



ORTHOPEDIC
ASSOCIATES
of HARTFORD

Superior Labrum Anterior Posterior (SLAP) Repair (Type II) Return to Sport Protocol

General Rehabilitation Guidelines:

- A specific Rehabilitation program is dependent on the severity of the pathology/injury and should specifically manage the healing and requirement of the procedure the patient underwent (Debridement vs. Repair), in addition to other concomitant injuries/procedures performed
- The emphasis of the SLAP protocol should be on restoration and enhancement of the dynamic stability of the glenohumeral and scapulo-thoracic joints while protecting the healing tissues from adverse stress
- Hypersensitivity in axillary nerve distribution is a common occurrence
- For patients who sustained a SLAP lesion secondary to a fall/compression (MVA, Fall on out-stretched arm), weight-bearing exercises should be avoided to minimize compression and sheer on the superior labrum, while lesion is healing.
- Patients who sustained a traction-type injury should avoid heavy resistance or excessive eccentric biceps contractions, while lesion repair is healing
- Patients with peel-back lesions (typically overhead athletes), should avoid excessive amounts of shoulder ER while the SLAP lesion repair is healing
- **SLAP Classifications:** (basic 4, recently additional classifications added):
 - **Type I:** Isolated Fraying of the superior labrum, with a firm attachment of the superior labrum to the glenoid (typically degenerative in nature).
 - **Type II:** (Most common, especially with overhead athletes): A detachment of the superior labrum and the origin of the long head of the biceps brachii tendon from the glenoid creating instability of the biceps-labral anchor.
 - **Type III:** A bucket-handle tear of the superior labrum with an intact biceps insertion.
 - **Type IV:** (The least common of the 4 main types): A bucket-handle tear of the superior labrum that extends into the biceps tendon. This type will also have instability at the bicep-labrum anchor.
 - **Type V:** SLAP lesions with the presence of a Bankart lesion of the anterior capsule extending into the anterior superior labrum.
 - **Type VI:** A disruption or separation of the biceps anchor with an anterior posterior superior labral unstable flap tear.
 - **Type VII:** Lesions that extended anteriorly to involve the area inferior to the middle glenoid ligament.
 - **Type VIII:** A type II SLAP tear with a posterior labral extension to the 6 o'clock position.
 - **Type IX:** Is a circumferential lesion involving the full 360° of labral attachment to the glenoid rim.
 - **Type X:** In involves a superior labral tear combined with a posteroinferior labral tear (a reverse Bankart lesion).
 - * It is common to have concomitant injuries with SLAP lesions, so these classifications can be beneficial for creating the most appropriate treatment plan*

Type II SLAP Repair: (Repair):

- Common in overhead athletes, and typically peel-back lesions
- Rehabilitation progression rate typically slower for 3- vs. 1- anchor repair

Phase I: Protective phase: (approximately 6 weeks)

Goals:

- Protect the structures that were surgically repaired
- Decrease/ eliminate pain and inflammation
- Ensure there are little to no negative effects from prolonged immobilization
- Activation of the stabilizing muscles of glenohumeral & scapulo-thoracic joints
- Get a baseline Kerlan-Jobe Orthopaedic Clinic Overhead Athlete Shoulder and Elbow (KJOC), or American Shoulder and Elbow Score (ASES) subjective assessment forms

Patient Education:

- Sling worn to sleep & all day for 4 weeks post-op- removal only at rest or HEP
- No Resisted Biceps activity (both Elbow Flexion & Supination), or UE Weight-Bearing for 8 Weeks Post-Op to protect healing anchor
- Cardiovascular Fitness: Walking, or Stationary bike, **Wearing the Sling**.
- No AROM is allowed for the first 4 weeks (only gentle PROM and AAROM) within allowable motion ranges
 - o Motion kept below-90° (slow progression) to avoid strain on labral repair

Weeks 0-2 Post-Op:

- Patient Education:
 - o Sling worn 24 hour/day, except for Rehab and Bathing
- Treatment:
 - o **Modalities**: Cryotherapy, kinesiotaping (basket weave), Edema massage to decrease inflammation and swelling, as well as possible ecchymosis
 - o Desensitization techniques for axillary nerve distribution, if present
 - o Assess any breathing dysfunctions and teach appropriate breathing exercises for diaphragmatic breathing
 - o AROM of wrist and hand, Hand gripping exercises
 - o PROM of elbow flexion and extension (**No isolated biceps contraction**)
 - o PROM and gentle shoulder AAROM exercises:
 - Flexion: **week 1**: 0°-60°, **week 2**: 0°-75°
 - Elevation in the scapular plane to 60°
 - IR: to 45°, ER: 10-15°, (both in the scapular plane)
 - o Submaximal isometrics for shoulder (in neutral or scapular plane) for shoulder flexion, abduction, extension, IR & ER, and scapular musculature
 - o Active Scapular retractions and chin tucks for postural improvements
 - o Pendulum exercises- PROM using body movements, **Without Weight**

