

COMMON INJURIES OF THE SHOULDER

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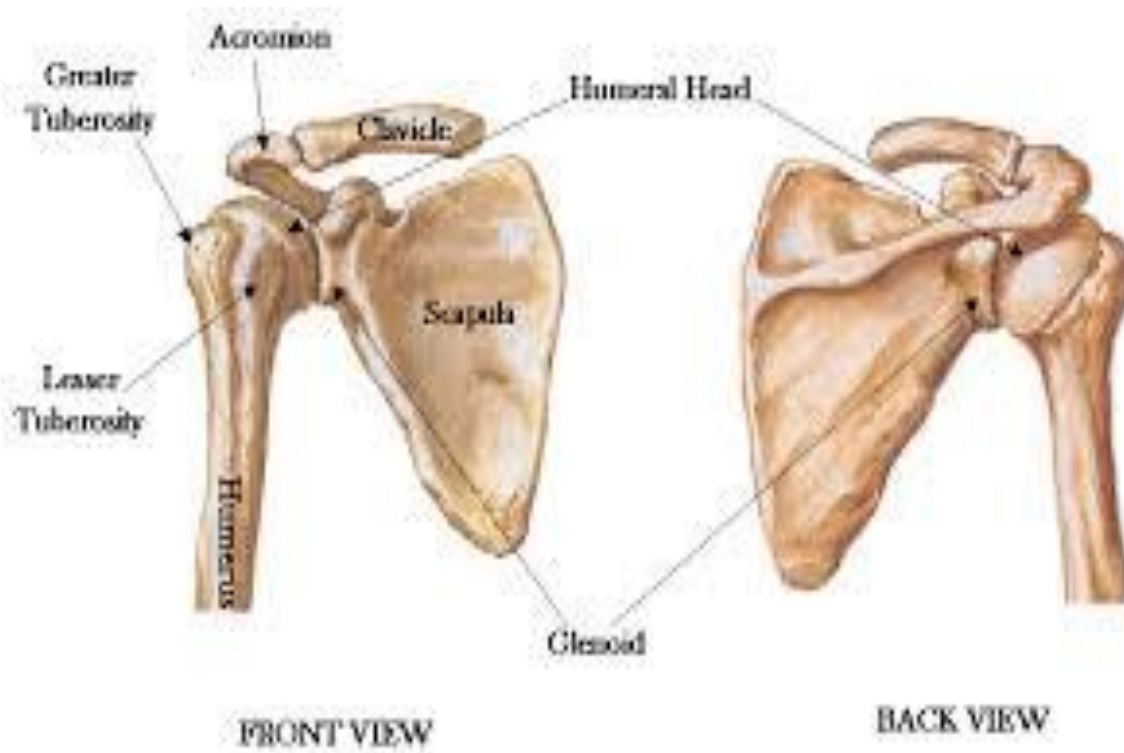
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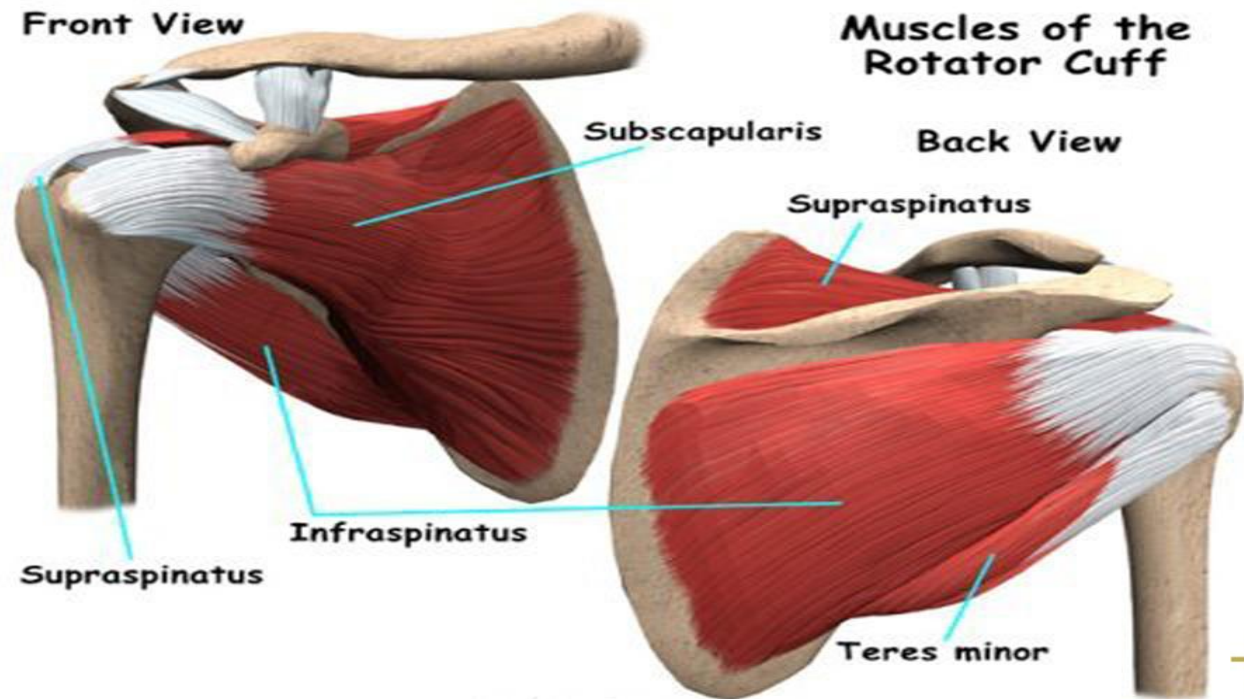
Anatomy

