ORTHOSURGERY
Ιατρείο Ορθοπαιδικών Παθήσεων

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Elbow Arthroplasty

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PHYSIOTHERAPY PROTOCOL

INDICATIONS

- Severe pain due to degenerative joint disease e.g. end stage rheumatoid arthritis or osteoarthritis, elbow ankylosis
- Progressive loss of functional range of movement of elbow joint
- Elbow joint instability
- Trauma e.g. flail elbow, non-union of supracondylar fractures

TYPES OF PROSTHESIS

- **Non-constrained resurfacing elbow prosthesis** – used when collateral ligaments are intact and sufficient bone stock
- **Semi-constrained hinged elbow prosthesis** – used for revision arthroplasty or when there is significant joint instability

General Rehabilitation Guidelines

Program for Total Elbow Arthroplasty

Rehabilitation Considerations: Hematoma formation follow elbow arthroplasty can lead to pain and loss of motion in the early phases after surgery. Attempts to reduce and mobilize edema are critical in the early phases. Hematoma also increases the risk of infection which occurs in 2-3 percent of elective cases and up to 7% of cases performed for trauma Full flexion and extension can usually be obtained on the table but stiffness may ensue rapidly.

Continuous passive motion is almost always employed when possible but patients must be encouraged to perform daily stretching exercises to preserve motion.

Because the extensor mechanism must heal back to the ulna, active elbow extension, such as using the arm to assist in rising from a chair, is not permitted for 8 weeks.

Adjacent joint therapy may be particularly important for patients with rheumatoid arthritis who may have concomitant disease of the shoulder and wrist.

PRE-OPERATIVE

- Assessment as appropriate, to include neck, scapula, shoulder, wrist and hand range of movement, muscle strength, elbow stability and general upper limb function
- Explanation of post-operative physiotherapy management
- Teach exercise program
- Instruct in application of ice and encourage use as much as tolerated within a 24 hour period for first week. If using ice packs, encourage to ice 20-30 minutes every 3-4 hours while awake.

• Instruct in home program of elbow flexion, extension, pronation and supination.
• Instruct in basic progression of rehabilitation program and expectations for time course to recovery
• Arrange follow-up physical therapy appointment on 7th-10th day post-op to correspond with physician's post-operative evaluation

POST-OPERATIVE

Review operation notes, noting the type of prosthesis used, the range of movement achieved in theatre and any special instructions. Rehabilitation depends on the type of prosthesis used, the surgical approach, the degree of ligamentous integrity and overall elbow joint stability.

Day 1

- Circulatory and respiratory exercises
- Elbow immobilized in back slab, collar'n'cuff fitted for comfort
- Begin neck, scapula, shoulder, wrist and hand movements.
- Positioning and management of swelling

Semi-Constrained Hinged Prosthesis

Immobilize in a backslab for 2 weeks. Following review by the surgeon, the patient begins elbow range of movement exercises and is encouraged to use the elbow for activities of daily living, depending on pain and would healing

Non-Constrained Resurfacing Elbow Prosthesis

Day 3 – 2 Weeks

• On day 3 the occupational therapist fits a static resting splint to the elbow joint. This is sometimes delayed for 2 weeks - discuss with consultant.
• Active assisted elbow flexion/ extension exercises with elbow joint in mid position. Commence exercises in supine with therapist, control emphasized. Avoid varus/ valgus strain.
• Progress to active assisted or active elbow flexion/extension exercises with patient in sitting with elbow resting on a pillow on knee, as pain and control allows.
• Progress to active assisted/active elbow supination/ pronation exercises with patient in sitting as above.

2 – 6 Weeks

• Cryotherapy and scar management as appropriate

- Continue to wear splint at night but gradually wean out of splint during the day – wear during high risk activities to avoid full elbow extension and supination if the prosthesis is unconstrained
- Continue with active flexion/extension exercises with emphasis on control.
- Progress to active assisted end of range stretches.

Note that outcome studies show extension is not improved post surgery and should not be forced at any stage of rehabilitation and average elbow range of movement following elbow arthroplasty is limited to 35º to 135º.

Progress to supination/ pronation exercises through active range of flexion/ extension as control improves. PNF patterns may be introduced.

Note that combined elbow extension and supination can put stress on the lateral soft tissue repair and result in instability, therefore introduction of combined movements should be dictated by joint stability and muscle control.

- Functional rehabilitation – movement patterns of daily living e.g. hand to mouth, hand to head, reaching etc.

Note that functional activities involving shoulder abduction can also stress the lateral structures and should be avoided for the first 6 weeks.

6 – 12 Weeks

- Maintain splint at night for 12 weeks
- At 6 weeks begin sub-maximal pain free elbow, wrist and hand isometrics at midrange of available range (all planes)
- At 10-12 weeks progress to sub-maximal pain free shoulder, elbow, wrist and hand isotonic strengthening as motor control improves. Initially single plane then progress to composite movements
- Begin anti-gravity control of triceps, active assisted in supine.

Progress to active as control and strength improves with holds throughout range

- Progress to light weights, no greater than 2 lbs

OUTCOMES

A pain-free joint with functional range for activities of daily living

No lifting of objects over 10-15 lbs for life

No hobbies involving repetitive throwing for life