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Reverse Total Shoulder Arthroplasty Protocol:

The intent of this protocol is to provide the clinician with a guideline of the postoperative rehabilitation course of a patient that has undergone a Reverse Total Shoulder Arthroplasty (RTSA). It is not intended to be a substitute for appropriate clinical decision-making regarding the progression of a patient's postoperative course. The actual post-surgical physical therapy management must be based on the surgical approach, physical exam/findings, individual progress, and/or the presence of postoperative complications. If a clinician requires assistance in the progression of a patient post-surgery, they should consult with Dr. Fullick.

Please Note:
The rotator cuff is either absent or minimally involved with the rTSA; therefore, the rehabilitation for a patient following the rTSA is different than the rehabilitation following a traditional TSA. The surgeon, physical therapist and patient need to take this into consideration when establishing the postoperative treatment plan.

Important rehabilitation management concepts to consider for a postoperative physical therapy rTSA program are:

- **Joint protection: There is a higher risk of shoulder dislocation following rTSA than a conventional TSA.**
    - Avoidance of shoulder extension past neutral and the combination of shoulder adduction and internal rotation should be avoided for 12 weeks postoperatively.
    - Patients with rTSA don't dislocate with the arm in abduction and external rotation. They typically dislocate with the arm in internal rotation and adduction in conjunction with extension. As such, tucking in a shirt or performing bathroom / persona hygiene with the operative arm is an especially dangerous activity particularly in the immediate peri-operative phase.
- Deltoid function: Stability and mobility of the shoulder joint is now dependent upon the deltoid and periscapular musculature. This concept becomes the foundation for the postoperative physical therapy management for a patient that has undergone rTSA.

Surgical Considerations:

Those patients with a concomitant repair of a rotator cuff tear and/or a TSA/HHR secondary to fracture should be progressed to the nest phase based on meeting the clinical Criteria (not based on the post-op time frames) as appropriate in collaboration with Dr. Fullick.

The surgical approach needs to be considered when devising the postoperative plan of care.

- Traditionally rTSA procedure is done via a typical deltopectoral approach, which minimizes surgical trauma to the anterior deltoid.
- Some surgeons perform this procedure via a superior approach, retracting the anterior deltoid from the anterior lateral one third of the clavicle. This allows for superior exposure to the GH joint between the retracted anterior deltoid and the clavicle. Upon surgical closure the anterior deltoid is sutured back to its anatomical location. In these cases early deltoid activity is contraindicated. We recommend a variation of the below protocol for patients who have had a superior approach. Patient's should use a sling for 4-6 weeks, not to begin deltoid isometrics for at least four weeks postoperatively, not to begin active range of motion (AROM) flexion for at least six weeks, and not begin deltoid strengthening for at least 12 weeks post operatively.
- **The start of this protocol is delayed 3-4 weeks following rTSA for a revision and/or in the presence of poor bone stock based on the surgeon's assessment of the integrity of the surgical repair.**

Phase I – Immediate Post-Surgical (0-4 weeks):

Goals:

- Patient and family independent with:
- Joint protection
- Passive range of motion (PROM)
- Assisting with putting on/taking off sling and clothing
- Assisting with home exercise program (HEP)
- Cryotherapy
- Promote healing of soft tissue / maintain the integrity of the replaced joint.
- Enhance PROM.
- Restore active range of motion (AROM) of elbow/wrist/hand.
- Independent with activities of daily living (ADL's) with modifications.
- Independent with bed mobility, transfers and ambulation or as per pre-admission status.

Precautions:
• Sling is worn for 3-4 weeks postoperatively and only removed for exercise and bathing once able. The use of a sling often may be extended for a total of 6 weeks, if the current rTSA procedure is a revision surgery.
• While lying supine, the distal humerus / elbow should be supported by a pillow or towel roll to avoid shoulder extension. Patients should be advised to "always be able to visualize their elbow while lying supine."
• No shoulder AROM.
• No lifting of objects with operative extremity.
• No supporting of body weight with involved extremity.
• Keep incision clean and dry (no soaking/wetting for 2 weeks); No whirlpool, Jacuzzi, ocean/lake wading for 4 weeks.
Acute Care Therapy (Day 1 to 4):
• Begin PROM in supine after complete resolution of interscalene block.

o Forward flexion and elevation in the scapular plane in supine to 90 degrees.
o External rotation (ER) in scapular plane to available ROM as indicated by operative findings. Typically around 20-30 degrees.
o No Internal Rotation (IR) range of motion (ROM).
• Active/Active Assisted ROM (A/AAROM) of cervical spine, elbow, wrist, and hand.
• Begin periscapular sub-maximal pain-free isometrics in the scapular plane.
• Continuous cryotherapy for first 72 hours postoperatively, then frequent application (4-5 times a day for about 20 minutes).
• Insure patient is independent in bed mobility, transfers and ambulation
• Insure proper sling fit/alignment/ use.
• Instruct patient in proper positioning, posture, initial home exercise program
• Provide patient/ family with written home program including exercises and protocol information.

