وزارة الصحة
Ministry of Health

Rehabilitation Protocol for

"Total Shoulder Arthroplasty Rehabilitation Protocol"

Kingdom of Saudi Arabia

Ministry of Health

General Directorate of Medical Rehabilitation & Long-Term Care

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Rehabilitation Protocol for Total Shoulder Arthroplasty

Overview.

Total shoulder arthroplasty (TSA) is a common treatment for patients with advanced joint issues who experience persistent pain and loss of function despite conservative management. These issues include osteoarthritis (OA), rheumatoid arthritis (RA), cuff tear arthropathy, osteonecrosis, and humeral head fractures[1]. Many factors influence TSA post-operative rehabilitation outcome, including surgical approach, associated soft tissue reconstruction, arthroplasty secondary to fracture, arthroplasty secondary to rheumatoid arthritis or osteonecrosis, and individual patient factors including co-morbidities [2]. The overall outcomes reported after surgical intervention are quite good and appear to be primarily determined by the underlying pathology and the tissue quality of the rotator cuff. [3] Physical therapy departments in Saudi Arabia, seldom apply protocol-based treatment approaches towards patients. Many hospitals nationwide don't have a well-defined rehabilitation protocol for patients undergoing TSA. Physical therapists utilize their experience and treatment approaches which are not always evidence-based, while formulating and implementing the treatment plan for a patient. The rationale behind a treatment plan must be scientific and sourced from evidence-based literature to ensure an appropriate prognosis for the patient. Failure to do so may lead to additional complications and an undesired prognosis for the patient. This paper aims to guide clinicians and patients through the post-operative course after a total shoulder arthroplasty (TSA), to provide an effective postoperative plan of care, which should allow patients to reach their maximum functional recovery.

Recommendation.

1- Patients should meet all rehabilitation criteria to progress to the next phase .

2- Clinicians collaborate closely with the referring physician throughout the rehabilitation process.

3- Contact the referring physician, If the patient develops a fever, unresolving numbness/tingling, excessive drainage from the incision, uncontrolled pain, or unexpected symptoms.[3]

4- The physical therapist should complete the following Arabic or English outcome measures pre-treatment, every 30 days and before discharge from physical therapy:

- DASH or Quick DASH.[4]
- The Simple Shoulder Test (SST).

PHASE I: IMMEDIATE POST-SURGICAL PHASE (0-3 WEEKS).

Rehabilitation Goals	• Protect surgical site and integrity of a replaced joint. • Gradually increase passive range of motion (PROM). • Maintain (AROM) of elbow/wrist/hand. • Reduce pain, swelling, and inflammation. • Decrease muscular inhibition. • Independence with activities of daily living (ADLs) with modifications. • Patient Education.
Sling	• Sling should be worn continuously for 3 to 4 weeks. • Use it at night while sleeping.
Precautions	• No shoulder AROM.

	• No reaching behind back, especially into internal rotation. • No excessive shoulder external rotation or abduction. • No lifting of objects. • No supporting of body weight with hands. • Place a small pillow/towel roll under the elbow while lying on back to avoid shoulder hyperextension. • No soaking for 2 weeks. • No driving for 3 weeks.
Intervention	*Swelling Management* • Ice, compression. *Range of Motion/Mobility* • PROM: ER no more than 30° in the scapular plane, IR to belt line in the scapular plane, Flex/Scaption to tolerance, Abduction no more than 90°, pendulums, seated GH flexion table slide, seated horizontal table slide. • AAROM: Active assistive 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.
Progression criteria	• Tolerates PROM program.

	• Achieves the following PROM: ▪ 90° flexion. ▪ 90° abduction. ▪ 45° ER in plane of scapula. ▪ 70° IR in plane of scapula measured at 30° of abduction. • NPRS < 4/10.

PHASE II: EARLY STRENGTHENING PHASE (4 – 6 WEEKS).

Rehabilitation Goals	• Restore full PROM. • Gradually restore active motion. • Control pain, swelling and inflammation. • Allow soft tissue healing by not overstress healing tissue. • Re-establish dynamic shoulder stability.
Sling	• Slinging should only be used for sleeping and removed gradually over the next 2 weeks during the day.
Precautions	• While lying supine, a small pillow or towel should be placed behind the elbow to avoid shoulder hyperextension/anterior capsule stretch. • In the presence of poor shoulder mechanics avoid repetitive shoulder AROM exercises/activity against gravity in standing. • No heavy lifting of objects (no heavier than a coffee cup).

