

An isolated palmar scaphoid dislocation with undisplaced fracture: A case report and review of literature

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ABSTRACT

Isolated carpal scaphoid dislocation is an extremely uncommon injury. Various methods have been used to treat the scaphoid dislocations, which involves open reduction and K-wire fixation with or without ligament repair or just closed reduction and cast application. The rarity of this injury has led to the proposal of vague and sometimes conflicting treatment strategies. In this article, we report a case of isolated palmar dislocation of scaphoid with an undisplaced fracture. Even though isolated dislocations of scaphoid have been reported before, this particular injury pattern of isolated dislocation with a fracture through the waist of scaphoid has not been reported before to the best of our knowledge. This case was managed by closed reduction, percutaneous Herbert screw fixation, and cast immobilization for 6 weeks, which produced a satisfactory short-term outcome.

Keywords: *Dislocation, Scaphoid, Undisplaced fracture*

An isolated scaphoid dislocation is an uncommon injury. Higgs described this injury in 1930 for the 1st time [1]. The exact mechanism of scaphoid dislocation has yet to be established, but it is generally believed to involve dorsiflexion and ulnar deviation with or without rotational forces [2,3]. Scaphoid dislocations occur usually in association with other injuries involving the ligaments attached to it or perilunate fractures. Various methods have been used to treat the scaphoid dislocations, which involves open reduction and K-wire fixation with or without ligament repair or just closed reduction and cast application [4].

We present a case report of isolated volar scaphoid dislocation with undisplaced fracture treated by closed reduction and percutaneous fixation with Herbert screw and cast immobilization. This particular injury pattern has not been reported in the literature before.

CASE REPORT

A 36-year-old man presented to our orthopedic department following a history of fall from height 2 days back, with pain and deformity in his left wrist. Clinically, there was swelling in the thenar aspect of the hand with reduced mobility in the fingers (Fig. 1). Bony prominence was felt on the volar aspect of the wrist with diffuse tenderness. Movements of the wrist were very painful. There were no distal neurovascular deficits. Rest of the systemic examination including vitals was unremarkable, and no additional injuries were noted at presentation. Radiographs of the wrist showed isolated volar dislocation of scaphoid with an undisplaced fracture through the waist (Fig. 2).

Initially, a closed reduction was performed for scaphoid dislocation by manual traction and countertraction with gentle pressure from volar to dorsal direction over the thenar region. The reduction was checked under image intensifier machine, and it was found that scaphoid had relocated without any evidence of scapholunate diastasis. Although the fracture of the scaphoid was undisplaced, it was treated by percutaneous Herbert screw fixation. A guide wire was passed into scaphoid from distal to the proximal pole under image intensifier control. Internal fixation of the scaphoid was performed using a cannulated differential threaded headless screw (Figs. 3 and 4). The wrist was immobilized in a below elbow plaster cast postoperatively. The post-operative period was uneventful. The patient was followed up at 3 weeks and 6 weeks (Fig. 5).

A plaster cast was removed at the end of 6 weeks and range of motion exercises was started. The range of motion exercises improved the wrist mobility after plaster removal. There was a limitation of wrist flexion and extension with minimally reduced hand grip compared to the normal side. No clinical or radiographic evidence of carpal instability or median nerve involvement was revealed, on standard X-rays or dynamic evaluations. No sign of avascular necrosis (AVN) or degenerative arthritis was observed. The patient was recalled again after 1 year of the injury, but unfortunately, the patient was lost to follow-up.

DISCUSSION

Isolated carpal scaphoid dislocation is a relatively rare injury often seen in patients with high-velocity trauma while patients trying to



Figure 1: Clinical photographs of the wrist



Figure 2: Radiographs showing isolated palmar dislocation of scaphoid with undisplaced fracture



Figure 3: Intraoperative clinical photograph

hold on to an object while falling. The significant amount of force required to dislocate the scaphoid out of its fossa usually provokes a radial styloid fracture or a waist fracture of the scaphoid which describes the rarity of this traumatic event [5]. The severity of the injury is strongly dependent on the number of ligaments disrupted. It has been stated that the radioscapocapitate and scapholunate ligament are ruptured initially followed by the radiolunate and the scaphotrapezial ligament [6].

