**Reverse Total Shoulder Arthroplasty**

**Rehabilitation Protocol**

Reverse total shoulder arthroplasty is designed for the treatment of three different shoulder conditions: (1) glenohumeral osteoarthritis in the presence of an irreparable rotator cuff, (2) complex fractures, or (3) failed conventional total shoulder arthroplasty with deficient rotator cuff tendons. A reverse total shoulder arthroplasty works by replacing the glenoid (socket) with a glenosphere (ball), and replacing the humeral head (ball) with a concave cup (socket). This change alters the biomechanics of the shoulder allowing the deltoid muscle to compensate for a deficient rotator cuff and become the primary elevator of the shoulder joint. This prosthesis is different than the conventional total shoulder arthroplasty and therefore requires a slightly modified postoperative plan. ***It is critical that the patient avoid putting the arm in adduction and internal rotation in conjunction with extension (tucking in a shirt, lifting oneself off the toilet, bathroom/personal hygiene) as this position greatly increases the risk of dislocation*.** These precautions are implemented for 12 weeks postoperatively. Below is a protocol that addresses these precautions and should be used as a guideline for patients who have undergone a reverse total shoulder arthroplasty.

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**PHASE 1 (Week 0-6):**

Goals*:*

* Protection of prosthesis and Subscapularis repair: NO active internal rotation, NO external rotation past 0 degrees
* Passive range of motion (PROM) of shoulder
* Active range of motion (AROM) of elbow, wrist, hand
* Development of Home Exercise Program (HEP)
* Independent with activities of daily living (ADL’s) with modification
* Cryotherapy
* Pain and inflammation control

*Week 0-3:*

* PROM in supine position
  + Forward flexion and elevation in the scapular plane to 90 degrees
* Periscapular sub-maximal pain-free isometrics in scapular plane
* Sub-maximal pain-free deltoid isometrics in the scapular plane
* AROM/AAROM of elbow, wrist, and hand
* Pendulums

*Week 3-6:*

* PROM in supine position
  + Forward flexion and elevation in the scapular plane to 120 degrees
  + ER in scapular plane to 30 degrees
* If tolerated, AAROM with pulleys in supine position in scapular plane
  + Forward Flexion to 130
  + External Rotation to 30
* Gentle resisted exercise of elbow, wrist, and hand

In order to progress to phase II, the patient must be able to:

1. Tolerate PROM of shoulder
2. AROM of elbow, wrist, and hand
3. Isometrically activate all components of the deltoid and periscapular musculature in the scapular plane.

**PHASE 2: (Week 6-12):**

Goals:

* Discontinue sling at 6 weeks. Should still be worn in public/crowded areas
* Restrict lifting of objects to no heavier than a coffee cup
* Gradually restore AROM
* Re-establish dynamic shoulder and scapular stability
* Strengthen rotator cuff and shoulder musculature (Isometrics, Theraband, dumbbell) AVOID resisted IR and hyperextension during phase 2.
* Limit sudden increases of deltoid activity to avoid acromion stress and fracture, this should be gradual and pain-free

*Week 6-9:*

* Continue working on shoulder PROM
  + OK to start PROM internal rotation to tolerance (not to exceed 50 degrees)
* Begin AAROM/AROM as appropriate if not already done so
  + Forward flexion, elevation, IR, ER (limit of 30 degrees) in scapular plane in supine with progression to sitting/standing
* Progress strengthening of elbow, wrist, hand
* Scapular stabilizer strengthening. Minimize deltoid recruitment during all exercise

*Week 10-12:*

* Continue with above exercises and functional activity progression
* Begin gentle glenohumeral IR and ER isometrics with progression to sidelying position with light weight (1-3lbs)
* Begin periscapular and deltoid isometrics
* Forward Flexion AROM strengthening in the scapular plane (1-3lbs) at varying degrees of trunk elevation

In order to progress to phase III, the patient must be able to:

1. Improving function of shoulder
2. Patient can isotonically activate the deltoid and periscapular muscles and is gaining strength

**PHASE 3: (Week 12+):**

Goals:

* Enhance shoulder mechanics, strength, and endurance
* Enhance functional use

*Week 12-16:*

* Continue with previous exercises
* Progress to resisted flexion, elevation while standing
* Incorporate low level functional activities (swimming, water aerobics, jogging)

**PHASE 4: (4 months post-op):**

Goals:

* Continue strengthening shoulder musculature
* Progression toward a return to functional and recreational activities
* *Typically, the patient is on a home exercise program 3-4x/week*

*Week 16+:*

* Continue with previous exercise and strength training
* Start higher level activities (tennis, light weight training, golf)
* Initiate functional progression to sports specific activities

***Criteria for discharge from skilled therapy:***

1. Pain free shoulder AROM with proper shoulder mechanics

(80-120 degrees of elevation with functional ER of about 30 degrees)

1. Can complete light household and work activities