



Isolated posterior elbow dislocation in a one-year-old child : A case report

Sherif Mounair ISAAC, Irini DANIAL, Amit MODI

From Leicester Royal Infirmary, Leicester, United Kingdom

Elbow dislocation is relatively uncommon in skeletally immature patients. Numerous reports describe elbow dislocations in children with or without associated fractures. These dislocations are most commonly posterior, although other types have been described, and are usually associated with fractures around the elbow. Isolated elbow dislocation is a very uncommon injury especially in children. The youngest ever-reported child in the English literature with an elbow dislocation was a 4-year-old girl with a transverse divergent dislocation and an avulsed bony fragment from the coronoid process.

We report a rare case of isolated posterior elbow dislocation in an 18-month-old child. This appears to be the youngest case with this type of injury in the English literature. Management involved closed reduction under general anaesthesia followed by a 2-weeks period of immobilisation in a plaster of Paris back-slab. At last follow-up, the patient regained a full range of pain free movements.

Keywords : elbow ; dislocation ; child.

INTRODUCTION

Traumatic elbow dislocations are rare in children, especially before the age of 8 (12). The incidence is 3% to 6% of all elbow injuries (14).

Isolated elbow dislocation is very rare. It is usually associated with extra- or intra-articular fractures. Carlizot *et al* (4) reported a 64% incidence of associated injuries in a series of 58 children with

elbow dislocation while in the Borris *et al* (2) series, associated elbow injuries affected 50% of the patients. In another study by Rasool (11), 75% of dislocations had associated elbow fractures. Avulsion of the medial epicondyle is the most common associated injury (5,8,9).

The youngest child reported in the English-language literature with elbow dislocation was 4 years of age. This was a transverse divergent dislocation of the elbow associated with an avulsion fracture of the coronoid process (3).

We present a case of an isolated elbow dislocation in an eighteen months old child. This type of injury is very rare in this age group.

■ Sherif Mounair Isaac, MBBCh, MRCS, Specialist Registrar in Trauma and Orthopaedics.

University Hospitals of Leicester, Leicester General Hospital, Leicester UK.

■ Irini Nabil Danial, MBBCh, Senior House Officer.
Northampton General Hospital, Cliftonville, Northampton, UK.

■ Amit Modi, MBBS, FRCS (Trauma & Orth), Consultant Orthopaedic Surgeon.

University Hospitals of Leicester, Leicester Royal Infirmary, Leicester LE1, UK.

Correspondence : Mr S M Isaac, 1 Battalion Drive, Wootton, Northampton NN4 6RU, United Kingdom.

E-mail : sherifisaac@hotmail.com

© 2009, Acta Orthopædica Belgica.



Fig. 1. — AP (A) and lateral (B) radiographs showing a postero-lateral dislocation of the elbow.

CASE REPORT

An 18-month-old right-handed girl fell onto her outstretched left arm while running. She presented to the emergency department with a painful deformed left elbow. Initial examination showed an isolated closed injury to the left elbow, which was swollen, deformed and held in 50° of flexion with minimal range of movements. Distal radial pulse was easily palpable. The hand was pink and warm with a capillary refill of less than 2 seconds. Neurological examination of the left arm was unremarkable. Radiographic examination showed a postero-lateral dislocation of the elbow joint with no associated fractures (fig 1).

Informed consent was obtained from the patient's mother. The patient was taken to the operating theatre within 4 hours of the injury and the left elbow was manipulated under general anaesthesia. Closed reduction was achieved under image intensifier control. The elbow was then immobilised in an above-elbow plaster of Paris back-slab.



Fig. 2. — AP (A) and lateral (B) radiographs after reduction and application of plaster slab.

The patient was discharged home the following day and was reviewed in the outpatient fracture clinic two weeks later. Radiographic examination showed a maintained reduction with a congruent elbow joint (fig 2). The plaster back-slab was then removed and the patient was allowed active mobilisation. The elbow range of movement at that time was from 10° to 90° of flexion with full pronation and supination movements. At last follow-up, 4 months post injury, the patient regained a full and

stable range of pain free movements at the injured left elbow.

