

Repair of SLAP lesion

Surgical Indications and Considerations

Anatomical Considerations: The rotator cuff is predisposed to tearing secondary to senescence of the tendon with age, including apoptosis of fibroblasts, loss of cellular activity, disorganization of the collagen, and decreased extracellular matrix synthesis. Furthermore the tearing of the rotator cuff can occur because of decreased vascularity within the shoulder, specifically, a centimeter of its insertion on the proximal humerus.

Pathogenesis: A SLAP lesion is a lesion of the Superior aspect of the glenoid Labrum that extends Anteriorly and Posteriorly to the biceps insertion. There are four variations that include: 1) Type I, where the labrum is attached to the glenoid rim but fraying occurs at the leading edge of the labrum. 2) Type II lesion, where the superior labrum or biceps insertion is detached from the glenoid. 3) Type III, where the lesion is similar to Type II, but includes a bucket handle tear of the labrum. 4) Type IV has a longitudinal split in the biceps tendon. SLAP lesions are also common in patients with full-thickness rotator cuff tears or glenohumeral instability and shoulder pain. A variety of mechanisms can cause a SLAP lesion, including a fall on an outstretched arm, shoulder instability, and overhead work.

Epidemiology: The incidence and etiology of SLAP lesions is uncertain. Research has indicated that pathologic shoulders that have been arthroscopically examined have revealed 6%-12% of those had SLAP lesions. The most common causes of SLAP lesions include falling on an outstretched arm, traction on the biceps tendon, and overhead athletic activity. Type I lesions are common in older patients, greater than forty years old, and usually associated with rotator cuff disease. Type II lesions are common in younger individuals, usually throwing athletes secondary to biceps insertion twisting as the arm is brought into abduction and external rotation causing a peeling back of the superior labrum. Approximately 81% of SLAP lesions in throwers are Type II. Type III and IV lesions are fairly rare and are associated with traumatic instability.

Diagnosis:

- Patient may complain of pain that is sharp, severe, and localized being deep within the joint
- Symptoms may include intermittent catching or locking to the shoulder during overhead sports or activities of daily living
- Production of pain when the examiner applies compression to the abducted shoulder with added rotation. Also pain with the internally rotated arm in adduction and having patient resist a downward force.
- Positive for these special tests: Speed test, apprehension test, active compression test, Hawkins impingement test, O'Brian test
- MRI with contrast material
- Common with full-thickness rotator cuff tears or glenohumeral instability.
- Arthroscopic visualization is the standard for diagnosis

Nonoperative Versus Operative Management: Treatment for a patient with a suspected symptomatic SLAP lesion is initially nonoperative. For example, athletes involved with overhead sports with symptoms of a SLAP lesion often have symptoms of a rotator cuff pathology. The treatment consists of rest, rehabilitation, pain relief, and graduated return to a sport or activity. With throwing athletes being able to return to play, they must have full pre-injury full range of motion and be able to perform pain free. Recurrent episodes of pain that prevent full recovery may be an indication for surgery.

Surgical Procedure:

- Type I lesions: The minor fraying at the free edge of the labrum is considered an abnormality and do not perform any debridement.
- Type II lesions: An anterosuperior portal is created. A spinal needle is inserted at the anterolateral acromial corner and enter the joint lateral to the biceps tendon. Then a burr is used to abrade the glenoid beneath the detached superior labrum to expose cancellous bone anterior to posterior margins of the superior labrum detachment. Holes are drilled for suture anchors. Then nylon sutures are used to suture the labrum.
- Type III lesions: If the bucket handle is less than one third the width of the labrum, then it is excised, and repair to the major portion to the superior labrum to the glenoid is performed as that of type II. If the bucket handle is one third or more the width of the labrum, then the detached portion is repaired with sutures.
- Type IV lesions: If the longitudinal tear in the biceps tendon is less than one third the diameter of the tendon, then the torn fragment is excised. If the fragment is one third or more the diameter of the tendon, then the torn fragment is repaired to the major portion of the bicep tendon. The superior labrum is repaired first as described in the Type II repair. Usually one or two sutures are sufficient to repair the torn fragment to the major portion of the biceps tendon.

POSTOPERATIVE REHABILITATION

Phase I for Immobilization and Rehabilitation: Weeks 1-3

Goals: Increasing passive shoulder range of motion

Control inflammation

Control pain/effusion

Intervention:

- Shoulder immobilized immediately post-op in sling that is to be worn at all time except while exercising or bathing for 4 weeks.
- 2 weeks after surgery, passive range of motion is allowed in all planes except external rotation and abduction
- No shoulder rotation above 60° of glenohumeral abduction until week 3
- Modalities to reduce inflammation, pain, and edema

Phase II for Mobilization and Rehabilitation: Weeks 3-6

Goals: Progressive passive range of motion

Increase scapulothoracic motor control

Incorporate involved extremity with ADLs

Pain control

Intervention:

- Week 4, sling is no longer needed
- Progressive passive range of motion is started, with emphasis placed on posterior capsule stretching and internal rotation.
- Begin passive and manual scapulothoracic mobility program
- Begin external rotation in abduction
- Allow use of operative extremity for light activities of daily living
- Modalities

Phase III for Immobilization and Rehabilitation: Weeks 6-12 to 7 months

Goals: Increase shoulder active and passive range of motion

Increase scapular stabilizers strength

Increase rotator cuff strength

Increase trunk stability

Intervention:

- At 6 weeks after surgery, external rotation and abduction is allowed with continued stretching
- Progressive strengthening program for the deltoid, rotator cuff, scapular stabilizers, biceps, triceps, and trunk stability
- 3 months after surgery - Patients engaged in sports that use upper extremities, such as swimming and golf, are allowed
- 4 months after surgery, throwing athletes can return, beginning with low-velocity, short distance, throwing on level ground with emphasis on proper throwing mechanics. Continue stretching and strengthening regimen, with emphasis on posterior capsular stretching
- Distance and velocity are gradually increased until 7 months with continuation of progressive strengthening and posterior capsular stretching

Selected References:

Kim K, Queale W, Cosgaria A, McFarland E. Clinical features of the different types of SLAP lesions. *J Bone and Joint Surgery*. 2003; 85:66-71.

Burkhart S, Morgan C. SLAP lesion in the overhead athlete. *Orthopedic Clinics of North America*. 2001;32:1-10.

Conway J. Arthroscopic repair of partial-thickness rotator cuff tears and SLAP lesions in professional baseball players. *Orthopedic Clinics of North America*. 2001;32(3).

Park H, Lin S, Yokota A, McFarland E. Return to play for rotator cuff injuries and superior labrum anterior posterior (SLAP) lesions. *Clinics in Sports Med*. 2004; 23(3).

Garsman G., Hammerman S. Superior labrum, anterior and posterior lesions when and how to treat them. *Clinics in Sports Med*. 2000;19(1).