

Shoulder Arthroplasty – Total and Hemi

This protocol is intended to provide the clinician with a guideline for the postoperative rehabilitation course of a patient who has undergone **Total Shoulder Arthroplasty (TSA) or Hemi Shoulder Arthroplasty (HAS)**. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, comorbidities, pre-surgical range of motion, strength, health/functional status, rehabilitation compliance, learning barriers and complications. Specific time frames, restrictions and precautions are given to protect healing tissues and surgical reconstruction.

Shoulder Arthroplasty is considered when a patient has severe arthritis (either osteoarthritis or rheumatoid arthritis) at the glenohumeral joint that is significantly affecting functional range of motion as well as pain that is constant and moderate to severe. Along with arthritis, significant wear and tear on ligaments and tendons (specifically rotator cuff injury) can also be considered for this procedure. Shoulder Arthroplasty are also considered for proximal humerus fracture that are unable to be stabilized with an internal fixation. There are three types of shoulder arthroplasty: total shoulder arthroplasty (TSA), hemi shoulder arthroplasty (HAS), and reverse total shoulder arthroplasty (rTSA). The total shoulder arthroplasty replaces both the humeral head and the glenoid surface with a cemented all-polyethylene hardware whereas the humeral head only gets replaced in a hemi arthroplasty. For both, one must have good bone stock and rotator cuff muscles intact. If one rotator cuff muscle is full torn or two are partially torn, the surgeon may proceed with the procedure and repair them.

However, if there is not good bone stock and the rotator cuff injury is significant a reverse total shoulder arthroplasty preferred. Research has indicated that a reverse total shoulder arthroplasty has more favorable outcomes than TSA and HAS. As it is named, this procedure reverses the anatomy of the shoulder; the reverse shoulder arthroplasty uses a convex glenoid (hemispheric ball) and a concave humerus (articulating cup) to reconstruct the glenohumeral joint. With arthritis, conservative treatment will be performed first to see if this can be beneficial and/or to prepare for surgery.

In a total shoulder arthroplasty, the humeral head and the glenoid surface are replaced with a cemented all-polyethylene hardware and in a hemi arthroplasty, only the humeral head will get replaced. During surgery, the subscapularis tendon will be detached and then repaired. Therefore, shoulder ER ROM will be limited and resisted IR.

Postoperative Guidelines

Surgical Indication

- Severe arthritis at glenohumeral joint affecting functional range of motion
- Proximal humerus fractures

Return to Work

The timeline for returning to work can vary depending on the type of work performed, various accommodations that may be available within your work environment, and any postoperative complications. Your surgeon will discuss the timeline for returning to work after consideration of these

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Phase I (10-14 days after surgery)

Rehabilitation appointments	<ul style="list-style-type: none"> • 1-2x/week or per therapist discretion
Rehabilitation goals and priorities	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Post op dressings will be removed and continue to wear sling • Edema management • Pain management
Suggested therapeutic exercises	<ul style="list-style-type: none"> • PROM/AAROM of shoulder flexion and ABD and external rotation to 20 degrees • Physician will indicate if early motion is needed at 7 days. At 7 days after surgery, perform PROM shoulder flexion and ABD to 90 degrees with no ER rotation • Instruct immediately on squeezing ball with elbow flexion to activate deltoid • Thoracic extension and scapular retraction exercises well minimizing shoulder elevation • A/AA/PROM of elbow, forearm, and digits
Precautions	<ul style="list-style-type: none"> • No resisted shoulder IR if subscapularis is repaired • No combined shoulder ABD to 90 and shoulder ER • No lifting, pushing, or pulling more than 5 pounds with involved upper extremity • No weightbearing with involved upper extremity
Orthotic management	<ul style="list-style-type: none"> • Continue to wear sling for 4 weeks
Progression criteria	<ul style="list-style-type: none"> • Per pain tolerance

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Phase II (3 weeks after surgery)

Rehabilitation appointments	<ul style="list-style-type: none"> • 1-2x/week or per therapist discretion
Rehabilitation goals and priorities	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Edema management • Pain management • Address soft tissue muscular restrictions through manual therapy (upper trap, infraspinatus, pectoralis minor and major, and subscapularis) • NMES to deltoid muscle to increase strength in quick fibers to increase stability of shoulder
Suggested therapeutic exercises	<ul style="list-style-type: none"> • Shoulder isometrics except shoulder IR if subscapularis is repaired • Continue thoracic and scapular retraction exercises (postural exercises)
Precautions	<ul style="list-style-type: none"> • No resisted shoulder IR if subscapularis is repaired • No combined shoulder ABD to 90 and shoulder ER • No lifting, pushing, or pulling more than 5 pounds with involved upper extremity • No weightbearing with involved upper extremity
Orthotic management	<ul style="list-style-type: none"> • Initiate weaning of sling per pain tolerance
Progression criteria	<ul style="list-style-type: none"> • Excepted PROM of shoulder at this time should be shoulder flexion 100-110 degrees and ER 20-30 degrees

