Nursing Management for Patients Undergo Upper Limb Arthroplasty

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Upper Limb Arthroplasty

• Ulna Head Endoprosthesis

• Total Elbow Arthroplasty

• Shoulder Arthroplasties: Total shoulder arthroplasty, Reverse total shoulder arthroplasty, Shoulder Resurfacing, Hemiarthroplasty
Ulna Head Endoprosthesis

- Consists of a metal (titanium) stem could be press-fit or cemented into the intramedullary canal of distal ulna and,

- A ceramic semispheric ulnar head synthesized with material provided highest biocompatibility
Ulna Head Endoprosthesis

Surgical Option for distal radioulnar joint incongruity resulted from:

- Trauma
- Osteoarthritis
- Inflammatory disease
Ulna Head Endoprosthesis

• Restore function and stability of distal radioulnar joint

• Reduce pain coming from instability of distal ulnar stump after resection arthroplasties (e.g. Darrach’s procedure)
General post-operative Management

- Stabilize haemodynamics
- Pain management
- Wound/Drain management
- Infection control
- Sling management
- Neurovascular assessment
- Activity and ROM restriction
- Start rehabilitation
## Ulna Head Endoprosthesis- Therapy Protocol *(Kaiser et al, 2008)*

<table>
<thead>
<tr>
<th>Splint/ support</th>
<th>Immediately Post-op</th>
<th>10–14 Days Post-op</th>
<th>Two to Six Weeks</th>
<th>Six to Eight Weeks</th>
<th>12 Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulky Dressing till 1st FU</td>
<td>Custom short-arm bivalve splint •leaving all digits and thumb free.</td>
<td>slowly wean splint if stable and used for comfort</td>
<td>Wear splint at night or as needed.</td>
<td>Discharge splint.</td>
<td></td>
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<tr>
<th>Therapy</th>
<th>Immediately Post-op</th>
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<tr>
<td>Digit ROM, edema control, and wound care.</td>
<td>Edema control • joint protection •home exercise program.</td>
<td>AROM of wrist and forearm, •light ADLs with no resistance.</td>
<td>Strengthening initiated (gentle progressive) after functional ROM achieved (Ryu et al.*)</td>
<td>Return to regular activity as tolerated.</td>
<td></td>
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<th>Precautions</th>
<th>Immediately Post-op</th>
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<tr>
<td>Post-op dressing too tight.</td>
<td>Watch for excessive edema nerve irritation; Monitor splint for pressure marks/skin for maceration; Adjust splint as swelling decreases.</td>
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</table>
Custom short-arm bivalve splint
Conditions require medical consultation

- Instability
- Sensory abnormalities.
- Recurrent pain or progressive pain with increased activity.
- Excessive edema or pain.
- Signs of infection (fever, chills, vomiting, red streaks, drainage).
Total Elbow Arthroplasty

• Common indication: RA

• Post-trauma sequelae. e.g. post-traumatic OA, non-united fracture humerus

• Acute comminuted distal humeral fracture
General post-operative Management

- Stabilize haemodynamics
- Pain management
- Wound/ Drain management
- Prevent Infection
- Sling management
- Neurovascular assessment
- Activity and ROM restriction
- Start rehabilitation
Total Elbow Arthroplasty

- No strict physiotherapy protocol
- Analgesic before exercise
- Usually, short but frequent session rather than one long session (e.g. 5-10 mins/ sessions, 4 sessions per day)
- Length of exercise time could be increased after 3-4 weeks.
Total Elbow Arthroplasty
Common Complications

Aseptic Loosening:
• Primary- failure of bone-cement interface
• Secondary- osteolysis due to particulate debris either from polyethylene or cement

Instability:
• Prosthetic design
• Quality of soft tissue envelop of patient
Total Elbow Arthroplasty
Common Complications

Deep Infection:
- higher rate in TEA than in other TJR
- Elbow: subcutaneous joint with thin soft tissue envelop
- Immuno-compromise in RA patients due to drug (e.g. steroid, disease modifying anti-rheumatic drugs)
Total Elbow Arthroplasty
Common Complications

Ulna nerve deficit:
• At risk of damage during exposure and during component placement

• Compression from haematoma or soft tissue swelling

• Sensory deficits is usually self-limiting

• Motor weakness may need early exploration to rule out nerve compression/ damage
Total Elbow Arthroplasty Discharge Instruction:

- Pain management
- Wound management
- Exercise
- Avoid heavy loading to prevent wear and tear of prosthesis
- Antibiotic cover for minor procedure like dental extraction and other operations
Shoulder Arthroplasty

Four Types:

(A) Right shoulder hemiarthroplasty.

