



Epidemiology and Patterns of Perilunate Fracture-Dislocations Over a 17 Year Period

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OBJECTIVE

- Perilunate dislocations and fracture-dislocations comprise a spectrum of disruptions to the carpal anatomy. Although the patterns of injury are variable, they are always severe, debilitating, and often difficult to correct surgically.
- Due to the rarity of these injuries they are often all grouped together as one entity.
- The purpose of this study was to assess all perilunate types by classifying various injuries, assessing associated injuries, and looking for trends over time.

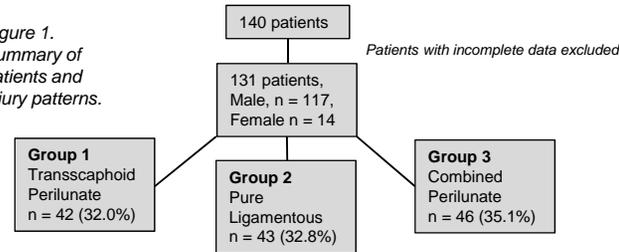
METHODS

- A 17 year period at a Level I Trauma center was retrospectively reviewed.
- The injuries were divided into three groups for analysis.
 - **Group 1** were **transscaphoid perilunate** injuries
 - **Group 2** were **pure ligamentous perilunate** injuries
 - **Group 3** included **combined perilunate fracture dislocations** that involved a fracture to any other carpal bone, the distal radius, or ulna.
- Demographic data including age, gender, and medical history were obtained, as well as injury data including type of injury, mechanism, concomitant injuries, ipsilateral upper extremity injuries, and presence of median nerve symptoms.

Table 1. Rate of associated injuries.

Scaphoid Component	Open fracture	Acute Carpal Tunnel Syndrome	Ipsilateral upper extremity injuries	Major non-orthopaedic injury
N = 68 (48.6%)	N = 4 (3%)	N = 20 (15.2%)	N = 9 (14.5%)	N = 50 (38.2%)

Figure 1. Summary of patients and injury patterns.



RESULTS

Between 1991 and 2008, a total of 140 perilunate fracture/dislocations were treated at our Level I trauma center with 131 patients having complete data. There were 117 males and 14 females, with an average age of 37.4 years (range 17-85). Group 1 consisted of 42 patients, Group 2 had 43 patients and Group 3 had 46 patients. 68 patients (48.6%) had a scaphoid fracture as a component of their injury. Amongst the complex fractures, 22 different injury pattern variations were seen, with the most common being trans-radial styloid (n=11), transscaphoid/trans-radial styloid (n=9), transscaphoid/transcapitate (n=6), associated distal radius fracture (n=5), transtriquetral (n=4), and transscaphoid/transtriquetral (n=3). Open fractures were relatively rare, seen in only 4 of 131 cases (3%). Naviculocapitate syndrome was present in 4 cases (3%). Acute median nerve symptoms, including one median nerve transection, was seen in 20 patients (15.2%). Four patients developed late onset carpal tunnel syndrome (3%). Nineteen patients sustained additional ipsilateral upper extremity injuries (14.5%), and 50 patients sustained major non-orthopaedic injuries (38.2%). The most common mechanism of injury was fall from height (n=59), followed by motor vehicle collision (n=27), and motorcycle collision (n=22). No significant trends were noted over the 17 year period.

CASE EXAMPLES

Group 1
Transscaphoid
Perilunate Injury



Group 2:
Pure Ligamentous
Perilunate Injury



Group 3:
Combined Perilunate
fracture dislocations



CONCLUSIONS

Perilunate fracture-dislocations comprise multiple injury patterns with differing treatments required. The injury pattern occurs most commonly in middle-aged men after falls from height. A perilunate injury associated with a scaphoid fracture is the most common injury pattern, comprising nearly half of all injuries. However, more than twenty different perilunate injury patterns have been identified, and concomitant ipsilateral upper extremity injuries are not uncommon. Median neuropathy, whether as a result of direct compression by dislocated carpal bones or by swelling, can occur in 15% of patients. Careful physical examination should be undertaken to diagnose acute carpal tunnel syndrome, as it may affect surgical approach.