On-line Case Report

Medial humeral condyle fracture with an ipsilateral dislocated radial head

MARK SHILLINGTON, BRETT COLLINS, HPJ WALSH

Department of Orthopaedics, Mater Health Services, Brisbane, Australia

We present the first reported case of a combined medial humeral condyle fracture with ipsilateral radial head dislocation. This injury was sustained by a 7-year-old girl following a fall on an outstretched hand. The operative technique is described. At 6-month follow-up, the patient had normal alignment of the limb and achieved full range of motion.

Keywords: Children – Elbow – Fracture – Dislocation – Medial condyle – Radial head

Case report

A 7-year-old girl presented to the emergency department of a specialist paediatric hospital following an injury to her right elbow. The injury had been sustained during an unwitnessed fall from furniture. On examination, the patient was noted to have significant swelling of the elbow and restricted range of motion. A neurovascular examination was normal. Routine radiographs revealed a displaced fracture of the medial humeral condyle and an anterior dislocation of the ipsilateral radial head (Figs 1 and 2).

The operative management of this patient involved initial closed reduction of the radial head which was confirmed on image intensification. Following this, a medial approach to the condylar fracture was undertaken. With care to protect the ulna nerve, the fracture was reduced and held with two Kirschner wires. Image intensification was once again used to confirm the reduction (Figs 3 and 4). The patient was then managed in a long arm cast for 6 weeks after which the wires were removed.

At the 10-week follow-up appointment, the patient demonstrated normal alignment of the limb and a full range of motion. At a 6-month review, the patient was asymptomatic and had a full range of movement.

Discussion

Fractures about the elbow are extremely common in children. In an epidemiological review, Litchenberg¹ found that fractures about the distal end of the forearm are the most common, and that fractures and dislocations about the elbow are the next in frequency.

Despite the frequency of elbow fractures in children, fractures of the medial condyle are very uncommon and account for less than 2% of all elbow fractures.² Two mechanisms of injury have been proposed for this injury. The first, as demonstrated in our case, occurs following a fall on the outstretched hand with the elbow extended, with subsequent avulsion of the medial condyle. The second, less common mechanism occurs following a fall onto the olecranon which is driven into the trochlea and fractures the medial condyle.

Treatment of medial condyle fracture is based on the classification system of Kilfoyle.³ In this system, a type I fracture is non-displaced, and the fracture line does not go into the articular surface. The fracture line in a type II fracture goes through the articular surface, but the fracture is essentially not displaced. A type III fracture is totally displaced and rotated. Type I fractures heal with simple immobilisation. Type II fractures should be stabilised with percutaneous pinning if the reduction is

Correspondence to: Mark Shillington, Department of Orthopaedics, Mater Hospital, Raymond Terrace, South Brisbane, Australia, 4101
E: markshillo@lycos.com

Figure 1 (above) Radiograph showing displaced fracture of the medial humeral condyle.

Figure 2 (see figure on the left) Radiograph showing anterior dislocation of the ipsilateral radial head.

anatomic; however, if adequacy of the reduction is in question, open reduction and fixation of the fracture with Kirschener wires should occur. Type III fractures, as occurred in our case, require open reduction and fixation.

Similarly isolated dislocation of the head of the radius is extremely rare.⁴ This type of injury is most frequently associated with fracture of the ulna, thus being a type of Monteggia fracture-dislocation. Other published reports

have shown dislocation of the head of the radius to occur with supracondylar⁵ and t-intercondylar⁶ fractures of the distal humerus. Whatever the associated fracture, the importance of radial head reduction should be emphasised because failure of reduction affects the long-term outcome.⁴ In children the preferred treatment is closed manipulative reduction. If, however, adequacy of the reduction is in question, operative treatment is always indicated.

Figure 3 Fracture reduction held with two Kirschener wires.

Figure 4 Fracture reduction held with two Kirschener wires.

In our case we have combined the above treatment principles resulting in a full recovery. Initially closed manipulative reduction of the head of radius was successful. This was followed by open reduction and internal fixation of the type III medial condyle fracture. This treatment should provide consistent outcomes in children with this rare injury.

References

1. Lichtenburg R. A study of 2532 fractures in children. *Am J Surg* 1954; **87**: 330–8.
2. Bensahel H, Csukonyi Z, Badelon D, Badaoui S. Fractures of the medial condyle of the humerus in children. *J Pediatr Orthop* 1986; **6**: 430–3.
3. Kilfoyle R. Fractures of the medial condyle and epicondyle of the elbow in children. *Clin Orthop* 1965; **41**: 43–50.
4. De la Garza JF. Monteggia fracture-dislocation in children. In: Beaty JH, Kasser JR. (eds) *Rockwood and Wilkins' Fractures in Children*, 6th edn. Philadelphia, PA: Lippincott, 2006; 492–525.
5. Powell RS, Bowe JA. Ipsilateral supracondylar humerus fracture and Monteggia lesion: a case report. *J Orthop Trauma* 2002; **16**: 737–40.
6. Sharma H, Wilson N. T-condylar distal humerus fracture associated with irreducible anterior radial head dislocation in an 11-year-old child: a case report. *J Trauma* 2007; **63**: 202–4.