- Ball and Socket joint



Anatomy

- Rotator Cuff
 - Supraspinatus, Infraspinatus, Teres Minor, Subscapularis



Anatomy

- Subacromial Bursa

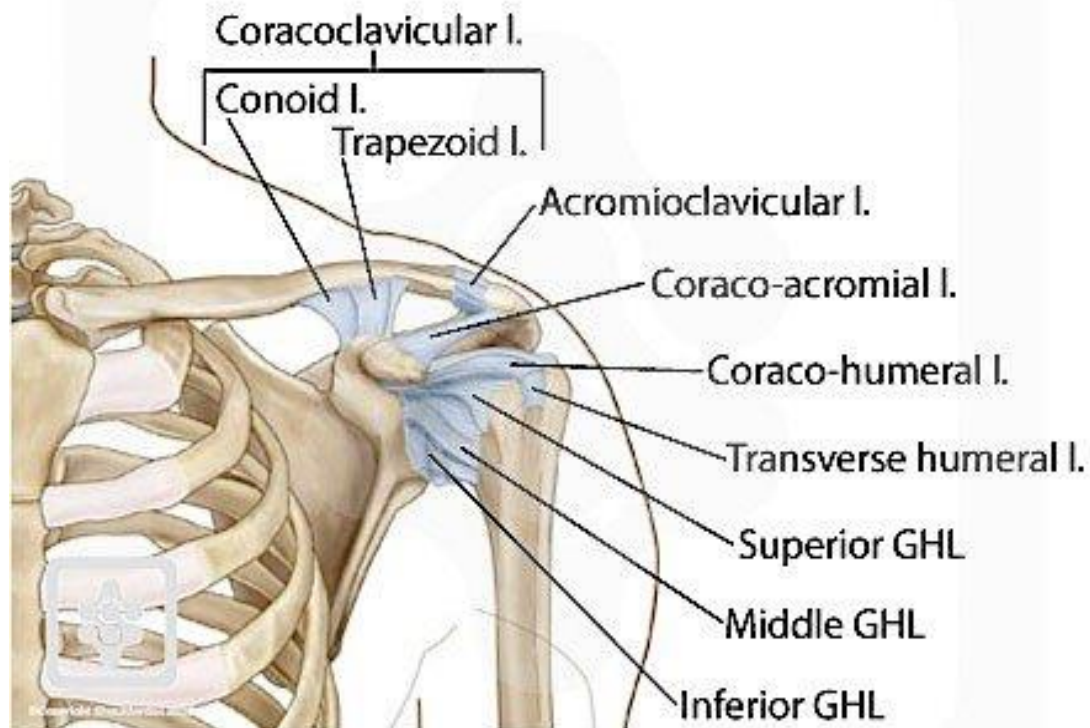


(Netter, 2011, p. 413)



