

Total Elbow 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 total elbow arthroplasty (TEA). 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 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, s/he should consult with the referring surgeon.

The type of prosthesis used for the surgical procedure dictates postoperative rehabilitation.

- The semi-constrained, hinged (linked) prosthesis is the most commonly used prosthesis. This prosthesis is stable postoperatively and one does not need to follow as strict a postoperative precaution regime. Patients are encouraged to do range of motion exercises and use their elbow for activities of daily living as dictated by their pain level and status of wound healing.
- The non-constrained resurfacing total elbow prosthesis (unlinked) is used less often. Adequate bone stock and ligamentous structures are needed when this prosthesis is used. Rehabilitation for this type of prosthesis is patient specific based on the repaired/reconstructed ligaments. Collaboration with the surgeon is critical to ascertain the degree of ligamentous integrity and overall level of general elbow stability. Elbow extension range of motion is initially limited postoperatively and gradually advanced weekly until the patient has regained functional extension range of motion. Combined elbow extension and supination is contraindicated for patients with a resurfacing procedure for a minimum of six postoperative weeks, due to the stress on the lateral soft tissue repair. In addition, these patients should not perform any shoulder/elbow exercises and/or functional activities in shoulder abduction, as this position will generate stress on the lateral collateral ligament of the reconstructed elbow.

Postoperative range of motion expectations are influenced by a number of factors:

- Presence of preoperative flexion contractures.
- Severity and chronicity of underlying disease process and tissue quality.

For the purpose of this protocol, **functional range of motion** of the elbow is defined as 30 to 120/130 degrees.

PHASE I - IMMEDIATE POST SURGICAL PHASE:

Phase I Goals:

- Allow healing of soft tissue.
- Maintain integrity of replaced joint and ligamentous reconstruction (if applicable).
- Gradually restore active range of motion (AROM) of cervical spine, shoulder/wrist/hand as indicated.

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- Gradually increase active assisted range of motion (AAROM) of the elbow and forearm.
 - Reduce/minimize pain and inflammation.
 - Regain independence with activities of daily living (ADLs) with modifications.

Phase I Precautions:

- Elbow is positioned in a soft posterior elbow splint @ about 60 degrees of flexion, unless otherwise specified. A sling is used for comfort only. (A hinged elbow brace or hard posterior elbow splint may be used to minimize varus/valgus forces of the elbow if the surgeon is concerned about the integrity of the soft tissues and surgical construct.)
- Therapists should assess for signs of ulnar neuropathy during the rehabilitation process and alert the orthopaedic team if present.
- Avoid combined elbow extension and supination ROM for patients with a resurfacing procedure.
- Patients who have undergone a resurfacing procedure should not perform any shoulder/elbow exercises and/or functional activities in shoulder abduction as this position will generate stress across the lateral collateral ligament of the elbow.
- No lifting of objects greater than 1 lb. with operated upper extremity.
- No excessive stretching or sudden movements (particularly extension).
- Avoid varus/valgus stress to the elbow (i.e. avoid excessive reaching across the body with ADLs).
- No upper extremity weight bearing with the involved side. No assistive device for ambulation should be used with operative upper extremity. No upper extremity pushing motions against resistance.
- No soaking for 2 weeks, or until staples/sutures are removed and incision is dry and intact.

Early Phase I: (Post-operative day 1-7)

- Sling/elbow splint as above.
- AROM cervical spine, shoulder, wrist, and hand.
- Gentle AAROM elbow extension and flexion exercises initiated with elbow held close to the body (adducted position) with forearm in neutral to pronation bias.
- Gentle AAROM supination and pronation exercises initiated with elbow held close to the body. Unless otherwise instructed, forearm rotations are to be completed with the elbow held at the side at 90 degrees of flexion to minimize strain on ligamentous structures.
- Gentle gravity-assisted elbow extension stretching to enhance extension ROM.
- Frequent cryotherapy for pain, swelling, and inflammation management.
- Compressive wrapping/garments for edema management as indicated.
- Patient education regarding proper positioning, ROM precautions, joint protection techniques, and ADLs.

Late Phase I: (Post-operative day 8 thru post-operative week 6):

- Patients are typically weaned out of the elbow splint for daytime use during their 2nd postoperative week, unless otherwise specified. The splint is typically worn only at night and during high-risk activity (to avoid full elbow extension and supination for those who have had a resurfacing procedure).
- Continue above exercises.
- Progress AROM cervical spine, shoulder, wrist, and hand exercises, while following applicable precautions.
- AAROM/AROM elbow extension, flexion, supination, and pronation to tolerance.
 - No combined extension and supination for those with resurfacing procedure.
 - Unless otherwise instructed, forearm rotations are to be completed with the elbow held at the side at 90 degrees of flexion to minimize strain on ligamentous structures.
- Continue cryotherapy and edema management as needed for pain and inflammation.
- Scar management upon suture/staple removal.

PHASE II -FUNCTIONAL ACTIVITY PHASE

(Not to begin before 6 Weeks post-surgery to allow for appropriate soft tissue healing):

Phase II Goals:

- To encourage functional ROM and strength of the elbow for ADLs, while protecting healing soft tissues.
- Minimize pain and inflammation.
- Re-establish dynamic elbow stability.

Phase II Precautions:

- No repetitive motions of more than 2 lbs. and no single lifts of more than 5 lbs. with operated upper extremity.
- Those patients with a resurfacing procedure should not perform combined repetitive extension/supination exercise or activity.
- No upper extremity weight bearing, pushing, or pulling with the involved side.

Early Phase II (6-12 Weeks postoperatively):

- Continue above previous exercises as indicated.
- Most strengthening gains will be achieved by the patient gradually progressing their activity level. The need for a vigorous strengthening program is not appropriate following total elbow arthroplasty.
- 6 weeks postop: Begin submaximal painfree elbow/forearm/wrist/hand isometrics at mid range of available elbow range of motion (all planes).

- 8 weeks postop: Progress to submaximal painfree elbow/forearm/wrist/hand isometrics at multiple angles of available elbow range of motion. Avoid isometrics at end ranges of motions.
- 10-12 Weeks postop: Progress to sub maximal pain free shoulder and elbow/wrist/hand isotonic strengthening as motor control improves. (No weights or resistance greater than 2 lbs.)
 - Initially single plane elbow movement, then progress to composite movements as appropriate. Those patients with a resurfacing procedure should not perform combined repetitive extension/supination exercise or activity.
- If patient has not achieved functional elbow range of motion of at least 120 degrees flexion then consider the use of a dynamic or static progressive splint. Consult with surgeon.
- Continue use of cryotherapy and edema management for pain and inflammation as needed.

Late Phase II (12 weeks postoperatively on):

- Typically patients are on a home program at this point focused on maintaining a pain free functional arc of elbow motion.
- Continue previous exercises 2-3 x/ week to maintain ROM, strength, and function upon discharge from therapy.
- No heavy lifting of objects (no heavier than 10-15 lbs) for life.
- No golf, tennis, or throwing activities for life.



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