

## **SLAP Repair**

SLAP is an acronym for Superior Labrum Anterior to Posterior. It describes a labral detachment that originated posterior to the long head of the biceps tendon and extends anteriorly. The superior and inferior labrums differ in numerous ways. Whereas the inferior labrum is firmly attached to the glenoid and is more inelastic, fibrous tissue, the superior labrum resembles the meniscus in the knee – it is loosely attached to the glenoid, is triangular in shape, and has a fibrocartilaginous consistency. The long head of the biceps tendon has an attachment on both the posterosuperior labrum and the supraglenoid tubercle.

There are four types of SLAP lesions. Type I occurs when there is degeneration and fraying of the labrum but it remains firmly attached to the glenoid. There is no avulsion of the biceps tendon. A Type II lesion also shows signs of degenerative changes and fraying and there is complete detachment of the labrum from the superior glenoid rim. The attachment of the biceps is unstable. In a type III SLAP lesion, there is a bucket-handle tear of the labrum and the free margin is displaced into the joint. The labrum and biceps attachments are stable however. In this type of lesion, mechanical symptoms similar to those found in bucket-handle meniscal tears of the knee can be present, including catching and locking. A type IV SLAP lesion occurs when the superior portion of the labrum is displaced into the joint and the long head of the biceps is partially ruptured.

The two most common mechanisms of injury causing SLAP lesions are compression forces such as would occur when attempting to catch a heavy, falling object and traction forces, experienced during activities such as water skiing and throwing. It is not unusual and often expected to have associated inferior instability and/or a rotator cuff tear with a SLAP lesion.

SLAP lesions are difficult to diagnose through physical exam and MRIs and are often only found upon arthroscopic examination.

It is of utmost importance to know the type of SLAP lesion sustained because the surgical procedure and subsequent rehab protocol differ for each type. Type I and III SLAP lesions are treated by debridement and because the biceps tendon is stable, post-op rehab can progress as tolerated. There are no restrictions of ROM.

The following protocol is for patients who have sustained a Type II or IV SLAP lesion in which the biceps tendon is unstable and possibly ruptured. The biceps tendon and labrum must be stabilized using tacks or suture anchors and if a Type IV lesion has occurred, the biceps must be repaired. Because of this, it is important to avoid stress on the repaired area post-operatively. ROM limitations should be followed closely and active biceps work must be limited for the first 6 weeks. Active biceps work is restricted because it has been shown that, if a SLAP lesion is present, contraction of the biceps actually lifts the superior labrum off the glenoid. The therapist must also remember that other procedures to correct instability or a RCT may have been performed concomitantly with the SLAP repair. If this is the case, the most conservative of the post-op protocols for all procedures performed is usually the one that is followed.

Rehab must be specific to the individual. The desired goals and work requirements must be taken into consideration as well as physical characteristics including age and tissue type and status.

Suggestions during rehab:

1. The RC gets a better blood supply when the shoulder is slightly away from the body; therefore, advocate the use of a towel roll under the arm when in a resting position.
2. The RC muscles are very small; therefore, we use lower intensities to isolate each muscle without recruitment from surrounding larger muscles. Focus on hypertrophy initially by high volume ( $V = \text{Reps} \times \text{intensity/weight}$ ). Following the hypertrophy phase, strength is the focus with lower reps and higher intensities/weight.

### **PHASE ONE: WEEK 1-3**

*Focus in the phase is protection of repair, decrease symptoms, and initiation of PROM*

- A sling will be worn for 4 to 6 weeks unless instructed otherwise by Dr. Shybut
- The sling is to be removed 2-3X/day to perform HEP.