(B) Right shoulder partial resurfacing arthroplasty.

(C) Right shoulder reverse ball-and-socket arthroplasty.

(D) Right total shoulder arthroplasty.

Nursing Care After a Shoulder Arthroplasty.
Brown, Frederick

DOI: 10.1097/01.NOR.0000310604.70247.e9
Shoulder Arthroplasty

• **Total shoulder arthroplasty**: replacement of both humeral head + glenoid cup

• **Hemiarthroplasty**: replacement of humeral head

• **Shoulder resurfacing**: humeral head prosthesis not requiring a stem, less bone is removed.

• **Reverse total shoulder arthroplasty**: reversed construction of prosthesis (for severe rotator cuff tears)
Shoulder Arthroplasty

Indication:
• Proximal humeral fracture
• Inflammatory or destructive arthritis

Contraindication:
• Active infection
• Charcot’s arthropathy
• Severe neurological disease. e.g. brachial plexus palsy (increase risk of unstable joints)
<table>
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<tr>
<th>Indications</th>
<th>Hemiarthroplasty</th>
<th>Total Shoulder Arthroplasty</th>
<th>Reverse Total Shoulder Arthroplasty</th>
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<tr>
<td></td>
<td>• Severe proximal humeral fracture,</td>
<td>• Primary arthritis (OA &amp; RA)</td>
<td>• Glenohumeral arthritis combined with severe rotator cuff deficiency</td>
</tr>
<tr>
<td></td>
<td>• Primary arthritis,</td>
<td>• Pain caused by glenoid incongruity unresponsive to nonsurgical treatment in patients with adequate bone stock, good surgical risk and motivation.</td>
<td>• Failed arthroplasty with poor rotator cuff</td>
</tr>
<tr>
<td></td>
<td>• Arthritic conditions when glenoid bone stock is inadequate for glenoid prosthesis,</td>
<td>• Osteonecrosis</td>
<td>• Proximal humeral fracture</td>
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<tr>
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<td>• Cuff tear arthroplasty,</td>
<td>• Secondary arthritis (e.g. post trauma)</td>
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<tr>
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<td>• Early stage osteonecrosis without glenoid involvement</td>
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<td>• Destruction of the rotator cuff &amp; deltoid muscles</td>
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Choice of shoulder Arthroplasty

Selection depends on:

- Age
- Health history
- Individual anatomy
- Bone stock and quality
- Integrity of the supporting soft tissue
General post-operative Management

- Stabilize haemodynamics
- Pain management
- **cryotherapy**
- Wound/ Drain management
- Prevent Infection
- **Shoulder Immobilizer/ Abduction Sling**
- Neurovascular assessment
- **Activity and ROM restriction**
- Start rehabilitation
Common Complications

• Component Loosening: Symptomatic loosening of the glenoid and humeral component
• Glenohumeral Instability
• Rotator cuff Tear
• Fractures: Periprosthetic, intraoperative, and postoperative fractures
• Infection
• Neural injury
• Deltoid Dysfunction
Rehabilitation Program

- No strict protocol
- Precaution and progression depend mainly on bone and soft tissue quality and any operation complications
- Progression from passive to active range of motion
- Later on incorporating progressive stretching and strengthening
- E.g. Four phases Wilcox protocol (Wilcox et al, 2005)
Pendulum Exercise

• Relieve pain
• Improve shoulder ROM
• Stand with support
• Bend knee and protect spine
• Keep shoulder relaxed
• Use body motion to swing arm in small circles
• Start for 30 sec for session
• Can be extended to 3-5 mins
Discharge instruction

• Wound care
• Compliance to shoulder immobilizer (for at least 3 weeks)
• Non-weight bearing activities limitations: no active internal rotation (pulling objects towards body), no external rotation (rolling shoulder backwards) and no shoulder extension beyond neutral (taking elbow behind body)
• No Heavy loading by operating arm
• Continue ROM exercises
Thank You Very Much