Rehabilitation Protocol for Pectoralis Major Repair

This protocol is intended to guide clinicians and patients through the post-operative course for a pectoralis major repair. 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 Pectoralis Major Repair Rehabilitation Program
One major factor that influences the post-operative pectoralis major repair rehabilitation outcome is type of repair. It is recommended that clinicians collaborate closely with the referring physician to establish if the repair is bone-tendon, tendon-tendon or muscle-tendon which will dictate soft tissue time constraints.

Post-operative considerations
If the patient develops a fever, unresolving numbness/tingling, excessive drainage from the incision, uncontrolled pain or any other symptoms you have concerns about you should contact the referring physician. Special care should be taken to monitor an incision in the axillary area due to increased risk of bacterial and moisture buildup.

PHASE I: IMMEDIATE POST-OP (0-3 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Protect surgical repair • Reduce swelling, minimize pain • Promote scar mobility • Maintain UE ROM in elbow, hand and wrist • Gradually increase shoulder PROM • Minimize muscle inhibition • Patient education
Sling	• Neutral or internal rotation • Use at night while sleeping

Intervention	*Swelling Management*
	• Ice/compression
	
	Range of Motion/Mobility (Week 2)
	• PROM
	  • ER: Neutral in 0 degrees ADD progressing 5 degrees each week
	  • Flex: 45 degrees progressing 5-10 degrees each week
	  • ABD: 30 degrees progressing 5 degrees each week
	• AROM
	  • Elbow, wrist and hand
	
	Soft Tissue Mobilization
	• Scar massage (once scar is closed and dry)
	
	Strengthening (Week 3)
	• Periscapular: inferior glide (<35 degrees ABD), low row
	• Ball squeeze

Criteria to Progress	• PROM ER @ 0 degrees ADD 5 degrees • PROM Flex 50 degrees

	• PROM ABD 35 degrees • Palpable muscle contraction felt in scapular and shoulder musculature • No complications with Phase I

PHASE II: INTERMEDIATE POST-OP (4-6 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Protect surgical repair • Reduce swelling, minimize pain • Gradually increase shoulder PROM • Initiate shoulder AAROM • Minimize muscle inhibition • Improve scapular muscle activation • Patient education

Sling	• Neutral or internal rotation
	  • Bone-tendon repairs can begin weaning out of the sling at 4 weeks
	  • Tendon-tendon or muscle-tendon repairs should begin to wean at 5-6 weeks

Additional Intervention **Continue with Phase I interventions*	*Swelling Management*
	• Ice/compression
	
	Range of Motion/Mobility
	• PROM
	  • ER: increase 5 degrees each week
	  • Flex: continue to increase 5-10 degrees each week
	  • ABD: continue to increase 5 degrees each week
	• AAROM
	  • Active assistive shoulder flexion, shoulder flexion with cane, cane external rotation stretch, washcloth press
	
	Strengthening
	• Shoulder: Submaximal isometrics: ABD, ext, ER (no IR)
	• Periscapular: scap retraction, prone scapular retraction, standing scapular setting, supported scapular setting

Criteria to Progress	• PROM ER @ 0 degrees ADD 20 degrees • PROM Flex 65-85 degrees • PROM ABD 50 degrees • Minimal substitution patterns with AAROM • No complications with Phase II

PHASE III: LATE POST-OP (6-8 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Gradually increase shoulder PROM/AAROM • Initiate shoulder AROM • Promote scar mobility • Gradually increase muscle strength • Patient education
Weight Bearing	• Can begin bearing weight through surgical side

Additional Intervention **Continue with Phase I-II Interventions*	*Range of Motion/Mobility*
	• PROM
	  • ER: increase 5 degrees each week to full
	  • Flex: continue to increase 5-10 degrees each week to full
	  • ABD: continue to increase 5 degrees each week to full
	• AAROM
	  • Seated shoulder elevation with cane, seated incline table slides, ball roll on wall, wall climbs
	• AROM

	• Supine flexion, salutes, supine punch *Strengthening* • Shoulder: Submaximal flex isometrics, side-lying external rotation • Periscapular: Row on physioball, shoulder extension on physioball, resistance band shoulder extension, resistance band seated rows, rowing, lawn mowers, robbery, serratus punches • Elbow: Biceps curl, resistance band bicep curls and triceps *Soft Tissue Mobilization* • Scar mobilization *Motor Control* • External rotation in scaption and Flex 90 degrees (rhythmic stabilization) *Stretching* • Sidelying horizontal ADD, sleeper stretch
Criteria to Progress	• PROM ER @ 0 degrees ADD 30 degrees • PROM Flex 75-105 degrees • PROM ABD 60 degrees • Minimal substitution patterns with AROM • No complications with Phase III