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Phase III (4 weeks after surgery)

Rehabilitation appointments	<ul style="list-style-type: none"> • 1-2x/week or per therapist discretion
Rehabilitation goals and priorities	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Edema management • Pain management • Progress muscular restrictions with P/AROM along with mobilization
Suggested therapeutic exercises	<ul style="list-style-type: none"> • AROM of shoulder. Start with short lever arm motion (elbow flexed) • Continue PROM of the shoulder • Progress scapular postural exercises with light resistance
Precautions	<ul style="list-style-type: none"> • No resisted shoulder IR if subscapularis is repaired • No combined shoulder ABD to 90 and shoulder ER • No lifting, pushing, or pulling more than 5 pounds with involved upper extremity • No weightbearing with involved upper extremity
Orthotic management	<ul style="list-style-type: none"> • Only wear sling in public or at-risk activities
Progression criteria	<ul style="list-style-type: none"> • Per pain tolerance. • Progress exercises when good posture is completed with exercises

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Phase IV (5 weeks after surgery)

Rehabilitation appointments	<ul style="list-style-type: none"> • 1-2x/week or per therapist discretion
Rehabilitation goals and priorities	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Edema management • Pain management
Suggested therapeutic exercises	<ul style="list-style-type: none"> • Progressive rotator cuff strengthening (gravity eliminated and then gravity resisted) • Initiate shoulder internal rotation isometrics
Precautions	<ul style="list-style-type: none"> • No combined shoulder ABD to 90 and shoulder ER • No lifting, pushing, or pulling more than 5 pounds with involved upper extremity • No weightbearing with involved upper extremity
Orthotic management	<ul style="list-style-type: none"> • Only wear sling in public or at-risk activities
Progression criteria	<ul style="list-style-type: none"> • Per pain tolerance. • Progress exercises when good posture is completed with exercises

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Phase V (6 weeks after surgery)

Rehabilitation appointments	<ul style="list-style-type: none"> 1-2x/week or per therapist discretion
Rehabilitation goals and priorities	<ul style="list-style-type: none"> Activities of daily living (ADLs) per restrictions Full PROM of shoulder AROM of shoulder should be WFL
Suggested therapeutic exercises	<ul style="list-style-type: none"> Continue to progress shoulder AROM (short and long lever arm motion) Progressive resistance strengthening
Precautions	<ul style="list-style-type: none"> No lifting, pushing, or pulling more than 5 pounds with involved upper extremity No weightbearing with involved upper extremity
Orthotic management	<ul style="list-style-type: none"> Discontinue sling
Progression criteria	<ul style="list-style-type: none"> Expected ROM: PROM should be close to full. AROM flexion 140-160 degrees and ER 40-60 degrees

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Phase VI (12-16 weeks after surgery)

Rehabilitation appointments	<ul style="list-style-type: none"> • 1x/week or per therapist discretion
Rehabilitation goals and priorities	<ul style="list-style-type: none"> • Return to all functional activities and progress to return to leisure and heavy work activities
Suggested therapeutic exercises	<ul style="list-style-type: none"> • Continue to progress strengthening
Precautions	<ul style="list-style-type: none"> • No restrictions. • For weight training, avoid combined ABD and ER (overhead lifting, flies, dips, lat pulldowns)
Progression criteria	<ul style="list-style-type: none"> • Per pain tolerance and physician guidance • Expected ROM: AROM shoulder flexion 140-160 and shoulder ER 50-60 degrees

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Additional Notes

*It is advised to perform PROM sooner instead of immobilization for 2 to 4 weeks. This will depend on surgical procedure and surgeon will need to make this clear in orders or post-operative note.

*Addressing soft tissue muscular restrictions early will help continue progression of shoulder elevation. Restrictors to arm elevation are pectoralis minor, infraspinatus, levator scapulae, and subscapularis.

*Addressing deltoid strength is essential to the rehabilitation process especially for reverse shoulder arthroplasty. The deltoid will not only perform elevation of the shoulder but will act as a compressor of the humeral head for stability and correct alignment with full elevation of the shoulder.

*About 80% of patients are able to return to sports or leisure activities. Total shoulder arthroplasty has the highest rate of return when both hemiarthroplasty and reverse total shoulder arthroplasty.

*For total/hemi shoulder arthroplasty, there is a risk for dislocation with combined shoulder ABD and ER. For reverse shoulder arthroplasty, the risk for dislocation is with shoulder ADD and IR in conjunction with extension. These motions are should not be performed until 12 weeks post op. Yet, these motions are not advised to perform with resistance after 12 weeks to maintain the surgical benefits.

*It is significantly beneficial for conservative management (therapy) to be performed pre-operatively if possible. Patient will

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