Concurrent palmar lunate dislocation and posterior elbow dislocation: a case report

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ABSTRACT
We report a rare case of concurrent palmar lunate dislocation of the left wrist combined with a posterior dislocation of the left elbow joint in a 40-year-old man. He sustained both injuries after falling onto his outstretched left hand. The elbow was reduced by the closed method. The wrist was treated with open reduction with carpal tunnel decompression and fixation with a Kirschner wire through the volar approach. Both the scapholunate and radioscaphocapitate ligaments were also repaired. At month 3, the patient had no pain in his elbow and minimal pain in his wrist on heavy lifting and had resumed his work as a porter.

Key words: dislocation; elbow joint; wrist injuries

INTRODUCTION
Radiocarpal fracture-dislocation associated with elbow dislocation is rare, as is ipsilateral palmar lunate dislocation of the wrist associated with posterior dislocation of the elbow joint. Detrimental impact on recovery and residual function may ensue if the diagnosis is missed.

CASE REPORT
In February 2010, a 40-year-old man presented with pain in the left elbow and wrist after falling on an uneven surface on his outstretched left hand. The wrist was markedly swollen and the elbow deformed. Distal neurovascular status was intact. Radiographs interpreted by emergency department physicians revealed a posterior elbow dislocation without any fracture (Fig. 1). Under sedation, the left elbow was reduced by the closed method, and an above-elbow back slab was given. Post-reduction radiographs of the left elbow joint were satisfactory.

Nonetheless, the patient continued to have severe pain in his left wrist associated with new onset median nerve symptoms. Further review of the radiographs by the orthopaedic team revealed an ipsilateral
palmar lunate dislocation. Closed manipulation was not successful. The patient then underwent open reduction with carpal tunnel decompression and fixation with a Kirschner wire through the volar approach (Fig. 2).

Intra-operatively, the scapholunate and radioscaphocapitate ligaments were found to be ruptured. The wrist joint was exposed and both ligaments repaired through a dorsal incision of the capsule to the Lister tubercle over the scapholunate interval. The scapholunate ligament was torn at the scaphoid and was intact on the lunate; the ligament was sufficient for primary repair. The scaphoid was stable in flexion and therefore capsulodesis was not performed. An above-elbow back slab was applied for support.

At week 2, sutures were removed and radiographs showed satisfactory carpal alignment. At week 4, the long-arm splint was removed and physiotherapy started. At week 6, the Kirschner wire was removed and radiographs showed satisfactory carpal alignment. The patient failed to attend further follow-up. At month 3, the patient was called and reported that he had no pain in his elbow and minimal pain in his wrist on heavy lifting and had resumed his work as a porter.

**DISCUSSION**

Lunate and perilunate dislocations are uncommon and constitute 10% of carpal injuries. The rate of missed diagnosis of perilunate dislocations can be as high as 25%, particularly when presenting with obvious elbow dislocation after high-energy trauma. Three cases of concurrent elbow and perilunate dislocations after falls onto an outstretched hand
Perilunate dislocations can be classified into stages I to IV, representing a spectrum of ligamentous injury caused by the forces dissipated onto the lunate during injury. The spectrum of perilunate dislocations in order of frequency include transscaphoid-perilunate, perilunate, transscaphoid-transcapitate-perilunate, and transradial-styloid. The mechanism of injury is stress loading of the carpus in hyperextension and ulnar deviation. The sequential destabilisation starts through the scaphoid body with fracture or scapholunate interval with dissociation and dislocation of the rest of the carpus around the lunate and proximal scaphoid or lunate. The force then transmits through the space of Poirier between the lunate and capitate with disruption of the luno-triquetral articulation, resulting in dislocation of the lunate into the carpal tunnel. In transradial-styloid-perilunate dislocation, the fractured radial styloid and rest of the carpus dislocate around the lunate with further progressive sequential destabilisation distal to the lunate through the space of Poirier or the capitate with fracture or hamate and triquetrum or luno-triquetral interval.

Of 166 perilunate dislocations, 66% were fracture-dislocations and the remainder were dislocations alone, whereas 97% of displacements were dorsal and only 3% were palmar. Good treatment outcome depends on the proper alignment of carpal bones; whether carpal instability can be reduced by ligamentous reconstruction remains controversial. In a study of 32 patients with lunate and perilunate dislocations and scapholunate ligament injuries, those who underwent ligamentous reconstruction achieved better outcomes and carpal stability. Therefore, acute ligamentous injuries in the presence of scapholunate dislocations should be repaired if there are no degenerative changes. In our patient, there was sufficient ligamentous tissue left for primary repair; otherwise suture anchors may have been resorted to. The capsule should be repaired using palmar pull-out sutures to augment the restoration and provide additional dorsal stability to scaphoid flexion. An alternative method is to suture the proximal half of the dorsal intercarpal ligament to the lunate. We elected not to perform this as the scaphoid was stable after Kirschner-wire fixation.

REFERENCES