Rehabilitation Protocol for Arthroscopic Rotator Cuff Repair – *Large to Massive Tears*

This protocol is intended to guide clinicians and patients through the post-operative course for arthroscopic rotator cuff repair surgery with large to massive sized tears. This protocol is time based (dependent on tissue healing) as well as criterion based. Specific intervention should be based on the needs of the individual and should consider exam findings and clinical decision making. If you have questions, contact the referring physician.

Considerations for the Post-operative Rotator Cuff Repair Rehabilitation:

Many different factors influence the post-operative rotator cuff repair rehabilitation outcome, including rotator cuff tear size, type of repair, tissue quality, number of tendons involved, and individual patient factors like age and comorbidities, including increased BMI and diabetes. Consider taking a more conservative approach for more complex tears, and > 1 tendon involvement. Special consideration for external rotation and abduction range of motion should be taken in the case of a concomitant subscapularis repair if PROM needs to be initiated during Phase I (no ER past 0 degrees, no abduction past 90 degrees).

Post-operative Complications:

If the patient develops a fever, unresolving numbness/tingling, excessive drainage from the incision, uncontrolled pain or any other symptoms you have concerns about, the referring physician should be contacted.

PHASE I: IMMEDIATE POST-OP: Passive Range of Motion Phase (WEEKS 1-6 AFTER SURGERY)

Rehabilitation Goals	• Primary goal is to protect the tendon repair and promote tendon-to-bone healing. • A 6-week period of immobilization with a sling, and delayed start of PROM is recommended for large-sized tears. • Reduce inflammation and pain. Cryotherapy and transcutaneous electrical neuromuscular stimulation help to control post-operative pain.
Sling	• Wear slight during the day and at night for sleeping.
Precautions	• **Do not actively move surgical arm**. • **No weight bearing through surgical arm**. • **No passive or active range of motion of shoulder**. • **No reaching overhead or behind back.** • **No pushing and pulling.**
Intervention	• Hand, wrist, elbow AROM (**no active elbow ROM for 4 weeks if biceps tenodesis is performed**). • Scapular mobility exercises with sling.
Criteria to Progress	• Appropriate healing of surgical repair. • Good safety adherence to precautions and immobilization guidelines. • Inflammation and pain controlled.

PHASE II: INTERMEDIATE POST-OP: Passive Range of Motion (6-10 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Minimize post-operative stiffness while simultaneously protecting the repair. Sling • can be gradually. • Start passive range of motion with physical therapist at 6 weeks after surgery

	• Initiate home exercise program. • Reduce inflammation and pain. Cryotherapy and transcutaneous electrical neuromuscular stimulation help to control post-operative pain. • Patient education emphasizing compliance of post-operative restrictions.
Sling	• Sling can be gradually removed with surgeon's clearance.
Precautions	• **No active range of motion of shoulder (AROM) despite minimal to no pain or other symptoms.** • **Avoid aggressive and painful passive range of motion (PROM)** • **No internal rotation at this time (i.e. reaching behind back).** • **Avoid any upper extremity weight bearing of surgical arm.**
Interventions	*Shoulder PROM* • Supine passive shoulder elevation with PT or assistant ○ 0-100 degrees *Do not force any painful motion. • Seated Passive External Rotation with PT or assistant ○ 0-30 degrees • Table Slide *Avoid shoulder shrug • Shoulder Pendulums *DO NOT actively use your shoulder muscles. *Strengthening* • Scapular exercises (without sling**)** ○ Scapular Retraction, Scapular elevation, Scapular depression
Criteria to Progress	• Appropriate healing of surgical repair. • Good safety adherence to precautions. • Adequate range of motion gains determined by physical therapist and surgeon**: At least 100 120 degrees of passive forward elevation, 25-45 degrees of passive external rotation with arm at neutral, 90 degrees passive abduction.** • Inflammation and pain controlled. • Compliance with home exercise program.

PHASE III: Active Assisted (Weeks 10-14) and Active Range of Motion (14-18 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Initiate AAROM and then AROM exercises. • Isometric strengthening exercises can begin 14-18 weeks after surgery. Only submaximal activation should be applied, maximal efforts can overload the repair. • Normalize motion and activities of daily living during this period.
Precautions	• **No lifting or activities that cause pain.** • **No supporting of body weight by hands and arms.** • **No excessive behind the back movements.** • **No sudden or jerking motions.** • **No excessive loading of the healing tendon.**

Additional Interventions **Continue with Phase I-II Interventions*	*Active Assisted ROM* • Supine AAROM Elevation with short lever arm *Only move through comfortable ranges ○ Cane or stick AAROM (10 weeks) a. Supine AAROM Shoulder Flexion b. Supine AAROM Shoulder Abduction
	c. Supine AAROM Shoulder ER –Start at neutral and slowly progress to arm in abduction *Progress from supine to beach chair 45-degree incline position (11 weeks), then to upright position (12weeks) ○ Assisted ER a. Standing with arm supported on pillow with elbow at 90 degrees. Gently turn body away ○ Wall Slide and Wall Walk *Start at 12 weeks *Active ROM* • Standing Shoulder ER AROM *start at 12 weeks • Side-lying Shoulder ER AROM *start at 14 weeks • Active Forward Reach *Start at 14 weeks • Active Shoulder Elevation *Start at 14 weeks *Shoulder Isometrics* • Isometric Shoulder Flexion and Isometric Shoulder Extension • Isometric Shoulder ER and Isometric Shoulder IR with arm at side *Apply only submaximal effort. Avoid forceful pushing. • Standing Rows a. Start in standing. Progress to Bent Over Rows *Manual Therapy (after week 10)* • Grade 1-2 joint mobilizations, thoracic mobilizations, soft tissue massage to help decrease pain or muscle guarding *avoid positions or techniques that place the shoulder or repair in a compromised position.
Criteria to Progress	• Adequate ROM in all planes without pain or substitution patterns, as determined by your MD and PT. Typically greater than 140 degrees of passive forward elevation, greater than 120 degrees of active forward elevation without compensation, normal external rotation at 0 degrees of abduction. • Appropriate scapular positioning at rest and with upper extremity activity. • Completion of current rehabilitation program / exercise without increase in pain or difficulty. • Ability to perform light, nonrepetitive activities of daily living or work tasks below shoulder level without pain or difficulty.

