

# MVC Rollover with Visual Left Wrist Deformity

Nicholas Hale D.O, Jonathan Leggett D.O.  
Emergency Medicine – Grand Strand Health

## Introduction

A young adult male presented as a level 2 trauma activation via helicopter following a motor vehicle rollover with a significant left wrist deformity. Primary survey was intact. However, secondary survey exam revealed clear dislocation of the left wrist and scattered superficial abrasions. Initial portable AP x-ray of the wrist in the trauma bay appeared to have joint space narrowing but grossly intact. Lateral x-ray view confirmed a complete dislocation of the proximal carpal row as seen visually

## Case Report

Evaluation should begin with standard ATLS protocol following A,B,C,D,E evaluations. On secondary survey, our patients left wrist injury was examined and exhibited a clear closed wrist dislocation. Initial AP x-ray of the wrist appeared grossly intact with joint space narrowing between the carpal row and distal radius/ulna bones as visualized in Figure 1. However, lateral view demonstrated a significant dislocation of the entire metacarpal row as seen in Figure 2. The radiologist reported a proximal carpal row dislocation, displaced radial styloid fracture, small ossific fragment along the triquetrum. CT scan of the forearm was completed while receiving further trauma imaging and resulted in similar findings to the x-ray reported above. After patient was stabilized, patient was consented for the closed wrist reduction. A hematoma block was performed with 2% 20ml lidocaine/epinephrine for analgesia. Traction with ventral pressure was applied to the wrist with counter traction applied at the elbow. After successful reduction, an Ortho-Glass sugar tong forearm splint was applied for stability. Post reduction x-rays are shown below in figure 3. Our orthopedic trauma team was consulted and recommended outpatient follow up in their clinic. Patient had no further critical injuries and was discharged with follow up following observation period.

## Images



Figure 1: Initial AP X-Ray



Figure 2: Initial Lateral X-Ray



Figure 3: Post Reduction  
Lateral View Portable X-Ray

## Discussion

Wrist injuries are often the result of falls on outstretched hands with dorsiflexed wrists in the younger and older patient populations. However, young adults are often times injured with greater traumatic force causing significant disruption in the ligaments, carpal bones, and forearm bones. As seen here, the patient experienced a high energy traumatic injury to the wrist likely from the steering wheel or dashboard during the accident. This fracture demonstrates a complete ventral dislocation of the proximal carpal row including the triquetrum, lunate, and scaphoid bones. It is hypothesized that the fracture of the distal radius as described above produced instability in the joint allowing the dislocation of the entire row without disruption between the proximal carpal bones. There are multiple dislocations discussed in literature most commonly lunate and peri-lunate dislocations. However, this injury is rare in that the carpal bones did not dislocate with respect to one another, but as a group dislocated with respect to the distal ulna and radius. A case report was identified showing a similar volar dislocation of the proximal carpal row following a motorcycle accident requiring reduction and further surgical repair. Rapid evaluation of the x-ray in the trauma bay could result in a missed read without detailed evaluation of the spacing between the carpal rows which is demonstrated in figure 1. On AP x-rays, this is an indication for metacarpal dislocations and requires an alternative view for further investigation.

## References

- Capo JT, Armbruster EJ, Hashem J. Proximal carpal row dislocation: a case report. *Hand (N Y)*. 2010 Dec;5(4):444-8. doi:10.1007/s11552-010-9272-x. Epub 2010 May 25. PMID: 22131931; PMCID: PMC2988128.
- Green DP, O'Brien ET. Classification and management of carpal dislocations. *Clin Orthop Relat Res*. 1980;(149):55-72.
- Tintinalli JE, Stapczynski JS, Tintinalli JE. *Emergency Medicine:A Comprehensive Study Guide*. New York: McGraw-Hill Medical; 2011.