

In The Clinic: Acute and Chronic Shoulder Pain

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Disclosure Information

- **Disclosure of Relevant Financial Relationships**
 - I have no financial relationships to disclose.
- **Disclosure of Off-Label and/or investigative Uses**
 - I will not discuss off label use and/or investigational use in my presentation.

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Bio

- Born and raised in Los Alamos, NM
- Medical School and Orthopedic Surgery Residency at the University of New Mexico
- Fellowship in Sports Medicine at Houston Methodist Hospital
- Team Physician Houston Astros, Rice University and Barbers Hill High School

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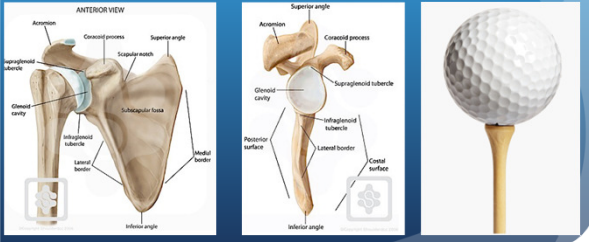
Objectives

1. **Understand the Basic Anatomy of the Shoulder**
2. **Discuss Epidemiology and Risk Factors:**
 - Examine the prevalence of shoulder pain across different age groups and genders, with an emphasis on common risk factors.
3. **Differentiate Between Acute and Chronic shoulder Pain Etiologies:**
 - Identify causes of acute vs. chronic shoulder pain, including trauma, degenerative conditions, and inflammatory processes.
4. **Learn Physical Exam Techniques and Diagnostic Maneuvers:**
5. **Review Diagnostic Work-Up Protocols:**
 - Understand indications for imaging and laboratory testing to diagnose common shoulder conditions effectively.
6. **Explore Evidence-Based Treatment Options:**
 - Outline conservative, pharmacological, and surgical treatment options, including when to refer patients for specialized care.
7. **Focus on Specific Conditions:**
 - Deepen understanding of shoulder osteoarthritis, rotator cuff tears, impingement syndrome, and AC joint pathology

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The Shoulder

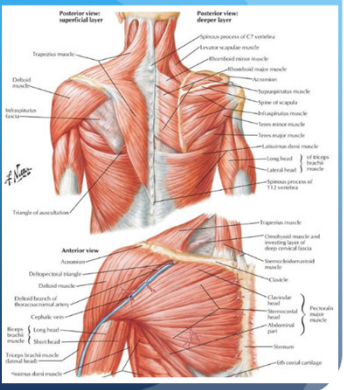
- Bony Architecture
- Ball and Socket



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The Shoulder

- Dynamic Structures



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The Shoulder

- Rotator Cuff

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The Shoulder

- Static Stabilizers
 - Ligaments
 - Labrum
 - Bumper and deepens socket

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The Shoulder

- Bursa

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The Shoulder

- Nerves and Vessels
- C5-6 nerve roots

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Shoulder Pain Epidemiology

- General Population
 - Prevalence of Shoulder Pain
 - Lifetime Prevalence: 70% of individuals experience shoulder pain at some point.
 - Point Prevalence: ~7-26% report current shoulder pain.
 - Acute Shoulder Pain
 - Incidence: Often due to trauma (e.g., falls, accidents).
 - More common in older adults (rotator cuff tears, fractures).
 - Chronic Shoulder Pain
 - Prevalence: Accounts for 40-50% of persistent musculoskeletal pain complaints.
 - Common Causes: Rotator cuff tendinopathy, adhesive capsulitis, osteoarthritis.
 - Higher prevalence in individuals aged 50+ years.
- Athletic Population
 - Prevalence
 - Athletes involved in overhead sports report shoulder pain in 20-50% of cases.
 - Sports like baseball, swimming, tennis, and volleyball have the highest risk.
 - Incidence of Acute Shoulder Pain
 - Typically results from trauma or acute overload:
 - Dislocations (football, rugby, wrestling).
 - AC joint injuries (cycling, rowing).
 - Reported incidence: ~3-8 injuries per 1,000 athlete exposures (varies by sport).
 - Incidence of Chronic Shoulder Pain
 - Overuse injuries are more common:
 - Swimmers: 35-40% report chronic shoulder pain.
 - Baseball pitchers: ~20% experience chronic symptoms.
 - Frequently attributed to repetitive microtrauma and poor biomechanics.

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Shoulder Pain Etiology

- Acute Causes
 - Trauma
 - Shoulder dislocations (common in contact sports).
 - Fractures: Clavicle, humerus, or scapula.
 - Rotator cuff tears: Often caused by falls or lifting heavy objects.
 - Inflammatory Conditions
 - Acute bursitis: Inflammation of the subacromial or subdeltoid bursa.
 - Septic arthritis: Rare but severe, requiring immediate intervention.
 - Overuse or Strain
 - Sudden increase in activity or improper technique leading to tendon strains.

