

ROTATOR CUFF AND BICEPS TENDON
PROBLEMS IN THE ATHLETE

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ROTATOR CUFF

EPIDEMIOLOGY

- Rotator cuff is a concern and problem in the overhead athlete.
- OVERHEAD ATHLETES
 - 1) Baseball (Pitcher, Outfielder)
 - 2) Swimmers
 - 3) Volleyball
 - 4) Golf
 - 5) Football (Quarterback)
 - 6) Javelin Throwers
 - 7) Tennis

CURRENT CONCEPTS

- Impingement is a common component in rotator cuff disorders.
- Primary Impingement - Narrowing of available space related to anatomic variability / abnormality.
- Secondary Impingement - Relative narrowing of the available space that is related to an eccentric overload of the cuff or glenohumeral instability.
- Overuse / Fatigue secondary to eccentric overload results in intrinsic fiber failure.
- Initial fiber failure leads to secondary impingement as forces pull the cuff superiorly.

ANATOMY

- Shoulder is the most mobile joint.
- Shoulder absorbs the majority of the forces in sports that require propulsive action of the upper extremity.
- Rotator Cuff
 - 1) Supraspinatus
 - 2) Infraspinatus
 - 3) Teres Minor
 - 4) Subscapularis
- Long head of the biceps is not part of the cuff, but often associated with cuff injuries.
- Vascularity - hypovascular region of supraspinatus just proximal to insertion on greater tuberosity. (biceps hypovascular in the intra-articular portion.)
- ACROMION
 - Bony protection to the shoulder.
 - Finite space between the undersurface and the humeral head.
- IMPINGEMENT
- Ant 1/3 acromion, distal clavicle, coracoid process, CA ligament, CA arch.

BIOMECHANICS

- Supraspinatus - Initiate abduction, glenohumeral joint stabilizer.
- Infraspinatus and Teres Minor- External rotators, humeral head depressors
- Subscapularis- Internal rotator, humeral head depressor, protects ant capsule.
- Rotator Cuff = Fine Tuning
- Biceps - Humeral head depressor.

CLINICAL EVALUATION

- Important to categorize the sport involved, intensity of participation, the offending activity, arm position and activity causing the problem.
- ACUTE / MACROTRAUMATIC
- OVERUSE / MICROTRAUMATIC
- **PAIN** - often radiates to upper arm (deltoid insertion)
 - 1) Associated with activity.
 - 2) During and after activity. (not disabling)
 - 3) During and after activity. (disabling)
 - 4) Daily living activities.
- DIFF DIAGNOSIS: GH Instability
 - Impingement
 - Calcific Tendinitis
 - AC joint pathology
 - Cervical spine pathology
 - Thoracic outlet syndrome
 - Adhesive capsulitis
 - Angina
 - Lung tumor

PHYSICAL EXAMINATION

- Inspection
- Palpation
- ROM
- Strength / Stability
- INSPECTION
 - o Symmetry
 - o Atrophy
- PALPATION
 - o Location / Degree of tenderness
 - o Biceps / Bicipital groove
 - o Supraspinatus tendon (can palpate defect in > 1 cm tear)

- ROM
 - o Documentation (FF, ER, IR)
 - o Note discrepancies between AROM and PROM.
 - o Unilateral overhead athletes = incr ER and decr IR. (adaptive mech)
 - o Impingement - Pain with forced FF and forced FF and IR.

- STRENGTH / STABILITY
 - o Documentation of any weakness.
 - o Stability – rotator cuff sx's are often secondary manifestation of underlying instability.
 - Load and Shift (Anterior and Posterior)
 - Sulcus (Inferiorly)
 - Anterior Apprehension Test
 - Relocation Test

RADIOGRAPHIC STUDIES

- Plain XRs - AP, Axillary Lateral, 30 Degree Caudal Tilt
 - o Subacromial spur, bony pathology, calcific tendonitis, AC joint, GH joint.

- Arthrography – 100% sensitive for RCTs.
- Ultrasound – 91% sensitive / specific (radiologist dependent)
- MRI- 95+% sensitive / specific.

TREATMENT

- Preventive TX - Strengthening, Stretching, and Proper Training.
- NONOPERATIVE TX
 - o Modification of activity = Active Rest
 - o NSAIDS
 - o Ice
 - o Ultrasound
 - o Subacromial Injection
 - o Stretching
 - o Strengthening - Rotator Cuff, Scapula Stabilizers

- OPERATIVE TX
 - o Arthroscopic
 - o Open Procedures

BICEPS TENDON / SLAP LESIONS

ETIOLOGY

- Fall onto outstretched hand
- Traction injury
- Dislocation
- Degenerative tear

HISTORY

- Popping
- Pain with resisted biceps function.
- Inability to throw
 - o Specific episode of pop or burn
 - o Decreased velocity
- Feels unstable at rest and overhead
- Dead arm
- History of overuse
- AC injury which has not improved.

PHYSICAL EXAM

- Speed's Test
- Yergason's Test
- O'Brien's Sign
- Labral entrapment test

RADIOGRAPHIC STUDIES

- XRs
- MRI vs MRA

TYPES AND TREATMENT

- SLAP - Superior *L*abrum *A*nterior *P*osterior
 - o Type I - Fraying
 - o Type II – Detachment from anchor.
 - o Type III - Bucket Handle
 - o Type IV- Bucket Handle with split in biceps tendon.
- TYPE I
 - o Conservative
 - o Limited debridement

- TYPE II
 - Debridement of anchor base with reattachment.
 - Suture anchors – metal vs absorbable
 - Absorbable tacks.

- TYPE III
 - Debridement of bucket handle.
 - Beware of unstable anchor.
 - Look for dual flaps in bucket handle type tear.
 - Very rare.

- TYPE IV
 - Debridement and repair vs Debridement.