Day 5 to 21:
• Continue all exercises as above (typically 2-3 times per day).
• Begin sub-maximal pain-free deltoid isometrics in scapular plane (avoid shoulder extension when isolating posterior deltoid.)
• Frequent (4-5 times a day for about 20 minutes) cryotherapy.

3 Weeks to 6 Weeks:
• Progress exercises listed above.
• Progress PROM:
o Forward flexion and elevation in the scapular plane in supine to 120 degrees.
o ER in scapular plane to tolerance, respecting soft tissue constraints.
• Gentle resisted exercise of elbow, wrist, and hand.
• Continue frequent cryotherapy.

Criteria for progression to the next phase (Phase II):
• Tolerates shoulder PROM and isometrics; and, AROM- minimally resistive program for elbow, wrist, and hand.
• Patient demonstrates the ability to isometrically activate all components of the deltoid and periscapular musculature in the scapular plane.

Phase II –Active Range of Motion / Early Strengthening Phase (Week 6 to 12):

Goals:
• Continue progression of PROM (full PROM is not expected).
• Gradually restore AROM.
• Control pain and inflammation.
• Allow continued healing of soft tissue / do not overstress healing tissue.
• Re-establish dynamic shoulder and scapular stability.

Precautions:
• Due to the potential of an acromion stress fracture one needs to continuously monitor the exercise and activity progression of the deltoid. A sudden increase of deltoid activity during rehabilitation could lead to excessive acromion stress. A gradually progressed pain free program is essential.
• Continue to avoid shoulder hyperextension.
• In the presence of poor shoulder mechanics avoid repetitive shoulder AROM exercises/activity.
• Restrict lifting of objects to no heavier than a coffee cup.

• No supporting of body weight by involved upper extremity.
Week 6 to Week 8:
• Continue with PROM program.
• At 6 weeks post op start PROM IR to tolerance (not to exceed 50 degrees) in the scapular plane.
• Begin shoulder AA/AROM as appropriate.
o Forward flexion and elevation in scapular plane in supine with progression to sitting/standing.
o ER and IR in the scapular plane in supine with progression to sitting/standing.
• Initiate gentle scapulothoracic rhythmic stabilization and alternating isometrics in supine as appropriate. Minimize deltoid recruitment during all activities / exercises.
• Progress strengthening of elbow, wrist, and hand.
• Gentle glenohumeral and scapulothoracic joint mobilizations as indicated (Grade I and II).
• Continue use of cryotherapy as needed.
• Patient may begin to use hand of operative extremity for feeding and light activities of daily living including dressing, washing.
Week 9 to Week 12:
• Continue with above exercises and functional activity progression.
• Begin gentle glenohumeral IR and ER sub-maximal pain free isometrics.
• Begin gentle periscapular and deltoid sub-maximal pain free isotonic strengthening exercises. Begin AROM supine forward flexion and elevation in the plane of the scapula with light weights (1-3lbs. or .5-1.4 kg) at varying degrees of trunk elevation as appropriate. (i.e. supine lawn chair progression with progression to sitting/standing).
• Progress to gentle glenohumeral IR and ER isotonic strengthening exercises in sidelying position with light weight (1-3lbs or .5-1.4kg) and/or with light resistance resistive bands or sport cords.
Criteria for progression to the next phase (Phase III):
• Improving function of shoulder.
• Patient demonstrates the ability to isotonically activate all components of the deltoid and periscapular musculature and is gaining strength.
Phase III – Moderate strengthening (Week 12 +)
Goals:
• Enhance functional use of operative extremity and advance functional activities.
• Enhance shoulder mechanics, muscular strength and endurance.
Precautions:
• No lifting of objects heavier than 2.7 kg (6 lbs) with the operative upper extremity
• No sudden lifting or pushing activities.
Week 12 to Week 16:
• Continue with the previous program as indicated.
• Progress to gentle resisted flexion, elevation in standing as appropriate.
Phase IV – Continued Home Program (Typically 4 + months postop):
 Typically the patient is on a home exercise program at this stage to be performed 3-4 times per week with the focus on:
 Continued strength gains
 Continued progression toward a return to functional and recreational activities within

limits as identified by progress made during rehabilitation and outlined by surgeon and physical therapist.

Criteria for discharge from skilled therapy:

- Patient is able to maintain pain free shoulder AROM demonstrating proper shoulder mechanics. (Typically 80 – 120 degrees of elevation with functional ER of about 30 degrees.)
- Typically able to complete light household and work activities.