Evaluation and Management of Common Shoulder Conditions

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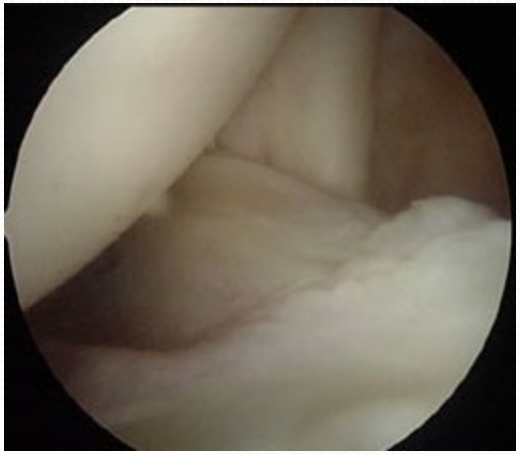
SJH Family Practice Refresher course

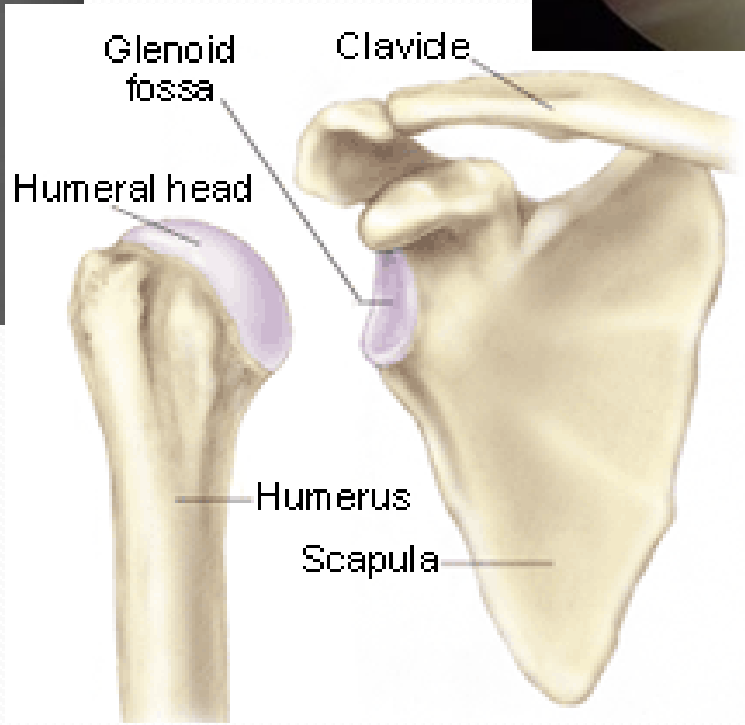
3/9/23

Outline

- Normal shoulder anatomy
- Physical Exam
- Imaging
- Impingement/bursitis
- Biceps tendinitis
- Frozen shoulder
- Rotator cuff tears
- Shoulder arthritis
  - **Rotator cuff tear arthropathy**
- Proximal humerus fractures

