

# An Unusual Transcarpi Fracture With Volar Lunate Dislocation In The Dominant Wrist Of A Manual Worker: Outcome Assessment At One Year

A Bhatti, S Quraishi, D Power

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## Abstract

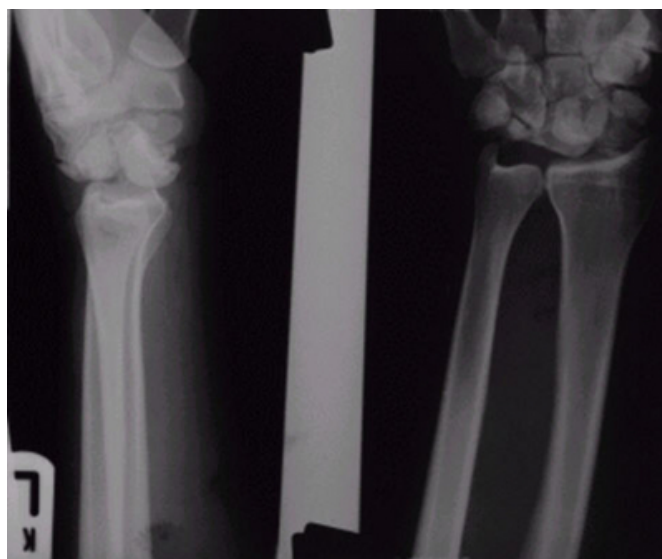
Fractures and dislocations within the carpus are high-energy injuries with extensive ligamentous disruption. They are usually unstable and require reduction and fixation with K wires and often open repair of the ruptured perilunate ligaments. They are associated with significant morbidity and loss of function and may require salvage wrist fusion if the outcome is unsatisfactory. The authors report an unusual case of transcarpi fracture with volar lunate dislocation and discuss management strategies, re-examine the classification of these injuries and report outcome at one year following conservative surgical wrist stabilization.

## CASE REPORT

A 25 year old manual ground worker fell from a height of ten feet onto his non dominant outstretched hand. He presented with a swollen and deformed wrist with no neurological deficit. Radiographs demonstrated fractures of the scaphoid, capitate and triquetrum. The carpus had displaced dorsally on the lunate. Fig.1 He underwent open reduction under general anaesthesia and K wire fixation of the fractures. Fig.2 Scaphoid cast was removed at eight weeks and he commenced physiotherapy.

## Figure 1

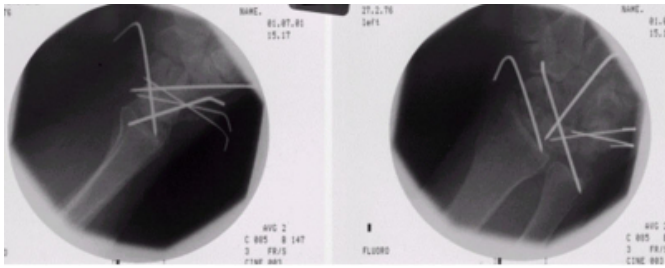
Figure 1: AP and Lateral view showing the trans scaphoid, trans capitate, trans triquetral fracture with perilunate dislocation.



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**Figure 2**

Figure 2: Immediate post-operative x-rays. Fracture/dislocation stabilized with multiple K-wires



**RESULTS**

At one year follow up he is back working full time as a manual ground worker and reports little functional deficit in his wrist. Revised Disability of the Arm, Shoulder and Hand (DASH) Score is 27% and optional work module score is 31%. Grip strength is 75% of the contra lateral side. Radiographs show early degenerative changes within the proximal carpus. Fig. 3

