

A comparative study of acute ligamentous repair and functional treatment in patients with simple elbow dislocation

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ABSTRACT:

Background: *The elbow is the second most commonly dislocated major joint in adults. Simple dislocations are those where there had been no concomitant fracture apart from small periarticular avulsions 1 mm or 2 mm in diameter. The present study compared acute ligamentous repair with functional treatment in patients with simple elbow dislocation.*

Materials & Methods: *80 patients with elbow dislocation were divided into 2 groups of 40 each. Group I patients were treated with closed reduction of elbow and group II patients were treated with closed elbow reduction and subsequent reconstruction of torn collateral ligaments. Outcome of the treatment was compared.*

Results: *Side of dislocation was left side in 17 in group I and 14 in group II and on right side seen in 23 in group I and 26 in group II. Type of dislocation was posterior seen in 15 in group I and 16 in group II, postero-lateral seen 12 in group I and 11 in group II, postero-medial seen 7 in group I and 8 in group II and lateral seen 6 each in group I and 5 in group II. Clinical outcome was excellent seen in 30 in group I and 22 in group II, good in 6 in group I and 14 in group II, fair seen in 4 in group I and 3 in group II and poor seen 1 in group II. The difference was significant ($P < 0.05$).*

Conclusion: *Closed reduction of elbow repair found to be better than closed elbow reduction and subsequent reconstruction of torn collateral ligaments.*

Key words: *Collateral ligament, Elbow dislocation, Surgery*

INTRODUCTION

The elbow is the second most commonly dislocated major joint in adults. Simple dislocations are those where there had been no concomitant fracture apart from small periarticular avulsions 1 mm or 2 mm in diameter.¹ Good long-term outcomes have been reported after non-operative management; however, a small proportion (2%) of patients do require surgical intervention³ and approximately 8% of patients with simple elbow dislocations will go on to have symptoms of persistent instability if treated non-operatively.² Elbow dislocation is the second most frequent type of large joint dislocations in adults with an incidence of 5–6 per 100,000 person-years. Most of these dislocations arise due to sports related injuries. Simple elbow dislocation (SED) involves only ligamentous and soft tissue injuries, and treatment results are more favorable compared to complex elbow dislocations that include bony injuries.³

Standard treatment of SED without manifest instability should involve closed reduction, short-term immobilization of the elbow followed by functional aftercare.⁴ After reposition of the simple dislocation, treatment options include immobilisation in a static plaster for different periods, surgical treatment of the ruptured medial and lateral collateral ligaments or so-called functional treatment, which is characterised by early active movements within the limits of pain with or without the use of a sling, hinged brace or functional plaster. In theory, after repositioning of a simple dislocated elbow, the joint retains an inherent stability caused by the contour of the intact joint surfaces.⁵ This stability may allow the patient to exercise the joint shortly after the

reposition. This functional treatment should prevent stiffness or restricted range of motion without risking increased joint instability. Standard treatment of SED without manifest instability should involve closed reduction, short-term immobilization of the elbow followed by functional aftercare.⁶ The present study compared acute ligamentous repair with functional treatment in patients with simple elbow dislocation.

Materials & Methods

The present study was conducted among 80 patients with elbow dislocation of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided randomly into 2 groups of 40 each. Group I patients were treated with closed reduction of elbow. Group II patients were treated with closed elbow reduction and subsequent reconstruction of torn collateral ligaments. Outcome of the treatment in both groups was compared. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I: Distribution of patients

Groups	Group I	Group II
Male	22	23
Female	18	17

Table I shows that group I had 22 males and 18 females and group II had 23 males and 17 females.

Table II Comparison of parameters in both groups

Variables	Parameters	Group I	Group II	P value
Side of dislocation	Left side	17	14	0.04
	Right side	23	26	
Type of dislocation	Posterior	15	16	0.05
	Postero- lateral	12	11	
	Postero- medial	7	8	
	Lateral	6	5	

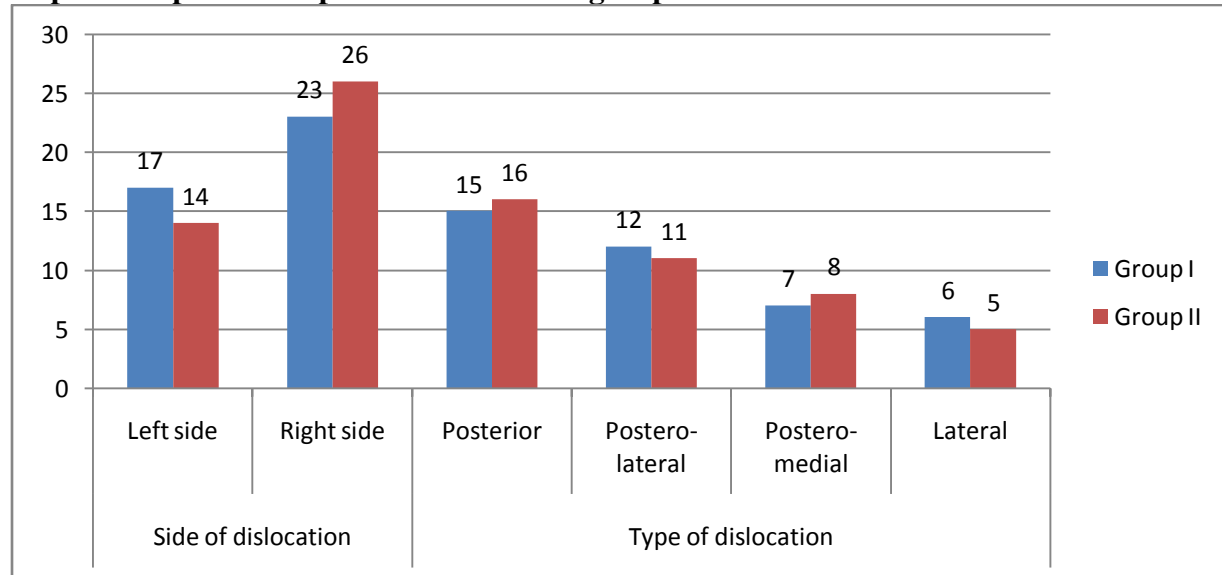
Table II, graph I shows that side of dislocation was left side in 17 in group I and 14 in group II and on right side seen in 23 in group I and 26 in group II. Type of dislocation was posterior seen in 15 in group I and 16 in group II, postero- lateral seen 12 in group I and 11 in group II, postero- medial seen 7 in group I and 8 in group II and lateral seen 6 each in group I and 5 in group II. The difference was significant ($P < 0.05$).

