Dorsal Dislocation of Lunate, a Rare Carpal Dislocation - Case Report

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Abstract

Lunate dislocations commonly occurs in volar direction as a part of perilunate injuries. This may be associated with fractures of carpal bones. Substantial trauma is required to disrupt the strong radio carpal and intercarpal ligaments. There are very few reports of lunate dislocating dorsally. We present a case of dorsal lunate dislocation, without associated significant bony injuries. The patient was treated by closed reduction, percutaneous K wiring and immobilisation in a cast. Ligament repair was not done.

Keywords: Lunate; Perilunate; Dorsal; Dislocation; Wrist; Carpus

Introduction

Dorsal lunate dislocation is a very rare injury. To our knowledge, only six cases have been reported in the English literature [1]. Dislocation of the lunate is the last event in the failure cascade of perilunate dislocations. Lunate commonly dislocates volarly [2].

Patient History

A 50 year old male, involved in a road traffic accident presented with trauma isolated to right wrist. The vehicle overturned as the driver lost the control. Patient was a front seat passenger; however he does not remember the exact nature of the injury to the wrist. On examination of his right wrist, the skin was intact. There was diffused swelling over the wrist with tenderness all around. The wrist was held in palmer flexion, supported by the non injured hand. Patient did not allow any examination of wrist movements. He was able to move his digits actively. He had preserved distal sensations and circulation. Plain X-rays of right wrist (Figure 1) showed in the anteroposterior view disruption of Gilula lines with carpal collapse. Ring sign was seen over scaphoid. The lateral view showed lunate dislocated over the dorsal side of the wrist, lying in flexion. A small radio opaque shadow lying volar to the radius, was suggestive of capsular avulsion. On CT scan there was dorsal lunate dislocation with capsular avulsion from volar aspect of radius and dorsal aspect of triquetrum.

Under General Anaesthesia and Image Intensification, congruent closed reduction was achieved by the Tavernier manoeuvre [3]. The reduction being unstable, was stabilised by three percutaneous K wires (Figure 2). A below elbow plaster of paris cast was given. Immobilisation for twelve weeks has been recommended after closed reduction and percutaneous K wiring [4]. In our patient also, the cast and K wires were removed at twelve weeks. The patient was subsequently put on a domestic active physiotherapy programme.

At six months follow up, the patient complained of intermittent wrist and hand pain during exposure to cold temperatures. On examination of his wrist there was no swelling, deformity or specific tenderness. Watson test was negative. His grip was good with no distal neurovascular deficit. Patient had wrist flexion extension arc of 70% of the uninjured side. There was full pronation and supination (Figure 3).

The radiographs of the involved wrist showed maintenance of reduction. There were no signs of increased scapholunate gap, avascular necrosis of lunate or loss of carpal height. CT scan showed early degenerative changes with subarticular cysts in lunate, scaphoid and capitate, which might be attributed to degenerative changes due to his age and occupation as a fisherman (Figure 4). His Mayo Wrist score was 75/100 [5]. We have recommended regular follow up to observe for late avascular necrosis and progress of degenerative changes.

Discussion

In the failure cascade of perilunate dislocations, there is a sequential failure of the ligaments or bones. The dislocation of lunate is the last event in the failure cascade. In pure perilunate dislocations, the distal carpal row will dislocate dorsally, with scaphoid and triquetrum following. The lunate will be left behind as the carpus now will dislocate dorsally. When the carpus returns back to the wrist, the lunate is pushed out volarly, producing a volarly dislocated lunate. These injuries are a result of high energy trauma due to road traffic accidents or fall on outstretched hand [2]. In our case, we believe that the forces which lead to the common pattern of volar lunate dislocation may have been reversed. With a volar perilunate dislocation, the lunate may be pushed out dorsally, when the rest of the carpus returned back to the wrist. The prognosis in perilunate and lunate dislocations is guarded even after open reduction and ligamentous repair [4]. In such a rare injury, emergent closed reduction and percutaneous K wiring may be a treatment option.

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References

Figure 1: The X-ray of right wrist showing that disruption of Gilula lines with carpal collapse.

Figure 2: The X-ray showing the percutaneous K wires.

Figure 3: Pronation and supination of both hands.


**Figure 4:** CT scan showing early degenerative changes.