

ISOLATED, PURE RADIAL DISLOCATION OF THE SCAPHOID

A CASE REPORT AND REVIEW OF LITERATURE

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ABSTRACT - Isolated scaphoid dislocation is a rare injury of the wrist. To our knowledge, only 22 cases of isolated scaphoid dislocation have been reported in English-language literature and we could find only one case with pure radial dislocation. We present a 34-year-old man with isolated pure radial scaphoid dislocation that was treated by open reduction and repair of the scapholunate ligament and pin fixation. Because of the rarity of the injury and as few orthopedic surgeons seem to have encountered it, we present this case along with literature review stressing on treatment options and results.

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injury, only individual case reports have been published. We have encountered one case of pure radial dislocation of the scaphoid. This prompted us to review the English language literature about this rare injury.

CASE SUMMARY

A 34-year-old man presented to our clinic with symptoms of right wrist pain and swelling lasting two days. While driving, he met an accident and had a head on collision. His right hand had a severe twisting injury, most probably severe ulnar deviation. On examination the hand was found to be in a position of ulnar deviation with swelling, tenderness, and a prominence along the radial aspect of the carpus. The range of motion of the wrist was limited and the neurovascular status was normal (Fig. 1.A and 1.B).

INTRODUCTION

Since isolated dislocation of the scaphoid is a rare

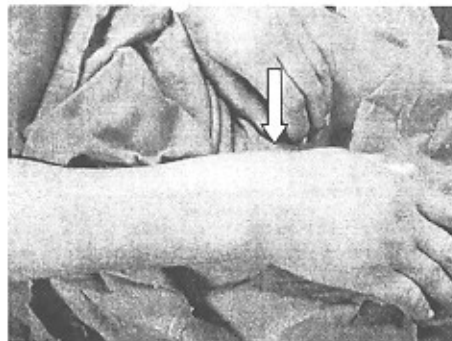
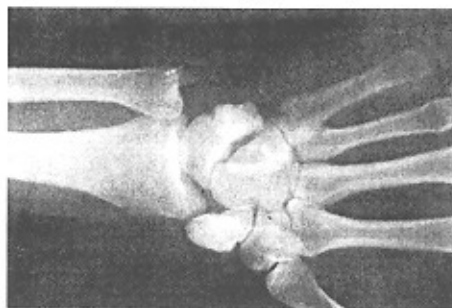
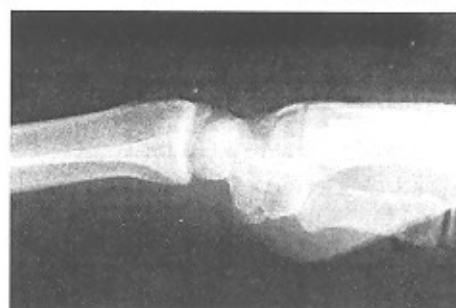


Fig. 1. Preoperative photographs of patient showing ulnar deviation and prominence along radial side of the carpus (arrows).



A



B

Fig. 2. Initial radiographs of the patient revealed isolated pure radial dislocation of the scaphoid without any dorsal or palmar translation. A. AP view B. Lateral view.

Radiographs of the wrist revealed an isolated pure radial dislocation of the scaphoid (Fig. 2A and 2B).

Because of isolated radial dislocation of the proximal pole of the scaphoid and rupture of the scapholunate ligament, we decided to repair this ligament irrespective of closed reduction results. Thus under general anesthesia, we tried closed reduction with longitudinal traction, ulnar deviation, and manual pressure over the prominent proximal pole of the scaphoid. Closed reduction was not successful and so we opened the wrist through a dorsal longitudinal approach. After opening the capsule, the scapholunate ligament was torn with avulsion of a small fragment from the lunate and although the major fragment remained attached to scaphoid, small portion of the ligament remained attached to the lunate (Fig. 3).

We repaired the ligament by three direct 4-0 prolene sutures (Fig. 4).

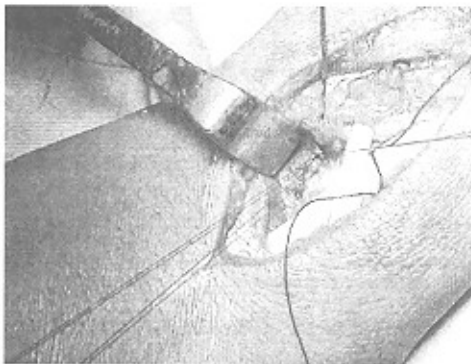


Fig. 3. Torn scapholunate ligament

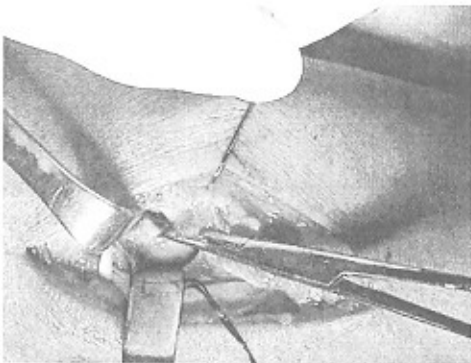


Fig. 4. Repaired scapholunate ligament

Then we fixed two bones with two KW from the scaphoid to the lunate (Fig. 5) and after routine closure of the wound, a short thumb spica cast was applied.

After 6 weeks the pins were removed and another thumb spica cast was applied for another 2 weeks. After removal of cast at 9th week, the patient was asymptomatic and after 4 weeks, ROM was full in ulnar and radial deviation and palmarflexion but 20 - degree

limitation in dorsiflexion. The last follow up X-ray is shown in figures 6.A and 6.B.