Table III Mayo Elbow Performance Score in both groups

Outcome	Group I	Group II	P value
Excellent	30	22	0.05
Good	6	14	
Fair	4	3	
Poor	0	1	

Table III shows that clinical outcome was excellent seen in 30 in group I and 22 in group II, good in 6 in group I and 14 in group II, fair seen in 4 in group I and 3 in group II and poor seen 1 in group II. The difference was significant ($P < 0.05$).

Graph I Comparison of parameters in both groups



DISCUSSION

The elbow joint is the second most commonly dislocated joint in adults. The annual incidence of simple and complex elbow dislocations in children and adults is 6.1 per 100,000. Elbow dislocations are classified as simple or complex types.⁷ The simple dislocation is characterised by the absence of fractures, while the complex dislocation is associated with fractures. The terrible triad is an example of a complex posterior dislocation with intra-articular fractures of the radial head and coronoid process.⁸ The annual incidence of complex elbow dislocations in children and adults is 1.6 per 100,000, or 26% percent of all elbow dislocations.⁹ The present study compared acute ligamentous repair with functional treatment in patients with simple elbow dislocation.

In present study, group I had 22 males and 18 females and group II had 23 males and 17 females. Anakwe et al¹⁰ reported an incidence of 2.9 per 100 000 population per year in those over 16 years of age. Men were more likely to sustain a dislocation after assault or sports, whereas women were likely to suffer dislocations in a fall from standing height. Josefsson¹¹ reported an incidence of 6.05 simple elbow dislocations per 100 000 individuals during their lifetime. The largest epidemiological study was conducted by Stoneback et al¹² who used a multicentre database in the USA to estimate an incidence of 5.21 simple elbow dislocations per 100 000 person-years. There was a statistically significant male predominance (53% men). The greatest difference in incidence was found in the 10-year to 19-year-old age group, with males having almost twice the incidence (8.91 per 100 000 person-years).

We observed that side of dislocation was left side in 17 in group I and 14 in group II and on right side seen in 23 in group I and 26 in group II. Type of dislocation was posterior seen in 15 in group I and 16 in group II, postero-lateral seen 12 in group I and 11 in group II, postero-medial seen 7 in group I and 8 in group II and lateral seen 6 each in group I and 5 in group II. Krticka et al¹³ in their study 54 adult patients with SED without manifest instability treated in tertiary

hospital. 28 patients were treated conservatively. Closed elbow reduction was followed by short-term plaster splint and active rehabilitation. Twenty six patients underwent closed elbow reduction and subsequent reconstruction of torn collateral ligaments. Postoperatively, plaster splint was applied followed by rehabilitation. Patients who were treated conservatively reached statistically significant better scores in Quick Disability Arm Shoulder Hand, Oxford Elbow Score, and Mayo Elbow Performance Score. Functional conservative treatment resulted in a higher range of motion. The complication rate was higher in the group of surgically treated patients.

We found that clinical outcome was excellent seen in 30 in group I and 22 in group II, good in 6 in group I and 14 in group II, fair seen in 4 in group I and 3 in group II and poor seen 1 in group II. Conn et al¹⁴ found 414 injuries of the elbow in their fracture service, including 58 elbow dislocations in children and adults. Elbow injuries accounted for 6.8% of all treated fractures. Seventy-six percent of the patients with elbow dislocations were older than 20 years. In 51% of these adults, the dislocations were simple, a lower percentage than the 74% found in Josefsson's study.¹¹ Elbow dislocations can also be classified by the direction of their displacement. Nearly all the dislocations are of the posterior or posterolateral types. In Conn's study, 96% of the dislocations were posterior or lateral and Josefsson¹¹ reported no anterior dislocations in his study of 52 patients. In 58% of patients, the simple elbow dislocations were on the non-dominant side.

CONCLUSION

Author found that closed reduction of elbow repair found to be better than closed elbow reduction and subsequent reconstruction of torn collateral ligaments.

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