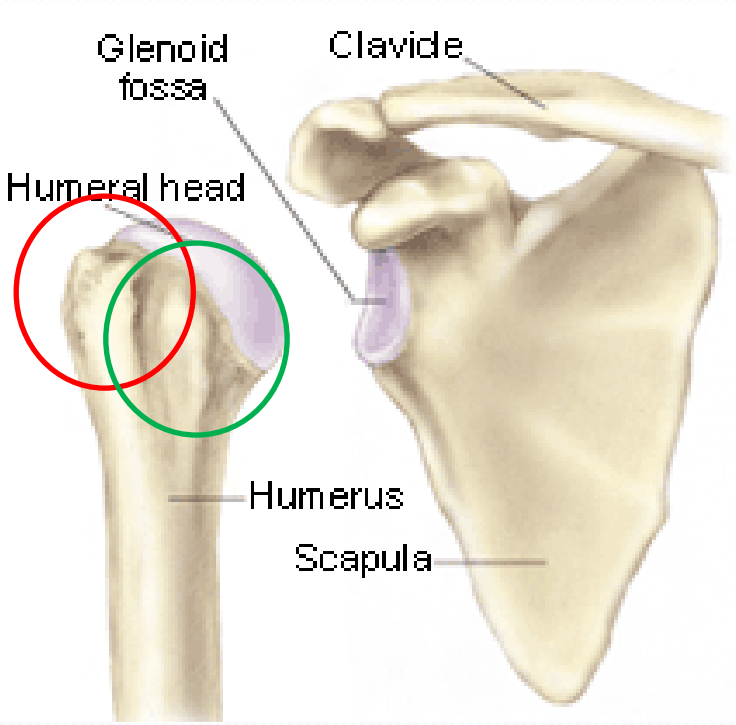
Normal Anatomy





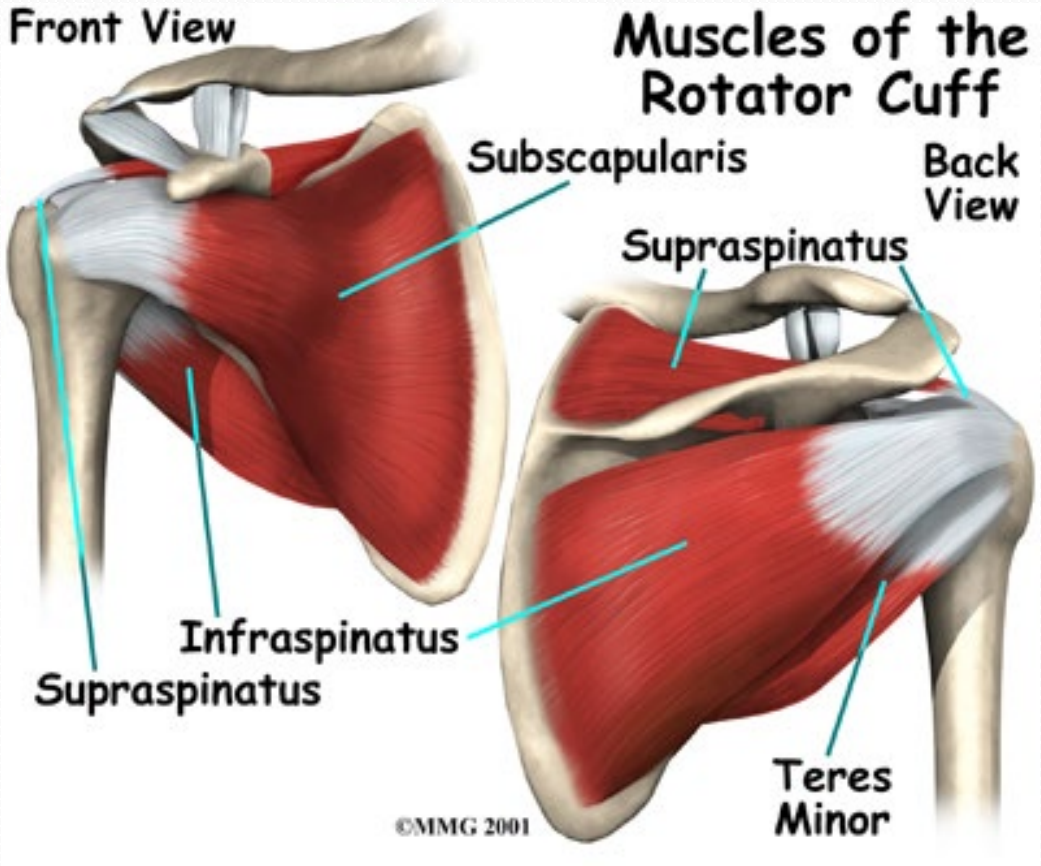
Normal Anatomy – Ball-and-Socket Joint

- Cartilage
  - Lines ends of bones
  - Cushions impact between bones
  - Provides a smooth gliding surface for movement.
- "Ball-and-Dish"
- Greater Tuberosity
- Lesser Tuberosity



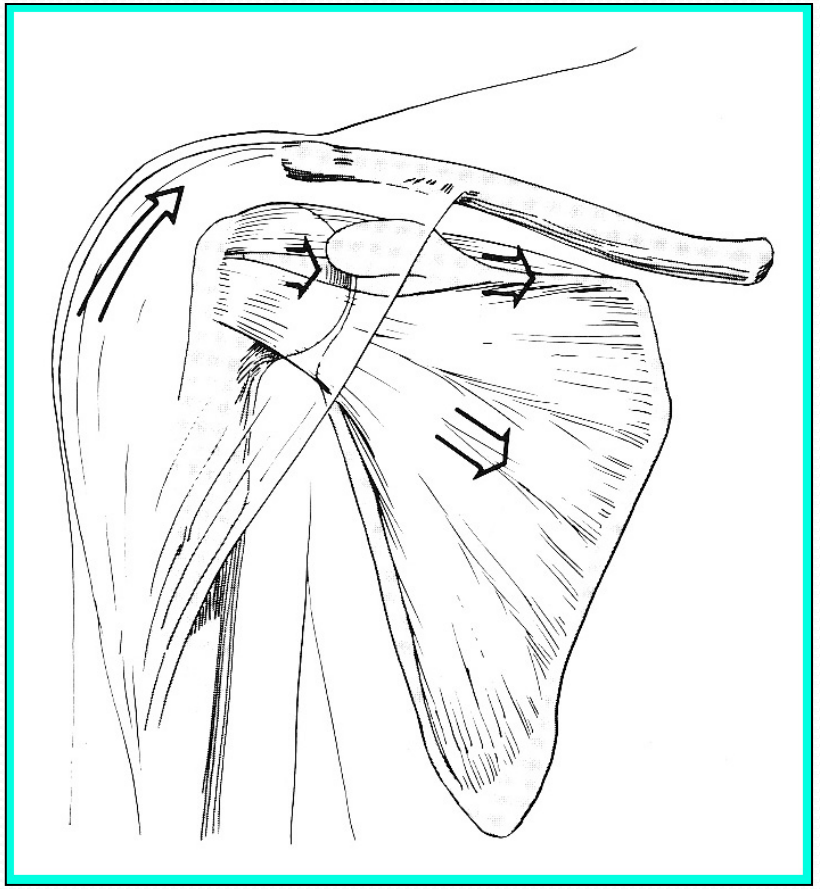
Normal Anatomy – Rotator Cuff

- 4 Muscles
  - 1 in front
  - 1 on top
  - 2 behind



Muscle Action of the Shoulder

- Deltoid
  - Wants to pull arm up
  - Requires stable joint
- Rotator Cuff
  - Pulls Humeral Head into Glenoid
  - **Establishes stability** of the joint to allow deltoid to elevate the arm

