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Post operative Guidelines

Total Elbow Arthroplasty

Indications

- Arthritis - rheumatoid arthritis, osteoarthritis and post-traumatic arthritis where pain is the predominant feature.
- Complex elbow fractures/trauma where the fracture cannot be fixed due to excessive comminution or because the quality of the bone is not suitable for fixation (more common in the elderly)
- Malignancy in or around the elbow
- Poor results from previous elbow surgery
- Instability resulting from severe damage to the soft tissues in the elbow, maybe a relative indication.
- Major cysts in the distal humerus or proximal ulna

Contraindicated

Contraindicated in young patients and heavy manual workers
Contraindicated where septic arthritis is present

Aims

To achieve improved pain and a functional elbow.

Functional range of motion is considered: 30-120 degrees of flexion and 60 degrees of pronation and supination.

The life span off the implant averages 10-15 years.

Lifting load restrictions will apply long term to prolong the life of the prosthesis.

Procedure

To replace the articular surfaces of the distal humerus and proximal ulna with prosthetic implants.

Associated Procedures

Possible ulnar nerve transposition

Types of prosthesis

Rehabilitation varies based on the type of implant used and the surgical approach.

Semi-constrained - linked prostheses have a “loose or sloppy-hinge” mechanical linkage.

These are linked implants but only semi-constrained to potentially reduce the forces transmitted to the prosthetic interface. These prostheses do not require significant ligamentous support. For this reason, the elbow tends to be more stable post-operatively and therapy can proceed without the need to restrict extension or follow as strict a post-operative regime.

Un-constrained - unlinked prostheses are a hinge design that can transfer stress directly to the prosthetic interface. Often elbow extension ROM is initially restricted from extending beyond 40 degrees initially and gradually increased each week. Combined elbow extension/supination is contraindicated for 6/52 due to stress on the lateral soft tissue repair and patients should not do elbow exercises in abduction as this position will generate stress on lateral collateral ligament construction.

Types of Approach

There are a variety of surgical approaches dependent upon the surgical preference.

Post Op Protocol Summary

In patients with RA, wound healing is the initial priority.

In patients with OA, wound healing is rarely a problem and ROM is primary focus.

Therapist should be aware of the type of prosthesis used, the status of the triceps tendon/surgical approach and the overall stability of the joint assessed in theatre.

Also status of the ulna nerve.

Sling is used for comfort only.

Lifting is limited to the weight of a cup of tea for the first 6 weeks and no more than 5 – 10lbs for life.

Post-Operative Treatment

Day 1 - 14

- Wait for anaesthetic block to wear off before exercising limb.
- Wrist / hand / finger exercises. Make fist pump regularly.
- Elevate arm – support the arm on pillows to do this.
- Have the arm in a sling when mobilising
- Active assisted range of elbow movement – flexion/ extension, supination/ pronation at 90 elbow flexion.
 - Active assisted table polishing
- Active assisted shoulder movement – walk aways/ A/A shoulder flexion in supine lying

2-4 weeks

- You should wear the sling for as long as your consultant and physiotherapist instruct you to but normally wean out around 4 weeks.
- When resting, continue to elevate the arm on pillows.
- Encourage light functional normal movement patterns.
- Maximise sensory input, because proprioceptive loss is normal after TER. (Luiatowski et al 2014). Maximise sensory input using visual imagery, touch and bilateral movement.

4 weeks onwards

- Continue shoulder, finger and wrist ROM
- Biceps strengthening
- Gradually progress active elbow extension
 - Introducing against gravity work with bilateral activity
 - Encourage exercises with the patient in supine lying, auto assisted reaches overhead with elbows to the ceiling.
 - Hands to top of head – then reach to ceiling
 - Hands to the nose
 - Hands to the mouth
 - Hand to earlobe
 - Hand to the shoulder.
 - Progress exercise to patient holding tissue box between hands, to a ball, to a small weight.
- Progress pronation and supination through ROM flexion/ extension
- Progress proprioceptive exercises
- Progress functional exercises

Complications

- Ulnar neuropathy
- Impingement into flexion
- Obesity with a body mass of 30+ increases infection rate, increases medical complications and increases risk of removal of prosthesis.
- Deep infections - Complications higher in patients with RA.
- Triceps insufficiency, patients struggle to reach over head, push doors open.
- An overall failure rate of 3% following TEA has been reported.
- Periprosthetic fracture rate has been reported at 1.3% (Williams et al 2016)
- Main modes of mechanical failure seen on the conrad morrey are stem loosening, polyethylene wear and osteolysis, predisposing to potential periprosthetic fractures. Higher rate of failure reported in patients with acute distal humerus fracture, distal humerus non union and post traumatic arthritis. (Sanchez-sotelo, 2017)
- Heterotopic Ossification (HO) after total elbow arthroplasty is seen more commonly than previously reported. In a recent study (Robinson, 2018); the overall incidence of HO after TEA was 84% (46/55). This was higher in the trauma group (96%, 25/26) compared with the elective arthroplasty group (72%, 21/29) ($p = 0.027$, Fisher's exact test). Patients in the trauma group had HO of higher Brooker class. The presence of HO did not significantly affect elbow range of movement within the trauma or elective groups.

MILESTONES	
ROM = to pre op range	6/52
Full ROM achieved	6/12
Pain free functional activities	6-12/52
Driving	6-8/52
Swimming	12/52
Golf	12/52
Work - light, desk top duties	6/52

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