

Complex Trans-Scaphoid Perilunate Fracture Dislocation Of The Wrist: A Case Report.

M Singh, N Kalsotra, S Sharma, B Singh, G Singh, D Singh

Citation

M Singh, N Kalsotra, S Sharma, B Singh, G Singh, D Singh. *Complex Trans-Scaphoid Perilunate Fracture Dislocation Of The Wrist: A Case Report..* The Internet Journal of Emergency Medicine. 2009 Volume 6 Number 2.

Abstract

Acute fracture-dislocations of the carpus are uncommon. If treated inadequately, however, these injuries can lead to wrist pain and dysfunction as a result of progressive traumatic arthritis (1). Of all the wrist dislocations, the perilunate dislocation is most common and the most common pattern is transscaphoid perilunate fracture dislocation (2). Most patients are young males and mode of injury is hyperextension injury to the wrist following a motor vehicle accident or fall from height. we report a rare case of such injury in our institution managed conservatively.

CASE REPORT

We present a case report of a 30 year old male police cop who sustained a fall from a skidding motorbike forcing his left wrist into hyperextension and injury to his back. The patient presented to us within 20 minutes with pain, gross circumferential swelling and deformity of the left wrist. He also had pain and spasm around dorsolumbar region of spine. The swelling on left wrist was very tense and radial pulsations were not palpable on left side. Clinically there was no evidence of an associated nerve injury. The range of motion of the wrist was decreased and painful. There was no head injury, no injury to left elbow, left shoulder, opposite upper extremity or lower limbs. Spine was tender around D12-L1 without any neurological deficit. Patient was given analgesia, iv line was established and patient was taken for PA and lateral X-rays of left wrist, AP pelvis with both hips, and AP and lateral views D/L spine. On X-rays there was fracture left Scaphoid (proximal pole), fracture ulnar styloid and disruption of Gillula's arcs on PA view (Fig1). There was perilunate dislocation with dorsal displacement of distal carpus and the hand (Fig 2) of left wrist on lateral views and mild compression of D12 vertebrae. A diagnosis of Trans Scaphoid perilunate dislocation left wrist was made. Patient was taken to emergency OT and under iv sedation closed reduction was done. The deformity appeared to be corrected clinically and radial pulsations became palpable. Below elbow pop slab was given with wrist in neutral position. Patient was taken for check x-rays. We got the check x-rays of wrist and found that reduction was satisfactory with restoration of the carpus alignment on PA and Lateral view.

We discussed the prognosis and course of the injury with the patient and applied the scaphoid cast with wrist in neutral position. The patient was discharged with the advice to come after 1 week for further management. The follow up period was uneventful.

Figure 1

Fig 1 : PA view of Wrist showing disruption of Gillula's lines and fracture ulnar styloid.



Figure 2

Fig 2: Lateral view of wrist showing Transscaphoid fracture dislocation.



DISCUSSION

Fracture dislocations of the carpus represent 10% of all dislocations and only fractures of the carpus account for 6% of all fractures, with scaphoid fractures accounting for 60—70% and lunate fractures account for 3% of these carpal injuries (3). Of all wrist dislocations, the perilunate is most common and the most common pattern is transscaphoid dorsal perilunate fracture dislocation. Palmar perilunate fracture dislocations are extremely rare accounting for less than 3% of carpal fracture dislocations (4). Most patients are young males, as the bone stock of the Scaphoid and distal radius needs to be strong enough to resist the torque involved in these dislocations. Perilunate dislocations are characterised by progressive disruption of most of the ligaments around lunate. There may be bony injury in the form of fractures of any carpal, the most common being the Scaphoid. In 1986, Linscheid (5) reported that the severity and location of the dislocation or fracture were different depending on whether the extreme extension of the wrist joint was associated with ulnar deviation or radial deviation. He concluded that the ulnar deviation led to the fracture of the triquetrum and the radial deviation led to the fracture of the radial styloid process or fracture of scaphoid. Most dorsal perilunate dislocation occur following fall on outstretched hand with hand being extended and ulnarly deviated at the time of impact. Perilunate dislocation pattern provides a whole spectrum of wrist sprains, fractures, dislocations. Severe ligament injury is necessary to tear the distal row from the lunate to produce perilunate dislocation. This injury pattern usually begins radially & destabilizes through body of scaphoid as in our case or through