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Shoulder Pain Etiology

- Chronic Causes

- Degenerative Conditions**
 - Rotator cuff tendinopathy: Progressive tendon wear.
 - Glenohumeral osteoarthritis: Cartilage degeneration in the shoulder joint.
 - Acromioclavicular (AC) joint arthritis: Pain localized to the AC joint.
- Repetitive Strain Injuries**
 - Impingement syndrome: Compression of tendons or bursa under the acromion.
 - Chronic instability: Recurrent shoulder dislocations leading to pain.
- Adhesive Capsulitis (Frozen Shoulder)**
 - Stiffness and pain due to thickening of the joint capsule.
 - Common in diabetics and post-injury.

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Shoulder Pain Etiology

- Referred Shoulder Pain

- Cervical Spine Pathology**
 - Radiculopathy from cervical disc herniation or osteophytes.
 - C5-7 nerve roots supply majority of motor and sensory function to the shoulder
 - Pain radiating to the shoulder, often accompanied by neck stiffness.
- Cardiac Causes**
 - Myocardial infarction: May present as left shoulder pain (referred pain).
- Visceral Pathology**
 - Gallbladder disease (cholecystitis): Right shoulder referred pain via the phrenic nerve.
 - Pulmonary conditions (e.g., Pancoast tumor, pneumonia): Shoulder pain due to shared nerve pathways.



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Shoulder Pain Etiology

Risk Factors

- Demographic Factors**
 - Age:**
 - Acute injuries more common in younger populations (athletes).
 - Degenerative conditions (e.g., rotator cuff tears, osteoarthritis) increase with age.
 - Gender:**
 - Adhesive capsulitis more common in females.
- Activity-Related Factors**
 - Repetitive overhead activities (swimming, tennis, pitching).
 - Poor posture or ergonomics (e.g., desk workers, assembly line workers).
- Health Conditions**
 - Diabetes mellitus: Increased risk of adhesive capsulitis and tendinopathies.
 - Autoimmune diseases (e.g., rheumatoid arthritis): Inflammatory involvement of the shoulder.
- Previous Injury**
 - History of dislocations, fractures, or rotator cuff injuries increases susceptibility to chronic pain.

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Diagnostic Work-up

- Pain Characteristics:**
 - Onset: Acute vs. gradual.
 - Location: Localized (e.g., anterior, posterior) or diffuse.
 - Nature: Sharp, dull, throbbing, or radiating.
 - Aggravating/Relieving Factors: Movement, rest, overhead activities.
- Functional Limitations:**
 - Difficulty with activities of daily living (e.g., dressing, lifting objects).
- Associated Symptoms:**
 - Weakness, instability, stiffness, swelling, or numbness.
- Occupational and Recreational History:**
 - Repetitive overhead activities or trauma.
- Medical History:**
 - Prior injuries, surgeries, or systemic conditions (e.g., diabetes, rheumatoid arthritis).

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Diagnostic Work-up

- Pain Location**
 - Crossover!
 - More than just around "the shoulder"
 - Pain in the upper arm/brachium can be shoulder pain

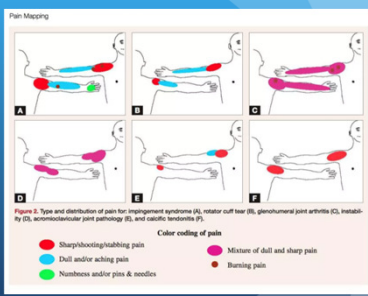


Figure 8. Type and distribution of pain for impingement syndrome (A), rotator cuff tear (B), glenohumeral joint arthritis (C), instability (D), acromioclavicular joint pathology (E), and axillary tendinitis (F).

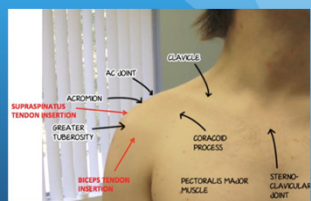
Color coding of pain

- Sharp/shooting/hoobing pain
- Dull and/or aching pain
- Numbness and/or pins & needles
- Mixture of dull and sharp pain
- Burning pain

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Diagnostic Work-Up

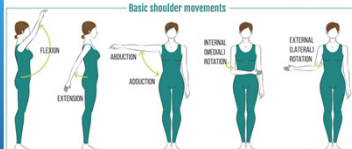

- Physical Exam**
- Inspection:**
 - Deformities, swelling, atrophy, skin changes.
- Palpation:**
 - Tenderness over bony landmarks, tendons, or joints.



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Diagnostic Work-Up

- Range of Motion (ROM):**
 - Active and passive movements.
 - Note restrictions and associated pain.
- Strength Testing:**
 - Break vs Make
 - Symmetry
 - Assess rotator cuff and deltoid strength (e.g., external rotation, abduction).
- Special Tests:**
 - Rotator Cuff Tear: Empty Can Test, Drop Arm Test.
 - Impingement: Neer's Test, Hawkins-Kennedy Test.
 - Instability: Apprehension Test, Sulcus Sign.
 - AC Joint: Cross-Body Adduction Test.






