

Unusual Combination of Monteggia, Radius Shaft, and Scaphoid Fractures*

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ABSTRACT

A rare combination of an ulnar fracture with posterior dislocation of the head of the radius and fracture of the radius shaft concomitant with an ipsilateral scaphoid fracture is presented. To the best of our knowledge, no such case has been reported. The mechanism of this fracture combination is discussed with respect to its role in producing the Monteggia type II fracture. Treatment consisted of a combination of closed and open reduction with external fixation.

Keywords: Monteggia; Scaphoid; Radius; Posterior; Herbert

1. Introduction

The case of a young adult who sustained a posterior Monteggia lesion with fracture of radius shaft and an ipsilateral navicular fracture is presented. This is an extremely unusual injury. The mechanism of injury is discussed.

2. Case Report

A 26-year-old man fell backwards off a tree onto his outstretched left arm. He described a twisting injury to the arm at the time. The patient presented to a tertiary trauma centre was seen 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 an ulnar fracture with posterior dislocation of the radial head and fracture of the radius shaft concomitant with an ipsilateral navicular fracture. At the elbow the radial head was dislocated posteriorly (**Figure 1(a)**). All injuries were of the closed type. At surgery, the ulnar fracture was openly reduced and fixed with a plate. The dislocation was reduced by manipulation after open reduction of the radial shaft fracture, which was then fixed with a plate. The dislo-

cated radial head reduced spontaneously, and the wound was sutured (**Figure 1(b)**). Open reduction and internal fixation with the Herbert-Whipple screw was used for navicular fracture (**Figure 1(c)**). The upper limb was immobilized in a light, above-elbow, full cast. The patient made an uneventful recovery, and the cast was removed at three weeks. Then active mobilization was started. Consolidation was observed in 10 weeks. At his last review eighteen month after injury, he had excellent wrist and elbow movement, with full range of pronation and supination.

3. Discussion

Any dislocation of the radial head with an ulnar fracture constitutes a Monteggia lesion. Of the various classifications available, Bado's [1] 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 radial head, fracture proximal third radius and fracture of the ulna at the same level.

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(a)



(b)



(c)

Figure 1. (a) ulnar fracture with posterior dislocation of the radial head and fracture of the radius shaft concomitant with an ipsilateral navicular fracture. (b) ulnar fracture and radius shaft fracture were openly reduced and fixed with a plate. The dislocated radial head reduced spontaneously. (c) the Herbert-Whipple screw was used for navicular fracture.

Other type I variants include isolated anterior disloca-

tion 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 [2,3].

The Bado type II lesion with posterior dislocation of the head of the radius accounts for 70% to 80% of such injuries [4,5]. Jupiter *et al.* [6] further subdivided the type II injuries based on the pattern of damage to the head of the radius and the site of the fracture of the ulna. They noted that fractures of the ulna, including the coronoid process (type A), and those distal to the coronoid process at the junction of the metaphysis and diaphysis (type B) were relatively common, whereas fractures involving the diaphysis (type C) and those extending from the olecranon to the diaphysis (type D) were rare.

Ring *et al.* [4] noted that Bado type II lesions occurred following two different mechanisms of injury. Fractures resulting from low-energy injuries tended to occur in elderly female patients, whereas those associated with a higher-energy were seen in younger, male patients. An associated fracture of the head of the radius occurred in 68% of Type II injuries.

Mullan *et al.* [7] reported a case of an adult Monteggia lesion associated with a Smith fracture and a fracture of the scaphoid waist, both occurring on the ipsilateral wrist—a very rare combination.

In our case, by falling backwards on the outstretched hand, radially deviated wrist, which results in extreme dorsiflexion at the wrist and compression to the radial side of the hand the patient's forearm locked in supination, and the weight of the body pronated the limb against a hand fixed on the ground. This produced the Monteggia lesion after a scaphoid fracture. When this twisting force combines with a heavy compressional force, fractures of the wrist may also theoretically occur [7-9].

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 can not be obtained closed, the threshold for open reduction must be very low.

4. Conclusions

A combination of an ulnar fracture with posterior dislocation of the radial head and fracture of radius shaft concomitant with an ipsilateral navicular fracture is rare.

The mechanism of injury giving rise to this rare combination of fractures as well as a review of the literature is discussed.

The factors we believe contributed to the excellent result were early diagnosis, anatomic reduction, stable fixa-

tion, and early physical exercise.

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