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REHABILITATION PROTOCOL: Total Shoulder Arthroplasty

This protocol is intended to guide clinicians and patients through the post-operative course after a total shoulder arthroplasty (TSA) and hemiarthroplasty. Specific interventions 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 Total Shoulder Arthroplasty and Hemiarthroplasty Rehabilitation Program
Many different factors influence the post-operative rehabilitation outcome, including surgical approach, concomitant repair of the rotator cuff, arthroplasty secondary to fracture, arthroplasty secondary to rheumatoid arthritis or osteonecrosis, and individual patient factors including co-morbidities. It is recommended that patients meet all rehabilitation criteria in order to progress to the next phase and clinicians collaborate closely with the referring physician throughout the rehabilitation process.

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, you should contact the referring physician.

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

Rehab Goals	▪ Protect surgical repair ▪ Reduce swelling, minimize pain ▪ Maintain UE ROM in elbow, hand and wrist ▪ Gradually increase shoulder PROM ▪ Minimize muscle inhibition ▪ Patient education
Sling	▪ Neutral rotation ▪ Wear sling during the day and at night for sleeping. ▪ Use of abduction pillow in 30-45 degrees of abduction.
Precautions	▪ No shoulder AROM ▪ No reaching behind back, especially in to internal rotation ▪ No excessive shoulder external rotation or abduction ▪ No lifting of objects ▪ No supporting of body weight with hands ▪ Place small pillow/towel roll under elbow while lying on back to avoid shoulder hyperextension
Interventions	**Swelling Management** ▪ Ice, compression **Range of motion/Mobility** ▪ PROM: ER ≤30 in scapular plane, IR to belt line in scapular plane, Flex/Scaption to tolerance, ABD ≤ 90 degrees, pendulums, seated GH flexion table slide, seated horizontal table slide ▪ AAROM: Active assisted shoulder flexion ▪ AROM: elbow, hand, wrist **Strengthening (Week 2)** ▪ Periscapular: scap retraction, prone scapular retraction, standing scapular setting, supported scapular setting, inferior glide, low row ▪ Ball squeeze
Criteria to Progress	▪ ≥50% shoulder PROM flex, scaption as compared to contralateral side ▪ ≤90 degrees of shoulder ABD PROM ▪ ≤30 degrees of shoulder ER PROM in scapular plane ▪ ≥70 degrees of IR PROM in scapular plane ▪ Palpable muscle contraction felt in scapular musculature ▪ Pain < 4/10 ▪ No complications with Phase I

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

Rehab Goals	▪ Continue to protect surgical repair ▪ Reduce swelling, minimize pain ▪ Gradually increase shoulder PROM ▪ Minimize substitution patterns with AROM and AAROM ▪ Improve periscapular muscle activation/strength ▪ Initiate RTC (external rotators) activation ▪ Patient education
Sling	▪ Neutral rotation ▪ Use of abduction pillow in 30-45 degrees abduction ▪ Use at night while sleeping ▪ Gradually start weaning sling over the next two weeks during the day
Precautions	▪ No excessive shoulder external rotation or abduction ▪ No lifting of objects heavier than a coffee cup ▪ No supporting of body weight with hands ▪ Place small pillow/towel roll under elbow while lying on back to avoid shoulder hyperextension
Interventions *Continue with Phase I interventions	**Range of Motion/Mobility** ▪ PROM: Full with exception of ER ≤30 degrees in scapular plane and abduction ≤90 ▪ AAROM: shoulder flexion with cane, cane external rotation stretch, washcloth press, seated shoulder elevation with cane ▪ AROM: supine flexion, salutes, supine punch **Strengthening** ▪ Rotator cuff: external rotation isometrics ▪ Periscapular: Row on physioball, shoulder extension on physioball ▪ Elbow: Biceps curl, resistance band bicep curls and triceps ▪ Motor control ▪ ER in scaption and Flex 90-125 (rhythmic stabilization) **Stretching** ▪ Side lying horizontal ADD
Criteria to Progress	▪ ≥75% shoulder PROM flex, scaption, as compared to contralateral side ▪ ≥75% shoulder PROM IR in scapular plane as compared to contralateral side ▪ 30 degrees of shoulder PROM ER in scapular plane ▪ 90 degrees of shoulder PROM ABD ▪ Minimal substitution patterns with AAROM ▪ AROM shoulder elevation to 100 degrees with minimal substitution patterns ▪ Pain < 4/10 ▪ No complications with Phase II