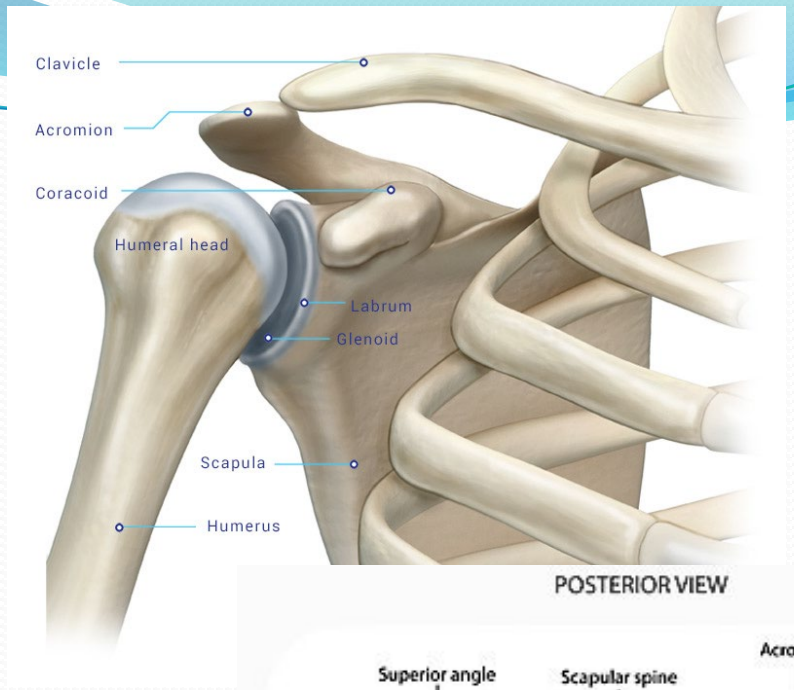


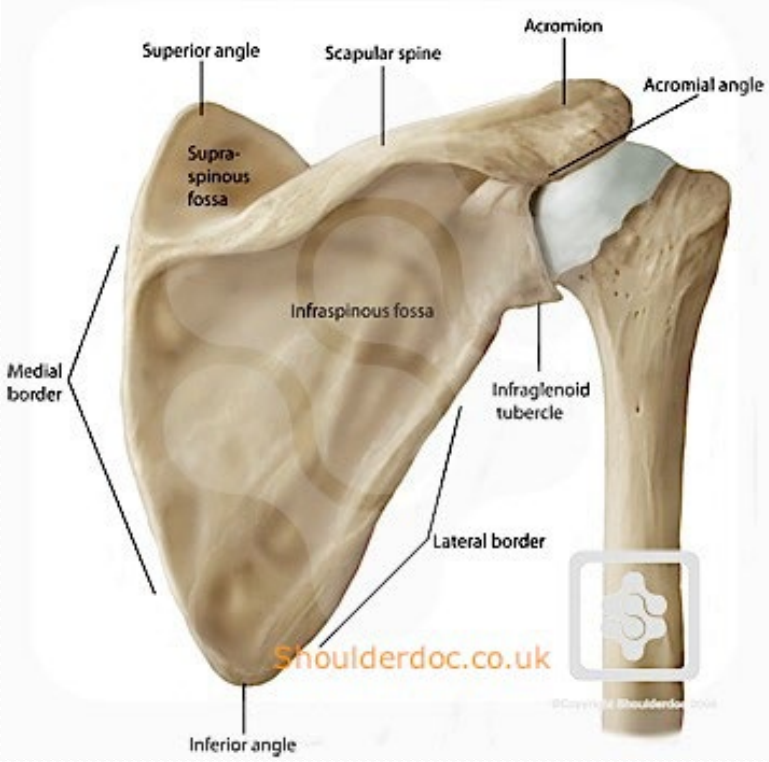
Physical Exam

- Range of Motion (Forward elevate, abduction, external rotation, internal rotation)
  - Stiffness – limited active and passive motion
  - Pseudoparesis – Active motion <90°, preserved passive motion
  - Pain
    - At extent or during arc
  - Crepitus

Physical Exam

- Tenderness
  - Joint Line
    - Anterior
    - Posterior
  - Subacromial space
  - Bicipital groove
  - Acromioclavicular joint





Physical Exam

- Strength (Pain?)
  - Scapular plane (Supraspinatus)
  - External rotation (Infraspinatus and Teres minor)
  - Internal rotation (Subscapularis)
  - Abduction (Deltoid)

