American College of Physicians - Internal Medicine Meeting 2025
New Orleans, LA

Diagnosis-Driven Physical Examination of the Shoulder
Shoulder Exam Small Group Cases

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Posted Date: February 24, 2025

SHOULDER EXAM SMALL GROUP CASES

ACP Musculoskeletal Medicine Teaching Group

2025 ACP National Conference

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OBJECTIVES FOR SHOULDER SMALL GROUP SESSIONS

1. Practice the Shoulder Physical Exam
2. Work with faculty experts to improve proper exam techniques
3. Using cases, review common conditions of the shoulder
4. Identify key historical factors in a patient with shoulder pain
5. Interpret physical exam elements to specific shoulder diagnoses
6. Overview of shoulder pain treatment options (time permitting)

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MUSCULOSKELETAL ORGANIZATIONAL SCHEME

- History
- Inspection
- Palpation
- Range of motion
- Provocative tests

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THE ESSENTIAL SHOULDER EXAM FOR INTERNISTS

- **Inspection** – Bony abnormalities, muscle atrophy
- **Palpation** **ABC's**: AC joint, Biceps tendon, Coracoid, Subacromial space
- **ROM/Strength: SITS**
  - **Supraspinatus**
    - Abduction
    - Drop Arm/Empty Can
  - **Infraspinatus/Teres Minor**
    - External Rotation
    - ER Lag test/ Resisted ER
  - **Subscapularis**
    - Internal Rotation Spinous process level
    - IR Lag/Gerber lift off

Provocative Tests: BIAS

Biceps
- Yergason's
- Speeds

Impingement
- Neer's
- Hawkins

AC Joint
- Scarf
- Cross Arm

Stability—Next layer

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COMMON SHOULDER CONDITIONS

- Long head biceps tendon injuries
- Rotator cuff disease:
  - Sub-acromial bursitis/impingement
  - Partial Rotator cuff tendon tear
  - Full Rotator cuff tendon tear
- Acromioclavicular Osteoarthritis
- Adhesive capsulitis
- Glenohumeral joint osteoarthritis
- Instability: Subluxation, dislocation, labral tears

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CASE 1

- HISTORY
- Chief complaint: 42 y/o LHD woman midwife, L shoulder pain 3 weeks
- Onset:
  - She works 5 days a week, 10-hour shifts
  - Recently put in a new garden and was digging for 4-5 hours, several days in a row
  - Now has anterior shoulder pain
- Location: anterior left shoulder
- Exacerbating factor:
  - pulling, twisting, reaching, heavy lifting; especially with palm up

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CASE 1

PHYSICAL EXAM

- Observation: Shoulders symmetric, no deformity
- Palpation: +Marked tenderness over proximal biceps tendon, rest of shoulder is nontender
- ROM: Full and intact
- Strength: intact except slight weakness related to pain during elbow flexion with a supinated palm
- Special Testing: (+) Speeds, (+) Yergason's, (-) Empty Can, (-) resisted ER, (-) Liftoff, (-) Drop arm, (-) AC cross-arm, (-) Hawkins, (-) Neers

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BICEPS TENDINITIS/TENDINOPATHY

- Affects the long head of the biceps tendon
- Tendinitis or Tendinopathy; Partial thickness tear
- Hx: pain w/ elbow flexion/supination
- PE: Anterior location and +tenderness over bicipital groove
- Maneuvers: +Speed's Test and +Yergason's

Treatment:

- Rest
- NSAIDs and topicals
- Physical Therapy

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CASE 2

- HISTORY
- Chief complaint: 60 y/o male, frequent weightlifter with shoulder pain
- Onset:
  - Last week, he was doing a heavy set of bench press, and "over did it"
  - Similar mild-moderate intermittent pain for years; especially after heavy weightlifting
- Location: anterior, superior shoulder
- Exacerbating factors:
  - Reaching across his body & w/ shoulder ADduction (e.g. bench press or pushups)
- Night pain: Pain w/ sleeping on side or draping across body if on laying contralateral side

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CASE 2

- PHYSICAL EXAM
- Observation: Small bony prominence at AC joint
- Palpation: Tender at AC-joint but not elsewhere in the shoulder
- ROM: Full ROM, painful with adduction
- Strength: Full strength in SITS, deltoid, biceps, triceps
- Specialty Testing: (+) Cross-arm and Scarf tests; mild (+) Hawkins and Neer's; (-) Spurling's