Weeks 3-4 Post-Op:

- Patient Education:
 - o Sling wore (24 hours) Unless D/C cleared by MD
- Treatment:
 - o **Modalities:** Continue any needed PRN
 - o Continue gentle PROM and AAROM exercises from the first 2 weeks post-op, progressing: Rate of Progression based on patient evaluation
 - Flexion to 90°, Abduction to 75°-80°
 - IR: 55°-60°, ER: 25°-30°, (both still in scapular plane)
 - o No Active ER, Elevation, or Extension of injured UE
 - o Manual Stretch, Joint Mobilization: Cervical, Thoracic & Rib Mobility
 - o Continue Isometrics, Add Light Resistance Tubing for IR at 0°
 - o Initiate Neuromuscular Re-Ed (Rhythmic Stabilization and Proprioception training drills)

Weeks 5-6 Post-Op:

- Patient Education:
 - o Some light AROM maybe begun with Abduction of the UE, even though not in a sling the arm should still be thought of in the protective phase of rehabilitation.
- Treatment:
 - o **Modalities:** Continue any that are needed or patient presentation/impairments
 - o Continue to improve ROM- PROM, AAROM, AROM:
 - Flexion to 145°
 - ER: 45°- 50°, IR: 55°-60°, (both at 45° of abduction)
 - May initiate light PROM at 90° of abduction for IR and ER
 - o Light isotonic strengthening for shoulder and scapulothoracic musculature, (with the exception of the biceps), with resistance tubing and dumbbells
 - See Shoulder Muscle Function and High Muscle Activity with shoulder exercises sheet, and progress appropriately
 - ER/IR tubing/dumbbell at 0° abduction: side-lying ER, Prone Rowing, Prone Horizontal Abduction, Prone ER
 - Cont. PNF Manual Resistance: Initiate Diagonals, rhythmic stab.
 - Active Elevation Exercises into abduction (Lateral raises) and scapular plane (full can) exercise- **no resistance** (weight of the arm)- AROM, wall slides, wall ladder
 - o UE Ranger can also be utilized in sidelying and standing
 - o **No biceps strengthening and Weight-Bearing restrictions continued**
 - o ***Make sure to train both UE to get neural carry over to repaired UE**

Criteria for Entering Phase II

- Patient met all ROM goals from current phase
- Able to perform current exercise program with minimal to no pain
- Patient is able to demonstrate improving scapular strengthening with maintenance of posture and balance while performing current exercises

Phase II- Intermediate Phase: (approximately weeks 7-12)

Goals:

- Gradually restore full ROM by approximately week 10 Post-OP
- Restore motor control and motor planning for muscular strength and symmetry

- Get baseline SFMA approx. weeks 8-10 post-op
- Restore Normal Arthrokinematics- Cervical, Thoracic, and Shoulder
- Restore full Rotator Cuff strength in a neutral position

Patient Education:

- Patient is free to use arm for normal daily activities for dressing bathing and self care, however, they should not raise arm overhead while carrying anything greater than 1 pound.
- Cardiovascular Fitness: Walking, Stationary Bike, Elliptical, without sling
 - o No Swimming or treadmill running
- Forceful pushing and pulling could also still disrupt healing of the surgical repair.

Weeks 7-9 Post-Op:

- Treatment:
 - o **Modalities**: Continue or use any modalities PRN
 - o Progress ROM:
 - Flexion to full motion
 - ER: 90°-100°, IR: 70°-75°, (both at 90° of abduction)
 - o Continue Isotonic strengthening: Resistance band exercises progressed IR/ER at 30° abduction (towel roll), Forward Punch, Dynamic Hug, W's
 - **See Shoulder Muscle Function and High Muscle Activity with Shoulder Exercises Sheets**- Progress appropriately
 - o Normalizing Joint Arthrokinematics:
 - Joint Mobilization in the glenohumeral, cervical, thoracic, lumbar, and rib joints- Techniques: P/A joint mobs., Muscle Energy Technique, Mulligan, etc.
 - Continue stretching of tissue extensibility dysfunctional muscles/joints along entire kinetic chain
 - As strengthening program progresses emphasis on obtaining muscular balance and promoting dynamic shoulder stability
 - o **No Weight Bearing until week 8 post-op**
 - o Continue Neuromuscular Control/Stabilization, with beginning weight bearing and continued/progressed PNF strengthening
 - Can begin forearm on wall lean with alternating lift off UE and LE (**week 8-9**), for eventual Quadruped Bird Dog Progression
 - o Initiate the Throwers Ten Program, **by Weeks 7-8 Post-Op**
 - o Stationary bike or elliptical to develop/maintain endurance training