**Figure 3**

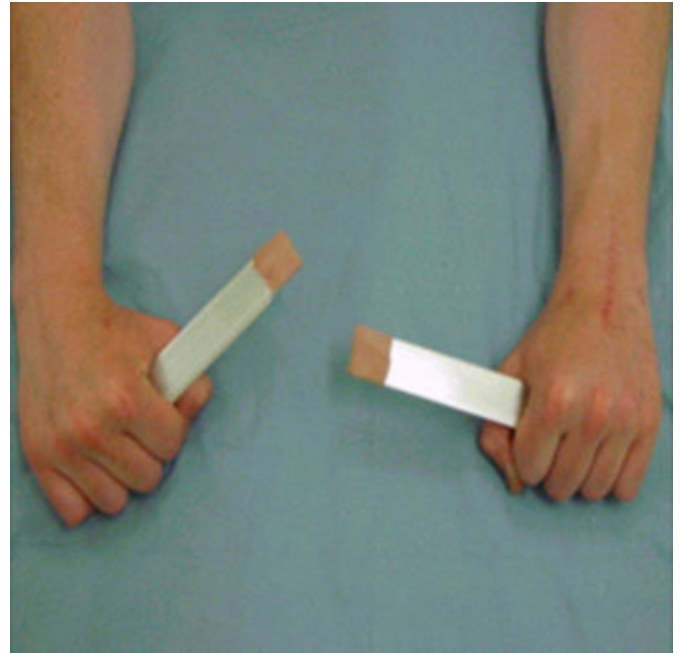
Figure 3: 1 year post-operative, early degenerative changes within the carpus



Movements are moderately impaired and he has achieved good functional outcome considering the extent of injury.

**Figure 4**

Figure 4A to 4C: Functional outcome at 1 year



**Figure 5**



**Figure 6**



## **DISCUSSION**

Many previous authors have attempted to compile a comprehensive classification system for carpal fracture dislocations. The seminal work by Mayfield classified progressive carpus injury and perilunate instability<sup>[2,3,4,5,6,7]</sup>. The Mayfield type IV shows complete dislocation of the carpus on the lunate with disruption of scapholunate, capitulunate and finally lunotriquetral ligaments. These injuries are inherently unstable and usually require dorsal and volar approaches to the wrist with primary ligament repair. However, he recognised the radial styloid fractures with triquetral fractures are sometimes found in association with lunate and perilunate dislocations. In addition he recognised the association between trans-scaphoid perilunate dislocations and triquetral fractures.<sup>[3,4]</sup>

Moniem described greater arc injuries as those including trans scaphoid, trans capitata, trans hamate and trans triquetral perilunate fracture dislocations<sup>[5]</sup>. Earlier Gellman had reported a fracture to the carpus with the perilunate dislocation<sup>[2]</sup> although a later report by Stevanovic described a similar injury as demonstrating volar lunate dislocation<sup>[6]</sup>. In the discussion he stated that the term perilunate

dislocation should be reserved for injuries in which the lunate remains in its normal relationship to the radius. This later confusion regarding appropriate terminology could have been avoided by referring to the much earlier work of Wagner in the 1950's<sup>[7]</sup>. He has suggested that lunate dislocations were preceded by perilunate dislocations and thus implied that the pathomechanics of these injuries may be related.

The authors suggest that in order to avoid confusion these injuries should be described as trans carpi fractures with associated lunate instability and should be distinguished from those true ligamentous injuries described by the Mayfield classifications that require early ligamentous repair. Anatomic reduction and limited surgical stabilisation of carpal fractures in this high demand patient achieved a satisfactory functional outcome without residual instability although radiographic degenerative changes were apparent at one year.

## **CORRESPONDENCE TO**

Mr Arshad Bhatti 80 Bedford road, Sutton Coldfield, Birmingham, B75 6AE West Midlands, UK Email: bhattiarsh@hotmail.com Tel: 00 44 121 6811265

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**Author Information**

**Arshad Bhatti, FRCSEd**

Registrar, Department of Orthopedic and Trauma Surgery, The Manor Hospital

**Sohail Quraishi, FRCS (Orth)**

Consultant Orthopedic Surgeon, Department of Orthopaedic and Trauma Surgery, Russell's Hall Hospital

**Dominic Power, FRCS**

Specialist Registrar, Department of Orthopaedic and Trauma Surgery, The Manor Hospital