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Rehabilitation After Arthroscopic SLAP Repair

The anatomic configuration of the shoulder joint (glenohumeral joint) is often compared to a golf ball on a tee. This is because the articular surface of the round humeral head is approximately four times greater than that of the relatively at shoulder blade face (glenoid fossa)[1] (Figure 1). The stability and movement of the shoulder is controlled by the rotator cuff muscles, as well as the shoulder ligaments, the capsule of the shoulder and the glenoid labrum. The labrum is a fibrocartilagenous ring which attaches to the bony rim of the glenoid fossa.1 The labrum doubles the depth of the glenoid fossa to help provide stability.[2] An analogy would be a parked car on a hillside with a block under the tire — the round tire being the humeral head, the road being the glenoid fossa and the block being the labrum. The labrum also serves as the anchor for the long head of the biceps. A large portion of the long head of the biceps originates from the top (superior) portion of the labrum. Overhead sports can create significant forces at this attachment site. This can ultimately lead to injury and tears of the biceps off this attachment. This is called a SLAP lesion (Superior Labral Anterior to Posterior tear). These injuries can also occur from trauma, such as falling on your arm, bracing your arm in an accident, arm tackling in football or any large sudden force applied to the arm. There are four basic types of SLAP tears.[3] A Type II SLAP tear is the most common type of SLAP tear requiring surgical reconstruction (Figure 2).[3] In this type of tear the long head of the biceps remains attached to the labrum but the labrum has been detached from the

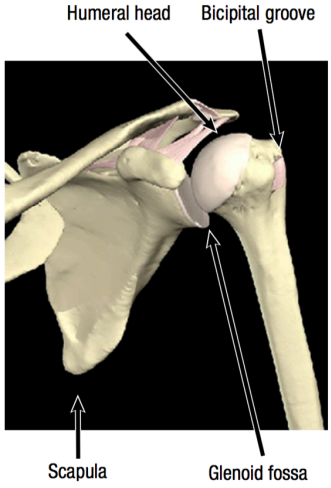
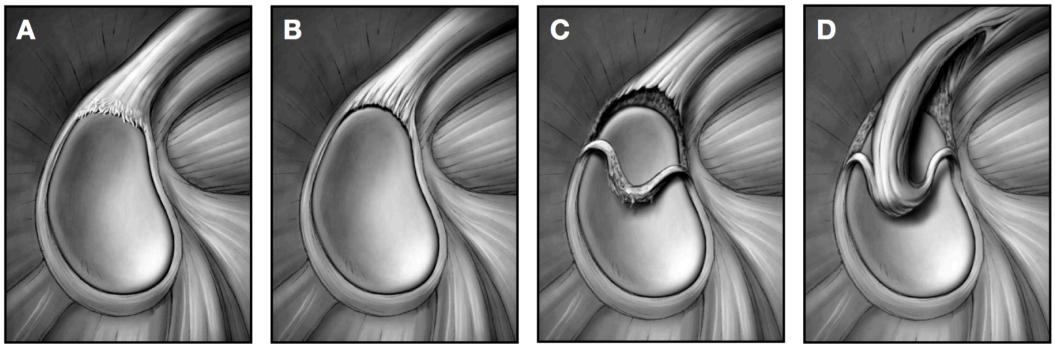


Figure 1 *Anatomical configuration of the shoulder joint (glenohumeral joint)*



Figures 2-A through 2-D *The classification system for SLAP lesions.* ***Figure 2-A*** *A Type-I SLAP lesion consists of degenerative fraying on the inner margin of the superior aspect of the labrum.* ***Figure 2-B*** *With a Type-II SLAP lesion, the biceps attachment and the adjacent superior aspect of the labrum have pulled off the superior glenoid tubercle.* ***Figure 2-C*** *A Type-III SLAP lesion is a superior labral bucket-handle tear.* ***Figure 2-D*** *A Type IV SLAP lesion is a superior labral bucket-handle tear that extends Into the biceps tendon.*

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bony glenoid.[4] This is repaired surgically by placing suture anchors (Figure 3) in the glenoid fossa, passing sutures through the labrum and then tying special surgical knots to approximate the labrum back to the bony glenoid rim.