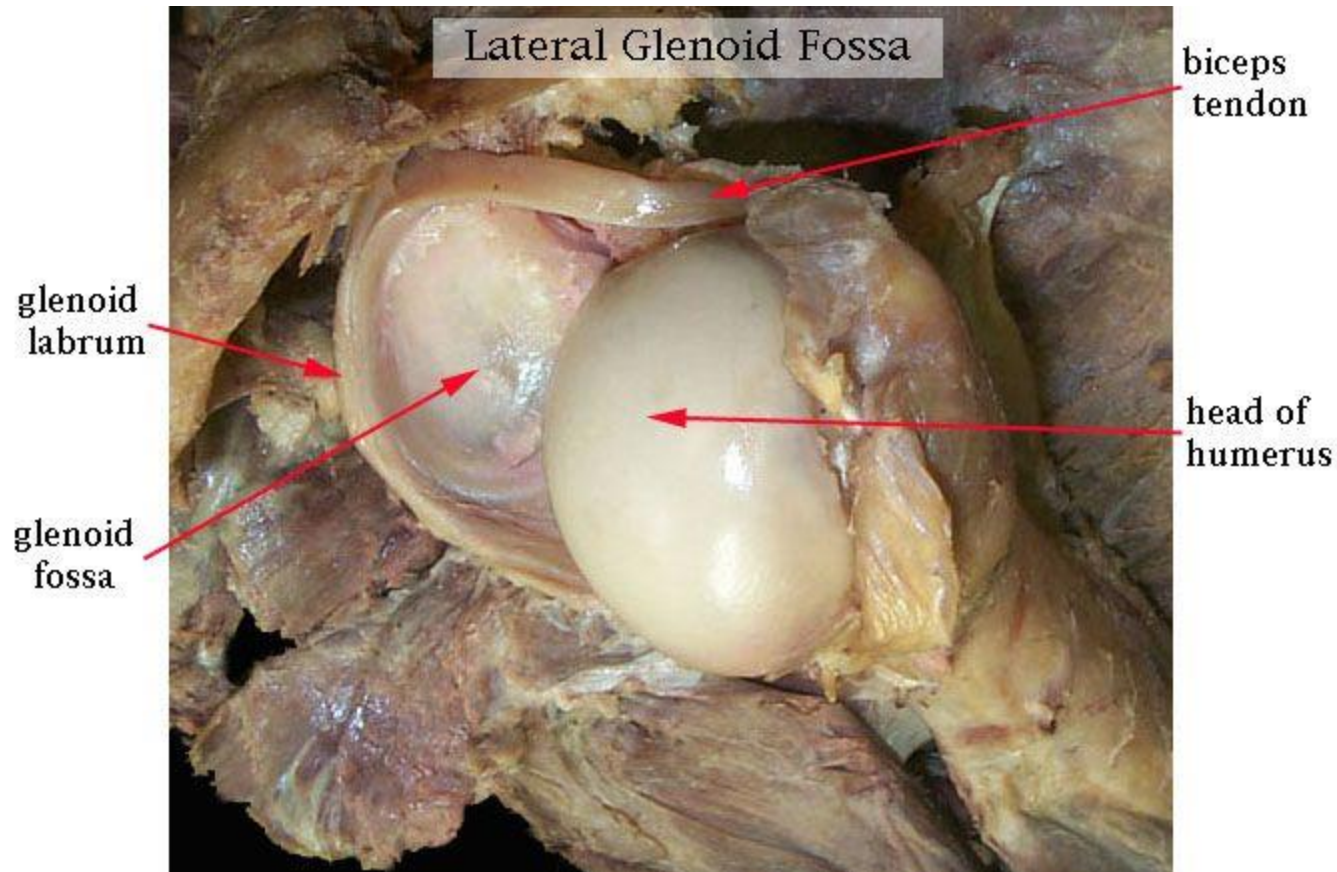
Anatomy

- Ligaments
 - Coracoacromial, Coracoclavicular, AC, Capsule



Anatomy

- Biceps tendon and labrum



Anatomy

- Local nerves
 - Brachial plexus, Axillary nerve, Suprascapular n.

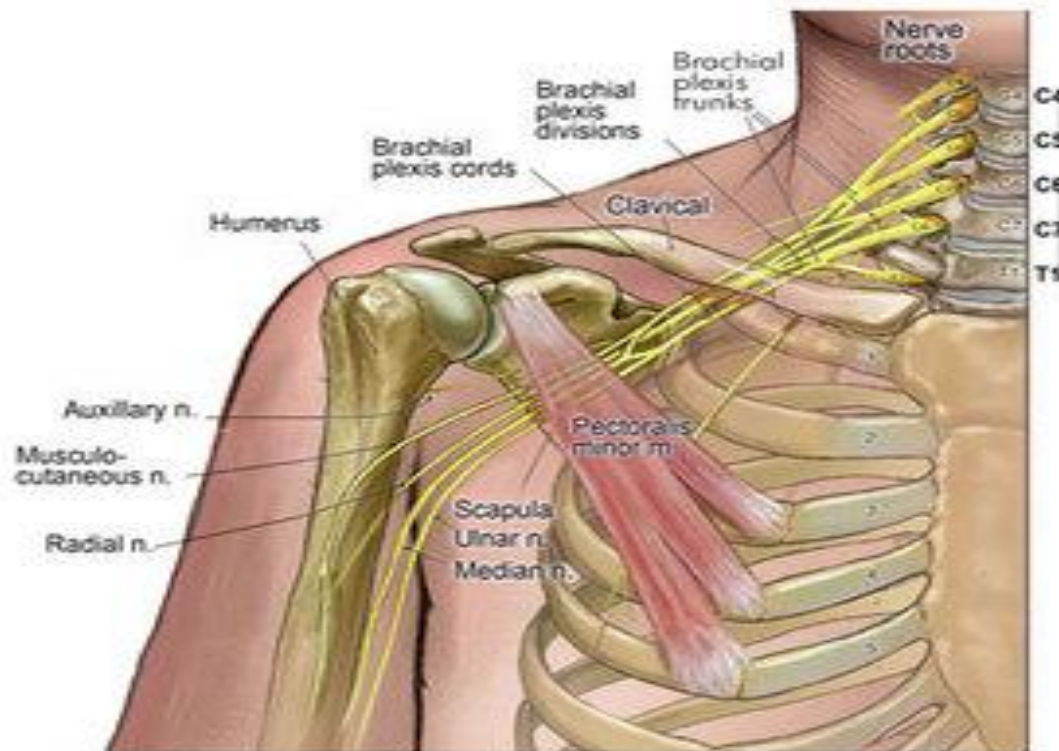


Fig. 2



Shoulder Biomechanics

- Most inherently unstable ball and socket joint in the body.
- Relies on static and dynamic stabilizers.
- Greatest range of motion of all of our ball and socket joints.



Shoulder Biomechanics

- Static Stabilizers
 - Glenohumeral ligaments (capsule)
 - Glenoid labrum
 - Articular congruity and version
 - Negative intra-articular pressure



Shoulder Biomechanics

- Dynamic Stabilizers
 - Rotator cuff muscles
 - Compress humeral head against the glenoid
 - Biceps
 - Periscapular muscles



Incidence

- Approximately 7.5 million doctors office visits per year for shoulder pain
- 4.1 million specific to rotator cuff injury



Common Causes of Shoulder Complaints

- Athletic activities
 - Excessive, repetitive overhead movements
 - Acute trauma -- fracture or dislocation
- Work related injury
 - Excessive, repetitive overhead use
 - Trauma
- Frozen shoulder
- Radicular



Common Causes of Shoulder Complaints

- Anatomic variations which predispose
 - Ligamentous laxity
 - Acromial morphology
 - Muscle imbalance
 - Neurologic injuries and conditions