PHASE IV: TRANSITIONAL (9-14 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Restore full shoulder PROM/AROM (week 12-14 for **bone-tendon**) • Gradually increase muscle strength • Initiate shoulder IR/pec major isometrics • Patient education
Additional Intervention **Continue with Phase I-III interventions*	*Range of motion/mobility* • PROM: Full • AROM: Full *Strengthening* • Shoulder: Submaximal IR isometrics, submaximal pectoralis isometrics **(starting in a shortened position; progressing towards a more lengthened position),** standing external rotation w/ resistance band, external rotation, sidelying ABD→standing ABD • Periscapular: Push-up plus on knees, prone shoulder extension Is, tripod, pointer *Motor Control* • PNF – D1 diagonal lifts **(concentric to begin, then eccentric; manual resistance progressing to resistance bands)** • PNF – D2 diagonal lifts **(concentric to begin, then eccentric; manual resistance progressing to resistance bands)** • Quadruped alternating isometrics • Ball stabilization on wall *Stretching* • Triceps and lats
Criteria to Progress	• Full pain-free PROM/AROM • Minimal to no substitution patterns with shoulder AROM • Performs all exercises demonstrating symmetric scapular mechanics

PHASE V: ADVANCED STRENGTHENING (14-20 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Restore full shoulder PROM/AROM (week 14-16 for **tendon-tendon** or **muscle-tendon**) • Gradually increase muscle strength through the full ROM • Do not overstress healing tissue • Patient education
Additional Intervention **Continue with Phase II-IV interventions*	*Range of motion/mobility* • PROM: Full • AROM: Full *Strengthening* • Shoulder: Standing internal rotation w/ resistance band, internal rotation, pectoralis isotonics, counter push-ups→push-ups, lat pull downs • Periscapular: Resistance band forward punch, forward punch, T and Y, "T" exercise, "W" exercise, resistance band Ws, dynamic hug, resistance band dynamic hug *Motor Control* • Field goals, wall slides w/ resistance band *Stretching* • Hands behind head, IR behind back with towel, doorway series **(gentle stretch only)**
Criteria to Progress	• Full pain-free PROM/AROM • Minimal to no substitution patterns with shoulder AROM • Performs all exercises demonstrating symmetric scapular mechanics

PHASE VI: EARLY RETURN TO SPORT (5-6 MONTHS AFTER SURGERY)

Rehabilitation Goals	• Maintain pain-free ROM • Continue strengthening and motor control exercises • Enhance functional use of upper extremity
Additional Intervention **Continue with Phase II-V interventions*	*Strengthening* • Shoulder: External rotation at 90 degrees, internal rotation at 90 degrees, resistance band standing external rotation at 90 degrees, resistance band standing internal rotation at 90 degrees *Motor control/Plyometrics* • 90/90 ball dribbles, over-head soccer throws, medicine ball chest pass, prone ball drops, standing ball drops, 90/90 over the shoulder eccentric catch and throw, body blade

Criteria to Progress	• No pain or tenderness
	• 5/5 shoulder strength
	• Satisfactory shoulder stability
	• Use Quick DASH and/or PENN shoulder scale
	• <u>Upper Extremity Functional Assessment</u>
	  • Full pain-free PROM and AROM
	  • Joint position sense < 5-degree margin of error
	  • Strength 85% of uninvolved arm with isokinetic testing or handheld dynamometer
	  • ER/IR ratio > 64%
	  • Scapular dyskinesis test symmetrical
	  • Functional performance and shoulder endurance tests > 85% of uninvolved arm
	  • Males > 21 taps; females > 23 taps on CKCUEST
	• <u>Additional UE Functional Tests</u>
	  • One-arm hop test
	  • Push-up test
	  • BABER

PHASE VII: UNRESTRICTED RETURN TO SPORT (6+ MONTHS AFTER SURGERY)

Rehabilitation Goals	• Maintain full pain-free ROM • Gradual return to strenuous work activities • Gradual return to recreational activities • Gradual return to sports activities

Additional Intervention **Continue with Phase II-VI interventions*	*Strengthening*
	  • 50% 1 RM bench press, progress slowly (coordinate with physician)
	  • See specific return-to-sport program (coordinate with physician)

Criteria to Progress	• 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

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