Full return to throwing and contact sports occurs in 80-90% of athletes.[4, 5] Successful return to sport and activity is dependent on following post-operative precautions and completing a structured post-operative rehabilitation program. Our rehabilitation program is outlined below. The rehabilitation guidelines are presented in a criterion based progression. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, associated injuries, pre-injury health status, rehabilitation compliance and injury severity. These factors will also affect how long it takes each individual to meet the required criteria for return to sport and activity.[4]

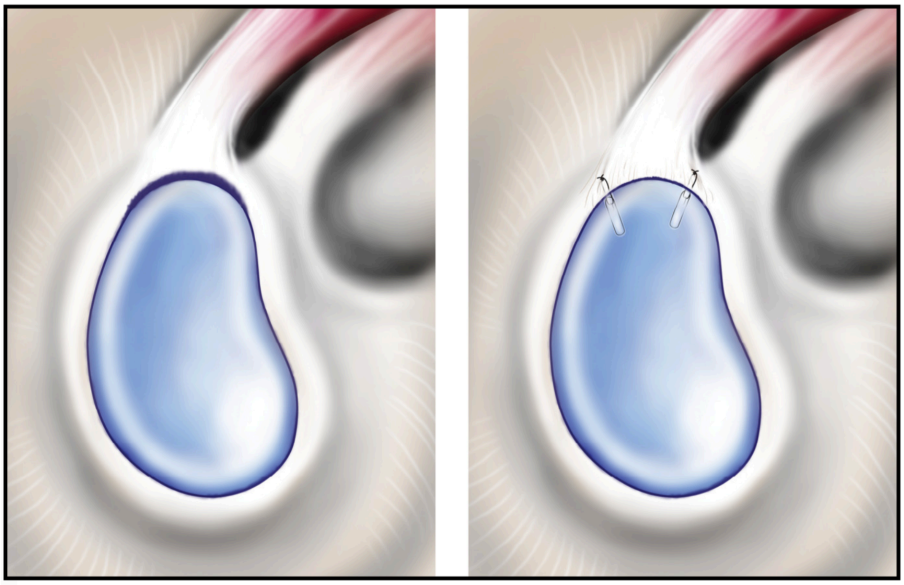

Figure 3. *The first illustration shows a Type II SLAP tear extending from 10:00 to 2:00. The second illustration shows this tear repaired with sutures and anchors anterior to and posterior to the long head of the biceps. The number of suture anchors needed varies from case to case.*

Rehabilitation After Arthroscopic SLAP Repair

Phase I (Surgery to 4 weeks after surgery)

Goals	○ Protection of shoulder after surgery ○ Activate muscles that help stabilize your glenohumeral and scapulo-thoracic joints
Precautions	○ Sling immobilization at all times except for showering and rehabilitation under guidance of physical therapist
Range of Motion Exercises	○ Active assistive range of motion (AAROM) → active range of motion (AROM) ○ Restrict motion to 140° of Forward Flexion, 40° of External Rotation and Internal Rotation to stomach ○ No Internal Rotation up the back ○ No External Rotation behind the head
Therapeutic Exercises	○ Wrist/Hand Range of Motion ○ Grip Strengthening ○ Isometric Abduction, Internal/External Rotation exercises with elbow at side ○ No resisted Forward Flexion/Elbow Flexion (to avoid stressing the biceps origin)
Other Suggestions	○ Heat/Ice before and after PT sessions

Phase II (4 weeks to 6 weeks following surgery)

Goals	○ Increased AROM ○ Increased rotator cuff strength in a neutral position
Precautions	○ Discontinue sling immobilization
Range of Motion Exercises	○ Increase Forward Flexion, Internal/External Rotation to full motion as tolerated
Therapeutic Exercises	○ Advance isometrics from Phase I to use of a theraband within AROM limitations ○ Continue with Wrist/Hand Range of Motion and Grip Strengthening ○ Begin Prone Extensions and Scapular Stabilizing Exercises (traps/rhomboids/levator scapula) ○ Gentle joint mobilization
Other Suggestions	○ Modalities per PT discretion

Phase III (6 weeks to 12 weeks following surgery)

Goals	○ Progress to full AROM without discomfort
Range of Motion Exercises	○ Active assistive range of motion (AAROM) → active range of motion (AROM) ○ Restrict motion to 140° of Forward Flexion, 40° of External Rotation and Internal Rotation to stomach ○ No Internal Rotation up the back ○ No External Rotation behind the head
Therapeutic Exercises	○ Advance Theraband exercises to light weights (1-5 lbs) ○ 8-12 repetitions/2-3 sets for Rotator Cuff, Deltoid and Scapular Stabilizers ○ Continue and progress with Phase II exercises ○ Begin UE ergometer
Other Suggestions	○ Modalities per PT discretion

Phase IV (3 months to 6 months following surgery)

Goals	○ Full range of motion without discomfort
Therapeutic Exercises	○ Advance exercises in Phase III (strengthening 3x per week) ○ Sport/Work specific rehabilitation ○ Return to throwing at 4.5 months ○ Return to sports at 6 months if approved
Other Suggestions	○ Modalities per PT discretion

References

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3. Barber A, Field LD, Ryu R. Biceps tendon and superior labrum injuries: decision-marking. *J Bone Joint Surg Am.* Aug 2007;89(8):1844-1855.
4. Park HB, Lin SK, Yokota A, McFarland EG. Return to play for rotator cuff injuries and superior labrum anterior posterior (SLAP) lesions. *Clin Sports Med.* Jul 2004;23(3):321-334, vii.
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