Subacromial Impingement Syndrome

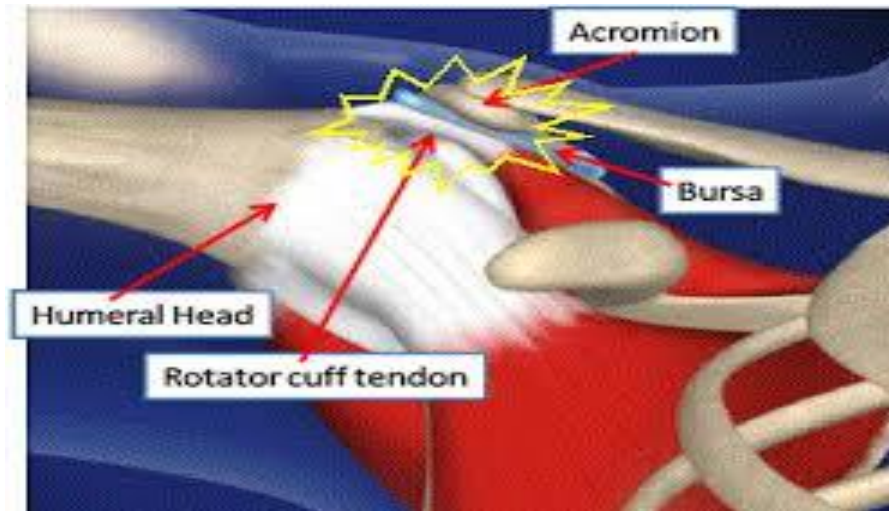
- The most common disorder of the shoulder, accounts for 44-65% of shoulder visits
- Spectrum of pathology
 - Subacromial Bursitis
 - Rotator Cuff Tendonitis
 - Calcific Tendonitis
 - Partial or full thickness RC tears



Subacromial Impingement Syndrome

- Neer's Stages

- Stage 1 – Edema and hemorrhage of the bursa and cuff
 - Younger age group (<25)
 - Typically reversible without surgery



Subacromial Impingement Syndrome

- Neer's Stage 2
 - Fibrosis and tendonitis of the cuff
 - 25 – 40 year old age group
 - Changes to the cuff are irreversible, but treatment does not always include surgery



Subacromial Impingement Syndrome

- Neer's Stage 3
 - Partial or complete cuff tears
 - 40 yo +



Subacromial Impingement Syndrome

- Clinical Presentation

- Pain along lateral acromion often radiated to mid humerus
- Pain with overhead motion
- Difficulty sleeping
- Weakness
- Pain may radiate through the supraspinatus to the lower neck



Subacromial Impingement Syndrome

- Physical Examination
 - Guarded position
 - Decreased ROM
 - Hawkin's sign positive
 - Pain exacerbated with resisted external rotation of the arm in 90 abduction and 45 adduction
 - Empty Can test positive
 - Pain with arm at 90 in plane of the body, thumb down and resisted elevation



SAIS – Physical Exam

- Hawkins test

Hawkins-Kennedy Test

- ◆ patient sitting with arm at 90° forward elevation and elbow flexed to 90°.
- ◆ Examiner then quickly moves the arm into internal rotation.
- ◆ +ve = Pain located to the sub-acromial space
- ◆ Subacromial impingement; rotator cuff tendinitis



SAIS – Physical Exam

- Empty Can test

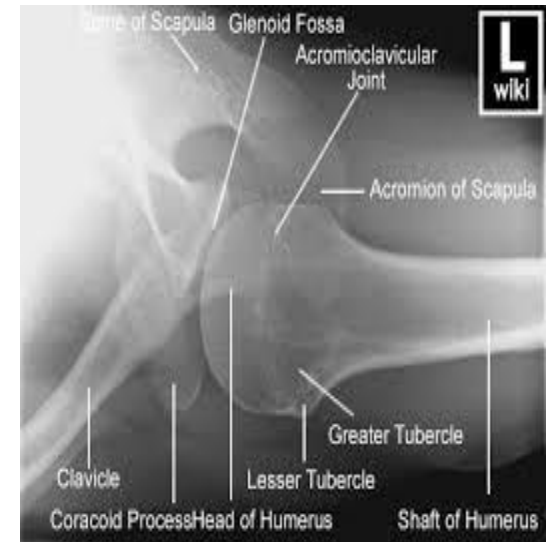
Physical Exam Strength

- Empty can test
 - 30° angle
 - Steady downward pressure
 - Tests supraspinatus strength and pain



SAIS - Imaging

- Plain radiograph
 - AP, Scapular Y and Axillary view



SAIS - Imaging

- Acromial morphology
 - Type I – flat
 - Type II – curved
 - Type III-- hooked



SAIS - Imaging

- Calcific Tendonitis



SAIS - Imaging

- MRI



SAIS - Treatment

- NSAIDS
- Activity Modification
- Physical Therapy
 - Aim is to improve ROM and strength of both cuff musculature and scapular stabilizing muscles



SAIS - Treatment

- Subacromial Injection
 - Corticosteroid and local anesthetic
 - 4cc 1% Lido and 2cc Celestone
 - Diagnostic and therapeutic



SAIS - Treatment

- Arthroscopic Subacromial Decompression
 - After failed attempt at conservative treatment
 - 2 – 4 months, at least one injection
 - Even short term relief from an injection is a positive predictor of surgical success
 - Significantly better surgical outcomes in patients who had a shorter symptom duration pre-op (Faber, et al., J Occup Rehab., 2006)



