با نام و یاد خدا
Evaluation of the adult with shoulder complaints

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PHYSICAL EXAMINATION

- Examination of the shoulder is guided by the history
- Inspection
- Basic neurovascular evaluation
- Shoulder anatomy and motion are complex, and thus, the examination of the shoulder is also complex
- ??
DIAGNOSTIC APPROACH

Is there a history of trauma?

Yes

- Obtain history of trauma
- Perform examination (may include ultrasound examination)
- Obtain plain radiographs as indicated

No

- Obtain history
- Perform examination
  (may include ultrasound examination)

Workup suggests intrinsic or extrinsic cause?

Intrinsic cause most likely

- Fracture (e.g., clavicle, proximal humerus)
- Glenohumeral dislocation
- AC sprain
- Sternoclavicular subluxation/dislocation

Extrinsic cause most likely

- Vague, diffuse, or poorly localized pain
- Pain associated with other symptoms (e.g., dyspnea, abdominal pain, diaphoresis)
- Sharp, shooting, or "electric" pain that radiates to neck or down arm
- History concerning for extrinsic cause (e.g., recent MVC, cardiac disease)
- Glenohumeral motion does not cause shoulder pain
- Shoulders symmetric in appearance, motion, and strength

Workup and diagnostic imaging reveal one of the following:

- Initiate appropriate management
- Refer to orthopedics as indicated

Evaluate for intrinsic soft tissue injury

Workup suggests glenohumeral or extraglenohumeral cause?

Findings consistent with glenohumeral cause*

- Glenohumeral exam reveals pain, weakness, or abnormal motion

Potential causes include:
- Rotator cuff impingement
- Rotator cuff tendinopathy
- Rotator cuff tear
- Adhesive capsulitis (frozen shoulder)
- Glenohumeral instability
- Labral tear
- Glenohumeral arthritis

Findings consistent with extraglenohumeral cause*

- Focal pain and tenderness outside glenohumeral joint
- Gentle passive motion of glenohumeral joint generally does not cause pain

Potential causes include:
- Biceps tendinopathy
- Biceps tendon tear
- AC arthritis
- Scapulohumeral weakness
- Subscapular bursitis
- Distal clavicle osteolysis
Step one:
Traumatic versus nontraumatic

- Patient's history
- The patient is nearly always able to localize the pain
- Plain radiographs
- Fx &/OR Dx
### Step two: Extrinsic versus intrinsic

#### Extrinsic causes of shoulder pain

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<tr>
<th>Neurologic</th>
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<tr>
<td>Cervical nerve root compression (C5, C6)</td>
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<td>Suprascapular nerve compression</td>
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<td>Brachial plexus lesions</td>
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<td>Herpes zoster</td>
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<td>Spinal cord lesion</td>
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<td>Cervical spine disease</td>
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<td>Hepatobiliary disease</td>
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<td>Diaphragmatic irritation (eg, splenic injury, ruptured ectopic pregnancy, perforated viscus)</td>
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<th>Cardiovascular</th>
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<td>Myocardial ischemia</td>
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<td>Axillary vein thrombosis</td>
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<td>Thoracic outlet syndrome</td>
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<td>Upper lobe pneumonia</td>
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<td>Apical lung tumor</td>
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<td>Pulmonary embolus</td>
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If the cause is extrinsic

- The patient has difficulty localizing the pain
- The pain itself is often vague if it is referred from a thoracic or abdominal source
- Sharp with radiation if it is from a neurologic source
- Painless ROM & no asymmetry in appearance, motion, or strength when compared with the opposite shoulder
Step three: Glenohumeral versus extraglenohumeral

The patient is able to localize the pain. Weakness of the stabilizing muscles of the scapula is a notable exception.
Extraglenohumeral

- Focal pain and tenderness outside glenohumeral joint
- Gentle passive motion of glenohumeral joint generally does not cause pain

Potential causes include:
- Biceps tendinopathy
- Biceps tendon tear
- AC arthritis
- Scapulothoracic weakness
- Subscapular bursitis
- Distal clavicle osteolysis
Biceps tendinopathy/rupture

- Repetitive lifting and, to a lesser extent, overhead reaching leads to irritation, microtearing, and, if untreated, degenerative change. Unusual or vigorous lifting in the setting of a chronically weakened tendon can lead to spontaneous rupture.

- The patient complains of anterior shoulder pain aggravated by lifting, carrying objects like shopping bags, and overhead reaching.

