Case Report

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Elbow Dislocation with Ipsilateral Fracture both Bones Forearm in a Pediatric Age

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Abstract

An elbow dislocation with ipsilateral diaphyseal fracture of radius and ulna in the paediatric age group is a very rare injury and usually results from high energy trauma. If the treating clinician is not aware of such injuries, the diagnosis may be missed. Successful outcome depends on concentric reduction of dislocated elbow with anatomical restoration of the radius and ulna fracture. Here we report a right sided elbow dislocation with ipsilateral diaphyseal fracture of radius and ulna in a 11-year old girl. In this case, closed reduction was performed for the dislocated elbow in the emergency department followed by closed reduction of the radius and ulna. Patient was followed-up for a period of 12 months. There was good clinical, radiological and functional outcome. Two similar cases have been reported in the literature and one had an additional fracture of the lateral humeral condyle. This case illustrates that these severe injuries can be managed successfully in children using non-operative methods.

Keywords: Elbow dislocation; Both bone forearm fracture, Paediatric age.

Background

Dislocation of elbow with ipsilateral fracture of both bones forearm is a rare injury although elbow dislocation and forearm fracture may occur separately. Elbow dislocation may be associated with fracture of proximal radius, or fracture of proximal radius and ulna together. Only few cases of elbow dislocation with ipsilateral diaphyseal fracture of both bones forearm have been reported and published in litearature [1, 2, 3]. Other injuries like complex elbow dislocation with radial and ulnar diaphyseal fractures also have been reported in literature [4, 5, 6].

Case report

An 11- year old girl brought by her father to the orthopaedic emergency department with history of trauma to her right upper limb. She had sustained injury while playing. At the time of presentation to emergency room, there was gross swelling of elbow and forearm with visible deformity.

Figure 1a: Antero- posterior and lateral view of right elbow (showing dislocation of elbow and fracture both bones forearam)

Figure 3a: Antero-posterior view of elbow with forearm at 1 year of follow up

Figure 3b: Lateral view of elbow with forearm at 1 year of follow up

Neuro-vascular status of the affected limb was intact. Antero-posterior and lateral radiographs of elbow and forearm were taken which showed posterolateral dislocation of right elbow with ipsilateral diaphyseal fractures of radius and ulna (Fig.1).

Closed reduction of the elbow dislocation was performed followed by closed reduction of both bones forearm under procedural sedation in the Emergency Department. The arm was immobilized in an above-elbow slab. Post-reduction radiographs showed concentric reduction of elbow with satisfactory reduction of both bones forearm (Fig.2). At discharge, limb elevation and active finger movements were advised.

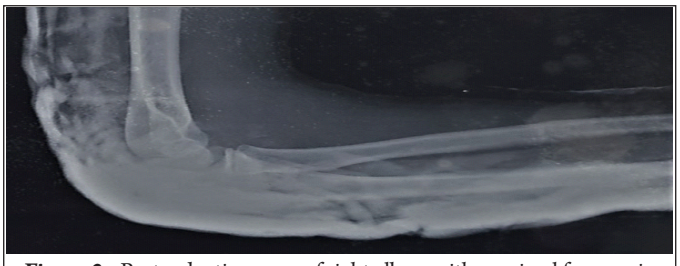

Figure 2: Post reduction x-ray of right elbow with proximal forearm in above elbow slab (showing concentric reduction of elbow and anatomical alignment of both bones of forearm)

Patient was followed up after one week when swelling was subsided and radiographs were found to be satisfactory. An above-elbow cast was applied for 4 weeks. Institutional physiotherapy was provided under supervision. At the end of 12th week she gained good range of motion at elbow and wrist joint. Complete union of fracture was noted at this time. At the last follow-up at 1-year post injury, there was complete union of fracture with remodelling at the fracture site (Fig. 3a, 3b) and range of motion at elbow in terms of flexion (Fig. 4a), extension (Fig. 4b) and supination, pronation of forearm was near normal. She was able to do all her routine activities without any pain or limitations.

Discussion

The elbow joint is a stable diarthroidal joint which consist of hinged ulnohumeral articulation, radiohumeral articulation and proximal radio-ulnar articulation together with collateral ligaments which provide necessary stability to it. Fractures of forearm bones associated with elbow dislocation commonly occur around the elbow i.e. in the proximal part and involve the radial head, olecranon and coronoid process [11]. Ulnar diaphyseal fracture along

Figure 4a: Range of motion of elbow at 1 year. (flexion)

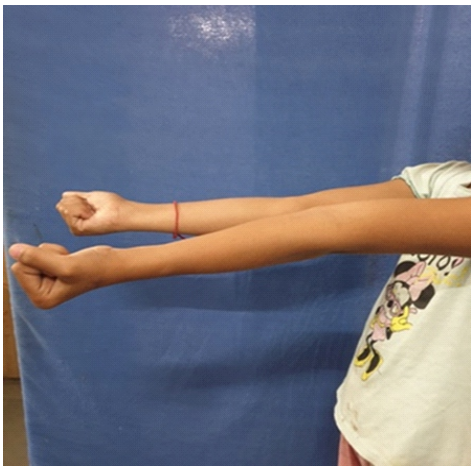

Figure 4b: Range of motion of elbow at 1 year. (extension)

with radial head dislocation (Monteggia fracture dislocation) may also be seen along with dislocated elbow but the combination of elbow dislocation with ipsilateral fracture of radius and ulna in a paediatric age group is a very rare injury as the force required to produce this injury is likely to be significantly greater than that required for a simple elbow dislocation or fracture of forearm bones alone [4, 5].