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ACROMIOCLAVICULAR ARTHRITIS

- **History**: Heavy labor, weightlifters, history of contact sports, history of AC joint pathology like separation or distal clavicle osteolysis
- Pain arises with activities above or in front of body
  - swimming, basketball, swinging golf club, backhand tennis or seatbelt

- **Physical Exam**:
- Pain directly over AC joint
- Provocative test include Scarf test and Cross Arm test
- **Imaging:**
- Radiographs will show OA changes to AC joint

- **Treatment:**
- Activity modification, Physical Therapy
- Pain management: NSAIDS, steroid injection (can be diagnostic and therapeutic)
- Definitive: Mumford (distal clavicle resection)

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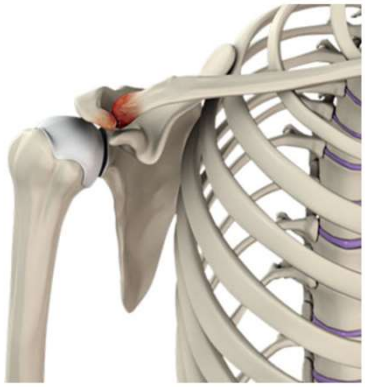
REFERENCES

- Mall NA, Foley E, Chalmers PN, Cole BJ, Romeo AA, Bach BR Jr. Degenerative joint disease of the acromioclavicular joint: a review. Am J Sports Med. 2013 Nov;41(11):2684-92. doi: 10.1177/0363546513485359. Epub 2013 May 6. PMID: 23649008.
- Docimo S Jr, Kornitsky D, Futterman B, Elkowitz DE. Surgical treatment for acromioclavicular joint osteoarthritis: patient selection, surgical options, complications, and outcome. Curr Rev Musculoskelet Med. 2008;1(2):154-160. doi:10.1007/s12178-008-9024-5



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CASE 3

- HISTORY
- CC: 45 yo female in for evaluation of shoulder pain
- Onset: 1 week ago, when s/he sustained a fall while rollerblading
- Location:
  - Lateral shoulder, subacromial space.
  - Radiation of pain toward the elbow, but not more distal.
  - Some weakness, though patient is uncertain because she does not know whether the weakness is due to the pain
  - No numbness
- Exacerbating factors:
  - Increase in pain with attempting overhead activities
  - Overhead work, reaching, carrying items if elbows are not at side
- Night pain: moderate, started two days after the fall

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CASE 3

- PHYSICAL EXAM
- Observation: Unremarkable
- Palpation:
  - Tender in supraspinatus and infraspinatus insertions
- ROM:
  - Pain with active abduction, beginning at around 30 degrees of abduction
  - Limited abduction from 30-90 degrees
  - Full passive ROM without pain
- Strength:
  - Clear weakness with empty-can test at 30 degrees of abduction and less weakness with external rotation, with increased pain during resistance
  - Full strength with subscapularis, though pain with resistance in these as well
- Specialty Testing: (+) drop arm. (+) lag signs on ext. rotation. (-) belly press and lift off. (+) Hawkins. (+) Neer. (-) Speed. (-) Yergason. (-) Cross-arm. (-) Spurling

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PARTIAL AND COMPLETE ROTATOR CUFF TEAR

History

- Fall on outstretched arm
- Complain of weakness > pain
- Pain with overhead activity
- Acute, Traumatic
  - Specific Event with pain and weakness
  - ≤ 3 months
- Chronic, Atraumatic
  - Gradual onset of weakness and pain
  - >3 months ago

Exam

- Limited active range of motion due to weakness, but normal passive range of motion
- Supraspinatus (70% of RCT)
  - Weak Empty Can at 30°
  - + Drop Arm test: Full tear (rare, deltoid can compensate)
- Infraspinatus (20% of RCT)
  - Weak resisted ER
  - + Lag Sign: Full tear
- Subscapularis (<1% of RCT)
  - + Gerber Belly Press or Lift Off tests

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DIAGNOSIS AND TREATMENT OF ROTATOR CUFF TEAR

Imaging

- 4 views of the Shoulder
  - AP Int. & Ext. Rotation, Axillary, and Scapular-Y
  - Usually normal
  - High riding humeral head suggestive of tear, but can not determine chronicity (acute vs chronic)
- MRI if concern for Acute RCT

Treatment

- Partial tear: maximize trial of nonsurgical treatment
- Full tear: Orthopedics referral for repairable tears if pt is a good surgical candidate
  - Chronic large tears often less repairable
  - Acute tears are more likely to be repairable than chronic ones