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Special Tests

Rotator Cuff Pathology

- Empty Can Test**
 - Purpose: Assesses supraspinatus function.
 - Procedure: Arm abducted to 90° in scapular plane, thumb pointing down; patient resists downward force.
 - Positive Sign: Weakness or pain indicates supraspinatus injury.
- Drop Arm Test**
 - Purpose: Evaluates for full-thickness rotator cuff tear.
 - Procedure: Patient slowly lowers arm from 90° abduction.
 - Positive Sign: Arm drops suddenly or cannot be held.
- External Rotation Lag Sign**
 - Purpose: Detects infraspinatus or teres minor dysfunction.
 - Procedure: Patient externally rotates arm while maintaining elbow at 90°.
 - Positive Sign: Inability to hold position.






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Special Tests

Impingement

- Neer's Test**
 - Purpose: Assesses subacromial impingement.
 - Procedure: Arm passively elevated while stabilizing the scapula.
 - Positive Sign: Pain at the anterior shoulder.
- Hawkins-Kennedy Test**
 - Purpose: Detects subacromial impingement.
 - Procedure: Arm flexed to 90°, elbow flexed to 90°, shoulder forcibly internally rotated.
 - Positive Sign: Pain indicates impingement.

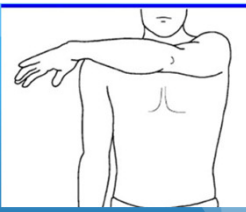




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Special Tests

AC Joint Pathology

- Cross-Body Adduction Test**
 - Purpose: Detects AC joint dysfunction.
 - Procedure: Arm passively flexed to 90°, horizontally adducted across the body.
 - Positive Sign: Pain localized to AC joint.
- AC Compression Test**
 - Purpose: Assesses AC joint stability.
 - Procedure: Compress the clavicle and scapula together.
 - Positive Sign: Pain or crepitus at the AC joint.

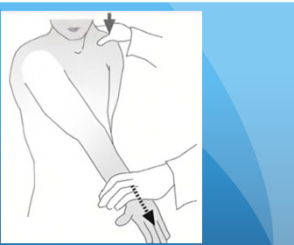




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Special Tests

Biceps Tendon Pathology

- Speed's Test**
 - Purpose: Assesses biceps tendonitis.
 - Procedure: Arm flexed to 90°, palm up; patient resists downward force.
 - Positive Sign: Pain in the bicipital groove.
- Yergason's Test**
 - Purpose: Detects biceps tendon instability or tendinitis.
 - Procedure: Elbow flexed to 90°, forearm supinated against resistance.
 - Positive Sign: Pain or snapping in the bicipital groove.

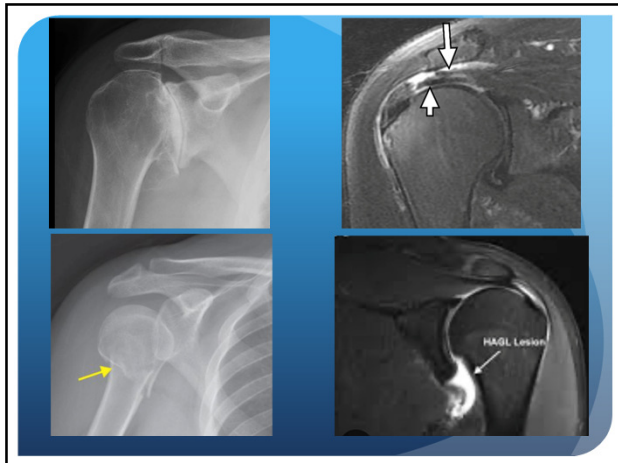
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Diagnostic Work-up

Imaging Modalities

- X-Ray:**
 - Useful for bony abnormalities (fractures, dislocations, arthritis).
 - AP, lateral, and axillary views often performed.
 - Axillary View Very Important!
 - Truth View
 - More specialized views
 - Anatomy of shoulder encompasses lots of planes and angles
 - Zanca, Greshy, Serendipity, West Point
- Ultrasound:**
 - Dynamic assessment of soft tissues (rotator cuff tears, bursitis).
 - Cost-effective and radiation-free.
 - Utilized for injections in and around the shoulder.
 - Accuracy of injections variable just by "feels"
 - Lots of isolated structures and locations of shoulder pain that cannot be injected "blind"
- MRI:**
 - Gold standard for soft tissue evaluation.
 - Detailed visualization of rotator cuff, labrum, and cartilage.
- CT Scans:**
 - Used for complex fractures or preoperative planning.
- Arthrography:**
 - Enhanced imaging of intra-articular structures with contrast.
 - Indicated in younger population
 - Can better define specific labral pathology
 - SLAP tears
 - 10 types!
 - HAGL lesions
 - ALPSA lesions

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Diagnostic Work-up

- **Acute Shoulder Pain:**
 - **Trauma-Related:** Fractures, dislocations, rotator cuff tears.
 - **Infection:** Septic arthritis, osteomyelitis.
- **Chronic Shoulder Pain:**
 - **Degenerative Conditions:** Rotator cuff tendinopathy, osteoarthritis.
 - **Overuse Syndromes:** Impingement, bursitis.
- **Referred Pain:**
 - **Cervical Spine Pathology:** Radiculopathy.
 - **Visceral Causes:** Myocardial infarction, gallbladder disease.
- **Systemic Conditions:**
 - Rheumatoid arthritis, polymyalgia rheumatica.