scapholunate interval. Scaphoid bridges the proximal and distal carpal rows and with dislocation between these rows, the scaphoid must either rotate or fracture to produce a perilunate dislocation, which may cause: trans-scaphoid perilunate dislocation as in our case. In 1980, Mayfield et al (6) suggested that most carpal dislocations around the lunate are the consequence of a similar pathomechanic event, the so-called progressive perilunate instability. The scaphoid has a tight connection to the lunate through the scapholunate ligaments, but the lunate is constrained to the radius by the radiolunate ligaments. When the wrist joint continues to hyperextend, there may be a progressive tearing of the scapholunate ligaments, eventually leading to a complete scapholunate dissociation. If the same process occurs when the wrist is radially deviated, instead of the scapholunate dissociation, a fracture of the scaphoid is likely to initiate the carpal derangement. They also (6) opined that Reduction can be accomplished by reversing the mechanisms of injury, which we did in our case.

Radiology: Diagnosis is based on careful examination of PA and Lateral views. The typical appearance of Perilunate fracture dislocations produces discontinuity of arcs of Gilula (7) on PA radiographs. The lateral view is essential for determination of the type and direction of dislocation. The normal lateral radiograph of the wrist in neutral position demonstrates that the longitudinal axis of the long finger metacarpal, capitate, lunate and distal radius all fall in same line. The perilunate dislocation is seen when the lunate maintains its articulation and alignment with the distal radius and rest of the distal carpus and hand moves dorsal to the lunate and no longer maintains a longitudinal alignment with distal radius on lateral x-rays.

References

1. Yaghoubian R, Goebel F, Musgrave DS, Sotereanos DG. Diagnosis and management of acute fracture-dislocation of the carpus. *Orthop Clin North Am.* 2001 Apr;32(2):295-305.
2. Cooney WP, Linscheid RL, Dobyns JHL, fractures and dislocations of the wrist. In: Rockwood CA, Green DP, Bucholz RW, Heckman JD, editors. *Rockwood and Green's Fractures in adults.* Philadelphia: Lippincott-Raven, 1996:745-867.
3. Dobyns J, Linscheid R. Fractures and dislocations of the wrist—carpal injuries. In: Rockwood CA, Green DP, editors. *Fractures in Adults.* 2nd ed. Philadelphia: Lippincott; 1984 p. 450—509.
4. Garcia-Elias M. Carpal instabilities and dislocations. In: Green D, Hotchkiss R, Pederson W, editors. *Green's operative hand surgery.* 4th ed. Churchill Livingstone; 1999. p. 865—928.
5. Linscheid RL. Kinematic considerations of the wrist. *Clin Orthop Relat Res.* 1986; (202):27-39.
6. Mayfield, J.K. Johnson, R.P. Kilcoyne, R.K. *Med. Coll. Wisconsin, Milwaukee, Wis. Carpal dislocations:*

Pathomechanics and progressive perilunar instability Journal of Hand Surgery Volume 5, Issue 3, 1980, Pages 226-241.

7. Gilula LA, Weeks PM. Post traumatic ligamentous instabilities of the wrist. Radiology 1978;129:641_651.

Author Information

Manjeet Singh, MS

Assistant Surgeon, JK Health Services

Nipun Kalsotra, MBBS

Junior Resident, Department of Orthopaedics, GMC Jammu

Siddhartha Sharma, MBBS

Junior Resident, Department of Orthopaedics, GMC Jammu

Balvinder Singh

Department of Orthopaedics, GMC Jammu

Gurpreet Singh, MBBS

Junior Resident, Department of Orthopaedics, GMC Jammu

Dara Singh

Professor and HOD, Department of Orthopaedics, GMC Jammu