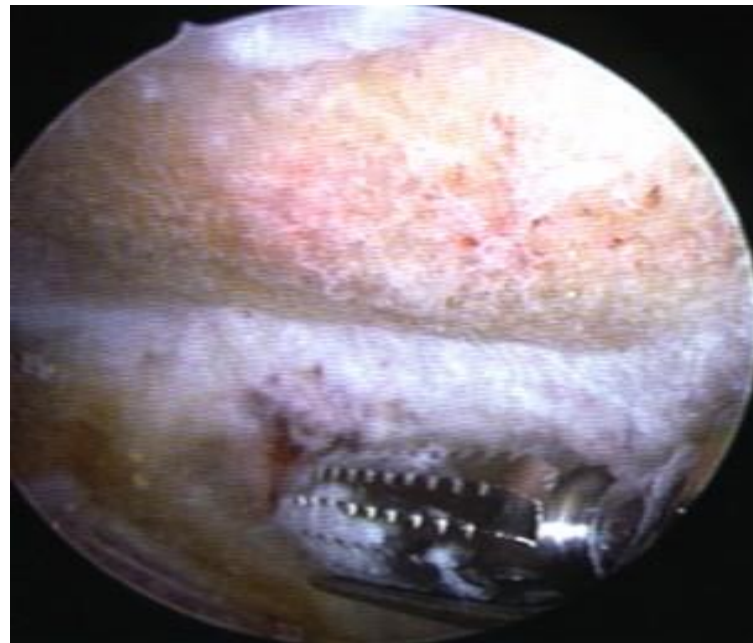
SAIS -- Treatment

- Arthroscopic Subacromial Decompression
 - Outpatient procedure
 - 7 – 10 days in sling
 - 4 – 6 weeks of PT
 - RTW depends upon job duties



SAIS – Treatment

- Arthroscopic Subacromial Decompression



Rotator Cuff Tear

- Tear of Supraspinatus is most common
 - May involve multiple tendons



Rotator Cuff Tear

- 2 million patients/year seek treatment
 - Approximately 1/3 require surgical treatment
- Estimate 50% over 65 y/o have RCT
 - Clearly not every one needs surgery



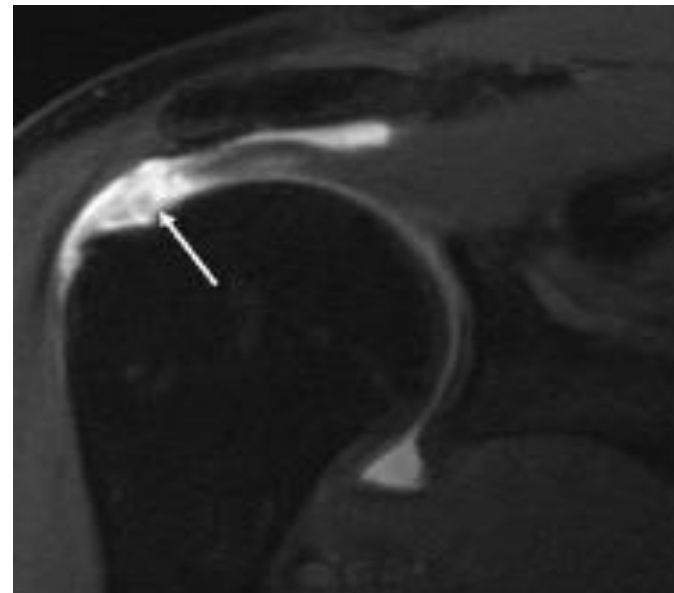
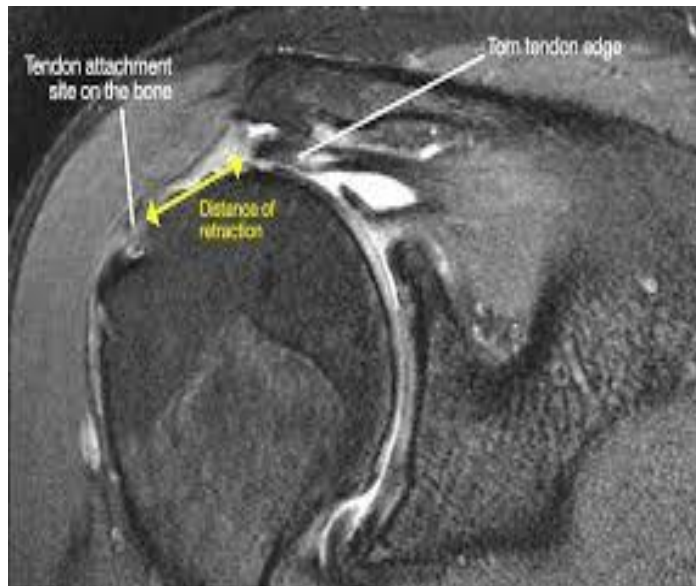
Rotator Cuff Tear

- Partial thickness (<50%) tears may not
- Elderly or lower demand patients may not
- Medically or psychologically unstable patients not appropriate for surgical repair (if unable to adhere to post op regimen)



Rotator Cuff Tear

- Diagnosis
 - MRI – most common
 - Arthrogram -- where MRI contraindicated
 - Ultrasound -- less specific, hard to find

