

Open Reduction For Neglected Posterior Dislocation of The Elbow

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Objective: To evaluate results of open reduction in 9 patients with neglected posterior dislocation of elbow, regarding Range of motion (ROM), stability and pain.

Type of study: Prospective descriptive study.

Place and duration of study: District headquarter teaching hospital, Dera Ismail Khan. May 2005- May 2008.

Materials and methods: A total of nine patients were included in study with mean age of 31 years (range 15- 55 years). Mean time since injury was 2.8 months (range 1- 7 months). Two patients had associated fractures around elbow. All the patients underwent open reduction using Speeds technique. Mean follow-up was 7.4 months (range 2.5-15 months) in which patients were assessed for pain, stability, range of motion (ROM) and ulnar nerve deficit.

Results: All patients showed improved ROM irrespective of duration of dislocation. Mean movement gained was 89° (range 60°-110°). Patients presenting early had better results than those presenting late or with associated fracture. Two patients complained of mild pain after heavy load lifting. All elbows were stable and there was no infection or ulnar nerve deficit.

Conclusion: Open reduction is simple and effective method to restore the joint to stable, pain free and functional state.

Key words: Dislocated elbow, open reduction.

Introduction

Old unreduced elbow dislocations are seen more frequently in rural areas as compared with urban population of Pakistan and present as a challenge to orthopedic surgeons. The term "unreduced" is used when elbow remains dislocated for more than 3 weeks¹. The elbow is generally fixed in extension or in slight flexion with minimal range of motion. Pronation and supination are also limited². The age of the patient and the duration of dislocation are two most important factors that influence the choice of treatment³. The early the dislocation is reduced, the better the results⁴. Most of the literature recommends some sort of excision, distraction, interposition or replacement arthroplasty after 3 months, though there are conflicting views regarding the best possible option^{5,6}. Also these procedures are technically demanding, lengthy and may end up with instability of the elbow⁷. We treated 9 patients, regardless of age, duration and associated fractures with simple open reduction.

Materials and Methods

Between the period of May 2005 and May 2008, nine patients aged between 15 years and 55 years (mean age 31 years) were treated for neglected posterior dislocation of elbow. There were six male and three female patients and right elbow was involved in six while left was involved in three patients. Of the six male patients two were laborers, one student, one driver, one loader and one mechanic. Two females were housewives and one was a student (TABLE I). Patients having duration of dislocation less than 1 month or associated injuries to ipsilateral limb were excluded from the study.

The time since injury ranged from 1 to 7 months (mean 2.8m). The presenting complaint in most of the patients was grossly restricted movements of the elbow which hindered the activities of daily living. Mild pain was reported by two patients who responded well to occasional analgesics. Both pre- and post- operative range of motion (ROM) was measured by conventional goniometer. All patients had flexion contracture at elbow from 15-30° (average 20°) and pre operative arc of movement ranged from 5-20° (average 13.8°). On neurovascular examination one patient showed signs of ulnar nerve compression.

X-rays revealed posterolateral dislocation in all patients. Two patients had associated fractures. Case 2 had fracture of coronoid process of ulna while case 4 had osteochondral fracture of lateral condyle of humerus.

8 patients were initially managed by local bone setters, while in case 4, the elbow dislocation was initially missed due to serious head injury, from which she later recovered. The dislocation remained undetected due to lack of follow up.

Operative technique: Open reduction was performed in all 9 patients using Speed's technique⁸. The operation was performed under general anesthesia. Lateral position was used and elbow of the patient was flexed. Tourniquet was applied high up. Fibrous tissue was removed from the olecranon and coronoid fossae. Shortened collateral ligaments were cut. Case 3 had well formed subperiosteal new bone on the posterior aspect of distal humerus, which was removed. After reduction, one or two 1.5mm kirschner wires were used to transfix olecranon to distal humerus with elbow in 90° of flexion. Suction drain was used and above elbow

Table 1:

	Age/Sex	Side	Duration of dislocation (months)	Associated fractures	Pre-op ROM (degrees)	Post-op ROM (degrees)	Follow up (months)	Movement gained (degrees)
1.Labourer	35yr/M	Right	3	None	20° - 30°	25° - 130°	15	95°
2.House wife	45yr/F	Left	3.5	Coronoid process of ulna	30° - 45°	25° - 105°	4	65°
3.Mechanic	15yr/M	Left	2	None	20° - 35°	20° - 140°	8.5	105°
4.House wife	55yr/F	Right	7	Lateral condyle of humerus	15° - 20°	25° - 90°	3	60°
5.Student	18yr/M	Right	1.5	None	15° - 30°	15° - 120°	12	90°
6.Labourer	32yr/M	Right	4	None	25° - 45°	20° - 130°	14	90°
7.Driver	35yr/M	Right	2.5	None	20° - 35°	20° - 120°	4	85°
8.Loader	25y/M	Right	1.5	None	20° - 40°	15° - 135°	3.5	100°
9.Student	23y/F	Left	1	None	15° - 25°	10° - 130°	2.5	110°

plaster of paris back slab was applied after dressing. In all patients capsule was contracted and triceps were shortened and required inverted V-Y plasty. In two patients, cartilage was friable and came off the bone easily exposing subchondral bone. Extreme care was taken to minimize cartilage damage.

The drains were removed after 48 hours and the patients were discharged.

Follow up. The follow up in our patients ranged from 2.5 months to 15 months (mean 7.4 months). All patients were assessed for pain, stability, ROM at elbow and ulnar nerve deficit. Anteroposterior and lateral X-rays were done to check the concentric reduction of the joint.

First follow up was after 2 weeks in which stitches, posterior splint and K- wires were removed under sedation. Later active ROM exercises were started under supervision of a physiotherapist. In between the exercises elbow was rested in arm sling, which was gradually discarded in next 8 weeks. At 10 weeks ROM was again recorded and compared with pre-op ROM.

Results

All wounds healed satisfactorily but there was one pin track infection which responded to oral antibiotics. The patient who showed pre operative ulnar nerve compression fully recovered during subsequent follow up. Two patients complained of mild pain during repetitive elbow movements and heavy load lifting, however, pain did not interfere with routine activities and sleep.

The ROM improved in all patients irrespective of the duration of dislocation, but the patients who presented early, had greater movement. The movement gain after open

reduction ranged from 60° to 110° (average 89°). Patients with associated fractures (case 2 and 4) gained movement of 65° and 60° respectively (mean 62.5°) as compared to 96.5° in patients without fracture. All the patients were satisfied regarding ROM and pain and returned to their previous occupation.

Discussion

Rare in developed parts of the world; neglected posterior dislocation of elbow is still seen quite frequently in Pakistan especially in rural areas. Due to lack of education, poverty and misconceptions, most patients first go to local bone setters for traditional treatment such as massage and manipulation. After wasting precious time in which closed reduction is possible, they seek advice of orthopedic surgeon.

It is believed that ROM from 30°-130° is required to perform routine daily activities⁷. After surgery, the greatest improvement in ROM occurs within first six months. Further improvement can be expected up to one year⁹. All our patients showed improved ROM after the procedure, but those who presented early did better. Post operative improvement in ROM was less in patients with associated fracture of distal humerus, as also reported by other authors¹⁰. The reason, apart from fracture, was also short follow-up of these two patients (average 3.5 months).

Some authors advocate combined medial and lateral approaches^{10,11} in terms of better access for excision of fibrous tissue and isolation and protection of ulnar and radial nerves. We found posterior approach easy and sufficient to perform open reduction and excision of fibrous tissue.

There are many procedures described in literature to achieve reduction and better post-operative ROM in patients

with neglected elbow dislocation. Jupiter et al¹² and Lo CY et al¹³ in different studies performed open reduction and hinged external fixator without V-Y plasty of the triceps to achieve early and better stability. Arafiles et al⁶ described a method of open reduction with tendon graft stabilization in which a medial collateral and intra-articular cruciate ligament is created followed by early exercises. We believe that these procedures are technically demanding and there is not much difference regarding results as compared to simple open reduction.

There was no incidence of nerve injury. None of our patients complained of instability or had recurrent dislocation. Return to their pre-injury occupation was considered a good indicator of function and stability. Socioeconomic factors proved to be a major problem to sufficient follow-up in our patients.

Conclusion

Open reduction with V-Y plasty of triceps for old posterior dislocation of elbow is simple, safe, cost effective procedure having satisfactory results regarding ROM and stability.

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