- **Stepwise Approach:**
 - Combine clinical history, physical exam, imaging, and lab results.
 - Correlate findings with differential diagnoses.
- **Red Flags:**
 - Severe night pain, fever, unexplained weight loss (rule out malignancy or infection).
- **Common Diagnoses:**
 - Rotator cuff tear, glenohumeral arthritis, frozen shoulder, AC joint conditions.
- **Collaborative Approach:**
 - Refer to specialists (e.g., orthopedics, rheumatology) when necessary.
 - More on this later!

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Treatment

Conservative Measures

- **Rest and Activity Modification**
 - Avoid aggravating movements (e.g., overhead activities).
 - Gradual return to normal activities.
- **Pain Management**
 - **Pharmacological:**
 - NSAIDs for inflammation and pain relief.
 - Corticosteroid injections for severe inflammation (short-term relief).
 - Intra-articular VS subacromial
 - Specialized injections
 - Long head biceps tendon
 - **Non-Pharmacological:**
 - Ice for acute injuries.
 - Heat therapy for chronic stiffness.
- **Physical Therapy (PT)**
 - Targeted exercises for mobility, strength, and stability.
 - Manual therapy for soft tissue mobilization.

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Treatment

Rehabilitation Principles

- **Phased Approach:**
 - **Acute Phase:** Focus on reducing pain and inflammation.
 - **Rest:** gentle range of motion (ROM) exercises.
 - **Recovery Phase:** Regain mobility and strength.
 - **Progressive stretching and strengthening exercises.**
 - **Functional Phase:** Restore full function for daily and sports activities.
- **Key Components:**
 - **Strengthening:** Rotator cuff and scapular stabilizers (e.g., serratus anterior, trapezius).
 - **Flexibility:** Stretch tight muscles (e.g., pecs, posterior capsule).
 - **Proprioception:** Improve joint awareness and control.
- **Equipment:**
 - Use resistance bands, weights, and stability balls to enhance rehabilitation.

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Treatment

Patient Education

- **Understanding the Condition**
 - Explain the underlying cause of shoulder pain (e.g., tendonitis, impingement).
 - Emphasize the importance of compliance with treatment.
- **Postural Training**
 - Encourage ergonomic adjustments (e.g., desk setup, sleeping positions).
 - Promote proper posture to reduce strain on the shoulder.
- **Activity Guidelines**
 - **Do's:** Gradual progression in activities, cross-training for abilities.
 - **Don'ts:** Avoid repetitive overhead motions during recovery.
- **Self-Management Strategies**
 - Home exercises, use of ice/heat, and pacing physical activities.
- **Factors Influencing Recovery:**
 - Severity and duration of the condition.
 - Timeliness of intervention.
 - Patient compliance with therapy.
- **Expected Outcomes:**
 - **Acute Conditions:** 4-6 weeks with proper treatment.
 - **Chronic Conditions:**
 - May require months of therapy; full recovery depends on adherence.
- **Potential Complications:**
 - Delayed treatment can lead to stiffness (e.g., frozen shoulder) or chronic pain.
 - Poor adherence to rehabilitation may result in recurrent injuries.

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In Focus: Rotator Cuff Tears

- **Definition:**
 - A tear in one or more of the tendons of the rotator cuff (supraspinatus, infraspinatus, teres minor, subscapularis).
- **Epidemiology:**
 - Common cause of shoulder pain, especially in adults over 40.
 - Prevalence increases with age: ~10% in adults over 60, ~30-50% in adults over 80.
- **Classification:**
 1. **Partial-Thickness Tears:** Tendon partially frayed or damaged.
 2. **Full-Thickness Tears:** Complete disruption of tendon fibers, often referred to as a "complete tear."

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Etiology and Presentation

- Acute Causes:**
 - Sudden trauma:
 - Falls onto an outstretched arm.
 - Shoulder dislocations or lifting heavy objects.
- Chronic Causes:**
 - Degeneration:
 - Age-related wear and tear of the tendon.
 - Overuse:
 - Repetitive overhead activities (e.g., pitching, swimming).
- Risk Factors:**
 - Age >40 years.
 - Repetitive overhead activity or heavy lifting.
 - Smoking and poor vascularity of the tendon.
 - Systemic conditions (e.g., diabetes, rheumatoid arthritis).
- Symptoms:**
 - Pain:
 - Localized to the lateral shoulder, worsened by overhead activities or lying on the affected side.
 - Weakness:
 - Difficulty lifting the arm or performing overhead movements.
 - Stiffness or limited range of motion (in chronic cases).
- Signs:**
 - Drop Arm Test: Sudden arm drop when lowering from 90° abduction.
 - Painful Arc Test: Pain between 60° and 120° of abduction.
 - Weakness: Assessed during resisted movements (e.g., external rotation, abduction).