- A dramatic worsening of symptoms and description of a lump just above the antecubital fossa suggests an acute long head tendon rupture.
Acromioclavicular pain

Deformity following Type III AC joint injury

Acromioclavicular joint cross body adduction test
Scapular instability

Wing of the scapula

Scapular assistance test
Scapulothoracic bursitis

- May result from mechanical pressure and friction, most often between the superior-medial angle of the scapula and the adjacent second and third ribs.
- Poor muscular development in thin patients, kyphotic posture, repetitive to-and-fro motion of the scapula (ironing, assembly work, throwing sports), and direct pressure are common causes.
- A typical patient has poor muscular development, an asthenic physique, and poor posture.
Step four: Differentiating glenohumeral pathology

- Impingement and rotator cuff tendinopathy
- Rotator cuff tendon tear
- Adhesive capsulitis
- Glenohumeral osteoarthritis
- Multidirectional shoulder instability
- Superior labrum anterior to posterior (SLAP) tear
Rotator cuff injury

- The most common causes of shoulder pain
- Improper athletic technique, poor muscular conditioning, poor posture, and failure of the subacromial bursa to protect the supporting tendons adequately may result in a progression of injury from acute inflammation, to calcification, to degenerative thinning, and finally to tendon tear.
Impingement syndrome

- Overhead reaching and positioning cause pain over the outer deltoid region.
- Atrophy of the muscles around the top and back of the shoulder may be apparent if symptoms are longstanding.
- Crepitus may be felt with attempts to abduct the arm beyond 60 degrees.
- Patients with rounded shoulders (a down-sloping acromial angle), poor muscular development, repetitive overhead sport activity, and occupations that require repetitive work at or above the shoulder are at greatest risk.
Tendinopathy

Generally age >40

shoulder pain aggravated by

- Reaching, pushing, pulling, lifting, positioning the arm above the shoulder level, or lying on the affected side
- Most patients do not describe an injury or fall
- Subacromial tenderness
- Pain with Apley scratch tests
- Normal passive range of motion
- Normal strength but pain with testing midarc abduction and/or external rotation
- Pain with impingement testing
- (Neer and Hawkins tests)
Apley scratch tests

Neer and Hawkins tests
Tendon tear

- Occur as the end result of chronic subacromial impingement
- Progressive tendon degeneration
- Traumatic injury
- Combination of these factors
- SS
- IS
- SSC

- Weakness
- Pain over the anterolateral shoulder or sometimes the upper back
- Popping or catching sensation when the shoulder is moved
- Night pain
Examination findings

- Same as rotator cuff tendinopathy
- Weakness often present with resisted abduction and/or external rotation
Labral tear & SLAP

- Athletes
- Deep shoulder pain
- Catching sensation
- Instability
- Crepitus
Adhesive capsulitis

- History of diabetes
- Increased pain at night either from direct pressure or shoulder movement
- Immobilizing disability (e.g., stroke, injury requiring sling)
- Parkinson disease, and chronic pulmonary disease
- Diminished active and passive range of motion
- The most common cause is rotator cuff tendinopathy
- Low pain tolerance, poor compliance with exercise therapy
Glenohumeral osteoarthritis

- History of shoulder trauma;
- Primary osteoarthritis of the shoulder is uncommon; thus, in the absence of trauma clinicians should consider the possibility of metabolic disease
- Pain
- Diminished active and passive range of motion particularly abduction and external rotation
- Imaging shows sclerosis and diminished joint space
Multidirectional shoulder instability

- Subluxation, loose shoulder, or partial dislocation
- Younger patient (age < 40)
- Athletes under the age of 40, especially swimmers and throwers
- Patients with large rotator cuff tendon tears (loss of muscular support)
- More common in young women with poor muscular development
- Patients with generalized hypermobility or connective tissue disorders like Ehlers Danlos syndrome
- The symptoms are often vague and nonspecific ("dead arm," looseness, or crepitation) unless the condition is complicated by rotator cuff tendinopathy
- Excessive range of motion, particularly with internal and external rotation
- Positive sulcus sign
- Positive instability test
- Provocative maneuvers cause discomfort
Sulcus sign

Load and shift test for glenohumeral instability
A. Apprehension test:
To perform this test, the patient places the symptomatic arm in the throwing position. Next, the clinician braces the posterior shoulder with one hand while using the other hand to push back on the wrist with steady pressure, thereby increasing the abduction and external rotation of the shoulder. Any sensation of impending dislocation at any time on the part of the patient constitutes a positive test.

B. Relocation test:
The relocation test is begun at the end of the apprehension test. Forced abduction and external rotation are stopped and the clinician moves the hand that was bracing the posterior shoulder to the anterior shoulder. The examiner pushes the humerus posteriorly. Relief of pain or of the sensation of impending dislocation on the part of the patient represents a positive test.

C. Anterior release test:
The release test is performed at the end of the relocation test when the clinician abruptly stops pushing the humerus posteriorly. Again, any sensation of impending dislocation on the part of the patient constitutes a positive test.
THANK YOU