Rotator Cuff Disease

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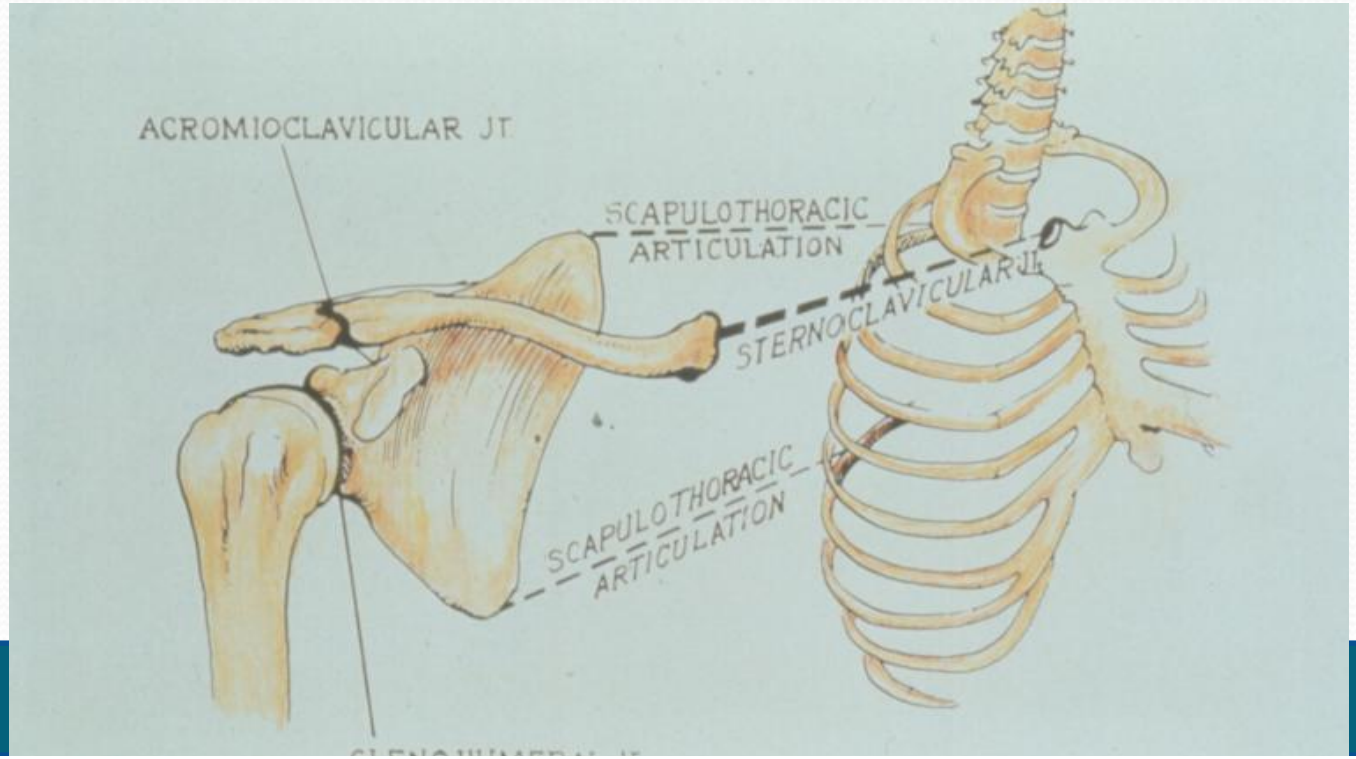
Think of the Big Picture