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Treatment

- Non-Surgical Management:**
 - Viable option even in setting of full thickness tears
 - Best in degenerative setting
 - Subset of people with rotator cuff tear and do not have any clinical signs
 - We know people can function normally with a rotator cuff tear!
 - MOON study
 - Includes:
 - Rest and activity modification.
 - NSAIDs or corticosteroid injections.
 - Physical therapy: Focus on strengthening scapular stabilizers and remaining rotator cuff tendons.
- MOON Study**
 - Overview
 - Multi-Center Orthopaedic Outcomes Network (MOON) study
 - focused on the management of traumatic full-thickness rotator cuff tears.
 - Investigated the outcomes of nonoperative and operative treatments.
 - High Success Rate
 - ~75% of patients treated with structured physical therapy did not require surgery.
 - Most reported satisfactory outcomes with reduced pain and improved function.
 - Sustained Benefits
 - Improvements from physical therapy were maintained for 7+ years, demonstrating durability.
 - Initial Recommendation
 - Nonoperative management is an effective first-line treatment for many patients.

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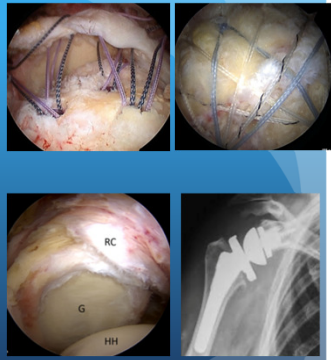
Treatment

- MOON Study Predictors**
- Patient Expectations**
 - Patients who believed physical therapy would not suffice were more likely to opt for surgery.
- Demographics and Activity Level**
 - Younger, more active patients were more likely to choose surgical options after trying conservative treatments.
- Clinical Implications**
 - Managing patient expectations is critical to ensuring compliance with nonoperative strategies.
- Implications**
- Conservative First-Line Approach**
 - Physical therapy is recommended as the initial treatment for atraumatic rotator cuff tears.
- Patient-Centered Care**
 - Individualize treatment plans based on patient activity level, age, and expectations.
- Patient Education**
 - Educate patients about the effectiveness and sustainability of nonoperative treatments to influence informed decision-making.

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Treatment

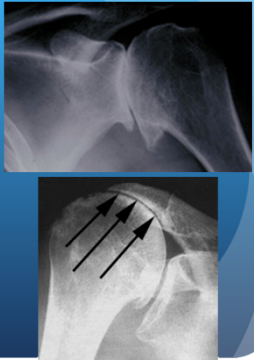
- Surgical Management:**
 - Indications:
 - Full-thickness and partial thickness tears with significant functional impairment.
 - Traumatic Tears
 - Failed conservative management.
 - Procedures:
 - Arthroscopic rotator cuff repair.
 - Gold Standard
 - Open repair or tendon transfer (in massive tears).
 - Reverse total shoulder arthroplasty
 - Large irreparable rotator cuff tears 65+
 - Arthritis no longer only indication for arthroplasty



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In Focus: Shoulder Osteoarthritis

- Definition:**
 - Degenerative joint disease affecting the glenohumeral or acromioclavicular joint, characterized by progressive cartilage wear, bone remodeling, and joint inflammation.
- Prevalence:**
 - Affects 4-26% of adults, with increased prevalence in those over 50 years.
 - Commonly underdiagnosed compared to hip and knee OA due to reduced weight-bearing demands of the shoulder.
- Key Joints Affected:**
 - Glenohumeral Joint (Primary OA): Cartilage erosion in the ball-and-socket joint.
 - Acromioclavicular (AC) Joint (Secondary OA): Results from wear and tear or prior trauma.
 - Very common
 - Very commonly NOT symptomatic