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ROTATOR CUFF DISEASE TREATMENT

Most do well with conservative treatment

- Impingement
- Tendinitis, tendinopathy
- Partial thickness tear

} PT +/- Injection +/- Medication

- **Full thickness tear → Ortho referral.**

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REFERENCES

- Kuhn JE, Dunn WR, Sanders R, et al. Effectiveness of physical therapy in treating atraumatic full-thickness rotator cuff tears: a multicenter prospective cohort study. J Shoulder Elbow Surg. 2013;22(10):1371-1379. doi:10.1016/j.jse.2013.01.026
- Weber S, Chahal J. Management of Rotator Cuff Injuries. J Am Acad Orthop Surg. 2020;28(5):e193-e201. doi:10.5435/JAAOS-D-19-00463

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CASE 4

- HISTORY
- CC: 45 year old with shoulder pain
- Onset:
  - gradual over the past 6 weeks
  - Started after increase in overhead duties at work
  - No fall or specific injury
- Location:
  - superolateral shoulder
  - Radiates to lateral arm
  - No numbness or paresthesias
- Exacerbating factors: Overhead work, reaching
- No significant pain at rest with hands in lap

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CASE 4

- PHYSICAL EXAMINATION
- Observation: No scapular winging
- Palpation:
  - Tender at subacromial space, but no tenderness at rotator cuff insertions, AC joint, or proximal biceps tendon
- ROM:
  - Normal A/PROM except for limited passive internal rotation
  - Pain with active ABduction more than with forward elevation
- Strength:
  - Normal, including rotator cuff, but pain with resisted ABduction at 90 degree in the scapular plane
- Specialty Testing:
- (+) Hawkins (+) Neer's
- (-) drop arm (-) lag signs on ext. rotation (-) belly press and lift off (rotator cuff tears)
- (-) Speeds (-) Yergason's (biceps tendon pathology)
- (-) Cross-arm (AC joint pathology)
- (-) Spurling's

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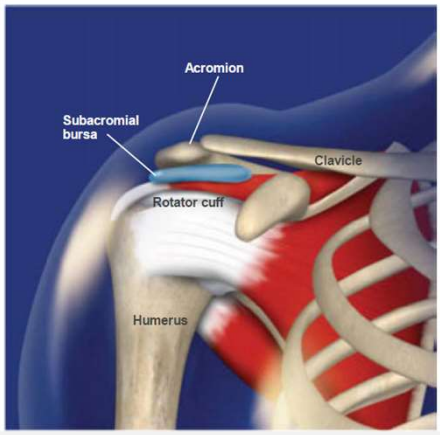
WHAT IS SUBACROMIAL PAIN SYNDROME?

- Defined as all non-traumatic, usually unilateral, shoulder problems that cause pain, localized around the acromion, often worsening during or subsequent to lifting of the arm (Diercks et al.)
- Clinically, it is an umbrella term that includes:
  - Impingement
  - Subacromial bursitis
  - Rotator Cuff Tendinitis/tendinopathy
  - Calcific Tendinopathy
  - Partial thickness tear
  - Chronic Full thickness tear



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SUBACROMIAL PAIN SYNDROME

History

- Pain at superolateral shoulder, especially with reaching
- Pain after an event or increase in activity
- No change in shoulder pain with Neck ROM

Exam

- Limited passive internal rotation
- Tender to palpation deep to acromion
- Pain on Empty-Can testing at 90° Abduction in scapular plane
- Pain-related weakness sometimes present
- Pain with Neer's and/or Hawkins' and/or other "impingement" tests

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SUBACROMIAL PAIN SYNDROME

Imaging

- 3-4 views of the Shoulder
  - AP Int. & Ext. Rotation & Axillary +/- Scapular-Y view
  - Usually normal
- Look for calcific rotator cuff tendinopathy or osteoarthritis

Treatment

- Trial of non-operative treatment first
- Pain relief: PO NSAIDS or Subacromial CS Injection as needed
- PT: Rehab after pain improvement
- Non-operative procedures: needle barbotage or EWST for calcific tendinopathy
- Referral to ortho: Subacromial Decompression +/- Bursectomy only if conservative Tx fails