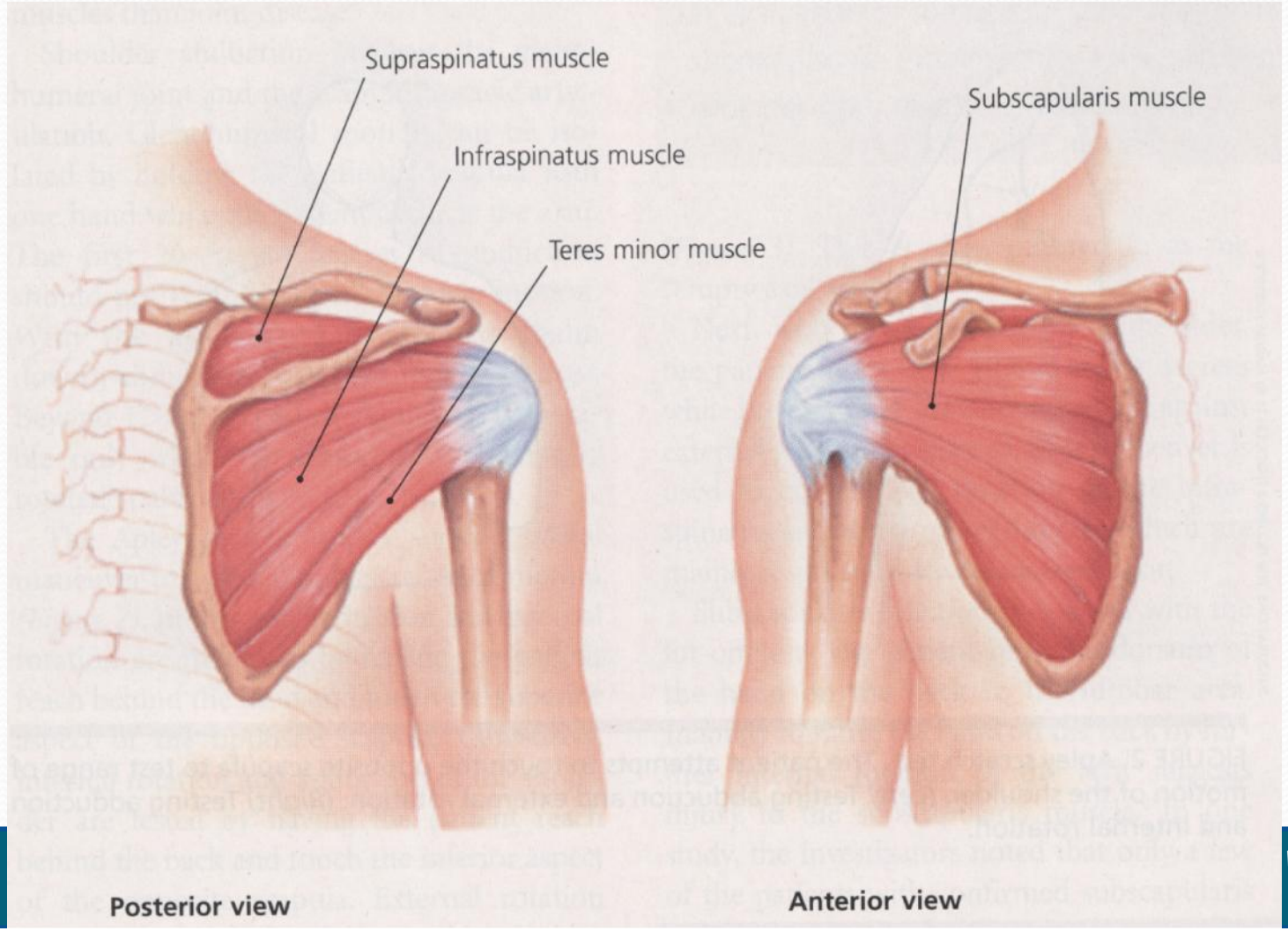
- How this injury can affect other neighboring structures.
- "Impingement" is a symptom, look for underlying diagnosis/root cause.
- Always evaluate the cervical spine.
- Chronic impingement can lead to tendinitis → tendinonsis-→partial tearing→ complete tear.
- More than one diagnosis is possible.
- Think prevention.