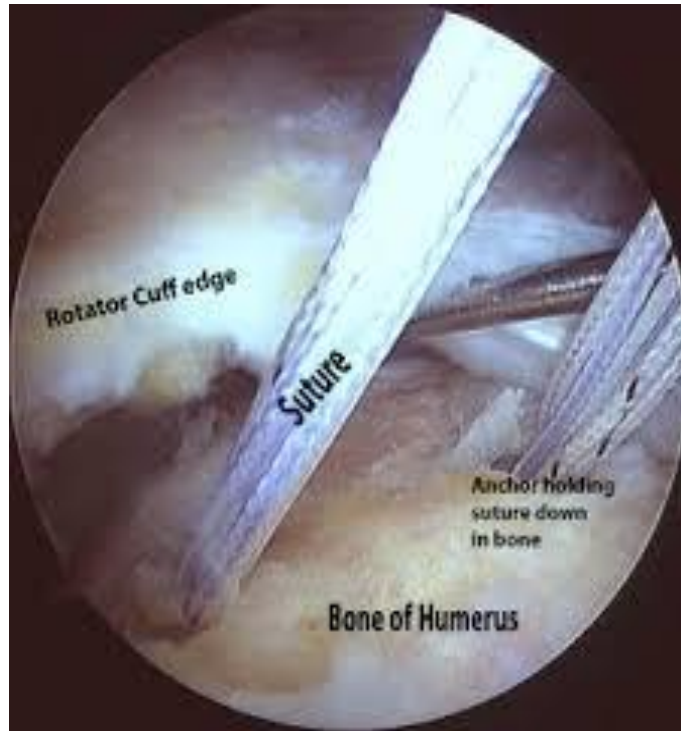


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Rotator Cuff Tear

- Arthroscopic repair
 - Outpatient procedure



Rotator Cuff Tear

- 4 – 6 weeks in a sling
- 4 – 6 months to full recovery
- Post op PT important for regaining ROM, strength and function



Acromioclavicular Joint Arthritis

- Pain on direct palpation
- + Crossover adduction test



AC Joint Arthritis

AC joint injection

1cc Celestone + 1cc Lido



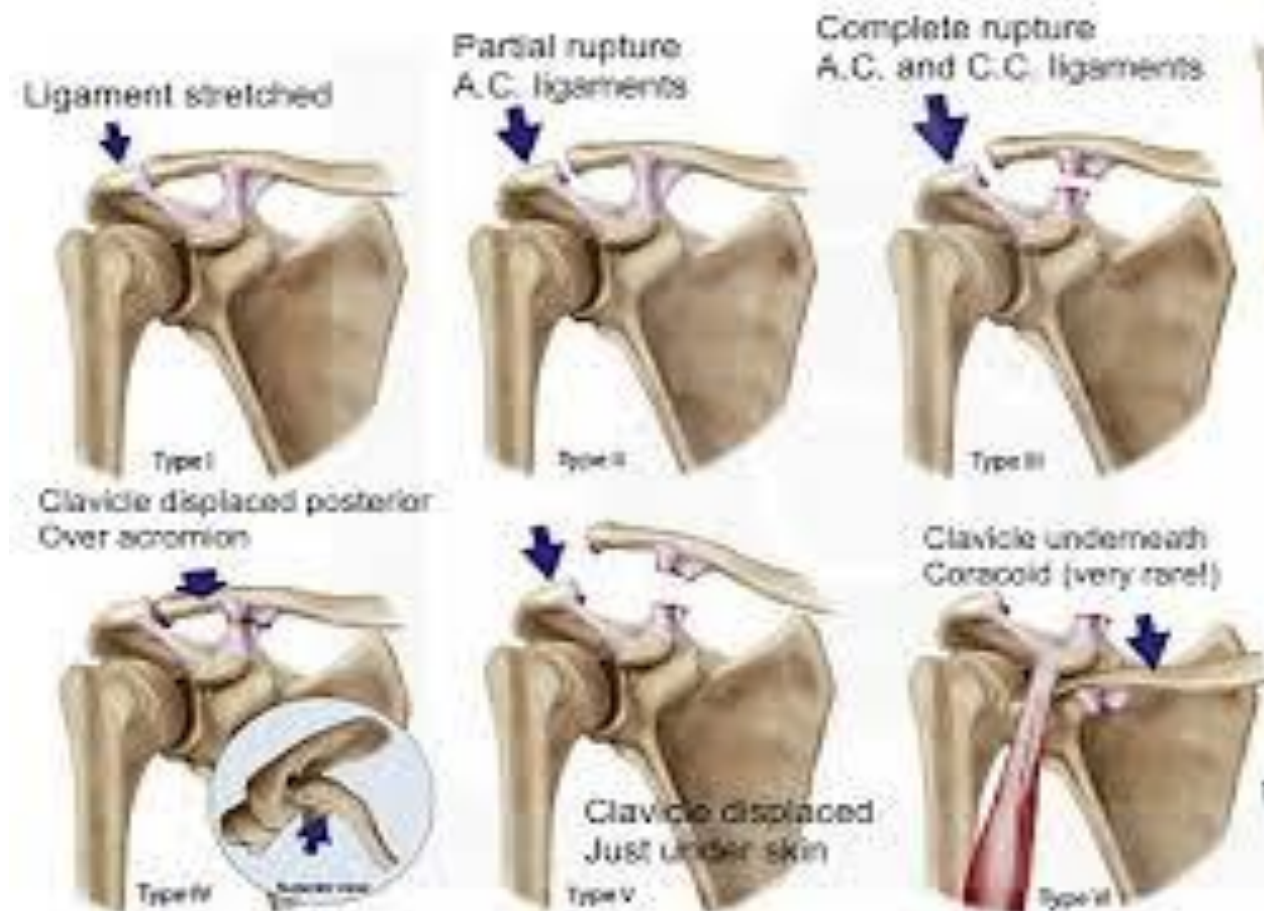
AC Joint Separation

- Rockwood Classification
 - Type I – CC ligament sprain, no separation
 - Type II – slight widening of CC distance
 - Type III – 25-100% elevation of clavicle
 - Type IV – posterior displacement of clavicle into trapezius muscle
 - Type V – 100-300% displacement



