Introduction

The preferred management of simple elbow dislocations is non-operative rehabilitation protocol. Initiating early mobilization is integral to optimizing functional and motion outcomes, but must be done appropriately to minimize the risk of recurrent instability. We managed a cohort of patients who had sustained a simple elbow dislocation with an overhead motion protocol, and hypothesized that immediate motion in an inherently stable position could maximize range of motion and functional outcomes while minimizing the risk of recurrent instability.

Materials and Methods

27 patients were included who sustained a simple elbow dislocation and were treated non-operatively with an overhead motion protocol designed to convert gravity from a distracting to a stabilizing force. Motion was initiated within one week of injury, and average follow-up was 29 months. Final arc of motion and prevalence of instability were the primary outcomes measures.

Exercises are performed in a supine position with the shoulder flexed to 90 degrees, adducted, and in a neutral to external rotation position. This position minimizes the effect of gravity, decreases posteriorly directed forces, and allows the triceps to function as an elbow stabilizer. By avoiding abduction and internal rotation, the gravitational varus and extension/distraction force is eliminated thereby allowing the lateral collateral ligament to heal in an isometric fashion. With the limb in the aforementioned position, 2 exercises are performed: active-assisted forearm pronation and supination and active and active-assisted elbow flexion without limits and elbow extension tailored to the instability of the injury.

By the third or fourth week, joint stability is typically achieved, and the second phase is initiated. Active and active assisted elbow and forearm rotation ROM exercises are allowed in the sitting or standing position. The arc of motion is based on the individual’s degree of stability, apprehension, and comfort. Shoulder internal rotation and abduction are avoided to minimize gravitational varus strain.

The third phase begins six weeks post-injury, and includes ROM exercises without limits, strength and endurance exercises, and resumption of normal activities.

Results

At most recent follow-up examination, mean arc of motion was 6-137 degrees in the flexion-extension axis, with an extension range of 0-30 degrees and a flexion range of 90-150 degrees. Mean forearm pronation was 87 degrees (range 70-90) and mean supination was 86 degrees (range 70-90).

No patient had a subsequent subluxation or dislocation episode, and no clinical instability was noted on most recent physical examination. One patient required a contracture release 12 weeks after dislocation for a flexion-extension arc of 10-90 degrees. This improved to 5-140 degrees. Motion prior to the contracture release was used for analysis in this patient. All patients were fully functional at most recent follow-up.

Conclusions

- We demonstrate that with an appropriate, supervised rehabilitation protocol, early motion can be initiated following an elbow dislocation event, and excellent functional outcomes can reliably be obtained.
- The motion protocol utilized in this cohort places patients in a supine position with the arm overhead, thereby minimizing the varus and distraction gravitational force and transitioning the triceps into an elbow stabilizer.
- The early motion maximizes the ability to achieve a full flexion-extension arc, while the positioning allows the collateral ligamentous complexes to heal in an isometric fashion, thereby potentially minimizing the risk of recurrent instability.
- A functional arc of motion was reliably obtained, with no observed cases of recurrent instability.