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Total Shoulder Arthroplasty/Hemiarthroplasty Protocol:

The intent of this protocol is to provide the therapist with a guideline for the post-operative rehabilitation course of a patient that has undergone a Total Shoulder Arthroplasty (TSA) or Hemiarthroplasty (Humeral Head Replacement, HHR). If a therapist requires assistance in the progression of a post-operative patient, they should consult with the referring surgeon directly.

Phase I: Immediate Post-Surgical

- Goals:
 - Allow healing of soft tissue
 - Maintain integrity of replaced joint
 - Gradually increase passive range of motion (PROM) of shoulder
 - Store active range of motion (AROM) of elbow/wrist/hand
 - Reduce pain and inflammation
 - Prevent muscular inhibition
 - Independent with activities of daily living (ADL's) with modifications to maintain the integrity of the replaced joint
- Precautions:
 - Sling should be work for 3-4 weeks
 - While lying supine a small pillow or towel roll should be placed behind the elbow to avoid shoulder hyperextension/anterior capsule/subscapularis stretch
 - Avoid shoulder active ROM
 - No lifting of objects
 - No excessive shoulder motion behind back, especially into IR
 - No excessive stretching or sudden movements, particularly ER
 - No supporting of body weight by hand on involved side
 - Keep incision clean and dry (no soaking for 2 weeks)
 - No driving for 3 weeks
- Postoperative Day 1
 - Passive forward flexion in supine to tolerance
 - Gentle ER in scapular plan to available PROM, usually around 30 degrees **Do Not produce

undue stress on the anterior joint capsule, particularly with shoulder in extension**

- Passive IR to the chest
- Active distal extremity exercise for elbow/wrist/hand
- Pendulum exercises
- Frequent cryotherapy for pain, swelling, inflammation management
- Patient education regarding proper positioning and joint protection techniques

Early Phase I

- Continue above exercises
- Begin scapula musculature isometrics (primarily retraction)
- Continue active elbow ROM
- Continue cryotherapy as much as able for pain and inflammation management

Late Phase I

- Continue previous exercise
- Continue to progress PROM as motion allows
- Begin assisted flex, abduction, ER, IR in the scapular plane
- Progress active distal extremity exercise to strengthen as appropriate

Criteria for progression to the next phase:

- Tolerates PROM program
- Achieves at least 90 degrees PROM flex
- Achieves at least 90 degrees PROM abduction
- Achieves at least 45 degrees PROM ER in scapular plane
- Achieves at least 70 degrees IR in scapular plane measured at 30 degrees abduction

Phase II: Early Strengthening

*Not to begin before 4 weeks post-surgery to allow for appropriate soft tissue healing.

- Goals:
 - Restore full PROM
 - Gradually restore AROM
 - Control pain and inflammation
 - Allow continued healing of soft tissue
 - Avoid overstress of healing tissue
 - Re-establish dynamic shoulder stability
- Precautions:
 - Sling should only be used for sleeping and removed gradually over the course of the next 2 weeks for period throughout the day

- 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 should AROM exercises and activity against gravity in standing
- No heavy lifting of object (no heavier than a coffee cup)
- No supporting of body weight by hand on involved side
- No sudden jerking motions

Early Phase II

- Continue with PROM and AAROM
- Begin active flex, IR, ER, abduction pain-free ROM
- AAROM pulley (flex and abduction) as long as greater than 90 degrees PROM
- Begin shoulder submaximal pain-free shoulder isometric in neutral
- Scapular strengthening exercises as appropriate
- Begin assisted horizontal adduction
- Progress distal extremity exercises with light resistance as appropriate
- Gentle glenohumeral and scapulothoracic joint mobilization as indicated
- Initiate glenohumeral and scapulothoracic rhythmic stabilization
- Continue use of cryotherapy for pain and inflammation

Late Phase II

- Progress scapular strengthening exercises
- Criteria for progression to the next phase:
- Tolerated PROM, AAROM, and isometric program
 - Achieves at least 140 degrees PROM flexion
 - Achieves at least 120 degrees PROM abduction
 - Achieves at least 60 degrees PROM ER in plane of scapula
 - Achieves at least 70 PROM IR in plane of scapula measured at 30 degrees abduction
 - Able to actively elevate shoulder against gravity with good mechanics to 100 degrees

Phase III: Moderate Strengthening

*Not to begin before 6 weeks post-surgery to allow for appropriate soft tissue healing and to ensure adequate ROM.

- Goals:
 - Gradual restoration of shoulder strength, power, and endurance
 - Optimize neuromuscular control
 - Gradual return to functional activities which involve upper extremity
- Precautions:
 - No heaving lifting of objects (no heavier than 3kg or 6.5lbs)

- No sudden lifting or pushing activities
- No sudden jerking motions

Early Phase III

- Progress AROM exercise & activity as tolerated
- Advance PROM to stretching as appropriate
- Continue PROM as need to maintain ROM
- Initiate assisted shoulder IR behind back stretch
- Resisted shoulder IR, ER in scapular plane
- Begin light functional activities
- Wean from sling completely
- Begin progressive supine active elevation strengthening (ant deltoid) with light weights at variable degrees of elevation

Late Phase III

- Resisted flexion, abduction, extension (Theraband/sports cords)
- Continue progressing IR, ER strengthening
- Progress IR stretch behind back from AAROM to AROM, as ROM allows
- *Pay particular attention to avoid stress on anterior capsule*

Criteria for progression to the next phase:

- Tolerates AAROM /AROM/strengthening
- Achieves at least 140 degrees AROM flexion supine
- Achieves at least 120 degrees AROM abduction supine
- Achieves at least 60 degrees AROM ER in plane of scapula supine
- Achieves at least 70 degrees AROM IR in plane of scapula supine in 30 degrees abduction
- Able to actively elevate shoulder against gravity with good mechanics to at least 120 degrees

Note: If above ROM are not met, then patient is ready to progress when the patient's ROM is consistent with outcomes for patients with the given underlying pathology.

Phase IV: Advanced Strengthening Phase

*Not to begin before 12 weeks to allow for appropriate soft tissue healing, ensure adequate ROM, and initial strength.

- Goals:
 - Maintain non-painful ROM
 - Enhance functional use of upper extremity
 - Improve muscular strength, power, and endurance
 - Gradual return to more advanced functional activities
 - Progress weight-bearing exercises as appropriate

- Precautions:
 - Avoid exercise and functional activities that put stress on the anterior capsular and surrounding structures (e.g., no combined ER and abduction above 80 degrees of abduction)
 - Ensure gradual progression of strengthening

Early Phase IV

- Home exercise program
- Gradual progression strengthening program
- Gradual return to moderately challenging functional activities

Late Phase IV (typically 4 to 6 months post-operative)

- Return to recreational hobbies

Criteria for discharge from skilled therapy:

- Patient able to maintain non-painful ROM
- Maximized functional use of upper extremity
- Maximized muscular strength, power, and endurance
- Patient has returned to advanced functional activities