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Simultaneous Fractures of the Ipsilateral Scaphoid and Comminuted Distal End Radius Fix with Two Approach in Single Sitting: Case Report

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Case presentation: A patient with Ipsilateral comminuted, displaced distal fracture of the radius and fracture of the scaphoid was treated via internal fixation of the scaphoid fracture with Herbert screw and internal fixation of the distal radius fracture with locked volar & dorsal plating.

Conclusions: Rigid internal fixation of the distal radius and scaphoid fracture is mandatory to start early active rehabilitation of the wrist without the need for wrist immobilization with plaster or external skeletal fixation.

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I. Background

Simultaneous fractures of the ipsilateral scaphoid and distal radius are rare. We have found only one case reported in the English language medical literature; the patient had been treated using plaster immobilization [1]. In this paper, we report the case of a young man who sustained high-energy, unstable, displaced comminuted distal radius fractures along with scaphoid fracture. The latter were treated with Herbert screw fixation and locking volar & dorsal plates. The purpose of this paper is to report the operative technique used to ensure that an early wrist rehabilitation program could be started in this unusual case.

Although the distal radial fracture can be diagnosed without too much difficulty, but the scaphoid fracture can be missed initially and leading to a delay in diagnosis and adequate treatment. The distal radius fracture is often intra-articular, while the scaphoid fracture occurs at the waist in most cases. Treatment of combined fractures of the distal radius and scaphoid can vary from closed reduction and cast immobilization to open reduction and internal fixation (ORIF) with bone grafting. Arthroscopically assisted fixation has also been reported recently [2].

The sequelae of an untreated or inadequately treated fracture of the distal radius can be significant and functionally disabling [3]. Unrecognized or untreated fractures of the scaphoid can also lead to non-union and can be accompanied by avascularity of the proximal pole, both of which can seriously compromise wrist function [4].

In this study, we report our experience of patients with combined fractures of the distal radius and scaphoid to increase the awareness of this combined injury and suggest an algorithm for its management.

II. Case Presentation

A 26-year-old man alleged history of the road traffic accident. He was came to the emergency department, and done Roentgenogram and CT scan that displayed combined ipsilateral fractures of the scaphoid and comminuted distal end radius fracture. The scaphoid fractures were typed A according to the Herbert classification system, and the distal radial fractures were type C (23-C3) according to the AO classification system (Figure 1 & 2). Open reduction of the intra-articular distal radius fracture and the scaphoid fracture was performed under regional anesthesia.

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Figure-1: Preoperative AP / LAT roentgenogram of the right distal radius and scaphoid fractures.

Figure-2: Pre-operative CT Scan showing comminuted fracture distal end radius (AO - 23C3) and fracture scaphoid (Herbert Classification Type A)

Initially, we fixed the distal end radius from the dorsal side using locking plate via the dorsal approach then dissection was made between the flexor carpi radialis and palmaris longus tendons, and it was extended 3 cm distal to the wrist flexion crease to expose the scaphoid. The flexor pollicis longus tendon was retracted in the direction of the radius, while the median nerve and other tendons were retracted in the direction of the ulna, revealing the pronator quadratus. Next the distal end radial borders of the pronator quadratus were raised and retracted in the direction of the ulna to expose the distal radius. First, the scaphoid fracture was fixed with a Herbert screw next open reduction and internal fixation of the distal end radius was performed with volar approach with the locking plate (Figures 3). No cast immobilization or bracing was used after the surgery. The patient began a passive and active range of motion exercises immediately.

Figure-3: Postoperative AP / LAT roentgenogram of the right distal radius and scaphoid

III. Discussion

Ipsilateral fractures of the distal radius and scaphoid are uncommon injuries, however, thus far there is only one reported case of ipsilateral fractures of the distal radius and scaphoid, and in that case the patient was treated using a plaster immobilization. Conservative management like cast immobilization may be applied in children but reduction maneuvers for distal radial fractures should bedone carefully to avoid displacement of the scaphoid fracture [5,6]. Although the presence of displaced scaphoid and radius fractures in adults as in our case is an indication for operative treatment, keeping in mind that traction would be applied to the carpus to treat an unstable distal radial fracture, the presence of even an un-displaced scaphoid fracture with a displaced distal radius fracture is an indication for internal fixation of the scaphoid [7]. The three main management methods for unstable distal radial fractures are external fixation, dorsal plating, and volar plating [8]. The volar approach is advantageous to dorsal dissection, which may lead to the inadequate blood supply to the dorsal meta-physeal area of the radius, can be avoided further this approach causes fewer problems related to the soft-tissue and tendons [8, 9]. The locked compression plate uses threaded screws that lock into the plate holes when tightened; this provides angular and axial stability with minimal possibility of screw loosening. Also these volar locking compression plates have significant strength advantages over those used in dorsal plating [8-10].

IV. Conclusions

Ipsilateral fractures of the distal radius and scaphoid are rare and are usually the result of High-energy mechanisms. The scaphoid fracture is usually a non-displaced fracture at the waist. The distal radius fracture pattern varies but most are displaced and comminuted. The union rate of the scaphoid is high, even if subjected to radio-carpal distraction required for distal radius management.

High- energy trauma to the hand and wrist can result in ipsilateral fractures of the radius and scaphoid and initiation of an early rehabilitation program requires rigid fixation of both these fractures. Volar and dorsal locking plating of distal radius fracture and Herbert screw fixation of scaphoid fracture allows this rigid fixation allow to start early active rehabilitation of the wrist without the need for wrist immobilization with plaster or external skeletal fixation.

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