Evaluation & Management of Common Shoulder and Elbow Disorders

Anil K. Koganti, M.D.
Sports Medicine, Shoulder/Elbow Reconstruction

Orthopaedic Consultants of North Texas
A Baylor-Health Texas Affiliate
EVALUATION OF THE SHOULDER
History

- Location of Pain
- Onset
- Trauma?
- Weakness?
- Numbness or Paresthesias?
Orthopaedic Physical Exam

Inspection
- Swelling or bruising
- Muscle atrophy

Palpation
- Tenderness

Range of Motion
- Active vs. passive
- Compare side-to-side
- Crepitus?

Strength Testing
- Grade manual motor strength on a 0-5 scale:
  - 5 = full strength
  - 4 = can combat mild resistance
  - 3 = anti-gravity strength
  - 2 = muscle functions with gravity removed
  - 1 = flicker of muscle activity
  - 0 = no visible activity
Check Cervical Spine

- Compression of a cervical nerve root can cause shoulder pain.

- Assess for tenderness and range of motion of the neck (flexion, extension, rotation).

- Spurling test may reproduce the arm pain.
Shoulder or Neck?

**Shoulder**
- Pain generally from shoulder to elbow
- Usually does not radiate to hand / fingers
- No change with neck position
- Worse with reaching or overhead positions
- Better with arm at side

**Cervical Spine**
- Pain often along trapezius muscle or medial scapula
- Often have paresthesias to hand or fingers
- Aggravated by rotation of neck
- Worse with sitting at desk/driving
- Better with arm overhead
Shoulder Range of Motion
Forward Elevation

Range is documented from 0 - 180°
Active vs. Passive ROM

**Active ROM**
- what the patient can achieve on own

**Passive ROM**
- what the patient can achieve with help
External and Internal Rotation

External Rotation 0 - 90°

Internal Rotation to Spinal Level T12
Shoulder X-Rays

- AP View
- Scapular “Y”
- Axillary view
Common Shoulder Problems

1. Rotator Cuff Pathology
   - Tendinitis / Bursitis
   - Tear

2. Adhesive Capsulitis (Frozen Shoulder)

3. Glenohumeral Arthritis

4. AC Joint Pain / Arthritis

5. Shoulder Instability
ROTATOR CUFF DISEASE
Rotator Cuff Anatomy

Muscles of the Rotator Cuff:
- Subscapularis
- Supraspinatus
- Infraspinatus
- Teres Minor
Rotator Cuff Tendinitis

“Impingement”

PATHOPHYSIOLOGY

• Inflammation of tendons near attachment on humerus

• Tendon inflammation leads to swelling of subacromial bursa

• With elevation or abduction of arm, bursa is compressed against acromial arch
Rotator Cuff Tendinitis
“Impingement”

SYMPTOMS

• Pain, usually along deltoid muscle
• May radiate down lateral arm to elbow
• Insidious onset
• Symptoms worse with reaching and overhead activities
• Difficulty sleeping on affected side
• Trouble with ADLs (washing hair, donning jacket, fastening bra, etc.)
Diagnostic Tests

Neer Impingement Sign

Hawkins Impingement Sign
Rotator Cuff Strength

SUPRASPINATUS

Resisted Elevation
“Empty Can Test”
Rotator Cuff Strength

INFRASPINATUS

Resisted External Rotation
Rotator Cuff Tendinitis “Impingement”

X-RAYS

- Usually normal

MRI

- Often with inflammatory changes in rotator cuff tendons

- **Supraspinatus** most commonly affected

- *Tendon is still in continuity*
Rotator Cuff Tear

- Pain and presentation usually identical to that of impingement
- If tear is full-thickness, patient may exhibit weakness on clinical exam
- MRI is only reliable way to differentiate tendinitis from a tear
- Supraspinatus tear is most common
Partial Thickness Tears

- Bursal Side
- Articular Side

Humeral Head
Full Thickness Tear

Humeral Head
Natural History of a Tear

- Five year MRI f/u of patients with a full-thickness rotator cuff tear
  - 40% had progressive enlargement of the tear
  - > 50% of these patients had increased pain, weakness, and functional deficits
  - No tears healed or decreased in size

“Your tear will either stay the same size or it will get bigger over time.”