Basic Shoulder Anatomy

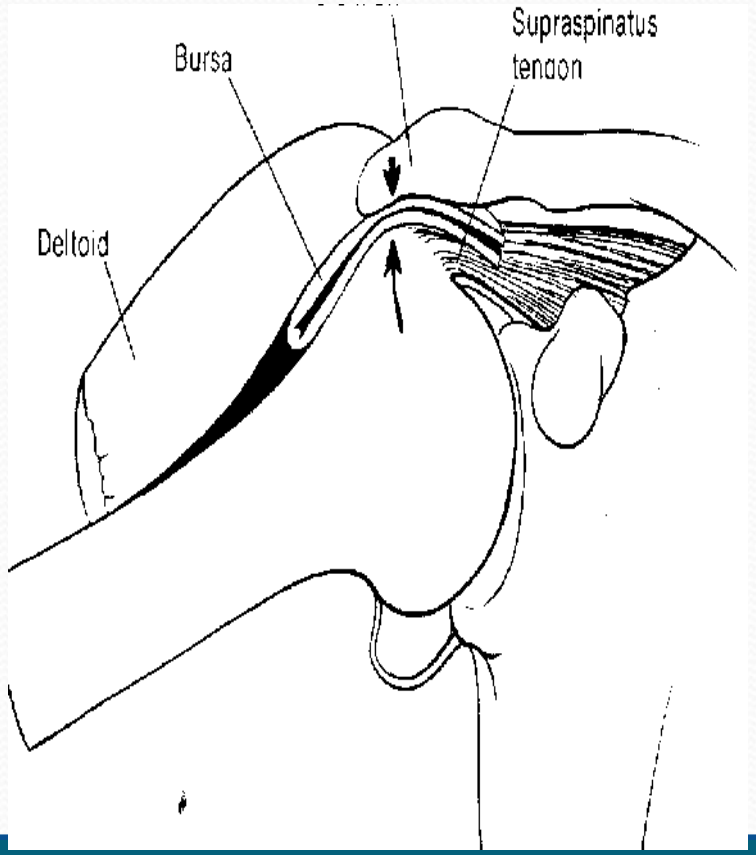
- 3 bones, 4 joints (glenohumeral,acromioclavicular, sternoclavicular, scapulathoracic).
- Inherently unstable.