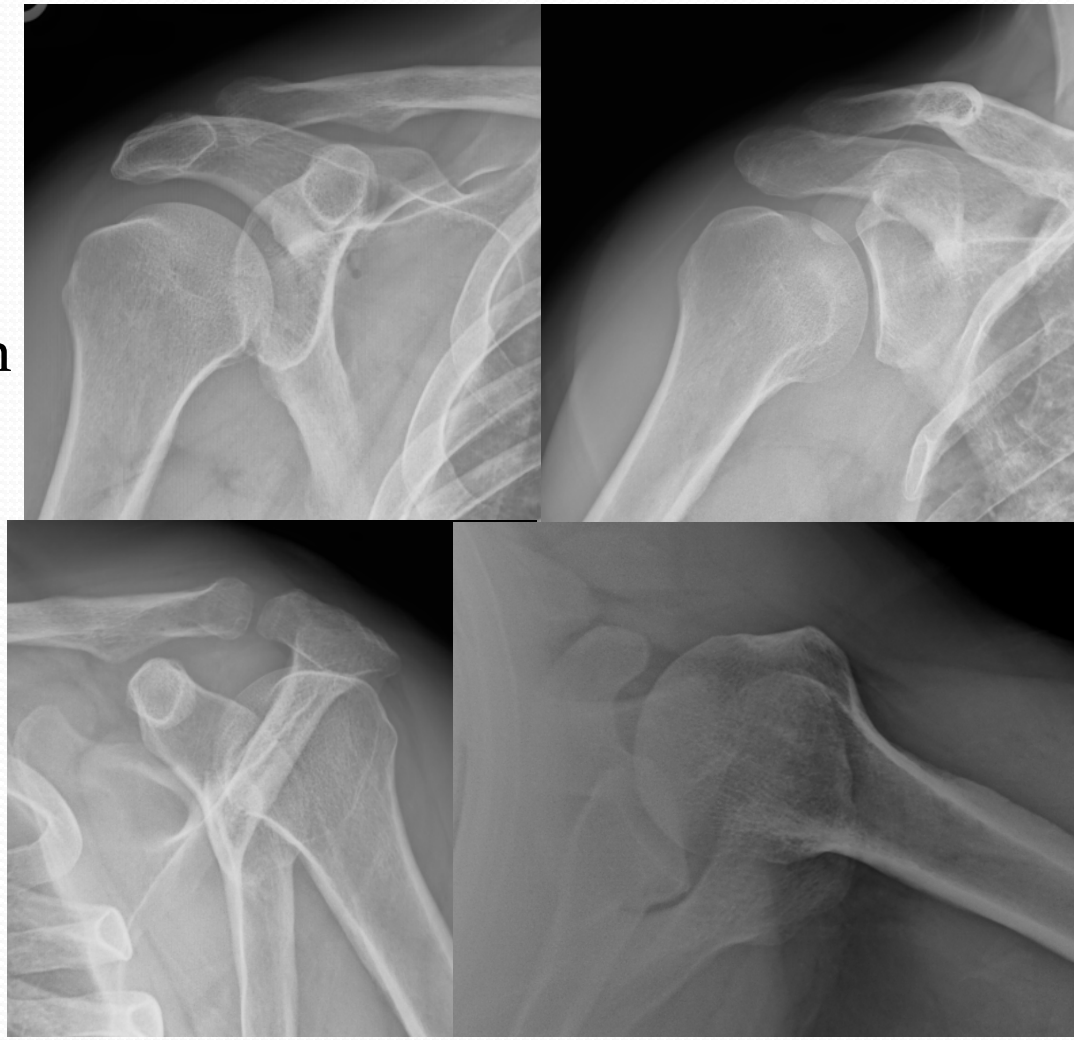
Bear-hug test for subscapularis

Empty can test for supraspinatus

External rotation strength for infraspinatus and teres minor

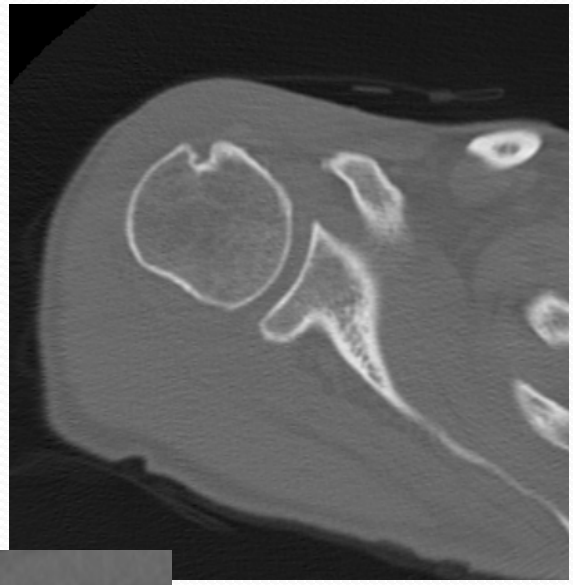
Radiographic Evaluation

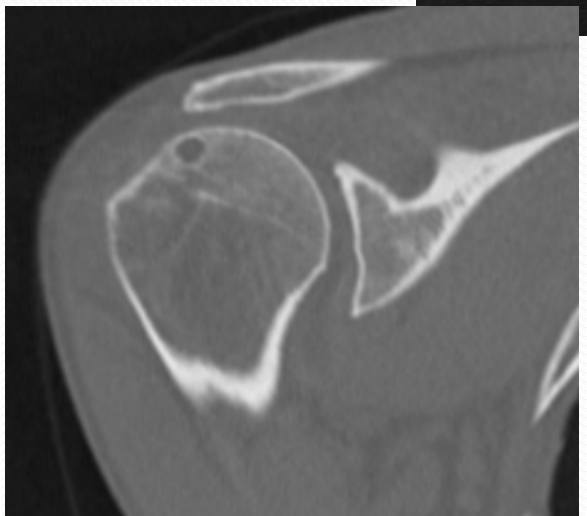
- X-Ray
  - Should be initial evaluation
  - Often all that is needed along with patient exam
  - 4 views
    - AP
    - Grashey
    - Outlet
    - AXILLARY
  - Cannot truly rule out a dislocation without an axillary view



Radiographic Evaluation

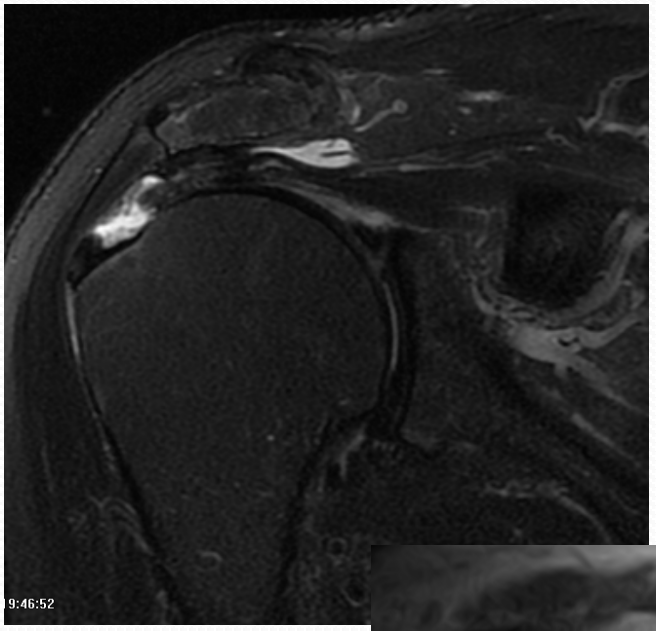
- CT Scan
  - Best for bony assessment (arthritis, glenoid bone loss after multiple dislocations)
  - Arthrogram can be used to evaluate rotator cuff in patients that cant have MRI



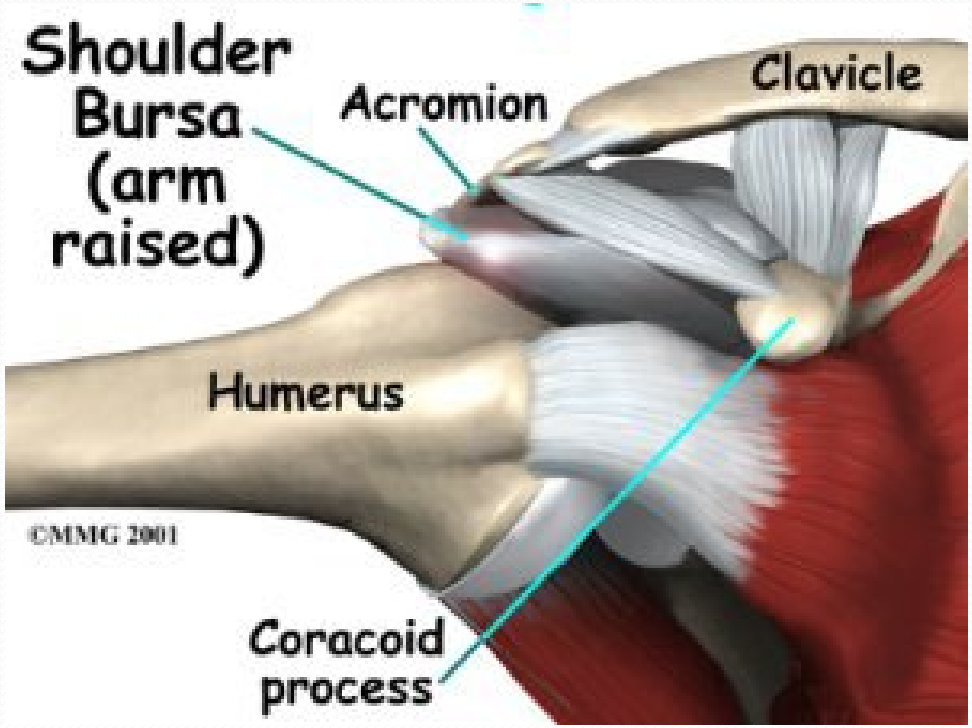


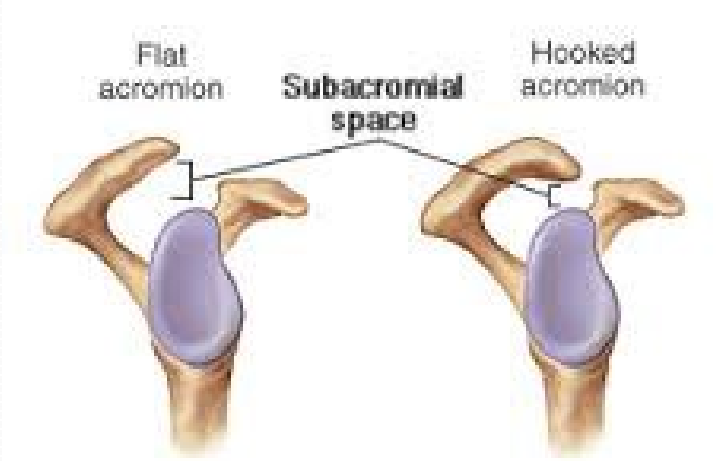
Radiographic Evaluation

- MRI
  - Non-arthrogram – Evaluate Rotator cuff
  - Arthrogram – Evaluate labrum
  - IV contrast – Masses or Cysts
- Ultrasound
  - Can be used to assess rotator cuff and biceps tendon



