ORIGINAL RESEARCH

Evaluation of outcome of patients with dislocation of elbow

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ABSTRACT

Background: Elbow dislocations occur when the bones of the elbow joint are forced out of their normal positions. The elbow joint is composed of three bones: the humerus (upper arm bone), the radius, and the ulna (forearm bones). The present study was conducted to evaluate outcome of patients with dislocation of elbow. **Materials & Methods:** 86 cases of dislocation of elbow of both genders were selected. Parameters such as mode of injury, type of displacement, type of management, complications and outcome was recorded. **Results:** Out of 86 patients, males were 48 and females were 38. The etiology was road traffic accident in 48, fall in 24 and domestic violence in 14 cases. Direction of displacement was anterior in 12, posterior in 38, medial in 27 and lateral in 9 cases. The difference was significant ($P< 0.05$). Treatment done was screw in 20, kirschner wire in 6 cases, trans-osseous suture in 8, radial head in 42 and locking plate in 10 cases. The difference was significant ($P< 0.05$). Complications were infection seen in 4, non- union in 2 and brachial artery occlusion in 1 patient. The outcome was excellent in 56, good in 25, fair in 4 and poor in 1 patient. **Conclusion:** Complications were infection, non- union and brachial artery occlusion. IN most of the patients, outcome was excellent, good and fair.

Keywords: Elbow dislocations, radial head, locking plate

INTRODUCTION

Elbow dislocations occur when the bones of the elbow joint are forced out of their normal positions. The elbow joint is composed of three bones: the humerus (upper arm bone), the radius, and the ulna (forearm bones).[1] Dislocations are categorized as simple or complex based on whether they involve fractures in addition to the dislocation.Elbow dislocations are relatively rare injuries, occurring at a rate of 6.1 per 100,000 people annually in all age groups. Nonetheless, they are the second most common dislocated joint in adults, after the shoulder, and the most common in children.[2] Elbow dislocations are more common in men (2–2.5 times more common in men) and in younger people (mean age of 30 years old). Approximately 40% of them are the consequence of sports injuries, and they are typically caused by falls onto the outstretched arm.[3]

The intricate relationship between the capsuloligamentous structures, dynamic muscle constraints, and the bony articulations of the elbow joint makes treating acute dislocations of the elbow joint difficult.[4] Developing an algorithm for diagnosis and therapy requires an understanding of the anatomy of the elbow and the relative contributions of the various components to elbow stability. In addition, elbow function must be restored and chronic instability and pain must be avoided by early identification of the exact injury pattern.[5]The present study was conducted to evaluate outcome of patients with dislocation of elbow.

MATERIALS & METHODS

The present study consisted of 86 cases of dislocation of elbow of both genders. All were selected with their written consent.

Data such as name, age, gender etc. was recorded. A thorough systemic, and local examination was carried out. All were subjected to PA radiographs, and CT scan. Records were kept on parameters like the sort of injury, the kind of displacement, and the type of management used. Surgeons took care of every patient during surgery. Within two weeks following trauma, early mobilization using a hinged orthosis took place for non-operative patients. Following surgery, a two-week long cast was placed on the arm. Results of the study were analysed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 86		
Gender	**Males**	**Females**
Number	48	38

Table I shows that out of 86 patients, males were 48 and females were 38.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Etiology	Road Traffic Accident	48	0.05
	Fall	24	
	Physical violence	14	
Direction of displacement	Anterior	12	0.05
	Posterior	38	
	Medial	27	
	Lateral	9	

Table II, graph I shows that etiology was road traffic accident in 48, fall in 24 and domestic violence in 14 cases. Direction of displacement was anteriorin 12, posterior in 38, medial in 27 and lateral in 9 cases. The difference was significant (P< 0.05).

Table III Treatment used in patients

Treatment used	Number	P value
Screw	20	0.02
Kirschner wire	6	
Trans-osseous suture	8	
Radial head	42	
Locking plate	10	

Table III shows that treatment done was screw in 20, kirschner wire in 6 cases, trans-osseous suture in 8, radial head in 42 and locking platein 10 cases. The difference was significant (P< 0.05).

Graph I Treatment used in patients

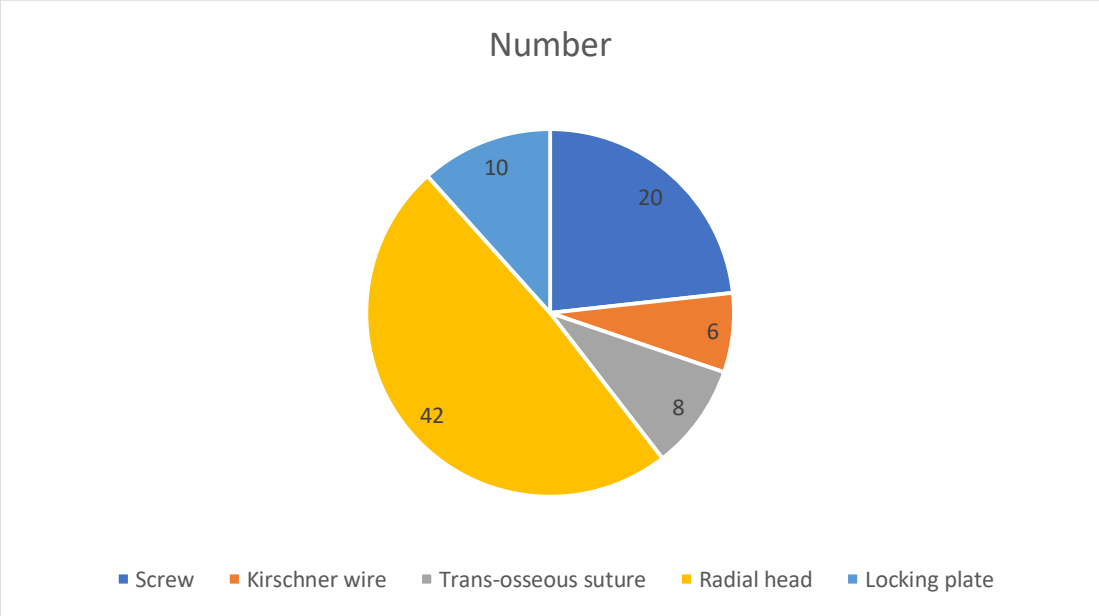

Table IV Complications of treatment

Complications	Number	P value
Infection	4	0.01
Non- union	2	
brachial artery occlusion	1	

