

# **ROTATOR CUFF TEAR**

See also: Rotator Cuff Injuries

See also: Rotator Cuff Tendonitis

See also: Shoulder Physical Exam in Athletes

See also: Shoulder Rehabilitation

## **Background**

1. Definition: partial or complete tear of one or more of the following musculotendinous bundles, which comprise the rotator cuff<sup>1</sup>
  - Supraspinatus
    - Most common
  - Infraspinatus
  - Subscapularis
  - Teres minor

## **Pathophysiology**

1. Extrinsic Causes: Traumatic tear in tendon
  - Falls, accidents, acute injuries
  - Overuse injuries-repetitive lifting, throwing, pushing, or pulling
2. Intrinsic Causes
  - Poor blood supply
  - Normal attrition
  - Calcific invasion of tendons
  - Degenerative changes
    - Acromioclavicular joint arthritis with spurring
    - Anatomic variant of acromion (Type 3)
3. Annual incidence of shoulder pain is 10 per 1000 population
  - Third most common musculoskeletal complaint behind lumbar and cervical pain
4. Risk Factors: Sports with overhead activity
  - Baseball, softball, volleyball, tennis, swimming
  - Age >40
  - Painters (overhead motion)
  - Narrow acromioclavicular arch
  - Heavy lifting
  - Improper rehabilitation from previous injury
5. Morbidity: cuff arthropathy develops in approximately 4%

## **Diagnostics**

1. History
  - Age
  - Sport
  - Activity
  - Work
  - Acute/chronic
  - Location
  - Radiation
  - Duration
  - Limitations

2. Physical exam
  - Inspection
    - Atrophy of muscles-supraspinatus, infraspinatus, deltoid, trapezius
    - Ecchymosis, swelling
  - Palpation
    - AC joint
    - Biceps tendon
    - Subacromial bursa
    - Cervical vertebrae
    - Clavicle
    - Acromion
    - Humerus
    - Supraspinatus, infraspinatus, deltoid
  - Range of motion: Passive and active
    - Internal Rotation
      - Tests subscapularis
    - External Rotation
      - Tests teres minor and infraspinatus
  - Cervical exam: Spurling's maneuver
    - With the neck extended and rotated to affected side, the examiner puts an axial load on patient's head
      - Exam is positive if it reproduces pain
  - Muscle Strength<sup>2</sup>
    - Lift Off test
    - Empty Can
    - Neer Impingement Test
    - O'Brien's Test
    - Hawkins'
    - Painful arc sign
    - Speed's test
    - Scarf Sign
    - Drop Arm test
    - Infraspinatus muscle strength testing
3. Laboratory Testing: Not indicated
4. Diagnostic Imaging
  - Shoulder X-ray
    - First imaging modality
    - 4 view shoulder
      - Internal rotation
      - External rotation
      - Axillary lateral view
      - Scapular Y view
  - Ultrasound
    - Useful for detection of full thickness tear
      - Sensitivity is 87%, specificity is 96% for full thickness tears<sup>3</sup>
      - Sensitivity of partial thickness tears: 67%<sup>3</sup>

- MRI
    - Sensitivity and Specificity of full thickness tears was 89% and 93%, respectively<sup>3</sup>
    - Sensitivity and Specificity of partial thickness tears: not consistent<sup>3</sup>
  - MRI Arthrogram
    - Sensitivity and Specificity of full thickness tears was 95% and 93%, respectively<sup>3</sup>
    - Sensitivity and Specificity of partial thickness tears: 44% and 90% respectively<sup>3</sup>
5. Recommendations
- Evaluation of a suspected rotator cuff tear should start with history and clinical exam of shoulder (SOR:B)<sup>4</sup>

### **Differential Diagnostics**

1. Key differential
  - Shoulder impingement
  - AC joint arthritis
  - Biceps tendon rupture
  - Shoulder instability
  - Adhesive capsulitis
  - Cervical radiculopathy
  - Labrum tear
2. Extensive Differential diagnosis: Pancoast's tumor, thoracic outlet syndrome, septic arthritis, rheumatoid arthritis, gout, lupus, avascular necrosis, Lyme disease, gonococcal arthritis

### **Therapeutics**

Decision based on patient's age, activity level, and etiology of rotator cuff injury

1. Acute Treatment
  - Rest: Avoid painful motions, limit overhead activities
    - Avoid sling
    - Continue using arm decreases risk for adhesive capsulitis
  - Ice: use for first 24 hours
  - NSAID
  - Early physical therapy
    - Re-establish ROM
    - Rotator cuff and scapular stabilization
    - Glenohumeral stabilization

### **Follow-Up**

1. Return to clinic in 6 weeks to evaluate effectiveness of conservative treatment
2. Recommendations for earlier follow-up
  - Decreased range of motion
  - Worsening pain
  - Neurological changes
  - Motor abnormalities

### **Refer to orthopedist**

1. Conservative treatment failure
2. Consider earlier referral for acute traumatic tears<sup>5</sup>
  - Especially for acute traumatic tears in patients less than 40

### **Prognosis**

1. Surgical repair may require 6-12 months before being able to fully return to sports

### **Prevention**

1. Maintaining strength and flexibility of muscles of shoulder
2. Limit heavy lifting, especially overhead lifting
3. Avoid repetitive motion with arms extended or overhead

### **Patient Education**

1. The Painful Shoulder Part 1: <http://www.aafp.org/afp/2000/0515/p3079.html>
2. The Painful Shoulder Part 2: <http://www.aafp.org/afp/2000/0601/p3291.html>

### **References**

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