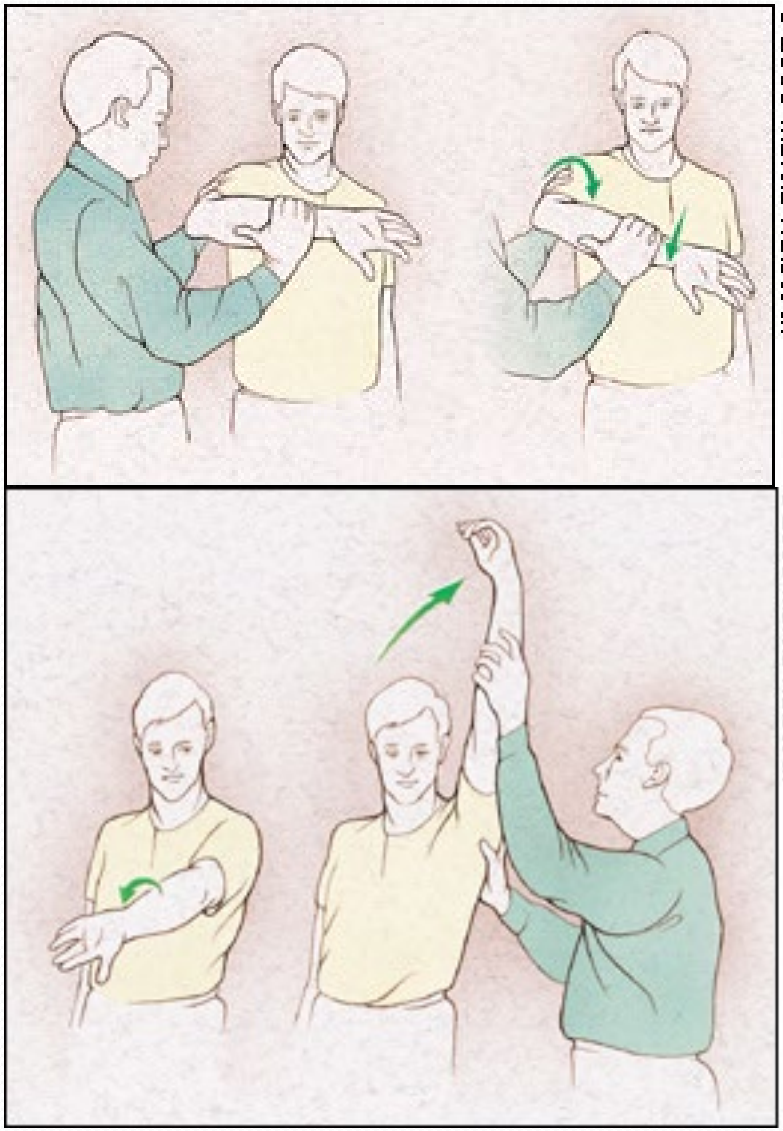
Impingement and Bursitis





Impingement and Bursitis

- Pain laterally
  - Over deltoid muscle
- Pain with overhead activity
  - Similar to rotator cuff tears
- Popping or catching
- Night symptoms
- Tenderness
  - Subacromial space
  - Along acromion
- Positive impingement signs
- Strength preserved



Injections Prior to Rotator Cuff Repair Are Associated With Increased Rotator Cuff Revision Rates

Alexander E. Weber, M.D., Nicholas A. Trasolini, M.D., Erik N. Mayer, B.S., Anthony Essilfie, M.D., C. Thomas Vangsness Jr., M.D., Seth C. Gamradt, M.D.,

Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 35, No 3 (March), 2019: pp 717-724

- Mobilization
- Activity Modification

The Timing of Injections Prior to Arthroscopic Rotator Cuff Repair Impacts the Risk of Surgical Site Infection

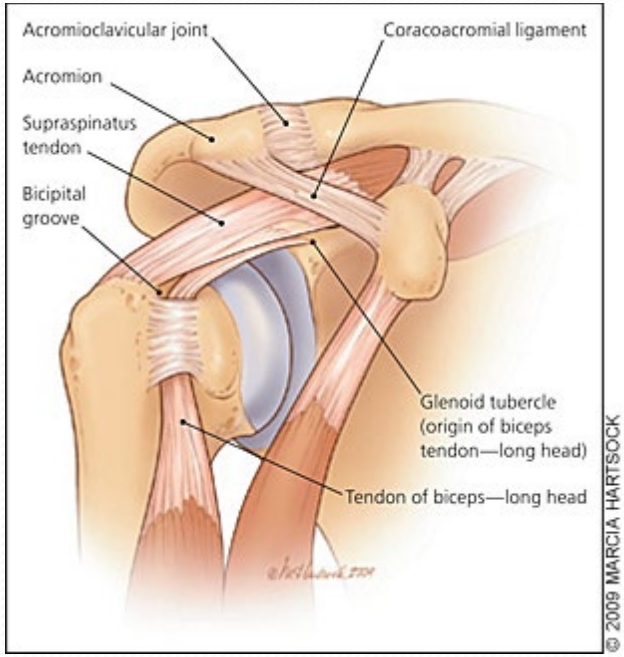
Brian Forsythe, MD, Avinesh Agarwalla, BS, Richard N. Puzzitiello, BS, Shelby Sumner, MPH, Anthony A. Romeo, MD, and Randy Mascarenhas, MD, FRCSC

Investigation performed at Midwest Orthopaedics at Rush, Rush University Medical Center, Chicago, Illinois

Biceps Tendinitis

- Intra-articular tendon
  - Attaches to the socket
  - SLAP tears
- Inflammation or tearing
- Pain in anterior shoulder
  - Radiates down the arm
  - Association with RCT, Impingement
- Tenderness over bicipital groove
- O'Brien, Speed, Yergason tests

