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Mridul Maheshwari
Dr. Ram Manohar Lohia
Hospital, New Delhi, India

Mohammed Saif Niyazi
Dr Ram Manohar Lohia
Hospital, New Delhi, India

Dorsal radiocarpal dislocation with fracture of the radial styloid: A case report

Mridul Maheshwari and Mohammed Saif Niyazi

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Abstract

Introduction: Radiocarpal dislocation with radial styloid fracture is an infrequent injury with even less number of cases reported.

Clinical case: A 19 year old male patient sustained dorsal radiocarpal dislocation with radial styloid fracture following high velocity trauma. The fracture was managed with open reduction and fixation. Postoperative evaluation after 12 weeks showed favourable outcomes.

Discussion: This case report contributes to the present scarce literature on such injuries which have uncommon fracture geometry and pathology.

Keywords: Dorsal radiocarpal dislocation, radial styloid

Introduction

Radiocarpal dislocation is a rare injury representing 0.2% of all the dislocations [1]. This may or may not be associated with fracture of ulnar styloid or radial styloid or marginal fracture of distal radius (Barton fracture). These injuries are a result of high velocity trauma mostly affecting the younger population. Although males and females are equally exposed to Motor Vehicle Accidents (M.V.A), the reported cases of such injuries mostly corresponds to the male patients [2-6].

There is paucity of literature on radiocarpal joint dislocation and the treatment differs amongst the existing literature; some authors obtained better results through conservative approach while the remaining surgeons concluded surgical option to be more superior [7].

Our study focuses on a 19 year old male who had a M.V.A and developed pain, swelling and deformity over the wrist. Radiological examination revealed radial styloid fracture with dorsal radiocarpal subluxation and dorsal margin fracture of distal end of radius. Our aim of this study was to assess the effect of this fracture pattern on upper limb functioning, to strengthen the data on this type of fracture dislocation and add to the pre-existing literature, and to discuss the treatment options.

Clinical case

A 19 year old male, student, without significant medical history, had a M.V.A following which he developed severe pain, deformity, swelling over the right wrist (dominant side) and multiple abrasions over the right leg, thigh and face. There was no loss of consciousness and no distal neurovascular deficit. Antero-posterior and lateral wrist X-rays were taken which revealed radial styloid fracture with dorsal radiocarpal dislocation with dorsal marginal fracture of distal end radius. After taking the written informed consent from the patient and pre-operative preparation the patient was taken to the operating room. Under general anaesthesia closed reduction was attempted under fluoroscopic guidance but articular congruency couldn't be attained. This was eventually converted into open reduction and internal fixation through dorsal approach where the radial styloid fracture was fixed using tension band wiring and the dorsal margin fracture was fixed using percutaneous K-wire. The final reduction was checked under the fluoroscopy, the surgical wound was sutured, dressed and cast was applied.

The cast and the dorsal percutaneous K-wire was removed after 6 weeks, range of motion exercise was started and the patient was assessed at the end of physiotherapy program.

Correspondence
Mridul Maheshwari
Dr Ram Manohar Lohia
Hospital, New Delhi, India

After 12 weeks of injury, the patient has following range of motion; wrist flexion 75 degrees (85 degrees on unaffected side), extension 70 degrees (80 degrees on unaffected side), radial and ulnar deviation of 30 degrees each (30 degrees on unaffected side). The patient is able to perform daily activities without restrictions.



Fig 1: Preoperative anteroposterior X ray wrist



Fig 2: Preoperative lateral X ray wrist



Fig 3: Postoperative anteroposterior X ray wrist



Fig 4: Postoperative lateral X ray wrist

Discussion

Radiocarpal fracture dislocations are usually high energy trauma injuries in which the wrist is driven into excessive radial deviation, pronation and extension, however the exact mechanism is unknown to the patient as it is a high velocity injury [8]. Two cases of bilateral radiocarpal fracture dislocation have been reported [9-10]. Dumontier *et al.* [11] classified radiocarpal dislocation into two types depending upon the extent of radial styloid fracture and integrity of the volar radiocarpal ligament; Type 1 includes radial styloid fracture involving less than one third of scaphoid fossa and disruption of the volar radiocarpal ligament, Type 2 includes styloid fracture with intact scaphoid fossa and volar radiocarpal ligament. In our study, the patient had type 2 pattern. Lozano-Calderon *et al.* [12] concluded four different patterns of radiocarpal injuries including dorsal radiocarpal dislocation and dorsal articular margin fracture. Our case had type 2 pattern of injury. Moneim *et al.* [13] further suggested that radiocarpal fracture dislocations may (type 2) or may not (type 1) be associated with intercarpal injuries. The type 2 pattern often leads to stiffness, early arthritis despite surgical correction. In our case the patient had type 1 pattern according to Moneim *et al.*

Conclusions

Radial styloid fracture with radiocarpal dislocation is an infrequent traumatic injury as a result of a violent trauma. Such fracture dislocations should be stabilized for better postoperative results.

Conflict of interest

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article. I confirm that the contents of the manuscript have not been published or are not being submitted for publication elsewhere.

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