Madhar et. al reported a series of six cases, out of which one case had elbow dislocation with ipsilateral forearm fracture. The mechanism of injury was reported as forearm hypersupination with extension of the elbow [2]. Kose et al reported a case of an 80-year-old woman who had a posterolateral elbow dislocation with ipsilateral radial and ulnar shaft fractures and underwent closed reduction and plate fixation. She had an excellent outcome after 22 months of follow-up. The authors postulated the mechanism of injury to be two-staged in which initial elbow dislocation resulting from fall on outstretched hand is followed by fractures of both the bones of forearm while the elbow was still in extension, the forearm in hyper-pronation and the wrist in radial deviation [6].

More recently, Goni et al reported a similar case of elbow dislocation with fracture of the lateral condyle of the humerus along with fractures of shaft of the radius and ulna in a 44-year-old female [3]. Closed reduction of the elbow and operative stabilization of all fractures were done by them. A few authors have described this pattern of injury of radius and ulna shaft fractures with posterior dislocation of the elbow as a unique Monteggia-equivalent injury [4, 5]. Majority of such fractures described in literature are seen in adult and old age group.

In managing these injuries consideration should be given to restoration of joint congruity, skeletal alignment and ligamentous stabilization. Almost all of them were managed operatively by open reduction and internal fixation. In our case, we managed to treat all injuries non-operatively. As elbow dislocation benefits from early mobilization, we opted to immobilize for a period of 4 weeks only.

A number of cases of proximal or distal forearm fracture with an elbow dislocation have been published [7, 8, 9, 10]. All of these reported dislocations are managed by closed reduction of the elbow and open reduction and internal fixation of the forearm fractures. All the authors have reported good outcomes with this treatment modality. We believe that the case reported by us is the first in terms of age of presentation and management modality.

Conclusion

Posterolateral dislocation of the elbow in a child associated with ipsilateral diaphyseal fractures of the radius and ulna can be managed by closed means. Early mobilization of the elbow and forearm at 4 weeks post-injury is advocated to prevent stiffness.

References

1. *Ramesh S, Lim YJ. Complex elbow dislocation associated with radial and ulnar diaphyseal fractures: A rare combination. Strateg Trauma Limb Reconstr 2011;6:97-101.*

2. *Madhar M, Saidi H, Fikry T, Cermak K, Moungondo F, Schuind F. Dislocation of the elbow with ipsilateral forearm fracture. Six particular cases. Chir Main 2013;32:299-304.*

3. *Goni V, Behera P, Meena UK, Gopinathan N, Akkina N, Arjun RH. Elbow dislocation with ipsilateral diaphyseal forearm bone fracture: A rare injury report with literature review. Chin J Traumatol 2015;18:113-115.*

4. *Hung SC, Huang CK, Chiang CC, Chen TH, Chen WM, Lo WH. Monteggia Type I equivalent lesion: Diaphyseal ulna and radius fractures with a posterior elbow dislocation in an adult. Arch Orthop Trauma Surg 2003;123:311-313.*

5. *Frazier JL, Buschmann WR, Insler HP. Monteggia Type I equivalent lesion: Diaphyseal ulna and proximal radius fracture with a posterior elbow dislocation in a child. J Orthop Trauma 1991;5:373-375.*

6. *Kose O, Durakbasa MO, Islam NC. Posterolateral elbow dislocation with ipsilateral radial and ulnar diaphyseal fractures: A case report. J Orthop Surg (Hong Kong) 2008;16:122-123.*

7. *Rijal L, Kc KM, Sagar G. Elbow dislocation with ipsilateral radius and ulna fracture: Is it so common? Nepal Med Coll J 2012;14:163-164.*

8. *Ring D, Jupiter JB. Fracture-dislocation of the elbow. J Bone Joint Surg Am 1998;80:566-580.*

9. *Fleming FJ, Flavin R, Poynton AR. Elbow dislocation with ipsilateral open radial and ulnar diaphyseal fractures--a rare combination. Injury 2004;35:90-92.*

10. *Kumar P, Manjhi LB, Rajak RL. Open segmental fracture of both bone forearm and dislocation of ipsilateral elbow with extruded middle segment radius. Indian J Orthop 2013;47:307-309.*

11. *Bryce CD, Armstrong AD. Anatomy and biomechanics of the elbow. Orthop Clin North Am 2008;39:141-154.*

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