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Clinical Presentation

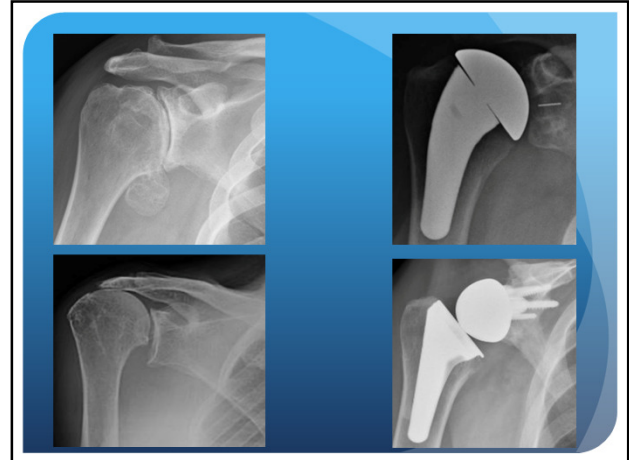
- Symptoms:**
 - Pain:
 - Dull, aching pain in the shoulder.
 - Exacerbated by movement, especially overhead activities.
 - Stiffness:
 - Reduced range of motion (active and passive).
 - Crepitus:
 - Grinding or clicking sounds during movement.
 - Functional Impact:
 - Difficulty with daily tasks such as dressing, reaching, or lifting.
 - Physical Exam Findings:
 - Tenderness over the joint.
 - Limited range of motion with associated pain.
 - Muscle atrophy (late stages).
 - Imaging Studies:
 - X-rays (Standard Imaging):
 - Bone fragments (due to arthritis)
 - Joint space narrowing.
 - Osteophytes.
 - Subchondral sclerosis or cysts.
- Differential Diagnosis:**
 - Rotator cuff arthropathy, rheumatoid arthritis, aneurysmal aneurysm.
- Rotator Cuff Arthropathy**
 - Chronic condition characterized by the combination of rotator cuff dysfunction and degenerative changes in the glenohumeral joint. It typically occurs when a massive, long-standing rotator cuff tear exists.
 - Joint Instability: Loss of dynamic stabilization provided by the rotator cuff muscles.
 - Altered Joint Mechanics: The humeral head migrates superiorly due to unopposed action of the deltoid muscle.
 - Glenohumeral Arthritis: Cartilage degeneration and bony changes resulting from abnormal joint biomechanics.
- Key Features:**
 - Massive Rotator Cuff Tear: Usually involves more than two tendons, leading to irreversible damage.
 - Superior Migration of the Humeral Head: Causes impingement on the acromion and abnormal wear on joint surfaces.
 - Degenerative Changes: Includes joint space narrowing, osteophyte formation, and subchondral sclerosis.
- Common Presentation:**
 - Chronic shoulder pain.
 - Progressive loss of shoulder function, especially overhead movements.
 - Weakness due to inability to effectively elevate the arm.

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Treatment

- **Conservative Treatment:**
 - **Medications:**
 - NSAIDs for pain relief and inflammation.
 - Intra-articular corticosteroid injections for temporary relief.
 - **Physical Therapy:**
 - Focus on improving range of motion and strengthening surrounding muscles.
 - **Activity Modification:**
 - Avoid activities that exacerbate pain.
- **Surgical Treatment**
 - **Indications:**
 - Persistent pain and functional impairment despite conservative treatment.
 - **Surgical Options:**
 - **Arthroscopy:**
 - Debridement of osteophytes, removal of loose bodies.
 - **Shoulder Arthroplasty (Replacement):**
 - **Total Shoulder Arthroplasty (TSA):** For intact rotator cuff.
 - **Reverse Total Shoulder Arthroplasty:** For severe OA with rotator cuff damage.
 - **Outcomes:**
 - Significant pain reduction and improved range of motion.

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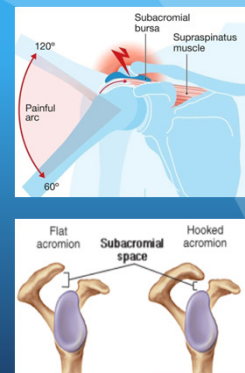
In Focus: Impingement Syndrome

- **Definition:**
 - Compression of rotator cuff tendons and/or subacromial bursa beneath the acromion or coracoacromial arch during shoulder movement.
- **Common Terms:**
 - Subacromial impingement syndrome (SIS).
- **Prevalence:**
 - Most common cause of shoulder pain in adults, especially in overhead athletes or workers.
- **Key Mechanism:**
 - Narrowing of the subacromial space leads to tendon and bursa irritation.
- **Etiology**
 - **Intrinsic Factors:**
 - Degeneration or inflammation of rotator cuff tendons.
 - Weakness or fatigue of shoulder stabilizers (e.g., rotator cuff, scapular muscles).
 - **Extrinsic Factors:**
 - **Anatomic Variations:**
 - Acromion shape (hooked or curved increases risk).
 - Osteophytes on the acromion or AC joint.
 - **Postural Issues:**
 - Forward shoulder posture reduces subacromial space.
 - **Repetitive Overhead Activities:**
 - Sports (e.g., baseball, swimming, tennis).
 - Occupations involving repetitive arm elevation (e.g., painters, construction workers).
 - **Age:**
 - Degenerative changes more common after age 40.

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Pathophysiology

- **Primary Impingement:**
 - Structural narrowing of the subacromial space due to:
 - Acromial shape.
 - Osteophytes or bursal thickening.
- **Secondary Impingement:**
 - Functional narrowing caused by:
 - Scapular dyskinesis (abnormal scapular movement).
 - Muscle imbalances or instability of the glenohumeral joint.
- **Cycle of Irritation:**
 - Compression → inflammation of tendons or bursa → pain → altered mechanics → further compression.