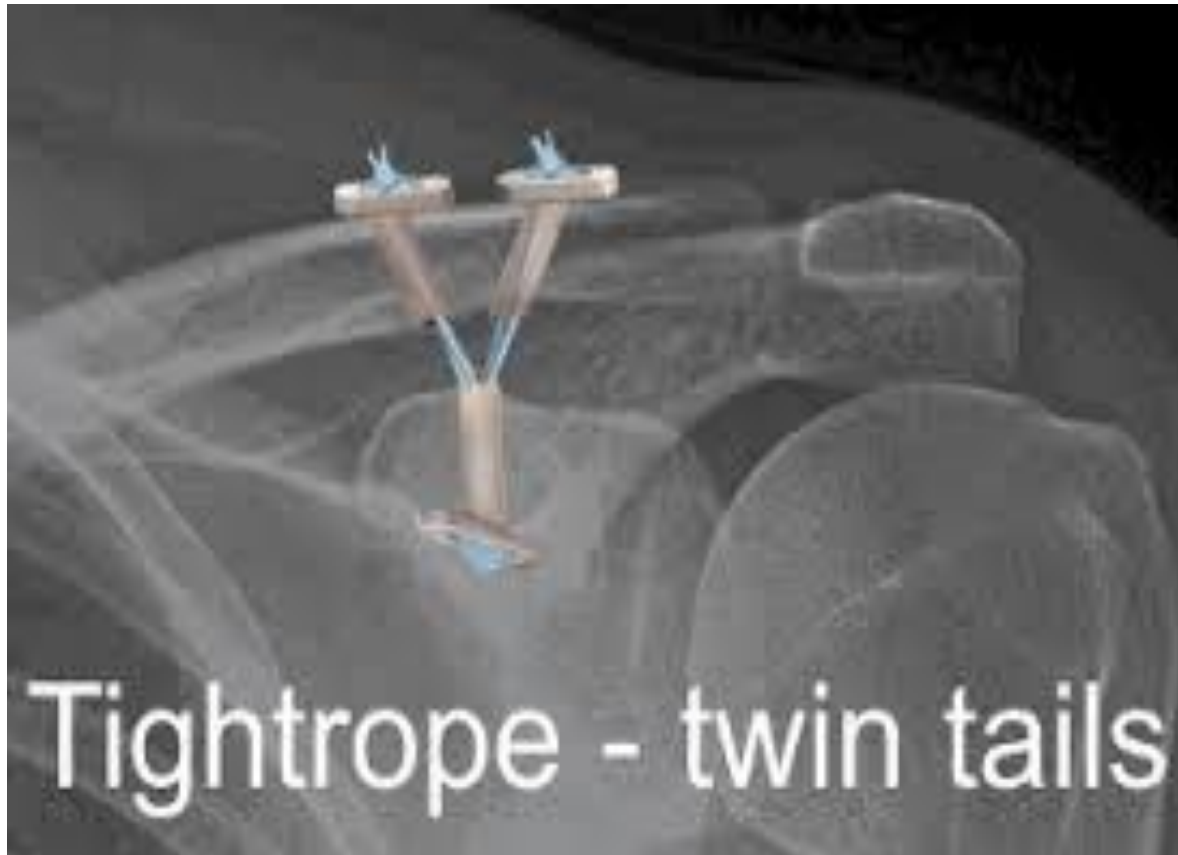
AC Joint Separation

- Treatment usually conservative



AC Joint Separation

- Symptomatic Type III, IV and V may benefit from surgical fixation



Shoulder Instability

- Traumatic
 - Most commonly anterior dislocation



Shoulder Instability

- Radiographs must include 2 views to establish direction of dislocation
- Variety of techniques for reduction
 - I typically employ traction/rotation



Shoulder Instability

- Sling 10 – 14 days
- PT
- Activity modification until strength and ROM return
- US military studies have indicated up to 85% redislocation rate in young, traumatic dislocators



Shoulder Instability

- MRI/arthrogram indicated for multiple dislocators or younger, traumatic dislocators with instability sensation



