

Elbow – Ulnohumeral Dislocation and Rehabilitation

Surgical Indications and Considerations

Anatomical Considerations: Elbow dislocations uncommon. Posterior dislocations are the most common; they comprise over 90% of all elbow dislocations. Anterior, divergent, and radial head subluxations in children comprise the other 10%.

Pathogenesis: Posterior dislocations are by far the most common and occur from a fall on an outstretched hand (FOOSH). This type of elbow dislocation occurs from hyperextension in which the trochlea is levered over the coronoid process. Anterior dislocations occur as a direct blow to a flexed elbow. This usually results in an olecranon fracture thus dislocating the ulna. Less rare is a divergent dislocation which is usually associated with a high-energy force in which the ulna and radius dislocate in opposite directions. Radial head subluxations occur in young children when they are being picked up by their arms.

Epidemiology: Elbow dislocations are more common in males than females. About 90% of elbow dislocations are posterior from FOOSH. Anterior dislocations occur from a direct blow on the flexed elbow usually fracturing the olecranon. Radial head subluxations occur when the arm is pulled. (The arm is usually pronated, flexed, and abducted against the body.)

Diagnosis

- Swelling and obvious deformity
- Obvious mechanism of injury
- Severe pain and guarding
- Limited ROM
- Posterior dislocations often have a prominent olecranon
- Radiographs confirm the diagnosis

Nonoperative Versus Operative Management: Surgical reduction is typically recommended for patients that have this condition. It consists of reduction of the ulna back into its anatomical position. This has to occur paying special attention to the ulnar nerve and median nerves. Motor function of the ulnar and median nerves is assessed by testing the opposability of the thumb (median), and abduction/adduction strength of the digits (ulnar). Sensation of the median nerve is evaluated by testing the distal palmar aspect of the first through fifth digits. Sensation of the ulnar nerve is evaluated by testing ½ of the fourth and the fifth digits. It is also important to assess vascular responses because the brachial artery may be compromised.

Surgical Procedure: There have been several methods for reducing a posterior dislocation. Adequate analgesia and sedation is necessary for patient comfort. If the patient has a posterior dislocation, the patient is put in a prone position having their elbow flexed at 90 degrees. Downward traction is applied to the forearm while pressure is applied to the olecranon in a downward direction to facilitate reduction. The second method has the patient laying supine

with the arm in flexion. Traction is applied to the humerus and another individual applies traction to the forearm, which is slightly supinated. Anterior dislocations are reduced by holding the humerus with two hands to apply counter traction. An assistant needs to apply traction to the forearm. Radial head subluxations in children are reduced by placing pressure to the radial head. Supination, flexion, and traction need to occur to reduce the dysfunction. There is little evidence that the surgical repair of ligaments is advantageous to the patient.

Preoperative Rehabilitation: There is no preoperative rehabilitation. The elbow needs to be reduced. Pre-hospital care should include splinting the limb in the position found. Secondary to neurovascular injury, reduction in the field is not recommended.

POSTOPERATIVE REHABILITATION

Note: There is currently no rehabilitation program developed specifically for elbow dislocations. The following rehabilitation protocol was developed from numerous sources of literature. Individual cases will vary dependent upon age, pain tolerance, and complications with the reductions. In most articles prognosis is excellent if the patient has full ROM within 3 weeks.

Phase I: Weeks 1-4

Goals: Control edema and pain
 Early full ROM
 Protect injured tissues
 Minimize deconditioning

Intervention:

- Continue to assess for neurovascular compromise
- Elevation and ice
- Gentle PROM - working to get full extension
- Splinting as needed
- General cardiovascular and muscular conditioning program
- Strengthen through ROM
- Soft tissue mobilization if indicated – especially assess the brachialis myofascia

Phase II: Weeks 5-8

Goals: Control any residual symptoms of edema and pain
 Full ROM
 Minimize deconditioning

Intervention:

- Active range of motion (AROM) exercises, isometric exercises, progressing to resisted exercises using tubing or manual resistance or weights
- Incorporate sport specific exercises if indicated
- Joint mobilization, soft tissue mobilization, or passive stretching if indicated
- Continue to assess for neurovascular compromise
- Nerve mobility exercises if indicated
- Modify/progress cardiovascular and muscular conditioning program

Phase III: Weeks 9-16

Goals: Full range of motion and normal strength
Return to preinjury functional activities

Intervention:

- Interventions as above
- Modify/progress cardiovascular and muscular conditioning
- Progress sport specific or job specific training

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