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Clinical Presentation and Work-up

- **Symptoms:**
 - Gradual onset of shoulder pain, often in the anterior or lateral shoulder.
 - Pain worsens with:
 - Overhead activities.
 - Sleeping on the affected side.
- **Examination Findings:**
 - Tenderness over subacromial space.
 - Painful arc (pain between 60°-120° of abduction).
 - Weakness of rotator cuff muscles.
- **Special Tests:**
 - **Neer's Test:** Pain with passive forward elevation.
 - **Hawkins-Kennedy Test:** Pain with internal rotation at 90° flexion.
- **Imaging:**
 - **X-Ray:**
 - May reveal acromial spurs or narrowing of the subacromial space.
 - **Ultrasound:**
 - Real-time assessment of rotator cuff tendons for tears or inflammation.
 - **MRI:**
 - Detailed visualization of rotator cuff tendons, bursa, and labrum.
 - Often with tendinopathy WITHOUT tear and fluid in subacromial space.
 - **Diagnostic Injection:**
 - Injection in the subacromial space
 - Relief of symptoms and return to functional activities in 4-6 weeks
 - Support for diagnosis of impingement
 - Can be definitive treatment

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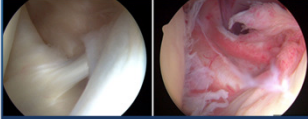
Treatment and Prognosis

- **Conservative Measures:**
 - **Activity Modification:** Avoid aggravating overhead movements.
 - **Pain Relief:**
 - NSAIDs, corticosteroid injections for inflammation.
 - **Physical Therapy:**
 - Strengthen rotator cuff and scapular stabilizers.
 - Stretch tight structures (e.g., pectorals, posterior capsule).
 - Correct scapular mechanics.
- **Surgical Options (for refractory cases):**
 - **Subacromial Decompression:** Removal of bone spurs or bursal tissue.
 - **Rotator Cuff Repair:** If a tear is present.
- **Prognosis:**
 - Most cases respond well to conservative management.
 - Surgery has a high success rate when indicated.
- **Prevention:**
 - **Maintain Shoulder Strength and Flexibility:**
 - Balance between rotator cuff and scapular muscles.
 - **Correct Ergonomics and Posture:**
 - Avoid prolonged forward shoulder positioning.
 - **Gradual Progression in Overhead Activities:**
 - Avoid sudden increases in activity or intensity.

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In Focus: Adhesive Capsulitis

- **Definition:**
 - A condition characterized by pain and progressive loss of active and passive range of motion (ROM) in the glenohumeral joint, due to capsular thickening and contracture.
- **Epidemiology:**
 - Affects ~2.5% of the general population.
 - More common in individuals aged 40-60 years.
 - Higher prevalence in women and individuals with diabetes or thyroid disorders.
- **Phases:**
 - Freezing (painful), frozen (stiffness), and thawing (recovery).
- **Primary (Idiopathic):**
 - No identifiable cause; thought to be related to inflammation and fibrosis of the joint capsule.
- **Secondary:**
 - **Intrinsic Causes:**
 - Rotator cuff tendinopathy or tears.
 - Post-surgical stiffness.
 - **Extrinsic Causes:**
 - Immobilization due to fractures or other injuries.
 - Neurological conditions (e.g., stroke).
 - **Systemic Causes:**
 - Diabetes mellitus (10-20% prevalence).
 - Thyroid disorders (hypo- or hyperthyroidism).
- **Risk Factors:**
 - Prolonged immobilization.
 - Systemic conditions (e.g., cardiovascular disease).



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Pathophysiology and Clinical Features

- **Inflammatory Phase:**
 - Synovitis and capsular inflammation lead to pain and decreased ROM.
- **Fibrotic Phase:**
 - Fibrosis and thickening of the joint capsule (especially the rotator interval).
 - Adhesions limit glenohumeral joint movement.
- **Capsular Patterns:**
 - Loss of external rotation > abduction > internal rotation.
- **Key Pathological Findings:**
 - Thickened coracohumeral ligament.
 - Contracted joint capsule with reduced joint volume.
- **Symptoms:**
 - Progressive shoulder pain (worse at night or with movement).
 - Stiffness leading to functional limitations (e.g., difficulty dressing or reaching).
- **Physical Exam Findings:**
 - Significant reduction in both active and passive ROM.
 - Especially with external rotation.
 - Pain on external rotation and abduction.
 - Tenderness over the anterior shoulder.
- **Phases:**
 - **Freezing Phase (Painful):** Gradual onset of pain and limited ROM (3-9 months).
 - **Frozen Phase (Stiffness):** Severe ROM restriction with less pain (4-12 months).
 - **Thawing Phase (Recovery):** Gradual return of motion (12-24 months).

