

Trans-Scaphoid Perilunate Fracture Dislocation with Ipsilateral Terrible Triad Injury of The Elbow: Case report

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ABSTRACT

Background: Complex elbow dislocations are injuries in which there is a significant risk of long-term disability. The combination of elbow dislocation with both radial head and coronoid process fracture is particularly challenging to treat and, as such, has been termed terrible triad injury (TTI) of the elbow. TTI is typically caused by high-energy falls onto an outstretched hand.

Case report: A-48-years-old male patient, not known to have any medical illnesses, presented to Emergency Department Orthopedic, King Fahad General Hospital, complaining of right elbow, forearm and wrist pain and deformities after history of fall down directly to his right hyperflexed wrist and extended elbow that resulted in elbow dislocation and ipsilateral transscaphoid perilunate fracture dislocation.

Management: Patient was shifted to operation room for open reduction internal fixation. We started with elbow through posterior elbow approach, coronoid reduced that was fixed by two interfragmentary screws. Then for olecranon fracture, through same posterior incision, ulnar nerve was identified and protected and fracture was reduced and fixed with anatomical plate. Elbow stability was checked where it was stable. Then, distal radius open reduction through dorsal approach and internal fixation with LC-DCP was achieved. Additionally, through dorsal approach, lunate dislocation and scaphoid fracture were reduced and fixed with 6 k-wires and spanning external fixator applied from radius to 2nd metacarpal to maintain reduction.

Conclusion: In case of right terrible triad injury of the elbow with ipsilateral trans-scaphoid perilunate fracture dislocation, only urgent surgical treatment of both elbow and wrist may achieve good results.

Keywords: Trans-scaphoid perilunate fracture dislocation, Ipsilateral terrible triad injury of the elbow.

INTRODUCTION

The term “floating forearm” refers to a rare condition in which concurrent elbow and wrist dislocations occur ^(1,2).

When elbow dislocation is associated with radial head and coronoid apophysis fractures, the diagnosis of “terrible triad injury” is made. This association is even rarer, and we found only one case reported in the literature. Among the various types of injuries associated with elbow trauma, the occurrence of TTI is rare. Injury accounts for only 8–11% of dislocations of the elbow joint and 3.4-10% of all radial head fractures, such complex elbow fracture dislocations occur as a result of high-energy trauma, such as falling from a height onto an outstretched hand ⁽³⁾.

CASE REPORT

A-48-years-old male patient, not known to have any medical illnesses, presented to Emergency Department Orthopedic, King Fahad General Hospital. He was complaining of right elbow, forearm and wrist pain and deformities after history of fall down directly to his right hyperflexed wrist and extended elbow that resulted in elbow dislocation and ipsilateral transscaphoid perilunate fracture dislocation. On physical examination, patient was fully conscious, oriented and vitally stable, while local examination of right upper extremity revealed severe swelling of the elbow and wrist with obvious deformity, severe tenderness and restricted range of movement, otherwise distal neurovascular examination was intact. Radiological assessment showed: right terrible triad injury of the elbow with ipsilateral trans-scaphoid perilunate fracture dislocation (Figure 1).



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Figure (1): Pre-operative X-rays

Initial management was done in ER, trial of close reduction under conscious sedation for the perilunate dislocation and dislocated elbow was difficult so alignment and above elbow back slap was applied. Then patient was shifted to operation room for open reduction internal fixation. We started with elbow through posterior elbow approach, coronoid was reduced and fixed with two interfragmentary screws. Then for olecranon fracture, through same posterior incision, ulnar nerve was identified and protected and fracture was reduced and fixed with anatomical plate. Elbow stability was checked where it was stable. Then, distal radius open reduction through dorsal approach and internal fixation with LC-DCP was achieved. Additionally, through dorsal approach, lunate dislocation and scaphoid fracture were reduced and fixed with 6 k-wires and spanning external fixator applied from radius to 2nd metacarpal to maintain reduction (Figure 2).



Figure (2): Post-operative X-rays

Ethical approval:

An approval of the study was obtained from King Fahad General Hospital (Jeddah, Saudi Arabia) Academic and Ethical Committee.

The patient and his relatives were informed that the case was taken as a case report for publishing and they accepted. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

DISCUSSION

Early surgical treatment and open reduction seem to be the most appropriate option for the wrist. Actually, a good functional outcome depends on the proper alignment of carpal bones and the timing of surgery⁽⁴⁾.

In complex fracture dislocations of the elbow such as TTI, it is almost impossible to achieve stability through conservative treatment⁽⁵⁾. In the surgical management of TTI, owing to recent studies of relevant anatomy and biomechanics of elbow stability, restoration of injured primary and secondary stabilizers of the elbow has yielded excellent results⁽⁶⁾.

Operative treatment of this injury has evolved to include the restoration of the radiocapitellar joint (via fixation or artificial radial head replacement), reattachment of the origin of the lateral collateral ligament to the lateral epicondyle, with fixation of the coronoid fracture, and medial collateral ligament repair, when indicated⁽⁷⁾.

However, there are still two controversies. One involves the management of coronoid fractures and the other the management of comminuted radial head fractures. Several approaches have been used to address coronoid fractures in TTI; however, a consensus is yet to be reached as to which method provides optimal results. The surgical management of coronoid fractures should be based on the fragment size and fracture location. Small coronoid tip fragments are usually repaired using the suture lasso technique or a suture anchor⁽⁶⁾.

Grassmann *et al.*⁽⁸⁾ reported an incidence of 4% (12 of 295) radial head fractures.

Watters *et al.*⁽⁹⁾ reported that radial head replacement enabled the achievement of elbow stability with comparable overall outcomes when compared with fixation.

CONCLUSION

In case of right terrible triad injury of the elbow with ipsilateral trans-scaphoid perilunate fracture dislocation, only urgent surgical treatment of both elbow and wrist may achieve good results.

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