



**Dr. John Awowale, MD**

## **Total Shoulder or Reverse Arthroplasty Protocol**

### **Phase 1 – Maximum Protection (0-6 weeks)**

#### **Goals for phase 1**

- Minimize pain and inflammation
- Protect integrity of the repair
- Initiate shoulder PROM
- Prevent muscular inhibition

#### **Precautions**

- Check op note- if subscapularis repair or reverse arthroplasty, no forced passive or active assist IR for 12 weeks

#### **Criteria for progression to Phase 2**

- Minimal pain with Phase 1 exercises
- Passive shoulder flexion  $\geq 110^\circ$
- Passive shoulder abduction  $\geq 60^\circ$
- Passive shoulder internal and external rotation at  $45^\circ$  abduction in scapular plane to  $45^\circ$  each

#### **Immobilization**

- Sling immobilization with abduction pillow for 6 weeks except for bathing and therapeutic exercises as provided at prehab visit.

#### **Initial Post-op Exercises**

- Elbow, forearm, wrist, hand (grip) AROM exercises; pendulum (Codman's) exercise; scapular squeezes; upper trapezius stretching; postural correction.
- Remove ABD sling 3 times per day for performance of home exercise program

#### **Post-op Physical/Occupational Therapy**

- **1<sup>st</sup> therapy visit to occur 4 weeks post-op**
  - Therapy 2-3 times per week to start at 4 weeks. If not able to obtain ROM as stated, please provide progress note for review and update for ortho at 6 weeks and 12 weeks.
  - Ensure appropriate fit of sling and reinforce on proper use
  - Review initial post-operative exercises and reinforce on proper performance
  - PROM check performed
    - Goal  $90^\circ$  FLEX,  $60^\circ$  ABD,  $30^\circ$  IR and ER at  $45^\circ$  ABD
    - Limit  $120^\circ$  FLEX,  $90^\circ$  ABD,  $45^\circ$  IR and ER at  $45^\circ$  ABD (limit ER to  $30^\circ$  if therapy were to start before week 4)

#### **Manual Therapy**

- Initiate pain dominant glenohumeral joint mobilization (grade 1-2)
- Initiate scar mobilization, soft tissue mobilization, lymphedema massage
- Initiate other shoulder, scapular, and cervicothoracic manual therapy techniques, as needed

#### **PROM**

- Initiate manual shoulder PROM in all planes of motion within limitations
  - Limit  $120^\circ$  FLEX,  $90^\circ$  ABD,  $45^\circ$  IR and ER at  $45^\circ$  ABD
  - Avoid sustained end range stretching

#### **AAROM**

- Initiate shoulder ER AAROM with wand at  $45^\circ$  ABD
  - Limit to  $45^\circ$  ER
- Initiate shoulder FLEX and ABD AAROM
  - Table slides, U.E. Ranger, physio-ball, wand, etc.
  - Avoid pulleys

#### **Modalities**

- Utilize cryotherapy, thermotherapy, and electrical modalities, as needed



## Phase 2 – Active Range of Motion (6-12 weeks)

### Goals for Phase 2

- Minimize pain and inflammation
- Restore full shoulder PROM
- Restore full shoulder AROM
- Initiate sub-maximal rotator cuff activation and neurodynamic stabilization exercises
  - No shoulder shrug sign with elevation AROM

### Precautions

- Continue Phase 1 precautions- if subscapularis repair or reverse arthroplasty, no forced passive or active assist IR for 12 weeks.

### Criteria for Progression to Phase 3

- Minimal pain with Phase 2 exercises
- Full shoulder PROM with minimal pain
- Full shoulder AROM with minimal pain
- Demonstrate neurodynamic stabilization of the shoulder
- No evidence of shoulder shrug with elevation AROM

### Manual Therapy

- Continue pain dominant glenohumeral joint mobilization (grade 1-2), as needed
- Initiate stiffness dominant glenohumeral joint mobilization (grade 3-4), as needed
  - Utilize stiffness dominant glenohumeral joint mobilization (grade 3-4) to facilitate specific AROM and PROM deficits
- Continue scar mobilization, soft tissue mobilization, lymph edema massage, as needed
- Continue other shoulder, scapular, and cervicothoracic manual therapy techniques, as needed

### PROM

- Continue manual shoulder PROM, as tolerated, with consideration for surgical precautions.
  - Initiate sustained end range stretching with consideration for surgical precautions
  - No forced passive or active assisted IR with subscapularis repair or reverse arthroplasty

### AAROM

- Continue shoulder ER AAROM with wand at 45° ABD
  - Progress from 45° to 60° to 90° ABD
- Continue shoulder FLEX and ABD AAROM
  - Table slides, wall slides, U.E. Ranger, physio-ball, wand, pulleys, etc.