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Treatment and Prognosis

- **Conservative Management:**
 - **Pain Control:** NSAIDs, corticosteroid injections.
 - **Physical Therapy (PT):** Focus on gentle stretching and ROM exercises.
 - **Hydrodilatation:** Injection of saline into the joint capsule to improve ROM.
- **Surgical Interventions (for refractory cases):**
 - **Manipulation Under Anesthesia (MUA):** Break adhesions to restore ROM.
 - **Arthroscopic Capsular Release:** Release fibrotic tissue surgically.
- **Rehabilitation Principles:**
 - Avoid aggressive therapy during painful phases.
 - Gradual progression as pain subsides.
- **Prognosis:**
 - Self-limiting in most cases with recovery over 1-3 years.
 - Residual stiffness or mild pain may persist in some patients.
- **Factors Influencing Recovery:**
 - Early intervention and adherence to therapy improve outcomes.
- **Prevention:**
 - Early mobilization following injuries or surgeries.
 - Proactive management of systemic risk factors (e.g., diabetes).

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In Focus: Acromioclavicular Disorders

- **Anatomy of the AC Joint:**
 - Small joint where the clavicle meets the acromion of the scapula.
 - Stabilized by:
 - **Capsular Ligaments:** Provide primary support.
 - **Coracoclavicular Ligaments:** Conoid and trapezoid ligaments offer additional stability.
- **Common AC Joint Conditions:**
 1. AC Joint Sprains/Separations.
 2. AC Joint Osteoarthritis.
 3. Distal Clavicle Osteolysis.
- **Clinical History:**
 - Onset: Acute trauma or chronic overuse.
 - Symptoms: Localized pain, deformity, activity limitations.
- **Physical Examination:**
 - Palpation: Tenderness over the AC joint.
 - Special Tests:
 - **Cross-Body Adduction Test:** Pain with adduction across the chest.
 - **AC Compression Test:** Pain with joint compression.
 - Range of Motion: Pain exacerbated by overhead or cross-body movements.
- **Imaging:**
 - X-ray: First-line for evaluating AC joint alignment and arthritis.
 - MRI: Assess ligament integrity in acute injuries.
 - Often not necessary.

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In Focus: AC Disorders

- **AC Joint Osteoarthritis**
- **Etiology:**
 - Wear-and-tear degeneration of the AC joint cartilage.
 - Common in middle-aged and older adults, as well as athletes with prior injuries.
- **Risk Factors:**
 - Repetitive overhead activities (e.g., weightlifting).
 - Previous trauma or AC joint separations.
- **Symptoms:**
 - Pain localized to the AC joint.
 - Pain during overhead activities or cross-body adduction.
 - Joint crepitus and stiffness.
- **Imaging Findings:**
 - X-ray: Joint space narrowing, subchondral sclerosis, osteophyte formation.
- **Distal Clavicle Osteolysis**
- **Etiology:**
 - Stress-related resorption of the distal clavicle, often from repetitive microtrauma.
 - Common in weightlifters ("Weightlifter's Shoulder").
- **Symptoms:**
 - Pain and tenderness at the distal clavicle.
 - Pain exacerbated by pressing, bench pressing, or overhead lifting.
- **Imaging Findings:**
 - X-ray: Distal clavicle bone resorption, irregularity, or cyst formation.
- **Management:**
 - Rest and activity modification.
 - Physical therapy focusing on scapular stabilization.
 - Corticosteroid injections for persistent pain.

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In Focus: AC Disorders

- **Treatment**
- **Non-Surgical Management:**
 - **Rest and Activity Modification:** Avoid aggravating activities.
 - **Medications:** NSAIDs for pain and inflammation.
 - **Physical Therapy:**
 - Strengthen scapular stabilizers.
 - Improve shoulder mechanics.
 - **Injections:** Corticosteroid for persistent symptoms.
- **Surgical Interventions:**
 - **AC Joint Osteoarthritis/Distal Clavicle Osteolysis:**
 - Distal clavicle resection (Mumford procedure).



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Conclusion

- Key Takeaways
- 1. **Understanding Shoulder Pain**
 1. Shoulder pain can arise from acute injuries (e.g., trauma, sprains) or chronic conditions (e.g., degenerative changes, overuse injuries).
 2. The etiology often involves a combination of structural, biomechanical, and systemic factors.
- 2. **Comprehensive Diagnostic Approach**
 1. A detailed clinical history and physical examination are critical for identifying the cause.
 2. Imaging (X-ray, MRI, ultrasound) and laboratory tests support diagnosis in specific cases.
- 3. **Treatment and Management**
 1. **Conservative Measures:** Rest, activity modification, physical therapy, and NSAIDs are first-line treatments for most conditions.
 2. **Surgical Interventions:** Reserved for severe or refractory cases (e.g., full-thickness rotator cuff tears, advanced osteoarthritis).
- 4. **Patient-Centered Care**
 1. Rehabilitation and patient education are essential to restore function and prevent recurrence.
 2. Tailored treatment plans improve outcomes, considering individual activity levels and goals.
- 5. **Prognosis and Prevention**
 1. Early diagnosis and intervention are key to favorable outcomes.
 2. Preventive strategies (e.g., proper mechanics, strengthening, and flexibility exercises) can reduce the risk of both acute and chronic shoulder conditions.

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Thank You

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