CASE REPORT

Rare Combination of Seven Fractures in the Same Forearm and Wrist

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Summary

A rare combination of a segmental ulnar fracture with fracture dislocation of the head of the radius and intraarticular fracture of the distal radius concomitant with an ipsilateral scaphoid, lunate and coronoid process fractures is presented.

The mechanism of injury could possibly be a tremendous impact on the outstretched hand with a dorsiflexed wrist, fracturing the carpal bones and the distal radius. Transmitted axial forces on the ulna in a pronating forearm resulted in the other fractures. To the best of our knowledge, no such case has been reported. Open reduction with screw fixation of the scaphoid, plating of the proximal ulna and Kirschner wiring of the distal radius and radial head dislocation were done.

Key Words: Seven fractures, Ipsilateral forearm and wrist

Introduction

Forearm fractures are becoming increasingly complex in their presentation especially where motorcycles abound. They are often the result of rather severe trauma and frequently have associated nerve injuries as well as injuries to other parts of the body. We report such a case with seven fractures in the same forearm and wrist.

Case Report

A 26 year old man was riding a motorcycle at high speed when he crashed. He had loss of consciousness and was unable later to recall what happened at the time of the accident. He was brought to hospital by a passerby. Plain radiographs of the left upper limb (Fig. 1) showed the following fractures:

1. Fracture of the scaphoid.
2. Intraarticular fracture of the distal radius with dorsal displacement. (Colles' type fracture).
3. Fracture of the distal third of the ulna.
4. Fracture of the proximal third of the ulna with dislocation of the proximal radio-ulnar joint. (Monteggia type)
5. Fracture of the radial head with dislocation of the distal radio-ulnar joint (Essex-Lopresti type).
6. Fracture of the coronoid process.

The seventh fracture, a chip off the volar surface of the lunate was seen only at the time of open surgery. An ulnar nerve palsy was also noted. There was also an associated fracture of the left mandible.

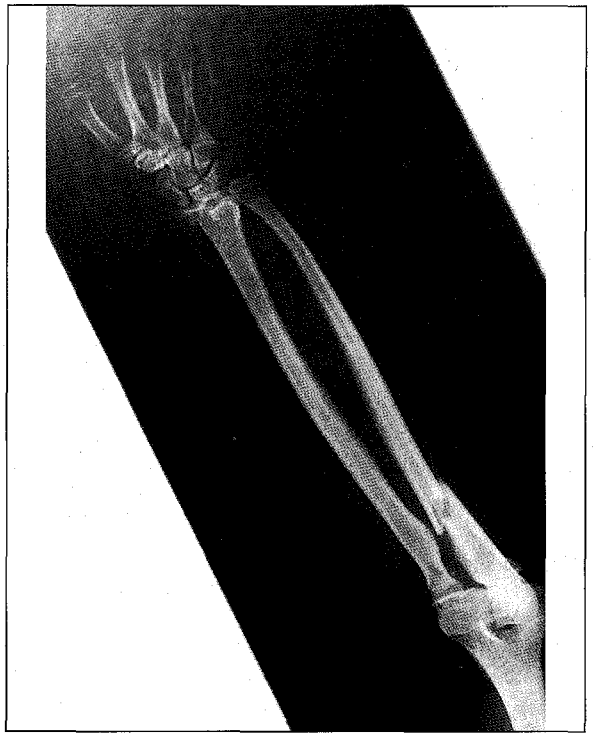

Fig.1: Radiographs showing the different fractures (antero-posterior view).

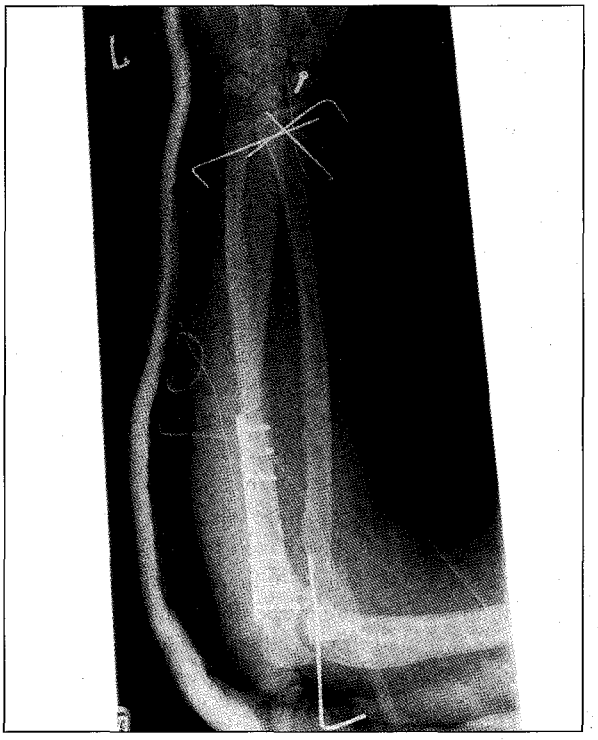

Fig. 2: Immediate postoperative radiograph.

Surgery was carried out three days later when the patient's general condition improved. Through a volar incision at the wrist, the scaphoid fracture was fixed with a minifragment 2.7mm screw. The chip fracture of the lunate was excised and the fragments of the distal radial fracture were fixed with Kirschner wires. Boyd's incision was then used to expose the proximal ulna and radial head.

The proximal ulna was fixed with a dynamic compression plate. The fractured fragments of the radial head were excised, leaving two thirds of the articular surface still intact. The dislocated radial head was reduced and a single Kirschner wire through the capitellum was used to hold it in place with the elbow at 90 degrees of flexion. The undisplaced distal third ulna fracture and the fracture of the coronoid were not fixed. Postoperatively, an above elbow plaster backslab was applied. (Fig. 2)

The proximal Kirschner wire was removed at three weeks and the elbow mobilised, using a below elbow backslab for the wrist joint.

At six weeks the distal wires were removed, together with the cast.

The ulnar nerve palsy recovered spontaneously two months after the injury. At the last follow up nine months after the injury, the patient had returned back to his normal work as a minibus driver with no complaints. The range of elbow flexion was from 20 to 100 degrees; supination from 0 to 80 degrees and pronation from 0 to 40 degrees.

Discussion

Fractures of the forearm are frequently complex in their presentation[1] and unusual combinations and the mechanisms of injury have been described[2].

The patient in our case report was unable to recollect how the accident happened. He could only remember that he was traveling at high speed on his motorcycle before the accident took place. We seek here to elucidate the probable mechanism of injury causing all the forearm fractures. The patient could conceivably have been thrown off his machine after hitting an object; most commonly in this country, a car that had suddenly moved out from a side road. At high speed, he would have been thrown a considerable distance, headlong. Landing on an outstretched arm, the wrist must have been dorsiflexed at the point of impact. The hyperextended wrist would have first caused the fracture of the scaphoid; followed by the comminuted fracture of the distal radius. The sharp end of the fractured distal end of the radius could then have chipped off a small piece of the volar surface of the lunate. With the energy through the radial axis partially dissipated at the distal radius, the force was next transmitted through the ulna. The body was probably twisting at the moment of impact, with the momentum causing the forearm to pronate. This would cause the segmental fracture at the lower and upper third of the ulna. The upward force would impact the coronoid process against the humerus, causing it to fracture. At the same time, the same upward and rotating forces dislocated the radial head, shearing itself on the capitellum and fracturing in the process.

The patient made reasonable recovery of function despite the severity and complexity of the injuries. He was fortunate too that there was no residual ulnar nerve damage. It is highly likely though, that he will develop arthritis of the elbow and wrist joints in the future.

Acknowledgements

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