Shoulder Instability

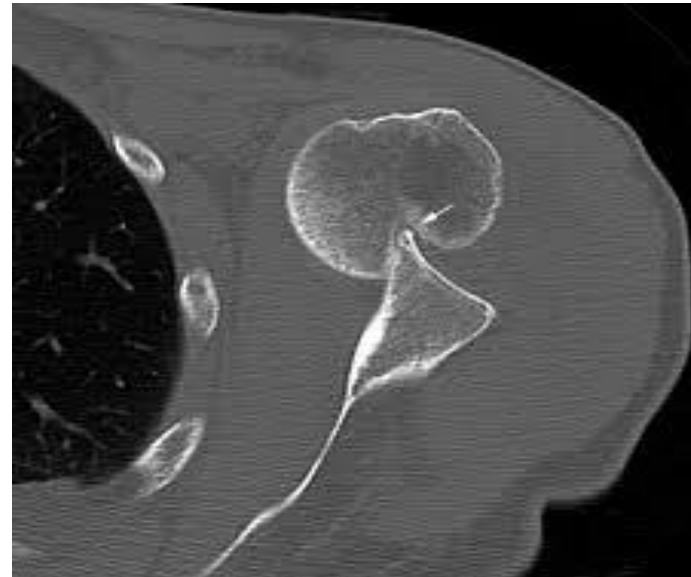
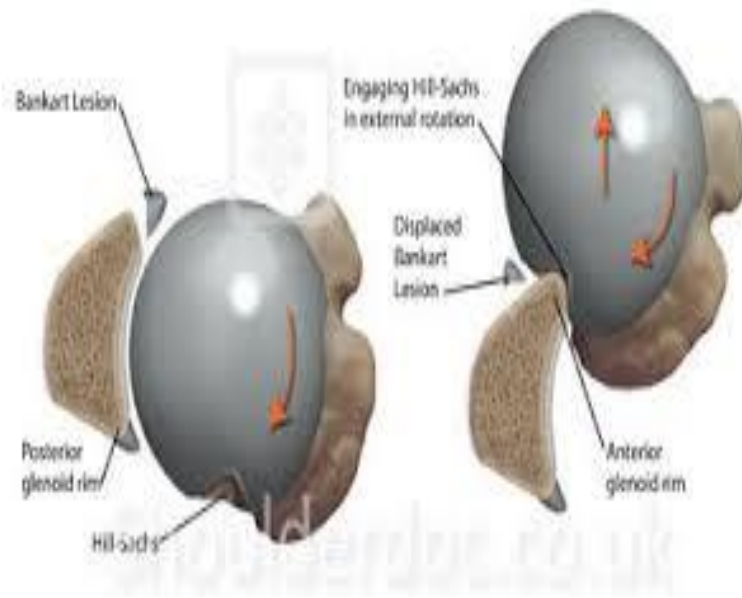
- Pathoanatomy
 - Bankart lesion -- labral tear



Shoulder Instability

- Pathoanatomy

- Hill-Sachs lesion -- bony defect posterior humeral head



Shoulder Instability

- Arthroscopic Bankhart Repair
 - Reapproximates labral tear



Shoulder Instability

- Multidirectional Instability
 - Atraumatic etiology
 - Multiple ligamentous laxity
 - Bilaterality common
 - Rehab (PT) cornerstone of treatment
 - Inferior capsular shift is surgical option if all else fails



Shoulder Instability

- Multidirectional
 - Sulcus sign, thumb to forearm sign



Shoulder Instability

- Multidirectional
 - Rehab aimed at balancing and strengthening extrinsic stabilizing muscles



Shoulder Instability

- Inferior Capsular Shift
 - Arthroscopic or open procedure tightens and rotates stretched out capsule



Shoulder Instability

- Centuries old and vexing problem



Clavicle Fractures

- Account for 2.6% of all fractures
- 1/3 occur in males age 13-20
- 70% in mid shaft of clavicle



Clavicle Fractures

- Treatment
 - Vast majority heal without surgery
 - Sling +/- Figure 8 harness initially
 - Simple sling about 6 weeks
 - May heal with a bump, but usually does not impair function



Clavicle Fractures

- Surgical Indications
 - Open fracture
 - Neurological or Vascular injury
 - Non-union
 - Relative indications
 - Dominant arm
 - Greater than 100% displacement/shortening
 - Severe comminution



Clavicle Fractures

- Surgical Treatment
 - ORIF



Clavicle Fracture

- Surgical Treatment
 - 6 – 8 weeks for bone healing
 - Can mobilize sooner
 - Hardware usually stays in
 - Restoring length to clavicle may improve post healing shoulder mechanics



Proximal Humerus Fractures

- 5% of all fractures
- Typically in older, osteoporotic bone
- Proximal humerus has 4 main portions



Proximal Humerus Fractures

- Neer Classification
 - Part determined if 1 cm displacement or 45 degree angulated

NEER'S CLASSIFICATION

Displacement defined as greater than 45 degrees of angulation or 1 cm of separation.

1-One part fracture – No displacement or angulation less than 45 degrees or separation less than 1 cm

2-Two part fracture – Displacement of **one** fragment

3-Three part fracture – Displacement of **two** individual fragments from remaining humerus

4-Four part fracture – Displacement of all **four** segments

5-there is dislocation (anterior or posterior) regardless number of displaced segment



Proximal Humerus Fracture

- Treatment
 - The shoulder benefits from having the greatest degree of mobility of any joint in the body
 - >45 degrees angulation and/or 1 cm displacement usually indicates surgery depending upon patient factors



Proximal Humerus Fracture

- Treatment
 - Minimal displacement and comminution requires sling +/- swathe
 - Early ROM (2 weeks) passively at first recommended to avoid adhesive capsulitis
 - 6 – 8 week healing



Proximal Humerus Fracture

- Surgical treatment indicated for significantly displaced, angulated or comminuted fractures
 - ORIF
 - Replacement
 - Hemiarthroplasty
 - Total shoulder
 - Reverse Total Shoulder



Proximal Humerus Fracture

- Shoulder Replacement

Figure 3



THANK YOU!

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"I'll need to run some tests to be sure, but I'm guessing you dislocated your shoulder."