

Case Report**Bilateral volar lunate dislocation- a rare case report**★*Ebrahim Zonoozi^a, Farid Najd Mazhar^{*b}, Mehdi Khazai^c, Nima Nejadgashti^f***Abstract**

Volar lunate dislocation is the fourth and last stage of perilunate dislocation. It is an uncommon injury of the wrist and its bilateral occurrence is so rare that only one case has been reported in the literature. We are presenting the second case of this kind of wrist injury, its treatment and outcome.

Key words: lunate, perilunate, volar, bilateral, dislocation.

JRMS 2009; 14(3): 187-190

Perilunate dislocation of the carpus is an unusual injury of the wrist joint, and a bilateral case is so rare that is worthy of report.¹ According to Mayfield the disruption of ligaments due to perilunate dislocation is not random but follows the progressive perilunate instability.² He shows that volar lunate dislocation is the fourth and last, stage of perilunate dislocation.² To our knowledge only one case of bilateral volar dislocation of lunate has been reported in the literature.³ This report presents the second case of this kind of injury.

Case Report

A 25 year-old right handed mechanic man suffered injuries to both wrists after a motorcycle accident. Past medical history of the patient was normal. He attended our hospital with painful wrists. The wrists were swollen and deformed at first visit in emergency department. Physical examination showed intact neurovascular. The skin on both upper limbs was intact. Anteroposterior and lateral X-rays revealed fourth stage of perilunate dislocation bilaterally (Figure 1-2). Because the optimum management of these injuries requires open



Figure 1. Preoperative X – ray of the right wrist

reduction and repair of the intercarpal ligaments, the patient underwent surgery. Under general anesthesia and tourniquet, the dislocations were treated by open reduction using dorsal approach. Cartilage damage was apparent around the lunate and on the head of the capitate in left wrist. We tried to restore the normal scapholunate relationship. Because anchor sutures were not available, we repaired the intercarpal ligaments directly or by suturing them to the edge of the bones after making

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through with small K- wires. The reductions were stabilized by inserting K- wires and short arm casts (Figure 3,4). The K- wires and casts were removed eight weeks later and physical therapy started. The patient was able to return to his previous occupation after six months (Figure 5,6). At this time patient had mild pain at the extreme active range of motion in his wrists. Table 1 shows active range of motion in both wrists six months after surgery. Because these injuries can result in late complications like lunate avascular necrosis, instabilities and degenerative joint disease, the patient will have periodic follow up visits.

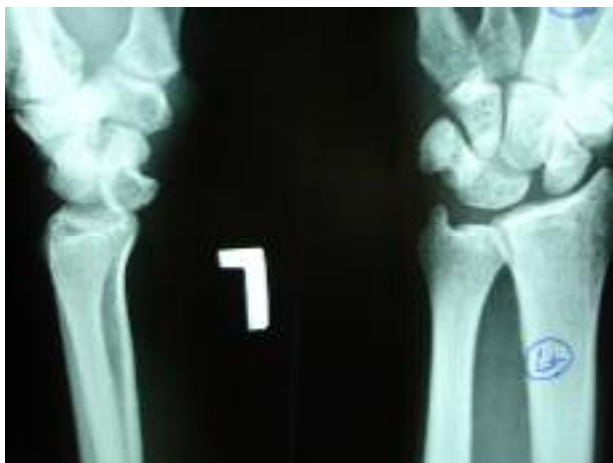


Figure 2. Preoperative X – ray of the left wrist



Figure 4. Postoperative X – ray of the left wrist



Figure 5. X – ray of the right wrist six months post surgery



Figure 3. Postoperative X – ray of the right wrist



Figure 6. X – ray of the left wrist six months post surgery

Table 1. Active range of motion in both wrists after 6 months (degrees).

| | Flexion | Extension | Ulnar deviation | Radial deviation | Supination | Pronation |
|-------------|---------|-----------|-----------------|------------------|------------|-----------|
| Right wrist | 80 | 45 | 30 | 10 | 80 | 60 |
| Left wrist | 70 | 30 | 15 | 5 | 80 | 70 |

Discussion

Perilunate dislocation of the carpus is an unusual injury of the wrist.¹ Dorsal perilunate dislocations are more common than anterior dislocation.

Most dorsal perilunate dislocations are the result of an indirect mechanism of injury, usually consisting of an extreme extension of the wrist, associated with variable degree of ulnar deviation and radiocarpal/midcarpal supination, often owing to violent trauma such as that sustained in falls from heights or in motorcycle accidents.⁴ These injuries can occur as lesser arc perilunate dislocations which are characterized by pure ligamentous injuries around the lunate or greater-arc perilunate dislocations, which are characterized by a fracture of one or more of the bones around the lunate.⁵ According to Mayfield the disruption of ligaments due to perilunate dislocation follows the progressive perilunate instability.² When all perilunate ligaments are torn, only the dorsal capsule and palmar radiolunate ligaments can hold the lunate in place. In such circumstances, the dorsally displaced capitate may exert a palmar translation force to the dorsum of the lunate, resulting in a palmar lunate extrusion.⁴ Bilateral perilunate dislocations or fracture dislocations are extremely rare. The first report of bilateral perilunate dislocation goes back to 1950.¹ The patient was a ship carpenter and the mechanism of injury was due to falling down and the injury was treated by manipulation and immobilization in plaster cast. Since then few reports of bilateral perilunate injuries have been reported in literature.⁶ Bilateral transscap-

phoid perilunate dislocations also are so uncommon that only three cases have been reported in literature.⁷ All three cases were male and the mechanism of injury was falling down and were treated by open reduction, internal fixation and ligament repair. The fourth and last stage of perilunate injury is lunate dislocation. To our knowledge only one case of bilateral volar dislocation of lunate has been reported in the literature.³ The case was a 34 year-old man, construction worker who sustained the injury to both wrists in a fall from a height of 9 meters. The dislocations were treated by open reduction and ligament repair. After 12 years of follow up the lunates developed avascular necrosis. In spite of mild loss of carpal height there were no signs of carpal instability or excessive degenerative changes in either carpus.³ The presenting case is the second case of bilateral volar dislocation of lunate. As it is recommended in the text and literature we believe that the best treatment of these injuries is open reduction, restoration of carpal bones relationship and repair of the ligaments. This case has an acceptable range of motion and minimal pain in activity after 6 months. But as reported in literature instability and degenerative joints disease are major complications of these injuries so we decided to do long term follow up in order to find out the final results.

Bilateral perilunate dislocations and its last stage, bilateral volar dislocations should be in differential diagnosis after wrist injuries even though they are extremely rare.

Conflict of interest

Authors have no conflicts of interest.

Authors' Contributions

EZ carried out the diagnosis, treatment, post operative follow up experiment and participated in manuscript preparation.

FNM provided assistance for treatment, post operative follow up experiment and participated in manuscript preparation.

MKh provided assistance for post operative follow up.

NN provided assistance for post operative follow up.

All authors have read and approved the content of the manuscript. They participated in editing and revision processing.

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