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PHASE III: INTERMEDIATE POSTOP CONTINUED (7-8 WEEKS AFTER SURGERY)

Rehab Goals	▪ Do not overstress healing tissue ▪ Minimize pain ▪ Maintain PROM ▪ Improve AROM ▪ Progress periscapular and RTC strength ▪ Return to full functional activities ▪ Patient education
Sling	▪ Discontinue
Precautions	▪ No lifting of heavy objects (>10 lbs)
Additional Interventions *Continue with Phase I-II Interventions	**Range of Motion/Mobility** ▪ PROM: Full ROM in all planes ▪ AAROM: seated incline table slides, ball roll on wall, wall climbs, pulleys ▪ AROM: : seated scaption, seated flexion, supine forward elevation with elastic resistance to 90 deg **Strengthening** ▪ Rotator cuff: internal rotation isometrics, side-lying external rotation ▪ Standing external rotation w/ resistance band, standing internal rotation w/ resistance band, internal rotation, external rotation, ▪ Periscapular: Resistance band shoulder extension, resistance band seated rows, rowing, lawn mowers, robbery **Motor control** ▪ IR/ER and Flex 90-125 (rhythmic stabilization) ▪ Quadruped alternating isometrics and ball stabilization on wall ▪ PNF-D1 diagonal lifts, PNF-D2 diagonal lifts **Stretching** ▪ IR behind back with towel, side lying horizontal ADD, sleeper stretch, triceps and lats
Criteria to Progress	▪ Minimal to no substitution patterns with shoulder AROM ▪ Pain < 4/10

PHASE IV: TRANSITIONAL POSTOP (9-11 WEEKS AFTER SURGERY)

Rehab Goals	▪ Do not overstress healing tissue ▪ Maintain pain-free PROM ▪ Continue improving AROM ▪ Improve dynamic shoulder stability

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	▪ Gradually restore shoulder strength and endurance
Precautions	▪ No lifting of heavy objects (> 10 lbs) ▪ Avoid exercises that put stress on the anterior shoulder capsule (ie: shoulder ER above 80 degrees of ABD)
Additional Interventions *Continue with Phase I-III interventions	**Range of Motion/Mobility** ▪ Full ROM in all planes **Strengthening** ▪ Rotator cuff: increase resistance rotator cuff exercise ▪ Periscapular: Push-up plus on knees, "W" exercise, resistance band Ws, dynamic hug, resistance band dynamic hug, prone shoulder extension Is, resistance band forward punch, forward punch, tripod, pointer **Motor control** ▪ Resistance band PNF pattern, PNF – D1 diagonal lifts w/ resistance, diagonal-up, diagonal-down Wall slides w/ resistance band
Criteria to Progress	▪ Supine AROM Flex ≥ 140 degrees ▪ Supine AROM ABD ≥ 120 degrees ▪ Supine AROM ER in scapular plane ≥ 60 degrees ▪ Supine AROM IR in scapular plane ≥ 70 degrees ▪ 120 degrees shoulder AROM elevation ▪ Minimal to no substitution patterns with shoulder AROM ▪ Performs all exercises demonstrating symmetric scapular mechanics ▪ Pain < 2/10

PHASE V: ADVANCED STRTENGTHENING POSTOP (12-16 WEEKS AFTER SURGERY)

Rehab Goals	▪ Maintain pain-free ROM ▪ Improve shoulder strength and endurance ▪ Enhance functional use of upper extremity
Additional Interventions *Continue with Phase II-IV interventions	**Range of motion/mobility** ▪ Rotator cuff: 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 ▪ Periscapular: T and Y, "T" exercise, push-up plus knees extended, wall push up **Motor Control** ▪ Progress ball stabilization on wall to overhead alternating isometrics/rhythmic stabilization
Criteria to Progress	▪ Clearance from MD and ALL milestone criteria have been met ▪ Maintains pain-free PROM and AROM ▪ Performs all exercises demonstrating symmetric scapular mechanics

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	▪ QuickDASH ▪ PENN
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.

**Acknowledgement: This rehab protocol was largely adopted from the protocols at MGH Sports Medicine Physical Therapy, which can be found at https://www.massgeneral.org/orthopaedics/sports-medicine/physical-therapy/sports-rehab-protocols*