	• No supporting of body weight by hand on the involved side. • No sudden jerking motions.
Intervention	*Range of Motion/Mobility* • PROM: Full of exception of ER </= 30 ° in scapular plane and </= 90° ABD. • AAROM: shoulder flexion with a cane, cane external rotation stretches, washcloth press, seated shoulder elevation with a cane. • AROM: supine flexion, salutes, supine punch. *Strengthening* • Rotator cuff: external rotation isometrics. • Periscapular: Row on a physioball, serratus punches. • 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.
Progression criteria	• NPRS < 4/10.. • PROM:

	▪ 75% shoulder flex in scapular plane as compared to contralateral side. ▪ 75% shoulder IR in scapular plane as compared to contralateral side. ▪ 30 ° of shoulder ER in scapular plane. ▪ 90 ° of shoulder ABD. ▪ Minimal substitution patterns with AAROM. ▪ 100 ° of active shoulder elevation with minimal substitution patterns. ▪ No complications.

PHASE III: LATE STRENGTHENING PHASE (7 – 8 WEEKS).

Rehabilitation Goals	• Do not overstress healing tissue (especially the anterior capsule). • Minimize pain. • Maintain PROM. • Improve AROM. • Progress periscapular and RTC strength. • Return to full functional activities. • Patient Education.
Sling	• No sling needed.
Precautions	• No lifting of heavy objects (>5 kg).

Intervention	*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. *Motor control* • IR/ER and Flex 90° -125° (rhythmic stabilization). • Quadruped alternating isometrics and ball stabilization on the wall. • PNF-D1 diagonal lifts, PNF-D2 diagonal lifts. *Stretching* IR behind back with a towel, side-lying horizontal ADD, sleeper stretch, triceps, and lats.
Progression criteria	• Minimal to no substitution patterns with shoulder AROM. • NPRS < 4.

PHASE IV: TRANSITIONAL POST-OP (9 - 11 WEEKS).

Rehabilitation Goals	• Do not overstress healing tissue (especially the anterior capsule). • Maintain pain-free PROM. • Continue improving AROM. • Improve dynamic shoulder stability. • Gradually restore shoulder strength and endurance.
Precautions	• No lifting of heavy objects (>5 kg).

	• Avoid exercises that put stress on the anterior shoulder capsule (ie: shoulder ER above 80° of ABD).
Intervention	*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, dynamic hug, resistance band dynamic hug, prone shoulder extension ls, resistance band forward punch, forward punch, tripod, pointer. *Motor control* ✔ Resistance band PNF pattern, PNF – D1 diagonal lifts w/ resistance, diagonal-up, diagonal-down all slides w/ resistance band.
Progression criteria	• Supine AROM Flex >/=140 °. • Supine AROM ABD >/=120 °. • Supine AROM ER in scapular plane >/= 60 °. • Supine AROM IR in scapular plane >/= 70 °. • AROM shoulder elevation to 120 ° with minimal substitution patterns. • Performs all exercises demonstrating symmetric scapular mechanics. • NPRS < 2/10.

PHASE V: ADVANCED STRENGTHENING POST-OP (12 – 16 WEEKS).

Rehabilitation Goals	• Maintain pain-free ROM. • Improve shoulder strength and endurance. • Enhance functional use of upper extremity.
Intervention	*Strengthening* • Rotator cuff: External rotation at 90 °, internal rotation at 90 °, resistance band standing external rotation at 90 °, resistance band standing internal rotation at 90 °. • Periscapular: T and Y, "T" exercise, push-up plus knees extended, wall push-up. • *Motor Control* • Progress ball stabilization on a wall to overhead alternating isometrics/rhythmic stabilization.
Progression criteria	• Clearance from MD and ALL milestone criteria have been met. • Maintains pain-free PROM and AROM. • Performs all exercises demonstrating symmetric scapular mechanics. • Quick DASH. • SST.
Precautions	• 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.

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Approval: Total Shoulder Arthroplasty Rehabilitation Protocol

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