- Most common 45-55 years



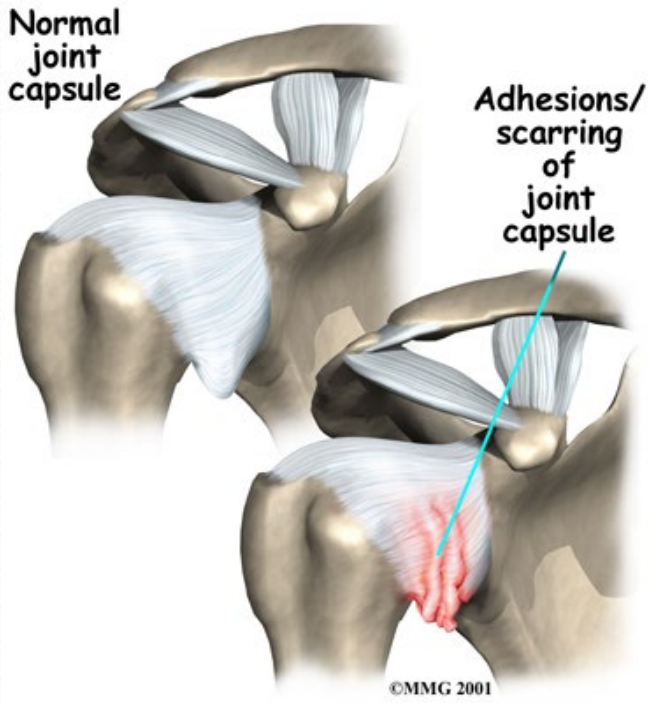
Management

- Anti-inflammatories
- Physical Therapy
- MRI may deomonstrate pathology of tendon
- Cortisone injections
  - Ultrasound guided
  - May rupture – Therapeutic
  - Popeye muscle
- Surgical
  - Biceps tenodesis vs Biceps tenotomy

- **IMPORTANT**
  - Distal biceps rupture
  - Muscle belly retracted proximally
  - Will lead to weakness
  - If treated surgically should be done urgently

Frozen Shoulder

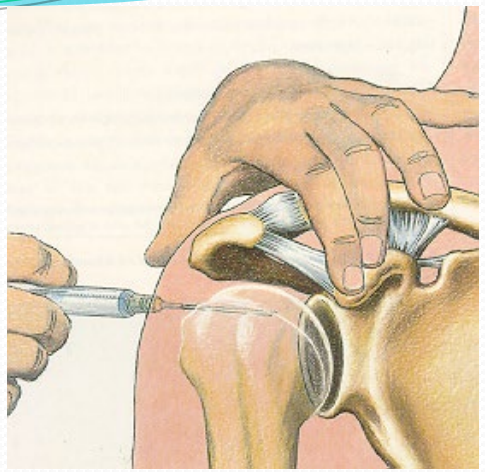
- Inflammation and contracture of capsule
  - Many causes
- Symptoms
  - Pain
    - Dull ache
    - Located around the shoulder
  - Loss of motion
  - Difficulty sleeping
- Motion loss on exam
  - Active and passive
- Pain at extremes of motion



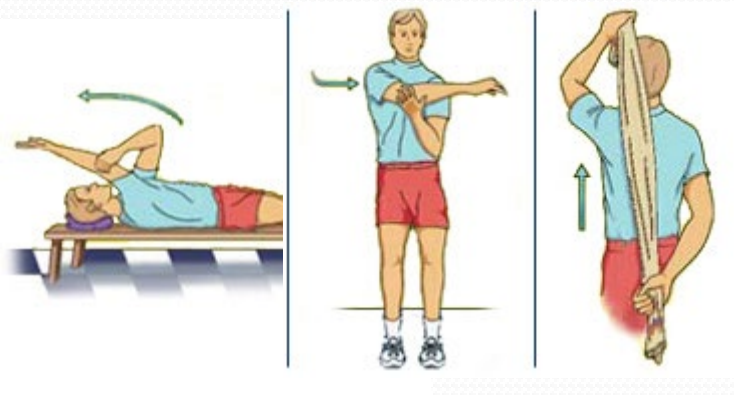
Frozen Shoulder

- Affects about 2% of the general population
- Populations at risk
  - Ages of 40 and 60 years
  - Women around menopause
  - Diabetes (10% of diabetics)
  - Thyroid disease
  - Following shoulder surgery
- Up to 14% will have it in the other shoulder