Tempelhof, JSES, 1999
Yamaguchi, JSES, 2001
Rotator Cuff Management

- **Rotator Cuff Tendinitis / Bursitis and Partial Thickness Tears** can be treated conservatively
  - Rest, activity modification
  - Icing, NSAIDs
  - Physical Therapy
  - Subacromial Bursal Steroid Injection

- **Full Thickness Rotator Cuff Tears** should be evaluated for **surgical repair**
  - Ideally before irreversible changes occur: fixed tendon retraction and fatty atrophy of muscle
Prolonged non-operative treatment of a full-thickness rotator cuff tear may lead to irreversible changes and a progressive decline in function
Algorithm

Impingement pain

- Pain only
- Little / no weakness

MRI

- Obvious weakness
- Significant trauma
- Felt a “pop”

Positive for full-thickness RC Tear

Surgical Evaluation

- No RC Tear
- Partial tear

Arthroscopic surgery

Conservative Tx

NSAIDs, PT, SA Injection

Different type of injection

Continued Rehab / P.T.
ADHESIVE CAPSULITIS
“Frozen Shoulder”
Adhesive Capsulitis

PATHOPHYSIOLOGY

• Disorder of the shoulder joint capsule
• Abnormal contraction of capsular fibers
• Etiology unknown, postulated to be either auto-immune process or nerve-mediated
• More common in patients with:
  1. Diabetes
  2. Thyroid disorder
  3. Neurologic disorder (Cervical spine disease, CVA, MS)
Adhesive Capsulitis

SYMPTOMS

- Pain and limited range of motion
- Patient will have limited active and passive range of motion
- Constant ache, sharp/stabbing pain at end ROM
- Frozen shoulder may last for up to 2 years if left alone or untreated

X-RAYS

- Generally normal
Adhesive Capsulitis

Joint capsule becomes inflamed and contracted
Limited ROM

Active

Passive

FORWARD ELEVATION
Limited ROM

External Rotation

Internal Rotation

65°  25°  T8  Sacrum
Treatment

- NSAIDs
- Physical therapy
- Corticosteroid injection → intra-articular
- More physical therapy (several months)
- Manipulation under anesthesia
Glenohumeral Arthritis

PATHOPHYSIOLOGY

• Degeneration of articular cartilage of humeral head and glenoid surfaces

• May be post-traumatic, osteoarthritis, or inflammatory arthritis
Glenohumeral Arthritis

SYMPTOMS

• Pain +/- crepitus
• Limited range of motion (active and passive)

X-RAYS

• Gold standard for diagnosis
X-Rays of Shoulder Arthritis

AP Views
X-Rays of Shoulder Arthritis

Axillary views
Treatment

- NSAIDs
- Gentle physical therapy
- Periodic steroid injections (intra-articular)
- Joint replacement surgery
Acromioclavicular (AC) Joint

- Small joint at top of shoulder
- Junction between clavicle and acromion process of the scapula
- Cartilage present at bony ends, articular disk in between bones, dense ligamentous capsule around the joint
- Additional ligaments connect clavicle to the coracoid process of the scapula
AC Joint Pain

TRAUMATIC ETIOLOGY

Joint trauma results in capsular strain, leading to inflammation and synovitis

- Direct fall onto shoulder
- Car accident with seatbelt injury

NON-TRAUMATIC

Most commonly due to wearing out of cartilage, with “bone-on-bone” contact

- Common in young weightlifters
- Progressive wear and tear in middle-aged to older patients
Acromioclavicular (AC) Joint

SYMPTOMS

• Pain at top of shoulder
• May radiate to neck/trapezius, front, or back of shoulder
• “Toothache” in shoulder
• Worse with reaching across front of body
• Can’t sleep on affected side
• X-rays may show narrowing or spur formation
Treatment of AC Joint Pain

- Rest, NSAIDs, Ice
- Localized steroid injection to AC joint
- Physical therapy to strengthen scapular muscles, improve posture
- Arthroscopic surgery to resect distal clavicle if patient fails conservative treatment
AC Joint Separation

- Traumatic AC joint injury from a fall or direct blunt trauma to top of shoulder
  - Football
  - Fall from bike
  - Hockey

- Results from sprain or disruption of the acromioclavicular ligaments +/- the coracoclavicular ligaments
AC Joint Separation Types