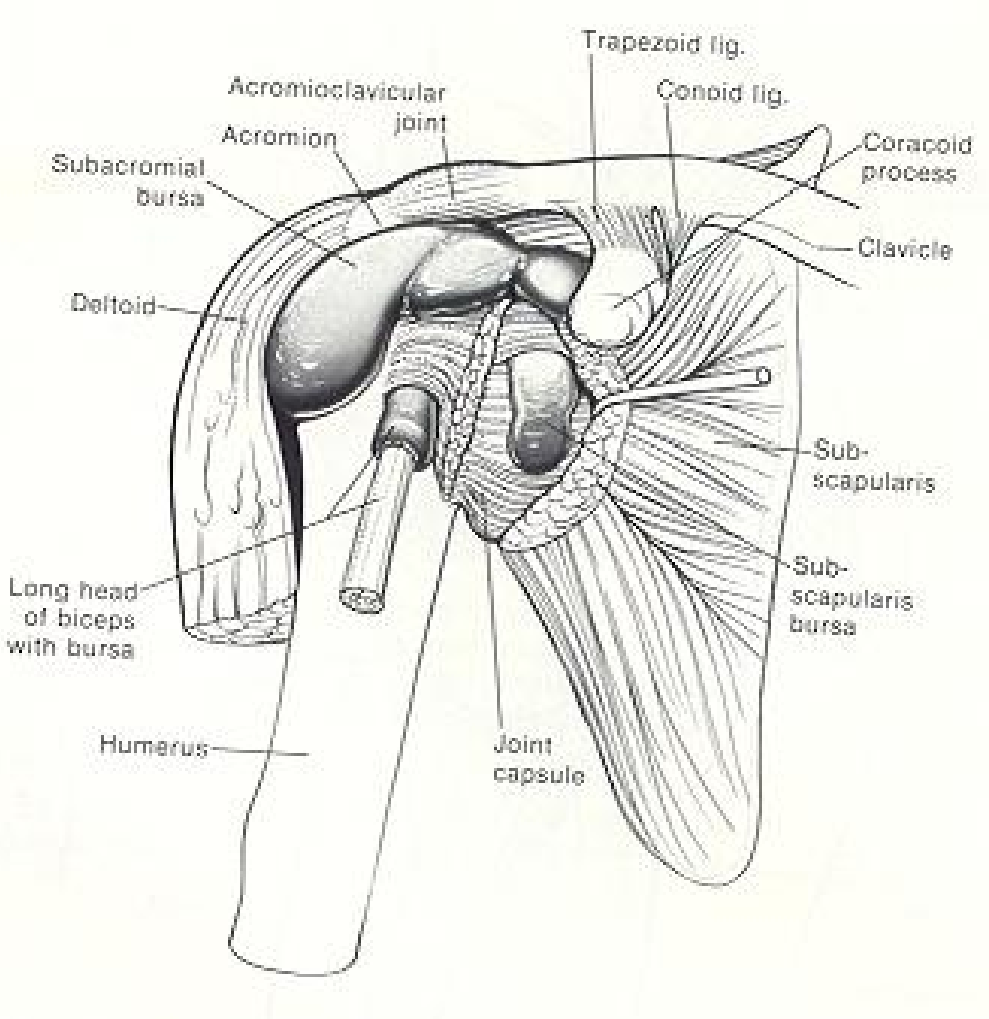


Rotator Cuff (S.I.T.S) Muscles



Impingement





Rotator Cuff Disease/Impingement

- Primarily arm abduction, external and internal rotation.
- Significant stabilizing force in the shoulder.
- Typically seen in > 40 years.
- Narrowing of subacromial space causing compression and inflammation of the bursa, biceps tendon, and rotator cuff.
- **Functional:** Superior migration of humeral head from caused by weakness or muscle imbalance. **Structural:** When subacromial space is too narrow due to bone growth or soft tissue inflammation. (Can have both combined).

Think as Continuum

- Lesion start where lesion is greatest (articular side of supraspinatus tendon, near biceps).
- Tendon fails when load exceeds strength causes them to retract under tension.
- Increase load on neighboring, yet intact fiber and decreasing the load that the fiber can deliver,
- Compromises tendon fibers blood supply, distorting anatomy and local ischemia, exposes tendon to lytic enzymes which removes hematoma that could contribute to tendon healing.
- Loss of stabilizing force causing humeral head to displace superiorly, placing load on biceps tendons, can extend across bicipuital groove then involve the subscapularis.

Impingement

Etiology uncertain. (Vascular/ischemic vs traumatic)

Neer's 3 stages" 1. Hemorrhage and edema, 2: Tendonitis and fibrosis, 3. Tendon degeneration of rotator cuff and biceps. Most commonly involves the supraspinatus.

3 types of acromium shapes type 1 (flat), Type 2(curved), type 3 (hooked).

Cause vs effect?

Notable and Quotable

"It has been said that time heals all wounds. I don't agree. The wounds remain. Time - the mind, protecting its sanity - covers them with some scar tissue and the pain lessens, but it is never gone."

- **Rose Kennedy**

History

- Hand dominance, occupation.
- Pain at night, when lying on affected shoulder.
- Pain/weakness when lifting/moving arm.
- Trauma vs atraumatic/degenerative.
- 50% report specific event, 50% report progressive onset.
- Exacerbations and remissions.
- Age (Impingement >40, Arthritis >50, Frozen shoulder >30 women more than men.
- Duration and associated symptoms. Ie weakness, numbness tingling, chest pain, systemic symptoms, history of malignancy.

EXAM

- Check both active and passive ROM.
- Inspection (Ie thoracic kyphosis).
- Ranges: Flexion 180 degrees, Extension 60 degrees, IR 90 degrees with arm abducted, ER 60-70 deg, adduction 30, abduction 180.
- 2:1 glenohumeral to scapulothoracic motion in abduction.
- **Strength testing.**
- Special Tests (Neer's, Hawkin's, Crossed arm, apprehension etc).
- Always compare to other side!