#### **ROM**

- Passive and active-assisted ROM ONLY:
- Flexion/scaption 60° by week 1, 75° by week 2, 90° by week 3
- ER in scapular plane 15° by week 1, 30° by week 2-3
- IR in scapular plane as tolerated
- Active wrist and elbow full ROM
- Exercises:
  - Pendulums
  - AA cane/wand into flexion, ER at 0° and 45°
  - Seated table slides
  - Seated or supine posterior cuff stretch into horiz adduction
  - Grade I-II g-h and scapular joint mobs and manual stretching

#### **STRENGTH**

- Hand gripping exercises – putty
- Submax pain-free isometrics at 0° abduction (IR, ER, Ext, Abd) – NO ELBOW or SHOULDER FLEXION
- UBE with no resistance
- Scapular stabilizer strengthening – rows, shrugs, punches

#### MODALITIES:

- Heat prior to tx
- Ice following tx and when needed

### **PHASE TWO: WEEK 3-6**

*Focus in this phase it gradually restore ROM, initiate active muscle contractions with a focus on regaining proper scapulo-humeral rhythm, begin to train joint proprioception*

#### ROM

- Flexion/elevation 145° by week 6
- ER in scapular plane 50° by week 6
- IR in scapular plane Full ROM by week 6
- Exercises:
  - Continue with AAROM exercises from Phase One – cane/wand
  - Initiate pulley for shoulder flexion/scaption
  - Table and incline slides on DS2 Platform, progress to wall mounted DS2 Platform stretch as ROM permits
  - Initiate towel IR stretch if needed
  - Posterior capsule stretch
  - G-H joint mobilizations emphasizing post and inf glides. Should be pain-free and in loose/open packed position.
  - Passive stretching should be performed following mobilizations.

#### STRENGTH:

- Closed chain cuff strengthening in scapular and horizontal planes below horizontal
- IR/ER with theraband using towel roll between upper arm and thorax
- Side-step holding t-band at neutral IR/ER for isometric resistance
- DB therex – flexion, scaption, empty can, deceleration
- Triceps with theraband
- Rhythmic stab progressing from supine to sidelying to partial sitting to standing as tolerated
- Scapular strengthening therex including seated rows, shrugs, punches
- PNF patterns with manual resistance
- Light bicep curls can be initiated at 3 weeks

#### MODALITIES:

- Heat prior to tx
- Ice following tx and when needed

### **PHASE THREE: WEEK 6-12**

*The focus in this phase is full AROM, progress strengthening and scapular stabilization exercises, and initiate more functional drills into rehab program*

#### ROM

- Full ROM all planes by 10-12 weeks
- Exercises
  - Continue with previous exercises to gain full ROM

- May need to add chicken wing stretch for ER
- Mobilizations may be more aggressive if needed

#### STRENGTH:

- High rep/hi speed cuff exercises at and above horizontal
- Continue with previous T-band and C. column exercises, increasing intensity, sets, reps as able
- Continue with db therex increasing sets, reps, and intensity (up to 7 lbs)
- Initiate T-band ER at 90/90 position – slow and fast reps
- Initiate prone db therex including scaption at 130° with thumb up, horiz abduction with thumb up, extension with palm down, ER
- Week 8: Initiate two-handed plyometrics including ball toss –chest pass, OH pass, diagonals
- Week 10: Biodex – isokinetics for IR/ER beginning in modified neutral position, progress to 90/90 position in scapular plane

#### MODALITIES:

- Ice as needed

### **PHASE FOUR: WEEK 12-24**

*Focus in this phase is full functional strength, implementing functional or sports specific training, and establishing a progressive gym program for continued strengthening and endurance training*

- Continue as needed with ROM exercises
- UBE high resistance, for endurance
- High load closed chain cuff and scapular ex
- Progress to one-handed plyos including ball toss, ball on wall
- Eccentric RC strengthening using plyoball, deceleration tosses, T-band
- Large muscle exercises including shoulder press, lat pull-downs, bench press – do not allow elbow to extend past plane of thorax
- For high school athletes: at 12 weeks, passive ER should be 100-105°; allow the athlete to gain the rest on his own.
- For college/pro athletes: at 12 weeks, active ER should be 100-105° and passive ER should be 110-115° – allow the rest to come on its own
- Initiate interval throwing program at wk 16 – consult with physician first
- Initiate sports specific/functional training
- Expected Biodex results: ER/IR ratio at 180°/sec: male 66%; female 71%