• Types I, II, III most common

• Present with pain, swelling, mild to moderate deformity

• Treatment is conservative
  • Ice, analgesics
  • Sling for 2-3 weeks, followed by gentle therapy
  • Avoid sports until pain-free, nontender, and full ROM

• Types IV, V, and VI are surgical
Shoulder Dislocation

- Traumatic separation of humeral head from glenoid

- 95% are anterior dislocations

- Posterior dislocations rare, but may be seen after seizures

- Require urgent closed reduction

- Two X-rays are required to confirm joint reduction
Anterior Shoulder Dislocation

- Treatment after successful reduction involves sling immobiliarizer for 1-2 wks, followed by progressive ROM exercises and strengthening.

- Likelihood of recurrent dislocation depends on patient age at time of first dislocation:
  - < 20 yo = > 90% or higher risk of recurrence
  - 20-40 yo = 40% chance of recurrence
  - > 40 = 14% chance of recurrence

- Though less likely to have recurrent instability, patients over age 40 are more likely to have a rotator cuff tear following a shoulder dislocation.

Rowe, JBJS, 1962
EVALUATION OF THE ELBOW
Elbow Range of Motion
Elbow ROM

FLEXION: 140 °

EXTENSION: 0 °
Elbow ROM

SUPINATION: 90 °

PRONATION: 90 °
Common Elbow Disorders

1. Lateral Epicondylitis (Tennis Elbow)
2. Medial Epicondylitis (Golfer’s Elbow)
3. Olecranon Bursitis
4. Elbow Arthritis
5. Distal Biceps Tendon Rupture
Lateral Epicondylitis

- “Tennis Elbow”
- 50% of participants in racquet sports will have symptoms
- Most are not sports-related
- Overuse injury with inflammation of wrist extensor tendon along lateral elbow
- Affects patients 30 - 55 yr
Lateral Epicondylitis

- Pain along lateral elbow
- Worse with lifting, forceful grip
- Full ROM
- Elicit pain on exam with:
  - Palpation of lateral epicondyle
  - Resisted wrist extension or supination
Treatment

- Rest, daily icing, NSAIDs
- Forearm stretching exercises
- Strap brace or splint
- Localized steroid injection
- Surgery only in recalcitrant cases
Medial Epicondylitis

- “Golfer’s Elbow”
- Pain along medial elbow
- Worse with forceful grip, lifting
- Tenderness at medial epicondyle
Medial Epicondylitis

- Inflammation of wrist flexors and pronators
- Repetitive injury with microscopic tearing and repair tissue formation
- 50% may have ulnar nerve paresthesias
Treatment

- Rest, ice, NSAIDs
- Forearm stretches, focusing on stretching of wrist flexors
- Strap brace may be helpful to dissipate strain on tendon insertion
- Steroid injection
- Surgery in rare cases
Olecranon Bursitis

- Inflammation of subcutaneous bursa at tip of elbow
- Does not involve joint
- Due to single trauma or repetitive abrasion
- Serous fluid or blood (in case of trauma)
- Occasionally becomes infected, warmth/redness will be present
Olecranon Bursitis

TREATMENT

• Ice, NSAIDs

• Elbow pad for protection

• Aspiration +/- steroid injection

• If infection, treat with antibiotics and possible surgical drainage
Elbow Arthritis

- Degeneration of articular cartilage
- Usually due to OA or rheumatoid arthritis
- May also have a post-traumatic etiology
- Pain, crepitus, and limited range of motion
- X-rays are diagnostic
Elbow Arthritis

Loss of joint space, osteophytes, bony sclerosis and cyst formation
Treatment of Elbow Arthritis

- NSAIDs, activity modification
- Intra-articular steroid injection
- Arthroscopic debridement
- Total elbow replacement
  - 10-15 lb permanent lifting restriction
Distal Biceps Rupture

• Traumatic injury caused by lifting a heavy object

• Rupture of biceps tendon attachment on radius

• Men, age 30s – 50s

• Results in 40% loss of supination strength and 30% loss of elbow flexion strength

• Surgical repair within 2-3 wks is recommended
THANK YOU

Orthopaedic Consultants of North Texas
A Baylor-Health Texas Affiliate