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REFERENCES

- Diercks R, Bron C, Dorrestijn O, Meskers C, Naber R, de Ruiter T, Willems J, Winters J, van der Woude HJ; Dutch Orthopaedic Association. Guideline for diagnosis and treatment of subacromial pain syndrome: a multidisciplinary review by the Dutch Orthopaedic Association. Acta Orthop. 2014 Jun;85(3):314-22.
- Eliason A, Harringe M, Engström B, Werner S. Guided exercises with or without joint mobilization or no treatment in patients with subacromial pain syndrome: A clinical trial. J Rehabil Med. 2021 May 11;53(5)
- Steuri R, Sattelmayer M, Elsig S, Kolly C, Tal A, Taeymans J, et al. Effectiveness of conservative interventions including exercise, manual therapy and medical management in adults with shoulder impingement: A systematic review and meta-analysis of RCTs [Internet]. Vol. 51, British Journal of Sports Medicine. BMJ Publishing Group; 2017 [cited 2020 Aug 17]. p. 1340–7.

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CASE 5

- HISTORY
- Chief complaint: 50 y/o woman with R shoulder pain
- Onset:
- Gradual onset over the past 4 months; No fall or injury
- Location:
- Entire shoulder, deep, nonspecific; radiates into proximal arm
- Exacerbating factors:
- Pain has gradually worsened over time, with eventual loss of motion. Pain worse with reaching overhead and behind. Can't fasten the bra nor reach across to wash opposite shoulder.

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CASE 5

PHYSICAL EXAM

- Observation: No asymmetry at rest, but the affected shoulder shrugs up during elevation
- Palpation: No point tenderness over SC joint, clavicle, AC joint, SA space, nor biceps tendon; +tenderness over GH joint-line
- ROM:
  - ↓ Active ROM (Forward flexion, ER, Abduction, & IR) compared to other shoulder
  - Passive ROM is decreased similarly. +Pain at end ranges of motion
- Strength:
  - 5/5 rotator cuff strength, 5/5 biceps strength. Mildly painful at end ranges
- Special Tests: +generalized shoulder pain & limited end ROM w/ Hawkins', Neer's, Cross-arm, Liftoff. (-) Speeds & Yergason's; (-) Spurling; (-) Empty can (-) resisted ER

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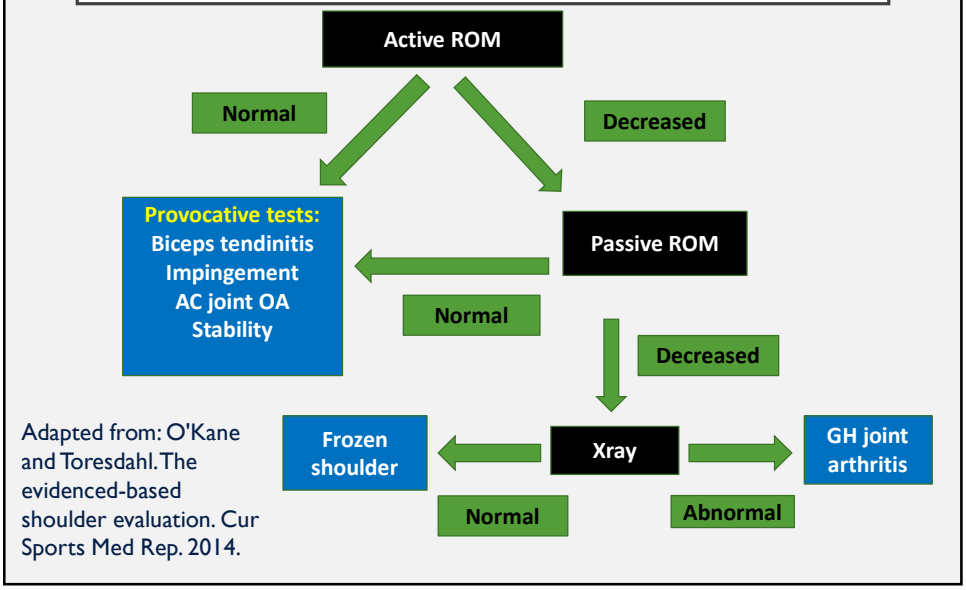
SHOULDER: RANGE OF MOTION IS KEY



Adapted from: O'Kane and Toresdahl. The evidenced-based shoulder evaluation. Cur Sports Med Rep. 2014.