Weeks 10-12 Post-Op:

- Treatment:
 - o Increase ER towards the throwers motion
 - ER (at 90° of abduction): 115°-120°
 - o Continue to progress all isotonic and NM strengthening exercises
 - Manual Resistance and Rhythmic Stabilization can be performed at end-range of motion
 - Prone I's, T's, Y's, L's, & W's
 - **See Shoulder Muscle Function and High Muscle Activity with Shoulder Exercises Sheets**- Progress appropriately

- If capsular tightness is present continue to use manual techniques as well as stretches, (Cross-Body Stretch for posterior capsule tightness), to return patient to throwers ROM
- Trunk Testing: Initial Testing (**See attached sheets**)
 - Deep Neck Flexor Test
 - Segmental Multifidus Test
 - Trunk Curl-Up Test
 - Double-Leg Lowering Test
 - Prone Bridge Test
 - Endurance of Lateral Flexors (Side Bridge) Test
 - Extensor Dynamic Endurance Test

Criteria to Progress to Phase III:

- Full non-painful ROM
- Muscle strength to 4/5 or better
- No pain or tenderness in the shoulder
- Able to perform current exercises program with minimal to no pain or dysfunction

Phase III- Advanced Strengthening Phase: (approximately weeks 12-20)

Goals:

- Maintain full Active and Passive ROM.
- Continue to improve/regain muscle strength, stability, and begin to train power and endurance.
- Continue to Restore Normal Arthrokinematics- Cervical, Thoracic, Shoulder, Hips, and Ankles (if needed).
- Improve neuromuscular control of the Shoulder, Scapula, Trunk, and Hips
- Get a baseline FMS approximately week 16 post-op.
- Get a Baseline Y-Balance Test score for LE
- Assess Core Stability and Dysfunction- determine whether dysfunctions are true strength issues or if they are a result of muscular inhibition from a joint/movement restriction.
- Give patient the KJOC Questionnaire, or ASES for minimal detectable change in score.

Patient Education:

- Avoid all activities that pose a high risk of falling, or that require an outside force is applied to the surgically repaired arm
- Cardiovascular Fitness: Walking, Stationary Bike, Stairmaster, Elliptical, Running (Once patient has completed Walk-to Run Protocol)
 - No throwing or overhead sports

Weeks 12-16 Post-Op:

- Treatment:
 - May begin Resisted Biceps and Forearm Supination exercises
 - Continue all stretching exercises (muscular and capsular)
 - Muscular Endurance Training- Alternating with static and dynamic holds and movements with the exercises, can perform in athletic positions
 - Continue I's, T's, Y's, L's, & W's with endurance training
 - Patient may also begin push-up progression (wall@angle@kneeling@prone)
 - Prone Swiss Ball Walk-Outs, Prone and Side Planks

- Manual Resistive Exercises and End-Range Rhythmic Stabilization, combined with isotonic strengthening and core stabilization exercises to help meet the ultimate goal of re-establishing dynamic humeral head and scapular control/stability, such as PNF diagonals, with cable, resistive band, medicine ball, and dumbbells, in Standing@Half-Kneeling@SLS
- Continue Throwers' Ten Program-> Progressing to Advanced Throwers' Ten by week 14-16
- Begin Walk-to-Run Protocol
- Teach basic Dynamic Stretching Program (total body)
- Continued Stationary bike, Elliptical, etc. for endurance training. Patient may begin light swimming and half golf swings

Weeks 16-20 Post-Op:

- Treatment:
 - Continue all above treatment and stretches
 - Continue Advanced Throwers' Ten Program
 - Once ROM is achieved, may begin UE Plyometric Protocol Phase I (Two-Hand drills)- (**See attached sheets**)
 - Continue/Progress Core, Hip, and Scapular Stabilization exercises
 - Make sure to include: Deadlift variations, Chop-n-Lift variations, Bridging variations, Plank variations, PNF, Balance/Proprioception exercises, Push-Up Progression, Squatting variations, and Reaction Training
 - Initiate and evaluate with LE Plyometric Protocol –(**See attached sheets**)
 - Begin Interval Running Protocol- **See Interval Running Protocol**

Criteria for entering Phase IV- Dynamic Strengthening Phase

- Full Non-Painful AROM & PROM
- No Pain or tenderness with any previously performed activity
- Muscular Strength \geq 75%-80% of the uninjured side
- Completion of Phase I of the UE Plyometric Protocol

Phase IV- Dynamic Strengthening Phase- (approximately weeks 20-26)

Goals:

- Maintain Shoulder ROM and Mobility
- Continue to improve Muscular Strength, Endurance and Power
- Score \geq 2 points higher on the FMS, with a Goal of >14/21, (research shows \leq 14/21 to be high risk of injury)
- Get a Baseline Y-balance Test Score for UE
- Progress functional activities and exercises
- Achieve good static stability: Shoulder & Scapular
- No Apprehension or instability with overhead movements
- Ensure adequate Core, Hip, and Scapular stability, to eliminate compensatory movements/positions, which can stress the shoulder with dynamic movements
- Ensure cardiovascular endurance is at appropriate level for participating in the sport for which they will be returning

Patient Education:

- Instruct patient on precautions and limitations while in this phase of rehabilitation

Treatment:

- Continue all exercises from previous phase PRN
 - o Isotonic Strengthening
 - o PNF and Manual Resistance exercises
 - o Begin Phase II UE Plyometric Protocol (**See attached sheets**)
 - o Begin some light interval sport exercises- (Throwing type exercises)
 - o Teach Sport Specific Dynamic Stretching Program- (**See Specific Sports Dynamic Stretching sheet**)
 - o Progress to Phase III of the UE Plyometric Protocol at the end of this phase, once Phase II has been completed

Criteria for entering Return to Specific Sport Training and Continued Interval Sport Protocols: (Approximately 6-9 months Post-Op)

- 1- Clearance from the surgeon to begin the Return to Specific Sport Protocols
- 2- No signs of any lingering shoulder instability with activities.
- 3- Restoration of all ROM needed to participate in desired sport.
- 4- Strength testing of $\geq 90\%$ compared to contralateral/uninvolved side.
- 5- Adequate strength and muscle endurance of the shoulder, rotator cuff, trunk, hips, and scapular musculature needed to perform sport specific drills/ activities with minimal to no pain or difficulty.
- 6- **If Available:** Perform Isokinetic testing: With the goals of the patient being able to achieve a ER peak torque/body weight ratio of 18%-23%, an ER/IR ratio of 66%-76%, and an ER/ABD ratio of 67%-75%, at 180°/sec testing.
- 7- Patient scores an appropriate score on the Kerlan-Jobe Orthopaedic Clinic Overhead Athlete Shoulder and Elbow (KJOC) Questionnaire, or ASES subjective evaluation forms, that would show ability to return to sporting activity.
- 8- >14 on the FMS and score equal to their peers for sport and age through the Y-Balance (Move2Perform database), or CKCUTEST equal to normative values.
- 9- No Pain with any of the pervious exercises/ activities/ evaluations performed.
- 10- Complete the Throwers Ten, Advanced Throwers Ten Program, and the UE & LE Plyometric Protocols.
- 11- Passing of the Functional Tests listed below: (Testing can be over multiple sessions):
 - a. Trunk Testing: Re-Test (**See attached sheets**)
 - i. Deep Neck Flexor Test
 - ii. Segmental Multifidus Test
 - iii. Trunk Curl-Up Test
 - iv. Double-Leg Lowering Test
 - v. Prone Bridge Test
 - vi. Endurance of Lateral Flexors (Side Bridge) Test
 - vii. Extensor Dynamic Endurance Test
 - b. Upper Extremity Testing: (**See attached sheets**)
 - i. Alternative/ modified Pull-Up Test
 - ii. Push-Up Test
 - iii. Backward Overhead Medicine Ball Throw Test

- iv. Sidearm Medicine Ball Throw Test
- v. 1-Hand and 2-Hand Seated Shot-Put Throw Test- 6 Pound medicine ball (Dominate and Non-Dominate UE)

*** When patient is cleared to perform Specific Sport Activities, may begin Interval Sport Protocols: Throwing, Pitching, and Hitting/Swinging**

*** Return to Sport ~ 9-12 Months**

- Re-Eval with all functional testing previously tested, plus:

- *If patient is a Baseball or Softball pitcher/player:
- Functional Throwing Performance Index (FTPI) Test- **best assessed with video analysis**
- Baseball Pitcher Only- PT/ATC fills out Upper Extremity Throwing Analysis Form- to determine areas of the throwing motion that need to be addressed in the Sport Specific/ Return to Baseball Pitching Protocol

- Criteria for Return to Full Sport Participation:

- Maintenance of full ROM
- Restoration or full equal bilateral strength
- $\geq 16/21$ on FMS, with no asymmetries, 0's, or 1's
- No asymmetries and composite score of $\geq 90-95$ on the Y-Balance Test (UE and LE)
- Completion of Interval Throwing, Hitting/Swinging, & Running Protocols
- Passing score (per age, sex, sport, statistical averages) on all the UE, Speed/Agility/Quickness, Strength/Power, & Trunk Functional Testing

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