Supraspinatus Testing

Infraspinatus/Teres Minor

Subscapularis Testing

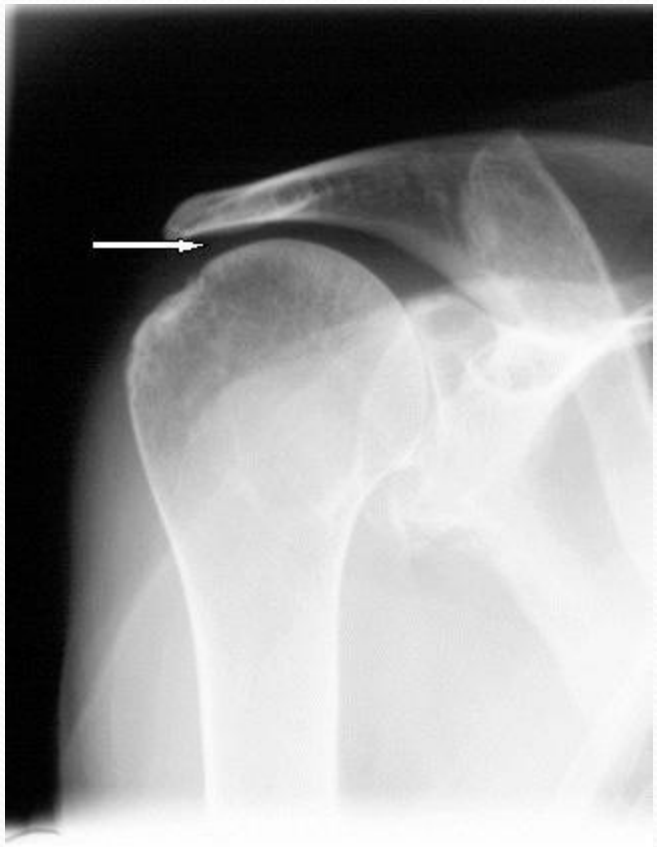
Imaging

- **X rays:** Good place to start. Not very sensitive or specific.
- Can provider helpful information and rule out acute causes (ie fracture, dislocation…)
- Routine series (Grashey- True AP view), Supraspinatus outlet view -variant of "scapular Y". A transthoracic lateral with the beam angled downward parallel to the supraspinatus muscle.
- Only if it changes treatment algorithm.