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ADHESIVE CAPSULITIS (FROZEN SHOULDER SYNDROME)

- Inflammation followed by fibrosis of the glenohumeral joint capsule -> eventually causing restricted range of motion
- Trigger usually unclear (primary/idiopathic)
- May be associated with: trauma, DM, thyroid disease, stroke, chest wall surgery, mastectomy
- Commonly seen in 40-60yo
- •Women > men

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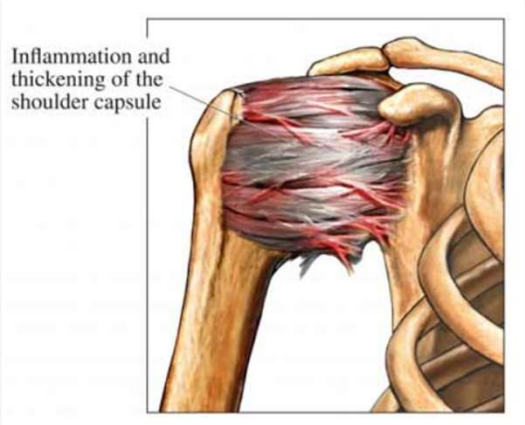
ADHESIVE CAPSULITIS



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ADHESIVE CAPSULITIS: HISTORY AND EXAM

HISTORY

- Gradual onset, usually no trauma
- Pain may be severe initially (even at rest) followed by gradual loss of ROM -> then pain at end ranges -> pain subsided but still restricted ROM
- Trouble reaching behind back, brushing hair, reaching up or across the body
- Pain localizes to GH joint or is diffuse, may radiate to elbow

EXAM

- Restricted ROM in all ranges compared to other side. Firm end range.
- Both Active AND Passive motion are *equally* limited
- Intact strength
- Provocative tests: often rotator cuff tests are normal –or- there may be diffuse nonspecific pain at end ranges

IMAGING: X-rays - normal (need to r/o GH OA). Consider blood sugar, TSH

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TREATMENT FOR ADHESIVE CAPSULITIS

- PT is needed to help restore ROM; HEP also advised
- Consider NSAIDs or Tylenol for pain control (PT painful)
- In early stages a steroid injection (intra-articular) can help with pain. Allows patient to do more aggressive PT with less pain.
- Warn patients it will take a LONG time: most get full or near full ROM, but can take 6 - 18 months
- If fails conservative care consider sports medicine or ortho referral

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REFERENCES

- Yip M, Francis AM, Roberts T, Rokito A, Zuckerman JD, Virk MS. Treatment of Adhesive Capsulitis of the Shoulder: A Critical Analysis Review. JBJS Rev. 2018 Jun;6(6):e5. doi: 10.2106/JBJS.RVW.17.00165. PMID: 29916942
- Challoumas D, Biddle M, McLean M, Millar NL. Comparison of Treatments for Frozen Shoulder: A Systematic Review and Meta-analysis. JAMA Netw Open. 2020 Dec 1;3(12):e2029581. doi: 10.1001/jamanetworkopen.2020.29581. PMID: 33326025
- Le Hai, Lee S, Nazarian A, Rodriguez E. Adhesive capsulitis of the shoulder: review of pathophysiology and current clinical treatments. Shoulder Elbow. 2017 Apr 9(2): 75-84.

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CASE 6

- HISTORY
- Chief complaint: 65 y/o with shoulder pain
- Onset: Gradual over the past 24 months; No fall or trauma or injury
- Location: Entire shoulder, deep, non-specific. No radiation of pain, numbness or weakness.
- Exacerbating factors:
  - Reaching or extending arm, combing or washing hair, tucking in shirt (activities at end ROM)
  - Deep, dull, ache at rest
  - Hurts at the end of the day or with increased upper extremity activity

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CASE 6

- PHYSICAL EXAM
- Observation: No scapular winging
- Palpation: No point tenderness over rotator cuff insertions, AC, proximal biceps tendon
- ROM:
  - Limited AROM in all 4 planes compared to opposite shoulder (20-30 degrees reduced).
  - Limited PROM to same location as AROM. Pain at end-ROM.
- Strength:
  - Rotator cuff strength is normal or mildly weak
  - Mild pain with strength testing but less painful than end-ROM testing
- Specialty Testing:
  - Unable to fully perform Hawkins', Neer's, and Cross-arm due to pain and limited ROM. (-) Speeds'/Yergason's; (-) Spurling's

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GLENOHUMERAL (GH) JOINT OSTEOARTHRITIS

