CASE REPORT

Palmar dislocation of the lunate bone with complete disruption of all ligaments A report on two cases

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Complete disruption of the lunate from both dorsal and palmar ligamentous attachments caused by palmar dislocation has rarely been reported. The authors present two cases and discuss the surgical treatments performed. They conclude from these cases that the lunate is at risk for remaining avascular after such trauma, so that proximal row carpectomy should be considered as a surgical option in the primary treatment.

INTRODUCTION

Palmar dislocation of the lunate bone with complete disruption of all ligaments is usually recognized during surgery, and the operative treatment is adjusted on the spot. The surgical technique to use in such a case is not unequivocal (1). We present two cases in which the completely disrupted lunate was treated in two different ways. Both surgical options are subsequently discussed.

CASE REPORTS

Case 1

A 48-year-old male was admitted to the emergency unit with a painful right wrist caused by hyperextension injury. The wrist was swollen, tender and deformed. On the standard radiographs of the carpus, a palmar dislocation of the lunate bone and a fracture of the radial styloid process were identified (fig 1). Following closed reduction, there was instability of the wrist. Subsequently, open reduction via a dorsal approach showed that the

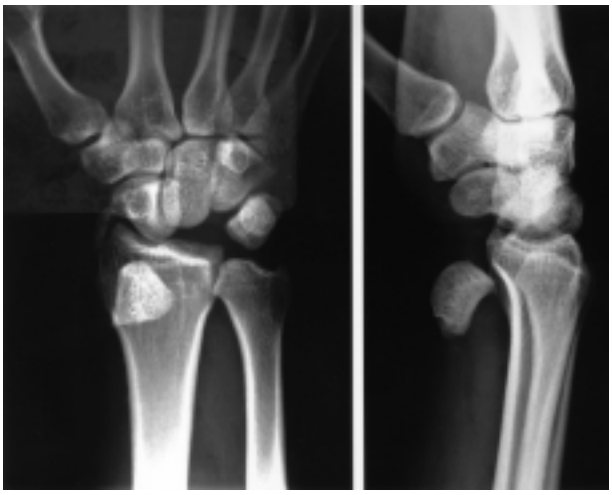

Fig. 1. — **Case 1.** Standard posteroanterior and lateral radiographs showing a palmar dislocation of the lunate bone.

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Fig. 2a. — **Case 2.** Standard posteroanterior and lateral radiographs showing palmar dislocation of the lunate bone, avulsion fracture of the scaphoid and ulnar translocation of the carpus.

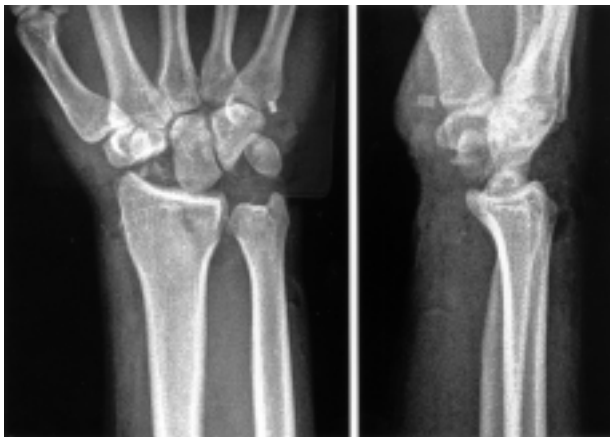

Fig. 2b. — **Case 2.** Standard posteroanterior and lateral radiographs after proximal row carpectomy.

lunate was completely disrupted from its dorsal and palmar ligaments. The lunate was secured with three Kirschner wires, and the ruptured dorsal ligaments were sutured. The wrist was immobilized for six weeks. Three months after the operation the patient still had severe restriction in wrist function and complained of pain. The grip strength of the right wrist was strikingly diminished compared to the contralateral wrist. The radiographs showed a sclerotic lunate. An MRI scan demonstrated that the lunate was degenerated and devitalised. On surgical exploration the lunate bone was necrotic, partially resorbed and replaced by fibrotic tissue. A proximal row carpectomy could not be performed because of the degenerated condition of the cartilage of the lunate fossa of the distal radius. Total wrist arthrodesis was considered the only surgical option.

Case 2

A 38-year-old male was involved in a car accident. The patient presented with multiple injuries, including a swollen, tender and deformed right hand. Radiographs showed a transscaphoid, transtriquetral palmar fracture dislocation of the lunate (fig 2a). Acute surgery using a combined palmar and dorsal approach was performed. The undamaged lunate, completely torn from its ligaments, was found between the flexor tendons of the distal forearm. A small fragment of the scaphoid was still connected to the lunate. No damage was noted to the cartilage of the proximal aspect of the distal row or to the cartilage of the lunate fossa of the radius. An acute proximal row carpectomy was performed (fig 2b). The wrist was immobilised for three weeks and subsequently given intensive physical therapy. Six months after the operation the wrist was painless, but the range of motion was still diminished.

DISCUSSION

It is accepted that the vascular supply of the lunate runs predominantly through the palmar and dorsal carpal ligaments (2, 5). If part of these ligaments is torn and stretched at the time of the dislocation, a change in the vascular distribution to the lunate may follow. White *et al* (4) reported that the lunate bone can survive transient vascular compromise after fracture-dislocation or dislocation of the carpus. In our cases, however, all ligaments were ruptured. Revascularisation of the lunate could not be expected, and avascular necrosis of the lunate was imminent (as observed in our first case). Only two similar cases of palmar lunate dislocation with complete disruption of the ligaments have been reported (1, 3). Mamon *et al* (3) performed open

reduction of the lunate and repair of the ligaments. They reported postoperative avascular necrosis of the lunate. The persistent pain and limited mobility of the wrist necessitated total wrist arthrodesis. Bartonicek and Dzupa (1) suggested an alternative procedure fusing the disrupted lunate with the scaphoid, capitate and triquetrum. This resulted in a satisfactory range of motion of the wrist. Such fusion was not possible in our case 2 because of concomitant fractures of the scaphoid and triquetrum. The authors suggest that acute proximal row carpectomy is an advisable treatment for traumatic palmar lunate dislocation with total disruption of all ligaments.

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