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REHABILITATION PROTOCOL: Reverse Total Shoulder Arthroplasty

This protocol is intended to guide clinicians and patients through the post-operative course after a reverse 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 Reverse Total Shoulder Arthroplasty 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 or AAROM ▪ No shoulder PROM in to IR ▪ 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: None ▪ AROM: elbow, hand, wrist
Criteria to Progress	▪ Gradual increase in shoulder PROM ▪ 0 degrees shoulder PROM in to IR ▪ Palpable muscle contraction felt in scapular musculature ▪ Pain < 4/10 ▪ No complications with Phase I

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 ▪ Initiate shoulder AAROM/AROM ▪ Initiate periscapular muscle activation

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	▪ Initiate deltoid activation (avoid shoulder extension when activating posterior deltoid) ▪ 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 reaching behind back, especially in to internal rotation ▪ 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** ▪ AAROM: active assistive shoulder flexion, shoulder flexion with cane, cane external rotation stretch, washcloth press, seated shoulder elevation with cane ▪ AROM: supine flexion, salutes, supine punch **Strengthening** ▪ Periscapular: scap retraction, prone scapular retraction, standing scapular setting, supported scapular setting, inferior glide ▪ Deltoid: isometrics in the scapular plane
Criteria to Progress	▪ Gradual increase in shoulder PROM, AAROM, AROM ▪ 0 degrees shoulder PROM in to IR ▪ Palpable muscle contraction felt in scapular musculature ▪ Pain < 4/10 ▪ No complications with Phase II

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

Rehab Goals	▪ Minimize pain ▪ Gradually progress shoulder PROM, initiate shoulder PROM IR in the scapular plane ▪ Gradually progress shoulder AAROM ▪ Gradually progress shoulder AROM ▪ Progress deltoid strengthening ▪ Progress periscapular strengthening ▪ Initiate motor control exercise ▪ Patient education
Sling	▪ Discontinue
Precautions	▪ No reaching behind back beyond pant pocket ▪ No lifting of objects heavier than a coffee cup ▪ No supporting of body weight with hands

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	▪ Avoid shoulder hyperextension
Additional Interventions *Continue with Phase I-II Interventions	**Range of Motion/Mobility** ▪ PROM: Full ROM in all planes, gradual PROM IR in scapular plane ≤ 50 degrees ▪ AAROM: incline table slides, wall climbs, pulleys, seated shoulder elevation with cane with active lowering ▪ AROM: seated scaption, seated flexion, supine forward elevation with elastic resistance to 90 deg **Strengthening** ▪ Periscapular: Row on physioball, serratus punches ▪ Deltoid: seated shoulder elevation with cane, seated shoulder elevation with cane with active lowering, ball roll on wall **Motor control** ▪ IR/ER in scaption plane and Flex 90-125 (rhythmic stabilization) in supine **Stretching** ▪ Side lying horizontal ADD, triceps and lats
Criteria to Progress	▪ ROM goals**: ○ Elevation ≤ 140 degrees ○ ER ≤ 30 degrees in neutral ○ IR ≤ 50 degrees in scapular plane or back pocket ○ **PROM and AROM expectations are individualized and dependent upon ROM measurements attained in the OR post-operatively ▪ Minimal to no substitution patterns with shoulder AROM ▪ Pain < 4/10

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

Rehab Goals	▪ Maintain pain-free ROM ▪ Progress periscapular strengthening ▪ Progress deltoid strengthening ▪ Progress motor control exercise ▪ Improve dynamic shoulder stability ▪ Gradually restore shoulder strength and endurance ▪ Return to full functional activities
Precautions	▪ No lifting of heavy objects (> 10 lbs)
Additional Interventions *Continue with	**Range of Motion/Mobility** ▪ PROM: Full ROM in all planes **Strengthening**

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Phase I-III interventions	▪ Periscapular: Resistance band shoulder extension, resistance band seated rows, rowing, robbery, lawnmowers, tripod, pointer ▪ Deltoid: gradually add resistance with deltoid exercise **Motor control** ▪ IR/ER and Flex 90-125 (rhythmic stabilization) ▪ Quadruped alternating isometrics and ball stabilization on wall ▪ Field goals ▪ PNF – D1 diagonal lifts, PNF – D2 diagonal lifts
Criteria to Progress	▪ 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 ▪ Initiate RTC strengthening with a concomitant repair ▪ Improve shoulder strength and endurance ▪ Enhance functional use of upper extremity
Additional Interventions *Continue with Phase II-IV interventions	**Strengthening** ▪ Periscapular: Push-up plus on knees, "W" exercise, resistance band Ws, prone shoulder extension Is, dynamic hug, resistance band dynamic hug, resistance band forward punch, forward punch, T and Y, "T" exercise ▪ Deltoid: continue gradually increasing resisted flexion and scaption in functional positions ▪ Elbow: Bicep curl, resistance band bicep curls, and triceps ▪ Rotator cuff: internal external rotation isometrics, side-lying external rotation, standing external rotation w/ resistance band, standing internal rotation w/ resistance band, internal rotation, external rotation, sidelying ABD → standing ABD **Motor Control** ▪ Resistance band PNF pattern, PNF – D1 diagonal lifts w/ resistance, diagonal-up, diagonal-down, wall slides w/ resistance band
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 ▪ QuickDASH ▪ PENN

**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*