Of the few reported cases, treatment strategies have emphasized closed reduction with percutaneous Kirschner wire fixation and more recently open reduction with ligament reconstruction with internal fixation [7-10]. The rarity of this injury has led to the proposal of vague and sometimes conflicting treatment strategies. Polveche *et al.* [11] have divided these injuries into isolated dislocations (Type I) and scaphoid dislocations associated with axial disruption of the capitolunate joint (Type II). More recently, Leung *et al.* further divided the classification of these injuries into the following: Primary versus secondary, simple versus complex, partial versus total, and the direction of the dislocation [2].

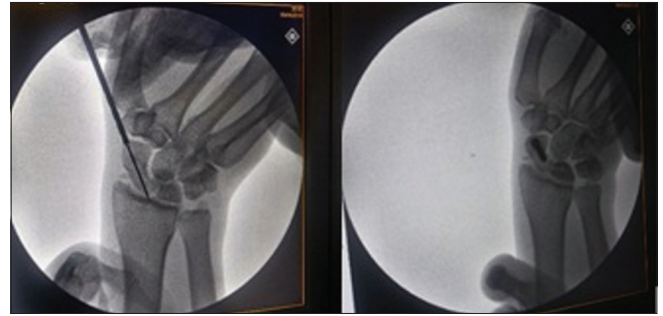


Figure 4: Intraoperative image intensifier images

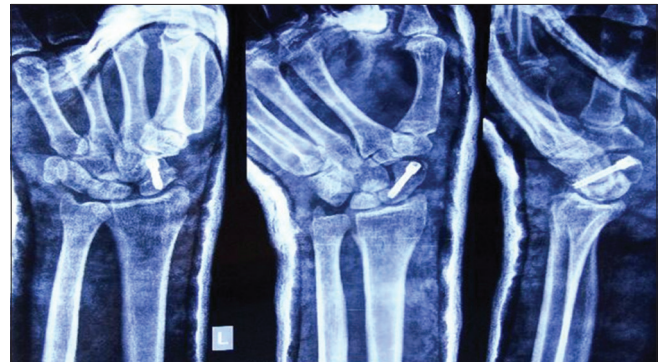


Figure 5: Radiographs taken at 6-week follow-up

Primary dislocations are dislocations that result directly from the injury and secondary dislocations are persisting dislocations following failed closed reduction. Simple dislocations involve only the scapholunate and radioscapoid while complex types have distal carpal row involvement. In partial dislocations, the proximal pole of the scaphoid is found outside of the fossa, but the soft tissue attachments to the distal portion are intact. Complete dislocations refer to injuries in which the dislocated scaphoid lacks any soft tissue attachments. Chloros *et al.* created an algorithm for treating isolated carpal dislocations [4]. They recommended open reduction and K-wire fixation for complex dislocations, simple dislocations with palmar-ular dislocations, and simple dislocations with delayed treatment. Closed reduction and casting may be satisfactory for simple dislocations in which there was no delay in treatment. However, if closed reduction fails and a secondary dislocation remains, the most appropriate treatment option would be open reduction and K-wire fixation. Our review revealed that the diagnosis of this injury is often missed, with seven of the previous 23 cases being treated more than 2 weeks after the injury occurred [1,12-14].

In this case, we are reporting a case of acute isolated palmar dislocation of scaphoid with an undisplaced fracture in it. This particular injury pattern has not been reported in the literature before. This was treated by closed reduction of the scaphoid and then percutaneous fixation of the undisplaced fracture of scaphoid with a Herbert screw under image intensifier control. Then, the wrist was immobilized in a scaphoid cast for 6 weeks.

Even though AVN of scaphoid is possible after isolated dislocation, only one case has been reported before in literature [6].

The low incidence of AVN following partial scaphoid dislocation can be attributed to the remaining scaphotrapezial ligament and capsular attachments providing sufficient blood supply [8,10]. In cases of complete disruption of all ligamentous attachments, undisturbed intraosseous channels within the intact scaphoid bone allow rapid revascularization from surrounding soft tissue [2]. Other possible complications include post-traumatic arthritis and carpal instability [15].

CONCLUSION

Isolated scaphoid dislocation is a rare injury, usually associated with high-energy trauma. The injury is easily overlooked. The prognosis of isolated dislocations of the scaphoid is typically good when treated early and appropriately. Complications are uncommon, and most patients will return to their previous activities following proper treatment.

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