempt. If still with resistance, withdraw and reinsert.