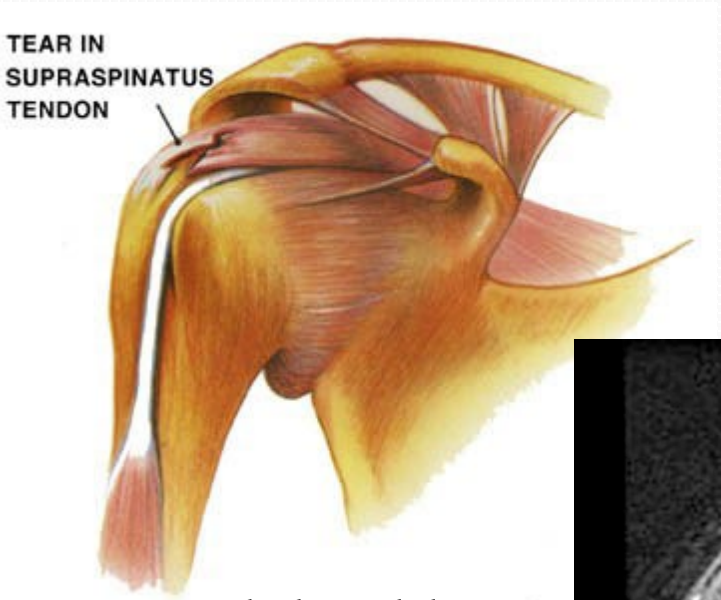
Frozen Shoulder

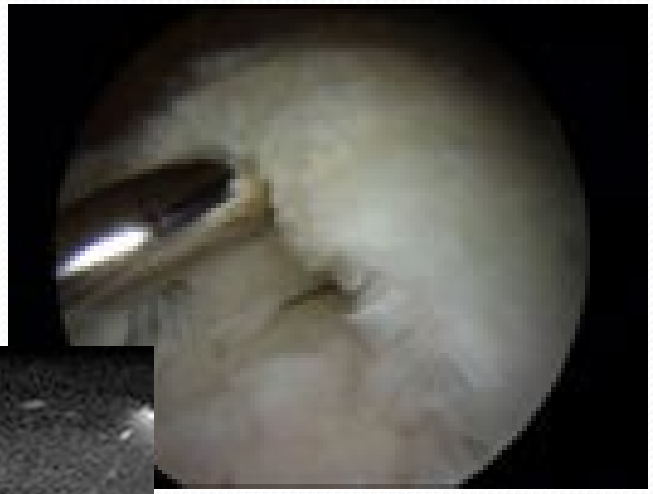


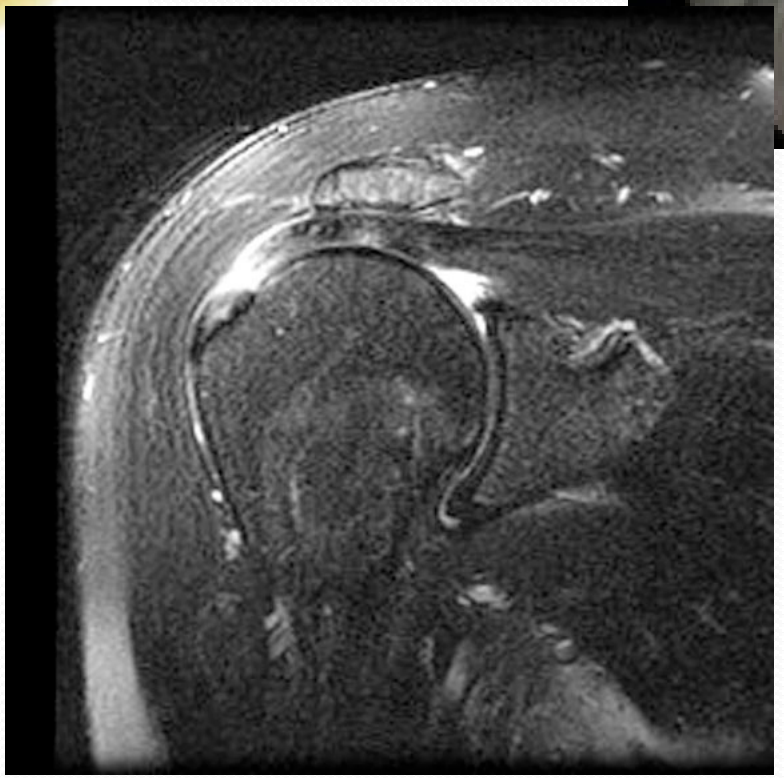
- Non-operative Treatment
  - Activity Modification
  - Intra-articular cortisone injection
  - Anti-inflammatory Medications
  - Stretching program
    - 3 times a day
    - Stretch and hold for 60 sec
    - Warm moist heat environment
  - 90% improve
- 1-2 years without treatment
- Surgical
  - Arthroscopic contracture release and manipulation



Rotator Cuff Tears







- Lateral shoulder pain
- Worse with activity
  - Overhead
- Night pain
- Often no history of trauma

- WEAKNESS
- Loss of ACTIVE motion
- Subacromial tenderness
- Palpable defect

What we know…

- Rotator Cuff Tears are common
  - By age of 60 over 50% of people have cuff pathology
- Most tears are degenerative tears
  - Some are traumatic
- Larger tears generally have loss of greater shoulder function/weakness

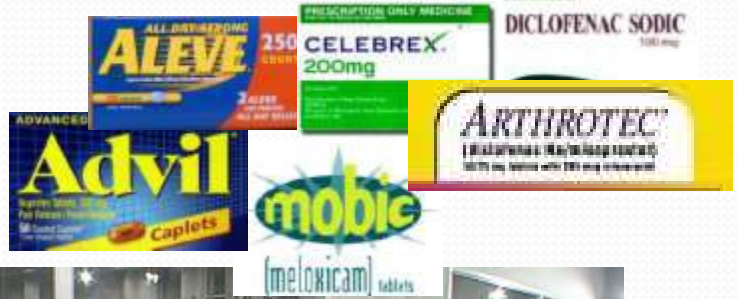
What we know…

- Rotator Cuff Tears ***do not*** heal on their own
- Rotator Cuff Tears get **larger** over time
- Many patients with rotator cuff tears do not have pain
  - Many patients ***will eventually*** have pain

(Yamagucci, *JSES* 2001)

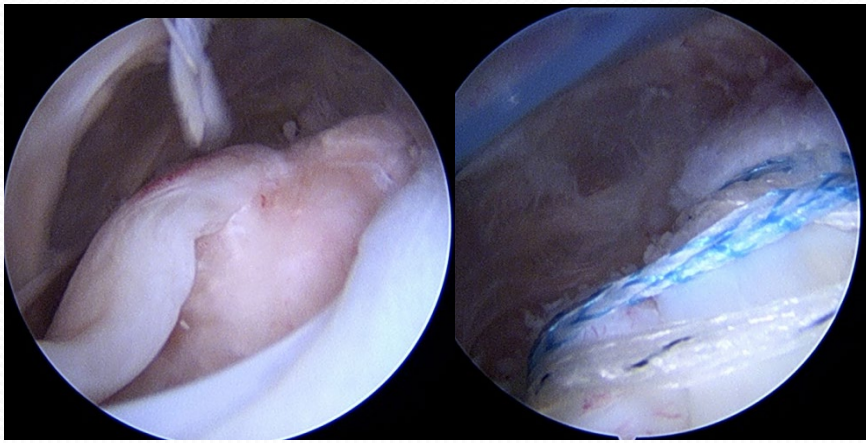
Non-operative Treatment

- Anti-inflammatory Medications
- Physical Therapy
- 60-70% will show some improvement
- MRI
  - After failure of PT
    - 6 weeks
  - After traumatic event
- Cortisone Injections**



Surgical Treatment

- Based on activity level
  - Age is relative
  - Higher activity → consider surgery earlier
- Surgical Treatment – Rotator Cuff Repair
  - Opportunity to heal tendon
  - Arthroscopic surgery
  - Outpatient
  - Well-tolerated
  - Small-medium size tears have 90-95% chance of improvement
  - Takes 3 months to heal



