CASE REPORT

A rare case is reported of a Monteggia equivalent injury where a dislocation of the radial head is associated with fracture of the distal third of the radius and ulna. The mechanism, treatment and outcome are described.

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A 12 year old boy fell backwards off a chair onto his outstretched left arm. He described a twisting injury to the arm at the time. He was seen in the accident and emergency department with an obvious deformity of the distal forearm and tenderness over the ipsilateral elbow. Movements at the wrist and elbow were painful and restricted, and no neurological or vascular deficits were noted. Radiographs showed a fracture of the distal third of the radius with a plastic deformation of the ulna at a point just distal to the site of the radial fracture. Both bones were angulated volar-wards. At the elbow the radial head was dislocated anteriorly (fig 1).

A closed reduction of the fracture was accomplished under a general anaesthetic. On reduction of the forearm fracture and supinating the forearm, the radial head relocated itself without difficulty (fig 2). An above elbow cast was applied and the child followed up with weekly radiography for four weeks, at which stage the plaster was removed. At his last review eight weeks after injury, he had excellent wrist and elbow movement, with full range of pronation and supination.

DISCUSSION

Any dislocation of the radial head with an ulnar fracture constitutes a Monteggia lesion. Of the various classifications available, Bado’s is the one that is almost universally in use.

- **Type I:** anterior dislocation of the radial head, fracture of the ulnar diaphysis at any level with anterior (volar) angulation.
- **Type II:** posterior or posterolateral dislocation of the radial head, fracture of the ulnar diaphysis with posterior (dorsal) angulation.
- **Type III:** lateral or anterolateral dislocation of the radial head with fracture of the ulnar metaphysis or diaphysis.
- **Type IV:** anterior dislocation of the radical head, fracture proximal third radius and fracture of the ulna at the same level.

Letts classified such fractures in children into five groups. A (plastic deformation of the ulna), B (green stick fracture) and C (complete fracture) are essentially variations of a Bado I lesion. D and E correspond to type II and type III respectively. He considered Bado IV to be a type I variant.

Other type I variants include isolated anterior dislocation of the radial head, fracture of the ulnar diaphysis with fracture of...
the neck or proximal radius, associated olecranon fractures, distal epiphyseal fracture of the radius, etc, all of which occur after a hyperpronation injury.

Some variants have also been described for type II, III and IV injuries too.\(^3\)\(^4\)

In type I Monteggia fractures, the child falls forward on his outstretched hand, the forearm is in pronation, and at the moment of the fall the hand remains firm to the ground. A moment before the end of the fall, a rotational force is added from the trunk; this force causes further external rotation to an arm already in full pronation. As the hand is fixed it causes a fracture of the ulna shaft. At the same time the radius, being forced into extreme pronation crosses the ulna at the junction of the middle and proximal thirds. This contact acts as a fulcrum, forcing the radius to dislocate anteriorly or fracture or both.\(^1\)

Type I Monteggia fractures with distal radial and ulnar fractures are extremely rare. Blasier et al\(^6\) described a similar case where the radial head dislocation was initially missed and required a delayed reconstruction of the annular ligament. Most of the other cases of distal radial fractures that have been described in association with a Monteggia lesion are type II injuries.\(^3\)\(^7\)

In this particular case the radius and ulna were angulated anteriorly with an anterior dislocation of the radial head. The mechanism of injury in this case is most likely to be a hyperpronation stress to the forearm at the time of the fall.

Excellent stable reduction was achieved by conservative means. It is important to restore normal length and achieve an anatomical alignment of the forearm bones, as otherwise the radial head will not reduce back into place. If good reduction cannot be obtained closed, the threshold for open reduction must be very low.

We would like to emphasise that the mechanism of injury needs to be taken into consideration at all times. With an obviously angulated distal third injury, the features of a dislocated radial head tend to be masked and very easily missed, unless the possibility is considered. The universal principle of examining one joint above and below and including both when taking radiographs for suspected long bone fractures must not be forgotten.

This patient has gone on to achieve an excellent result.

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