DISCUSSION

The elbow joint is the second most common joint to dislocate following trauma after the shoulder joint (9,13) and is the second most common site of skeletal traumatic injury in children after the distal forearm (12). The majority of elbow dislocations are closed injuries (6). Posterior dislocation is by far the most common type of dislocation (1,6,13) and the non-dominant extremity is more frequently injured (1). The usual mechanism of injury is a fall on an outstretched arm as in our case.

Closed reduction under general anaesthesia is usually successful in most of the cases especially in pure elbow dislocation. A few cases require operative procedures usually for irreducible dislocations, reduction of associated fractures and treatment of neuro-vascular injuries.

A short period of immobilisation followed by active movements is advisable and will favour a good outcome. We recommend 2 weeks of immobilisation in this age group.

The peak for elbow dislocations occurs at 13 to 14 years of age, at which time the physis begins to close (7). In the skeletally immature patients, bone is weaker than ligaments and therefore major stress applied to the elbow would result in a bony injury rather than an isolated dislocation (7,10). Therefore elbow dislocation without associated injuries is much less common in young children than fracture or epiphyseal separation of the distal humerus and proximal radius and ulna (1) and is particularly very rare in children less than 5 as in our reported case. Radiographs of the contralateral normal elbow may be of help for comparison.

CONCLUSION

Elbow dislocation is uncommon in children. This is usually associated with fractures around the

elbow. Pure elbow dislocation is even more rare below the age of 8. Considering this rarity, radiographs of isolated elbow dislocation should be examined with a great care for associated avulsions and/or fractures and if in doubt, obtaining radiographs of the other elbow may be beneficial to identify associated injuries.

REFERENCES

1. **Altuntas AO, Balakumar J, Howells RJ et al.** Posterior divergent dislocation of the elbow in children and adolescents : a report of three cases and review of the literature. *J Pediatr Orthop* 2005 ; 25 : 317-321.
2. **Borris LC, Lassen MR, Christensen CS.** Elbow dislocation in children and adults. A long term follow-up of conservatively treated patients. *Acta Orthop Scand* 1987 ; 58 : 649-651.
3. **Carey RPL.** Simultaneous dislocation of the elbow and proximal radio-ulnar joint. *J Bone Joint Surg* 1984 ; 66-B : 254-256.
4. **Carlioz H, Abols Y.** Posterior dislocation of the elbow in children. *J Pediatr Orthop* 1984 ; 4 : 8-12.
5. **Fowles JV, Slimane N, Kassab MT.** Elbow dislocation with avulsion of the medial humeral epicondyle. *J Bone Joint Surg* 1990 ; 72-B : 102-104.
6. **Grimer RJ, Brooks S.** Brachial artery damage accompanying closed posterior dislocation of the elbow. *J Bone Joint Surg* 1985 ; 67-B : 378-381.
7. **Hendrikson B.** Supra-condylar fractures of the humerus in children. *Acta Chir Scand* 1966 ; Suppl 369.
8. **Josefsson PO, Nilsson BE.** Incidence of elbow dislocation. *Acta Orthop Scand* 1986 ; 57 : 537-538.
9. **Linsheid RL, Wheeler DK.** Elbow dislocations. *JAMA* 1965 ; 194 : 1171-1176.
10. **Lipscomb PR, Burleson RJ.** Vascular and neural complications in supra-condylar fractures of the humerus in children. *J Bone Joint Surg* 1955 ; 37-A : 487-492.
11. **Rasool MN.** Dislocations of the elbow in children. *J Bone Joint Surg* 2004 ; 86-B : 1050-1058.
12. **Ring D, Waters PM.** Management of fractures and dislocations of the elbow in children. *Acta Orthop Belg* 1996 ; 62 Suppl 1 : 58-65.
13. **Royle SG.** Posterior dislocation of the elbow. *Clin Orthop* 1991 ; 269 : 201-204.
14. **Wilkins KE.** Fractures and dislocations of the elbow region. In : Rockwood CA Jr, Wilkins KE, King RE (eds). *Fractures in Children*. Vol. 3. Lippincott-Raven, Philadelphia, 1996, p 680.