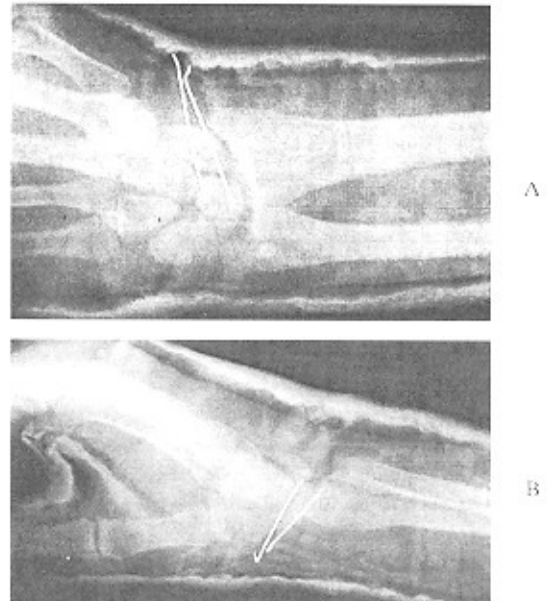


Fig. 5. Postoperative X-rays.

On the last follow up visit after 9 months, the ROM had improved and no evidence of avascular necrosis was found in X-ray.



Fig. 6-A. Follow-up X-ray, AP



Fig. 6-B. Follow-up X-ray, lateral

DISCUSSION

Isolated dislocation of the scaphoid is a rare injury which to our knowledge had been first reported in English language literature in 1930 (1). We found eighteen subsequent reports of 22 patients who had simple form of scaphoid dislocations (2-16). Of these 22 cases, only 1 case was found to have pure radial dislocation (16), and our case is the second case of this type being reported.

Scaphoid dislocation can be classified by several routes. It may be classified as simple or complex if the distal row is included (17,18,16,15,11). It may be total or partial, in total form all of the soft tissue attachment of the scaphoid is disrupted and it was found in the forearm in one case (6). In partial dislocation, the proximal pole can be dislocated palmar-ward, dorsally or pure radially; 7 cases with isolated dorsal dislocation have been reported (3,4,15,19-21). Palmar-ward dislocations can be classified as palmar radial, palmar straight and palmar ulnar with respect to deviation of proximal pole; 9 cases with palmar radial dislocation have been reported so far (2,6,8,11,12,14,20). Two cases with palmar ulnar dislocation have been found in literature, in both of which median nerve compression had occurred (5,13). One case with palmar straight was reported (6). And finally scaphoid dislocation may be closed or open and we found only one report of open dislocation of the carpal scaphoid (22).

From anatomical and biomechanical standpoints, there are three major periscaphoid ligaments that stabilize proximal pole and waist of the scaphoid: the radioscaphocapitate ligament, the scapholunate interosseous ligament, and the long radiolunate ligament. The scaphocapitate and scaphotrapezium ligaments stabilize distal pole of scaphoid from its palmar surface (12,23,24). Szabo believed that sequence of ligamentous failure in scaphoid dislocation begins in the radiopalmar aspect of the proximal pole with failure of the radioscaphocapitate and scapholunate interosseous ligaments, then progresses to the long radiolunate ligament, and ends at the scaphotrapezium ligament (12). Isolated dislocation of the scaphoid may be taken as a severe form of scapholunate dissociation (5). Failure of the interosseous scapholunate ligament was found in both injury but the radioscaphocapitate ligament kept the proximal pole of scaphoid in position in cases of complete scapholunate dissociation. Although some authors have described scaphoid dislocation without failure of the scapholunate interosseous ligament (12), we believe that this concept is true and scapholunate dissociation is one of the constant features of the scaphoid dislocation (25).

The mechanism of dislocation of the scaphoid is unknown; however, on the basis of previous reports and

our case, we believe that extension of the wrist, intercarpal supination and ulnar deviation are involved (12,26). The dislocations of the scaphoid in most of the reported cases were sustained by drivers involved in a motor vehicle accident, which suggests transmission of force to the wrist through the steering wheel that could predispose to this type of injury (5,8,11,12).

Options for the treatment of dislocation of the scaphoid include closed reduction and casting, closed reduction and percutaneous pinning (12), arthroscopically assisted percutaneous pinning (11,12), and open reduction with internal fixation (2,14). Despite reports of successful management with closed reduction and immobilization in a cast alone (17,18), at present, most authors recommend percutaneous pinning in addition to maintaining reduction in the cast (12). If after initial closed reduction a residual scapholunate diastasis greater than two millimeter remains, fluoroscopic examination is conducted. If there is synchronous motion of the scaphoid and the lunate, arthroscopic assisted freeing of soft tissue interposition and percutaneous pinning is recommended. On the other hand, if the motion of the scaphoid and the lunate is asynchronous, open reduction and percutaneous pinning through a dorsal approach is recommended (12). But with this concept that the scapholunate dissociation is a constant component of the scaphoid dislocation, we recommend open repair of the scapholunate ligament in spite of anatomic closed reduction, through a dorsal approach as we have done in our case (25). We recommend pinning of the scaphoid to the lunate and the capitate with K wire and immobilization in a below elbow thumb spica for 8 weeks.

It is interesting that no proven case of avascular necrosis has been found, even in total dislocation or after total detachment of surrounding soft tissues from the scaphoid during open reduction, although transient radiological feature of early avascular necrosis occurred in the second and third week in these cases (2,17).

Isolated dislocation of the scaphoid carries a good prognosis provided early treatment is started. The most significant risk factor in poor prognosis is delayed diagnosis and treatment, particularly if it exceeds two to three weeks.

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