Fracture of the upper radius with ipsilateral dislocations of the elbow and superior radio-ulnar joints

A case report

J. Wong-Chung, I. Jahromi, A. J. Aradi

Department of Orthopaedic Surgery, Salmaniya Medical Centre, Bahrain

Accepted: 25 June 1997

Summary. *We report the rare combination of a closed fracture of the upper third of the radius with ipsilateral posterior dislocation of the elbow joint and disruption of the superior radio-ulnar joint. Although in the Bado classification there is a fourth type that describes fractures of both radius and ulna with dislocation of the superior radio-ulnar joint, it does not include the injury we report. We review of the literature and put forward an extension of Bado's classification so that fractures of either, or both, the radius and ulna associated with pericubital dislocations will be included.*

Résumé. *Nous rapportons une association très rare, d'une fracture fermée du tiers supérieur du radius, avec luxations du coude et de la tête radiale. Quoique la classification de Bado comprends un quatrième groupe représentant les fractures des deux os de l'avant-bras avec luxation de la tête radiale, elle ne peut pas intégrer la lésion que nous décrivons. Après avoir revu la littérature sur les fractures du radius associées avec les luxations aux alentours du coude, nous proposons d'ajouter une cinquième catégorie qui comprendra les fractures du radius ou du cubitus ou des deux os accompagnées par des luxations péri-cubitales.*

Introduction

Fractures of the proximal ulna associated with disruption of the superior radio-ulnar joint are usually referred to as Monteggia fractures. The radial head may dislocate anteriorly, posteriorly or, more rarely, laterally. In his classification of Monteggia fractures, Bado included a fourth subtype, in which a fracture of the upper radius occurs at the same level as the ulna [1]. Basically, the type IV is similar to type I, but with an accompanying fracture of the radius.

We report a rare case of fracture of the upper third of the radius associated with dislocation of both the elbow and superior radio-ulnar joints which does not fit into the existing Bado classification.

Case report

A man, 39 years of age, injured his left upper limb when he fell off a truck. Physical examination showed marked swelling of the elbow and upper forearm. There was no neurovascular deficit. Plain radiographs revealed a displaced transverse fracture at the junction of the upper and middle thirds of the radius and posterior dislocation of the elbow joint with lateral dislocation of the radial head (Fig. 1).

Closed manipulation under general anaesthesia failed to achieve stable reduction of either joint dislocation. The radial fracture was then exposed through a Henry approach. The proximal radial fragment was freely moveable in all planes, explaining why reduction of either dislocation could not be maintained. Internal fixation of the fractured radius was performed with a 7 hole 3.5 mm AO/ASIF dynamic compression plate. Only after fixation of the radius was it possible to obtain stable reduction of both the elbow and superior radio-ulnar dislocations.

Postoperatively, the limb was immobilised in an above-elbow posterior slab. Extensive blistering was present when the cast was changed after one week. The swelling subsided

Reprint requests to: J. Wong-Chung, Department of Orthopaedic Surgery, Salmaniya Medical Centre, P.O. Box 12, State of Bahrain

Fig. 1. Anteroposterior **a** and lateral **b** radiographs of the left elbow showing a displaced fracture of upper radius, posterior dislocation of elbow joint and disruption of the superior radio-ulnar joint with lateral dislocation of the radial head

and the patient was discharged on the fifteenth day. The cast was removed on the twenty-second day and active exercises begun. He resumed heavy manual labour after four months.

He had a full range of all elbow movements at two years' follow up. Radiographs showed that the fracture was consolidated, and both elbow and superior radio-ulnar joints remain reduced (Fig. 2).

Discussion

Fracture of the radius alone is more commonly associated with disruption of the distal radio-ulnar joint and only two cases of anterior dislocation of the radial head have been reported in association with fracture of the upper third of radius without concomitant fracture of the ulna [5, 6]. Simpson et al. suggested that this might represent a variant of the Monteggia lesion which was not included in the Bado classification [6]. Evans illustrated an-

Fig. 2a, b Radiographic evidence of consolidation of the fracture at two years. Both elbow and superior radio-ulnar joints remain reduced

other unusual case of fracture of the distal third of the radius accompanied by anterior dislocation of the radial head [4].

Dislocation of the elbow joint can also occur in association with fracture of the upper radius. Beach and Hewson described one patient in whom the radius was fractured 6 cm below the elbow joint and the elbow dislocated posteriorly [2]. Watson-Jones illustrated another example of a fracture of the upper radius with posterior dislocation of the elbow joint [7].

Our case presents a rare combination of a fracture of the upper third of the radius posterior dislocation of the elbow joint and disruption of the superior radio-ulnar joint; such an injury has only been reported once previously. Chia Chin Soon et al. recently presented a case with identical initial radiographs [3], but the dislocation of the superior radio-ulnar joint was not recognised until 7 weeks after open reduction and internal fixation of the fracture of the upper third of the radius.

We suggest that the injury described is part of a spectrum of fractures of the upper forearm bones associated with dislocations about the elbow joint

Table 1. Fractures of forearm bones with dislocations about the elbow

Fracture type	Fracture	Associated joint lesion
Bado type I	Ulna	Anterior dislocation of radial head
Bado type II	Ulna	Posterior dislocation of radial head
Bado type III	Ulna	Lateral dislocation of radial head
Bado type IV	Ulna & radius	Anterior dislocation of radial head
<i>Type V</i>	<i>Fracture of radius with associated pericubital dislocations</i>	
Evans, 1949 Simpson et al., 1991 Mehara & Bhan, 1993	Radius	Anterior dislocation of radial head
Beach et al., 1966 Watson-Jones, 1976	Radius	Posterior dislocation of elbow joint
Chia Chin Soon et al., 1996 Present case	Radius	Posterior dislocation of elbow joint & lateral dislocation of radial head

which is not included in the Bado classification. We propose adding a fifth group to his categories, comprising fractures of the radius associated with dislocations of the superior radio-ulnar and/or elbow joints (Table 1). The extended classification will include all fractures of either or both forearm

bones accompanied by dislocations around the elbow joint.

The combination of fracture and joint injuries reported is associated with significant soft tissue damage. When dealing with a fracture of the radius with dislocation of the elbow joint, associated disruption of the superior radio-ulnar joint should be looked for, and prompt and appropriate treatment instituted.

References

1. Bado JL (1967) The Monteggia lesion. Clin Orthop 50: 71–86
2. Beach PM, Hewson JS (1966) Elbow dislocation with comminuted fracture of the proximal radial shaft. Thoughts on the mechanism. Am J Surg 112: 941–942
3. Chia Chin Soon J, Kumar VP, Satkunanarthan K (1996) Elbow dislocation with ipsilateral radial shaft fracture. Clin Orthop 329: 212–215
4. Evans EM (1949) Pronation injuries of the forearm with special reference to the anterior Monteggia fracture. J Bone Joint Surg [Br] 31: 578–588
5. Mehara AK, Bhan S (1993) Ipsilateral radial head dislocation with radial shaft fracture: case report. J Trauma 35: 958–959
6. Simpson JM, Andreshak TG, Patel A, Jackson WT (1991) Ipsilateral radial head dislocation and radial shaft fracture. A case report. Clin Orthop 266: 205–207
7. Watson-Jones R (1976) Injuries of the forearm. In: Fractures and joint injuries, vol 2, 5th edn. Churchill Livingstone, Edinburgh London New York, pp 698–700