### AROM

- Initiate shoulder AROM in all planes of motion as tolerated
  - Gradually progress from gravity reduced to full gravity positions
  - Gradually progress from below shoulder height to above shoulder height
  - Consider single-planar and multi-planar movement patterns
- Do **NOT** exercise through shoulder shrug sign

### Strengthening

- Initiate sub-maximal shoulder isometrics for FLEX, ABD, EXT, IR, and ER
- Initiate light isotonic scapular strengthening
  - supine press, serratus press outs, prone row, etc.
- Initiate light isotonic biceps and triceps strengthening
- Initiate sub-body weight closed-chain strengthening exercises
  - Wall press outs, countertop press outs, etc.
- Avoid sub-body weight suspension training exercises
  - TRX, GTS, assisted chin or dip machine, etc.
  - Do **NOT** exercise through shoulder shrug sign

### Aquatics

- Utilize aquatics for patients who are significantly painful, stiff, or guarded
  - Initiate when surgical incisions have healed
  - Initiate buoyancy assisted ROM exercises within limitations
  - Consider alternating land- and aquatic-based physical therapy visits

### Neuromuscular Control

- Initiate sub-maximal rhythmic stabilization drills
  - Gradually progress shoulder FLEX from 100° to 90° to 60° to 30°
  - Gradually progress shoulder IR and ER from 30° to 60° to 90° ABD

### NMES

- Utilize NMES to facilitate rotator cuff and scapular activation and strengthening



**Modalities**

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

## Phase 3 – Strengthening (12+ weeks)

**Goals for Phase 3**

- Minimize pain and inflammation
- Maintain full shoulder PROM and AROM
- Improve shoulder, scapular, and total arm strength
- Improve neurodynamic stabilization of the shoulder
- No shoulder shrug sign with strengthening exercises

**Criteria for Progression to Phase 4**

- Minimal pain with Phase 3 exercises
- Full, pain free shoulder PROM and AROM
- Shoulder, scapular, and total arm strength  $\geq$  80% of the uninvolved side (4/5)

**Manual Therapy**

- Continue stiffness dominant glenohumeral joint mobilization (grade 3-4), as needed
- Continue other shoulder, scapular, and cervicothoracic manual therapy techniques, as needed

**PROM**

- Continue manual shoulder PROM and stretching, as needed
- For subscapularis repair or reverse arthroplasty, initiate IR PROM and stretch, as needed

**Strengthening**

- Initiate gradual progression of isotonic rotator cuff strengthening exercises
  - Gradually progress from gravity reduced to full gravity positions
  - Gradually progress from below shoulder height to above shoulder height
  - Gradually progress internal and external rotation from 30° to 60° to 90° abduction and from supported to unsupported conditions
  - Consider single-planar and multi-planar movement patterns
- Progress isotonic scapular strengthening exercises
  - Progress from isolated to functional movement patterns
  - Progress isotonic biceps and triceps strengthening exercises
    - Progress from isolated to functional movement patterns
- Progress closed-chain strengthening exercises
  - Gradually progress from sub-body weight to full body weight positions
  - Gradually progress from stable to unstable surfaces
  - Do **NOT** exercise through shoulder shrug sign

**Neuromuscular Control**

- Progress rhythmic stabilization exercises to more functional positions and dynamic movement patterns
  - Gradually progress from mid-range to end range positions
  - Gradually progress from open-chain to closed-chain positions
- Initiate gradual progression of other neuromuscular control exercises
  - Body blade, wall dribbles, ball flips, plyo-back, etc.

**Core Stabilization**

- Incorporate core integrated exercises with strengthening and neuromuscular control progression

**NMES**

- Utilize NMES to facilitate rotator cuff and scapular activation and strengthening

**Modalities**

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed



## Phase 4 – Return to Activity (18+ weeks)

### Goals for Phase 4

- Minimize pain and inflammation
- Maintain full shoulder PROM and AROM
- Restore shoulder, scapular, and total arm strength, power, and endurance
- Restore neurodynamic stabilization of the shoulder
- Safe and effective return to previous level of function for occupational, sport, or desired activities

### Criteria for Return to Activity

- Minimal pain with phase 4 exercises
- Full, pain free shoulder PROM and AROM
- Shoulder, scapular, and total arm strength  $\geq$  90% of the uninvolved side (4+/5)

### OR

- Demonstrate neurodynamic stabilization of the shoulder
- Successful completion of functional capacity evaluation if physical laborer
- Quick Disability Arm Shoulder Hand Index score  $\leq$  15% disability

### Manual Therapy

- Continue stiffness dominant glenohumeral joint mobilization (grade 3-4), as needed
- Continue other shoulder, scapular, and cervicothoracic manual therapy techniques, as needed

### PROM

- Continue manual shoulder PROM and stretching, as needed

### Strengthening

- Continue Phase 3 strengthening exercises
- Consider specific demands of occupational, sport, or desired activities

### Neuromuscular Control

- Continue Phase 3 neuromuscular control exercises
- Consider specific demands of occupational, sport, or desired activities

### Core Stabilization

- Continue incorporate core integrated exercises with strengthening and neuromuscular control progression

### Weight Lifting

- Initiate traditional weight-lifting exercises
  - Educate patient to strengthen prime movers **AND** secondary stabilizers
  - Educate patient to balance anterior **AND** posterior musculature

### Work Specialty Rehabilitation Program

- Transition to work re-conditioning if physical laborer
- Transition to work re-conditioning if specific occupational demands
  - Lifting requirements, overhead tasks, repetitive tasks, tool or machine work, etc.

### Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities, as needed

### HEP

- Establish HEP for long-term self-management