EMERGENCY CASEBOOK

Anterior dislocation of the ulnar-humeral joint in a so-called 'pulled elbow'

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Emerg Med J 2006;23:e37 (<http://www.emjonline.com/cgi/content/full/23/6/e37>). doi: 10.1136/emj.2005.033878

We describe an unusual case of a missed anterior dislocation of the elbow joint in a 1 year old girl who presented with a pulled elbow. To our knowledge, this is the first report of anterior dislocation as a result of a pulled elbow in the literature. We would like to highlight the rarity of this presentation and the importance of chronological assessment and management in the accident and emergency department.

A 1 year old healthy Afro-Caribbean girl was brought to our paediatric accident and emergency (A&E) department by her mother with complaints of inability to use the left upper limb shortly after an injury. The mechanism of injury was a sudden traction force given by the mother to the child's forearm in an attempt to stop her running and falling down on the floor. During this manoeuvre, the mother also lifted the girl while holding the arm and then heard a click in the upper limb. The child refused to move the arm following the injury. There was no history of any other injuries and no previous episodes. There was no family history of congenital joint disorders.

The patient was assessed by the paediatric emergency nurse practitioner and paediatrics senior house officer on arrival. Clinical examination showed swelling around the elbow and the girl held her left arm in slight flexion at the elbow with forearm pronated. She avoided all active and passive movements of the arm.

A clinical diagnosis of pulled elbow was made in view of the presentation. The elbow was repeatedly manipulated to achieve reduction. The manoeuvre involved axial traction, supination, and flexion of the elbow. This, however, did not relieve the child's symptoms, but instead worsened them. The patient was then referred to the orthopaedic team for further management. On examination, an alteration in the triangular configuration of the distal humerus was identified and radiographs were obtained. They showed an anterior migration of the olecranon in relation to its articulation with the distal humerus (fig 1A). The elbow was relocated under sedation. After reduction was achieved, the joint remained stable. Repeat radiographs confirmed the reduction with no other abnormalities (fig 1B). The arm was then immobilised in an above elbow cast with the elbow in 90° flexion. The cast was left in position for 3 weeks and the elbow remained stable at 6 week follow up.

DISCUSSION

The elbow joint involves the ulnar-humeral articulation and the radiocapitellar component. The radial head articulates with the ulna forming the superior radioulna joint, which is stabilised by the annular ligament. The area of least resistance in the elbow is posterior, hence, posterior dislocations are very common in acute elbow injuries

while anterior dislocations are usually associated with fractures of the olecranon. Acute dislocations can be associated with concurrent fracture of the distal humerus and forearm.

The majority of elbow dislocation occur in sports and play activities, usually due to a fall on outstretched hand or a fall onto the elbow. To date, there has been no report of traction induced anterior elbow dislocations in children with normal joints.

In children <5 years of age, one of the common injuries presenting to the A&E department is pulled elbow or "nursemaid's elbow". This refers to the subluxation of the radial head from the annular ligament. The mechanism of injury is a sudden pull or axial traction to an extended arm while the forearm is pronated. This is followed by refusal to use the arm. Radiographs are usually normal. Mehara and Bhan¹ described a new sign that they termed the proximal radial length. They reported that 21 of 25 pulled elbows had a distal shift of the radius in relation to the ulna.

The standard recommendation for reducing a pulled elbow involves supination followed by flexion and then extension of the arm. Within a few minutes, the child should begin to move the forearm. In our case, traction in combination with this recommendation was performed repeatedly to achieve reduction before radiographs were obtained.

Despite there being no clear distinctive radiological signs for the diagnosis of pulled elbow, radiographs are still invaluable tools as they may rule out other possible injuries such as an elbow dislocation.

To our knowledge, anterior dislocation of the elbow following traction in children has not yet been reported in the literature. We assume that the traction force applied to our patient's forearm during the injury was responsible for the anterior dislocation of the ulnar-humeral joint of the elbow.

The integral stability of the joint is another factor influencing dislocations. Pulled elbows can also occur in children with hypermobile joints, but there is no evidence that there is an increase in incidence in such cases.²

CONCLUSION

In summary, we recommend that all pulled elbows should be assessed carefully before treatment. Dislocation of the elbow should be suspected clinically by the presence of deformity and loss of the triangular configuration between the bony prominences in the distal humerus. In the case of a pulled elbow, only a single and gentle attempt at reduction should be made, and if this does not relieve the child's symptoms, further investigations are required to rule out an anterior dislocation of the elbow.

Abbreviation: A&E, accident and emergency

Figure 1 (A) Anterior dislocation of the elbow; (B) repeat radiograph of elbow after reduction.

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Competing interests: there are no competing interests.

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Accepted for publication 9 January 2006

REFERENCES

- 1 **Mehara AK**, Bhan S. A radiological sign in pulled elbows. *Int Orthop* 1995;**19**:174–5.
- 2 **Hagroo GA**, Zaki HM, Choudhary MT, *et al*. Pulled elbow—not the effect of hypermobility of joints. *Injury* 1995;**26**:687–90.