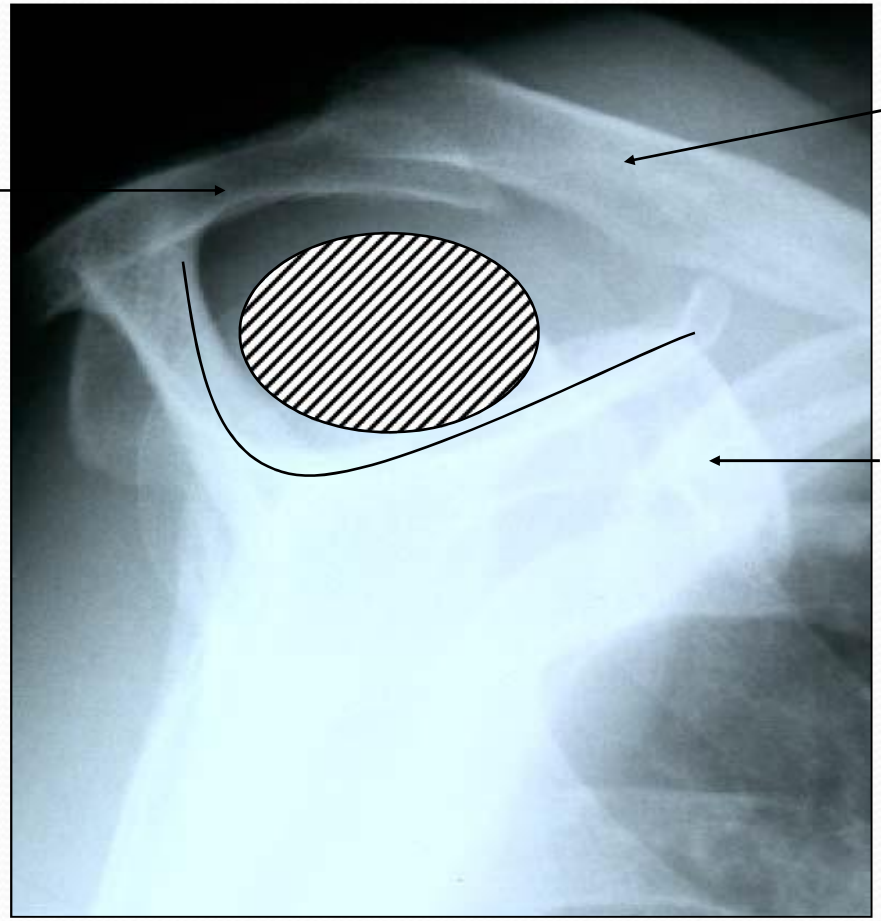
Normal Appearing Radiographs

Subchondral sclerosis/tendon calcification

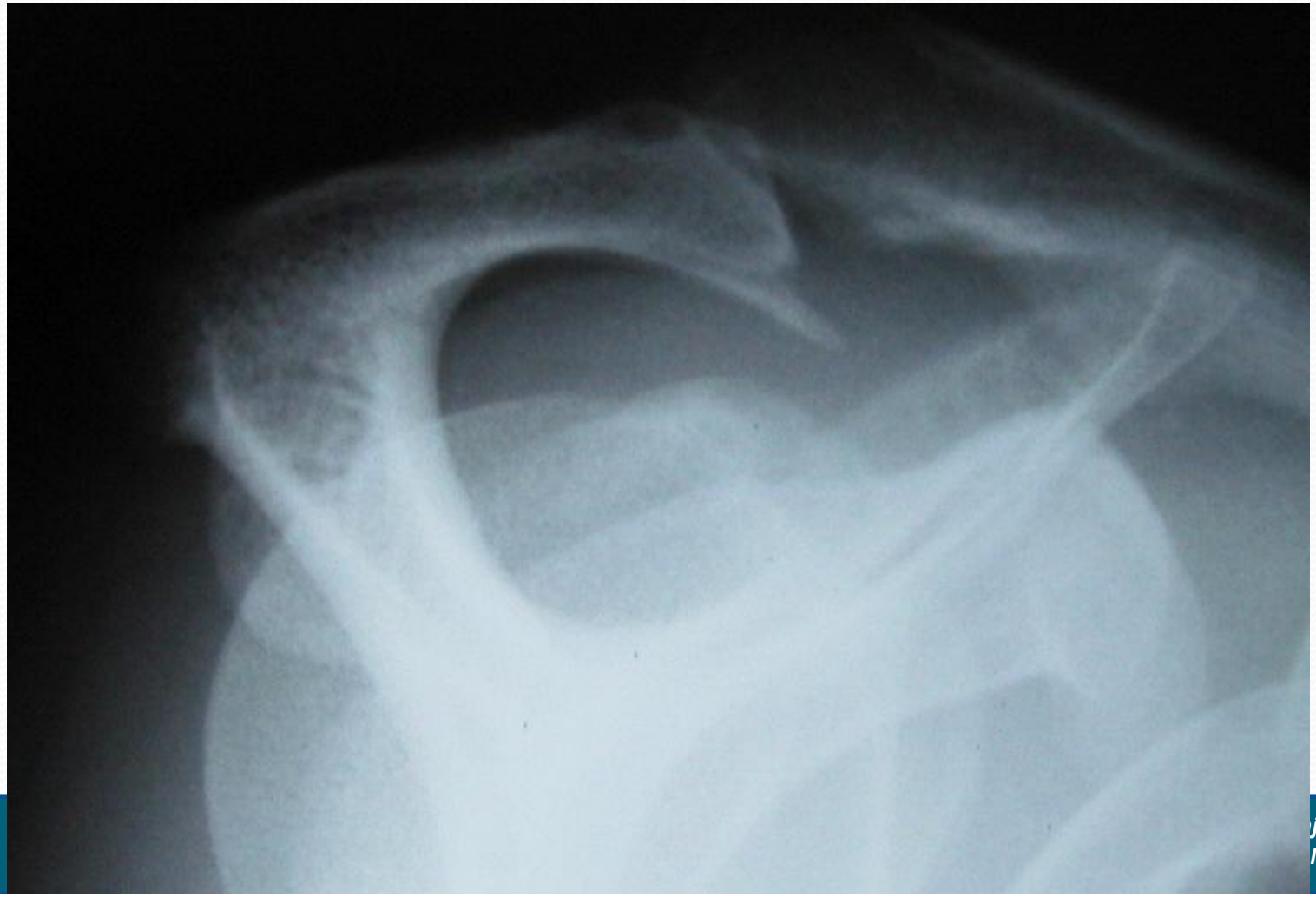
Rotator Cuff Tear



Supraspinatus Outlet



Impingement/Subacromial Spur



Imaging modalities

- **MRI:** Superior soft tissue contrast, high spatial resolution, multiplanar capabilities.
- **MR Arthrogram:** Distends joint and improves soft tissue contrast. Improved delineation of labrum, rotator cuff, and capsuloligamentous structures.
- **Ultrasound:** Cheap.
- No radiation.
- Dynamic evaluation.
- Can be used for both diagnosis and treatment (ie injections.
- Cons: User dependent. Difficult to assess labrum and glenohumeral ligaments.

Consider surgical referral/treatment

- No improvement with 3 months of conservative care.
- Complete tears.
- Large tears (> 3 cm)
- Progressive weakness and loss of function.
- Acute tears
- Younger age
- Occupation.

Thank You!

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