- Cartilage loss → limited and painful joint motion
- Onset usually early 60's
  - Younger person can present with inflammatory arthropathy of GH joint
- Primary shoulder OA less common
- Secondary OA:
  - Prior trauma
  - Chronic instability
  - Cuff arthropathy

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GH OA: HX AND EXAM

- **History**:
  - Insidious onset
  - Diffuse pain with motion in any direction
  - Worse with activity/movement
  - Less night time pain
- **Exam**:
  - **Loss of passive and active motion in all directions**
  - Strength is often preserved
- **Differential:**
  - Can differentiate from adhesive capsulitis via x-rays of the shoulder

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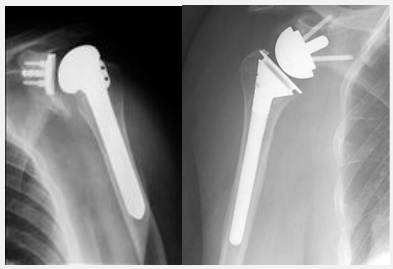
GH OA TREATMENT

Non-Operative

- Physical Therapy
- Pain Medicine
  - NSAIDs (oral or topical)
  - Tylenol (APAP)
- Steroid Injections
- Efficacy of non-operative treatments for severe GH joint OA can be limited

Operative

- Total Joint Replacement
- Reverse Total Joint Replacement



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REFERENCES

- Millett PJ, Gobezie R, Boykin RE. Shoulder Osteoarthritis: Diagnosis and Management. Fam Physician. 2008 Sep 1;78(5):605-611

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SUMMARY: KEY SHOULDER HISTORY

	Impingement	Rotator cuff tear	Adhesive capsulitis	Glenohumeral joint arthritis	Labral tear
Age	< 40	> 40	40-60 y/o	> 60 y/o	< 40 ish
Mechanism	Overuse	Overuse or acute	Acute onset without MOI +/- diabetes	+/- distant h/o trauma	Overuse or acute
Location of pain	Lateral shoulder	Lateral shoulder	Generalized	Generalized	Deep - Anterior shoulder
Stiffness	No	No	Yes	Yes	No

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Key Features of Top Shoulder Problems

Diagnosis	History	Exam	Workup	Treatment
Glenohumeral (GH) OA	Older patient Insidious onset, diffuse pain, limited ROM	Decreased AROM + PROM Cuff testing: strength intact, minimal discomfort	Xray: loss of GH joint space, flat humeral head, osteophytes, sclerosis	Non-op including GH CSI Surgery referral when fails
Adhesive Capsulitis	Similar to GH OA, age 40-60, ♀ > ♂	Same as GH OA	Normal xray	Good results w/ non-op including GH CSI but may take 1-2 years
RTC: suspected partial thickness tear/ tendinopathy/ subacromial bursitis	Pain w/ overhead reach, night pain, radiation to elbow (but not beyond)	Full ROM (active may be limited by pain), + Neers and Hawkins, pain with cuff testing but strength intact	•Clinical dx •xray if trauma/concern for fx •MRI (xray prior) only if fails non-op measures	Non-operative rx: •activity mod •analgesics • PT • 1-2 subacromial corticosteroid injections (CSI)
RTC: suspected full thickness tear	As above + weakness	AROM may be limited by pain/weakness. Full PROM. Cuff testing w/ pain + weakness	•Xray + MRI for acute suspected FTT, or acute on chronic in young patient	Urgent surgery for acute traumatic FTT; expedited for acute on chronic

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Diagnosis	History	Exam	Workup	Treatment
Biceps Tendonitis	Ant/medial shoulder pain, worse w/ elbow flexion/supination (e.g. turning door knob)	TTP over long-head of biceps + Speeds, Yergasons	Clinical dx	•Non-op, biceps tendon CSI •*Surgery referral if fails*
Labral Tear	Young, active patients clicking/catching	+ O'Briens	•Xray for trauma or r/o other causes •MRI vs MR arthrogram	•Non-op trial for most •*< 35, acute injury: surgery referral for SLAP repair*
AC Joint OA/Sprain	Hx shoulder injury; weight lifting (sprain). Anterior shoulder pain	TTP AC joint + Cross arm test	Xray shows AC OA or joint separation	•Non-op •AC joint CSI •*Surgery referral if fails*
GH Instability	Young, active patients, dislocation, subluxation, "dead/numb" feeling deltoid	+ Apprehension, relocation	Xray: Hill Sachs lesion	•Non-op •*Surgery referral if fails*

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