Table IV shows that complications were infection seen in 4, non- union in 2 and brachial artery occlusion in 1 patient.

Table V Outcome of treatment

Outcome	Number	P value
Excellent	56	0.01
Good	25	
Fair	4	
Poor	1	

Table V shows that outcome was excellent in 56, good in 25, fair in 4 and poor in 1 patient.

DISCUSSION

The ulno-humeral joint congruency, the medial collateral ligament (MCL), and the lateral collateral ligament (LCL) complex, which includes the lateral ulna collateral ligament (LUCL), are the principal stabilisers of the elbow joint, which makes it stable even though it has the capacity to dislocate. The common flexor and extensor origins, the joint capsule, and the radial head serve as additional stabilisers.[6,7] The dynamic stability that the muscles that cross the elbow joint give also helps with this.

Elbow dislocation may present as an isolated injury or as one of many injuries sustained in the polytrauma patient.[8] Appropriate assessment and management of these patients along trauma algorithms may be necessary. A detailed history of the mechanism of injury is beneficial, and information regarding the patient's functional status can be helpful in guiding treatment. On clinical examination, the dislocated elbow will be deformed with the forearm typically described in a position of varus and supination for postero-lateral dislocations.[9] Careful assessment and documentation of neurovascular status should be completed prior to, and following, reduction as entrapment of neurovascular structures can occur and necessitates urgent surgical management. Other injuries to the limb should be sought, with particular focus on the distal radio-ulnar joint (DRUJ) to assess for interosseous membrane injury. Radiographs should be used to confirm the extent of the injury, and in simple elbow dislocations anteroposterior and lateral radiographs usually suffice.[10]The present study was conducted to assess patients with dislocation of elbow.

We found that out of 86 patients, males were 48 and females were 38. Boretto et al[11]compared the results after operative treatment of simple and complex open dislocations in terms of ROM, functional score, and complications.Eighteen patients were retrospectively included in this study: 11 with simple open elbow dislocations and seven with complex open elbow dislocations. They found no differences between simple and complex open elbow dislocations related to ROM (median flexion/extension: 117° versus 110°, p = 0.12; forearm rotation: 160° versus 170°, p = 0.67). According to the Broberg and Morrey score, four patients had excellent results, five good, and one fair in the simple dislocation group, whereas in the complex dislocation group, four patients had excellent results, two good, and one fair (p = 0.8). No difference in complication rate was found between groups (p = 0.63). All complications in the simple dislocation group were neurovascular. In the complex dislocation group, there was one case of brachial artery occlusion, two cases of heterotopic ossification, one case of infection and nonunion, and one case of infection. No patients had recurrent elbow instability.

We found that etiology was road traffic accident in 48, fall in 24 and domestic violence in 14 cases. Direction of displacement was anterior in 12, posterior in 38, medial in 27 and lateral in 9 cases. Forthman et al[12]operated on 34 patients with a posterior dislocation of the elbow associated with one or more intra-articular fractures. The mean age of these 19 men and 15 women was 48 years. Associated fractures included the capitellum, trochlea, and lateral epicondyle in 3 patients; the olecranon in 1 patient; and the radial head in 30 patients (with concomitant fracture of the coronoid process-the so-called "terrible triad" of the elbow-in 22 patients, and concomitant fracture of the coronoid and olecranon in 1 patient). Operative treatment consisted of open reduction internal fixation (ORIF) or prosthetic replacement of all fractures and reattachment of the origin of the lateral collateral ligament (LCL) complex to the lateral epicondyle. The MCL was not repaired.Two patients (1 with a terrible triad injury and 1 with fracture of the capitellum and trochlea) had postoperative instability related to noncompliance, had reconstructive procedures, and were considered failures. An average of 32 months after injury, the remaining 32 patients regained an average of 120 degrees ulnohumeral motion and 142 degrees forearm rotation. Twenty-five of 34 patients (74%) had good or excellent results according to the system of Broberg and Morrey. Patients with terrible triad injuries had an average of 117 degrees ulnohumeral motion and 137 degrees forearm rotation, and 17 of 22 patients (77%) had good or excellent results.

We found that treatment done was screw in 20, kirschner wire in 6 cases, trans-osseous suture in 8, radial head in 42 and locking plate in 10 cases.Ayel et al[13]analyzed the results of nine cases of elbow dislocations with brachial artery complications. All the patients were seen at a minimum of 2 years' follow-up (mean of 4.3 years). On the basis of Mayo Clinic score, the results were considered excellent in three cases, good in four cases, and poor in two cases. No patients complained of elbow instability. The X-rays showed a reduced elbow in all cases and heterotopic ossifications in three cases. No degenerative lesion was observed at the longest follow-up.

CONCLUSION

Authors found that complications were infection, non-union and brachial artery occlusion. IN most of the patients, outcome was excellent, good and fair.

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