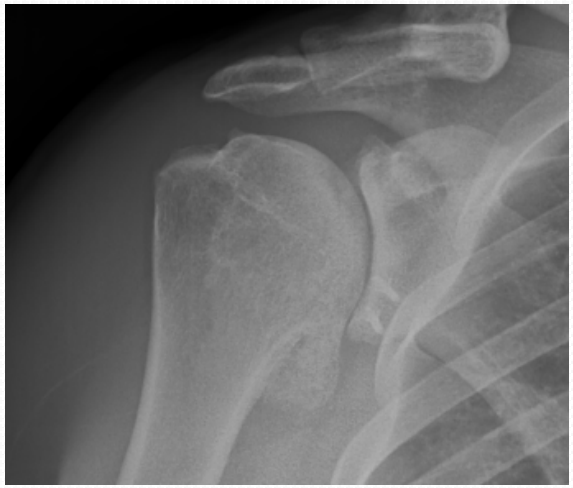
Challenges

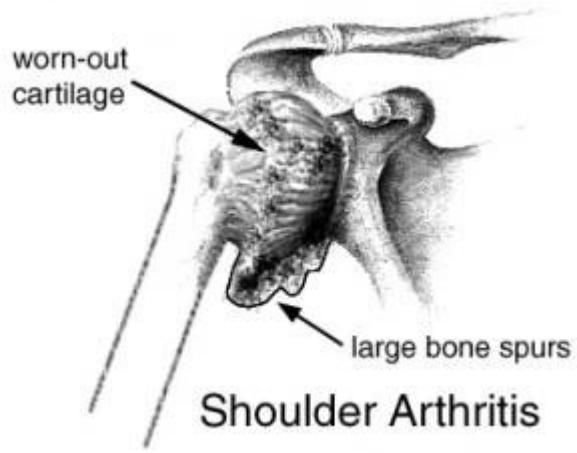
- What makes healing difficult:
  - Smoking
  - Age (>75 years)
  - Diabetes
  - Large/Massive rotator cuff tears
    - 88-95% improvement

      Savoie (Arthroscopy 2003), Burkhart et al (Arthroscopy 2001)
  - Recurrent tears
  - Multiple Cortisone Injections (Watson JBJS 1985)

Shoulder Arthritis

- Breakdown of cartilage
- Loss of smooth surfaces
- Loss of joint space
- Bone Spurs



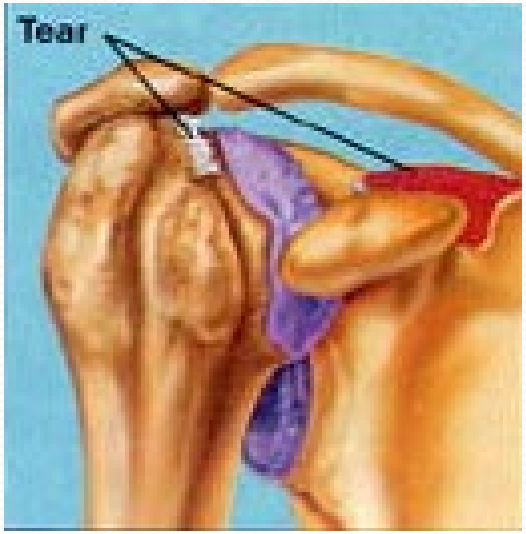


Symptoms

- Pain
  - Progress over time
  - Worse with activity
  - Interferes with sleep
- Loss of motion (active and passive)
- Pain with motion
- Swelling
- Crepitus (clicking, popping or crunching sound)
- Joint line tenderness
- Strength preserved

Rotator Cuff Tear Arthropathy

- Instability
- Breakdown of cartilage
- Loss of smooth surfaces
- Loss of joint space
- Bone erosion
- Bone Spurs



Symptoms

- Pain
  - Progress over time
  - Worse with activity
  - Interferes with sleep
- Instability
- Loss of Motion (Active)
  - pseudoparesis
- Swelling
- Crepitus (clicking, popping or crunching sound)
- Tenderness
  - Joint line and subacromial
- Weakness

Treatment – Non-operative

- Anti-Inflamatories (NSAIDs)
- Cortisone Injection
- Activity Modification
- Viscosupplementation

- Physical Therapy
  - Early arthritis
  - Deltoid re-training for cuff tear arthropathy

When to consider surgery

- Failed non-operative management
- Quality of Life Decision
  - Interferes with activities
  - Loss of independence
    - Grooming
    - Bathing
    - Dressing, etc.
  - Interferes with sleep
  - Interferes with work

Anatomic Shoulder Arthroplasty

- First performed in 1950s for fractures
- Has evolved from the original Neer Prosthesis

Monoblock


Modular

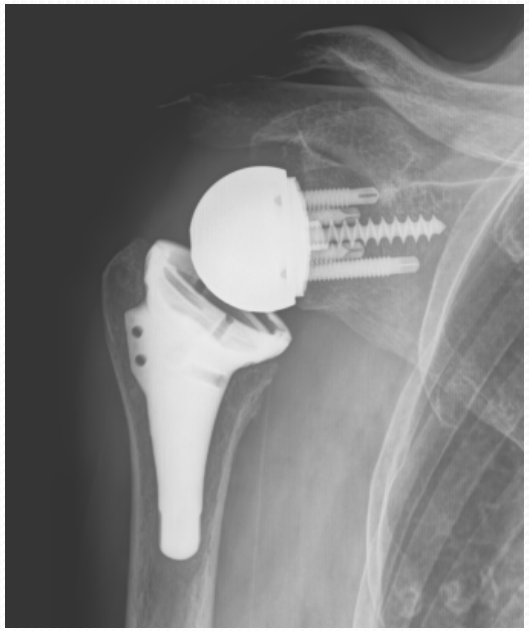

Anatomic


Short Stem


Stemless

Reverse Shoulder Arthroplasty

Introduced in the US in 2004



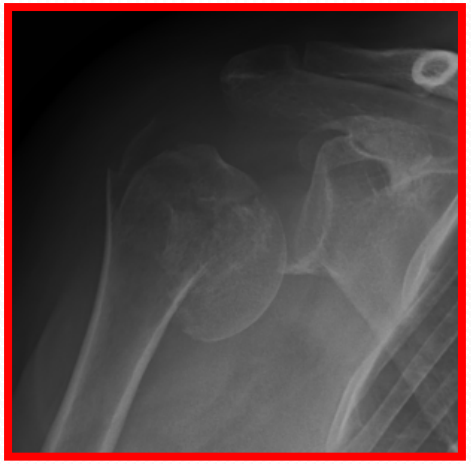
What to expect

- **High success rates**
- **90-95% successful**
- Pain Relief
- Improvement in function
  - Increased range of motion
  - Increased ability to perform activities
  - Improved quality of life
- Return of Independence

- Implant survival above 80% at 15-20 years

Proximal Humerus Fractures

- Common Injury
  - 5% of injuries to appendicular skeleton
  - One of the most common osteoporotic fractures
  - Adults (most common 65-75 y/o)
- Variability in fracture patterns and treatment
- Most treated non-op
- Important to make surgical or non-surgical decision quickly



Thank You

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