PHASE IV: Initial Strengthening Phase (18-22 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Resistance should be gradually progressed.[Error! Reference source not found.] • Continued emphasis on restoring PROM. Goal is to have full ROM at this point. Those who have not yet met ROM milestones or are still having pain should not be progressed to this phase.

	• Gradually restoring shoulder strength, power, and endurance with consideration of patient's ability, comfort level and long-term goals. • Return to normal functional activities of daily living, full work and modified recreational activities during this phase.
Precautions	• **No lifting of objects heavier than 5 lbs.** • **No sudden lifting, jerking, pushing or throwing motions/activities.** • **No uncontrolled movements.**
	• **Do not perform straight arm lateral raise (long lever arm abduction) strengthening exercises as this will place too much load on the repaired tissue.** • **Do not perform arm raises in empty can position at any stage of rehabilitation due to impingement and stress on the cuff repair.**
Additional Interventions **Continue with Phase I-III Interventions*	*Stretching* • Pec Stretch: place arm at angles of 60^0, 90^0 at doorway or corner • Internal Rotation Stretch**:** progress to using a towel for more aggressive stretch • Doorway external rotation stretch: Do not force any painful motion. • Crossbody Stretch: Can be done standing, standing against a wall or laying on your back. • Sleeper Stretch: start with your arm close to your body to avoid discomfort. **Cliniciandetermined, as this is typically not recommended for throwers** *Strengthening* • Prone W, Prone Y, Prone T, Prone I • Shoulder extension with straight arm • Supine shoulder protraction • Rows • Resisted Shoulder ER, Resisted Shoulder IR, Side-lying Shoulder ER • Forward Punch with resistance band • Biceps Curls, Triceps Extension • Rhythmic stabilization: ▪ In quadruped position using weight shifts and perturbation, or with a ball on table / wall. ▪ ER / IR in scaption and flexion 90-125 degrees *Manual Therapy* • Grade 3-4 joint mobilizations allowed if indicated. Manual therapy techniques should be pain-free and do not put the shoulder in a compromised position
Criteria to Progress	• Full ROM in all planes with normal movement mechanics. • Pain-free with activities of daily living and strengthening exercises.

PHASE V: Advanced Strengthening (22-26 WEEKS AFTER SURGERY)

Rehabilitation Goals	• After 22 weeks, more aggressive stretching of shoulder may be used if needed. **Error! Reference source not found. Error! Reference source not found.** • Restore maximal strength and power, as well as endurance to participate in higher-level activities. • Maintain pain free ROM.
Precautions	• **No lifting of objects > 10 lbs.** • **No overhead lifting.** • **No sudden pushing or lifting activities.** • **No progression into activities that are painful.**
Additional Intervention **Continue with Phase II-IV interventions*	• ER at 45 deg abduction • ER at 90 deg abduction ○ Supported on table then progressed to unsupported. • IR at 90 deg abduction

	• Full can in scapular plane *Limited to 1-2lbs. Increase repetitions according to patient tolerance. Error! Reference source not found.Error! Reference source not found. • Resisted diagonals ○ Shoulder PNF D1/D2 patterns • Dynamic hug
	• Push up progression: Wall Push Up / Counter Push Up / Floor Push Up
Criteria to Progress	• Full, non-painful ROM with no compensatory mechanisms 4+/5 • shoulder pain-free shoulder strength • Normalized scapulothoracic kinematics • Pain-free with basic ADLs and strengthening excises

PHASE VI: RETURN TO SPORT (26-30 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Continue with ROM and stretching program to maintain motion, and progress strengthening exercises • Submaximal muscle performance can be assessed using a hand-held dynamometer beginning at 5 months, with maximal muscle testing delayed until 10-12 months post-operatively • 85-90% shoulder strength of contralateral side with hand-held dynamometer • Prepare for safely return to work, active recreational activities, or athletic activities • Work on conditioning exercises for enhanced functional use of your arm
Precautions	• **No Forceful or Heavy lifting** • **No sudden pushing or lifting activities** • **No progression into activities that are painful**
Additional Interventions **Continue with Phase II-V interventions*	• • Daily home stretching program • Three days per week home strengthening program with 5-10-minute cardiovascular warmup Continue progression of shoulder strengthening, transitioning to general upper extremity strengthening program. Progressive return to weightlifting program emphasizing larger, primary upper extremity muscles • Activity specific progression; sport, work, hobbies
Return to Sport	• For the recreational or competitive athlete, return-to-sport decision making should be individualized and based upon factors including level of demand on the upper extremity, contact vs non-contact sport, frequency of participation, etc. We encourage close discussion with the referring surgeon prior to advancing to a return-to-sport rehabilitation program.

Contact	Please email MGHSportsPhysicalTherapy@partners.org with questions specific to this protocol

References:

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