

## **Dorsal Dislocation of the Third, Fourth and Fifth Carpometacarpal Joints: A Case Report**

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**Abstract:** Pure carpo-metacarpal dislocations are rare. Untreated, they could result in instability and early degenerative joint disease. We report the case of a 32-year-old man who suffered a closed dorsal dislocation of his third, fourth and fifth carpo-metacarpal joints. Patient underwent closed reduction dislocation by simply pulling on the axis with direct pressure on the bases of the metacarpals and subsequent K-wire fixation. The hand was immobilized in a forearm plaster cast for 6 weeks followed by rehabilitation. At 1 year follow-up, patient had no pain and returned to his pre-injury activity level without any discomfort.

**Keywords:** dislocation, joint disease, rehabilitation

### **INTRODUCTION**

Carpometacarpal dislocations of the fingers are rare. The first case was described by Rivington in 1873 [1]. Its diagnosis is clinically suspected and often confirmed on radiology. Treatment consists of immediate reduction and stabilization by pinning in the event of unstable injury with subsequent plaster-cast immobilization.

### **CASE REPORT**

Patient, 32 year old male, right-handed manual worker, admitted to the emergency room following an accident on the public highway (pedestrian hit by a car). It was a case of closed direct trauma of the right hand with pain and functional impairment.

Physical examination found oedema and marked deformity of the dorsal surface of the right hand (Figure 1). AP and lateral radiographs (Figure 2) showed a pure dorsal carpo-metacarpal dislocation of the third, fourth and fifth fingers. Patient underwent emergent closed reduction under locoregional anaesthesia. Reduction was easy followed by stabilization by percutaneous pinning under fluoroscopic control (Figure 3). The wrist was

immobilized by a forearm plaster cast in intrinsic position for a period of 6 weeks after which pins were removed. Active physical therapy of the fingers was commenced as early as the fourth postoperative week, while keeping a removable splint in-between sessions. At 1 year of follow-up, functional outcome was satisfactory with good muscle strength and complete recovery of wrist mobility especially flexion-extension of fingers.



Fig-1: oedema and deformity of the dorsal surface of the right hand



Fig-2: Pure dorsal carpo-metacarpal dislocation of the third, fourth and fifth fingers



Fig-3: Percutaneous pinning under fluoroscopic control

## DISCUSSION

The carpo-metacarpal joint is a very stable joint [2,3] and most authors are unanimous on the need for a high impact injury in order to disrupt articular congruence [4]. Thus isolated carpo-metacarpal dislocations of the fingers constitute a rare injury. It affects the young adult with high impact traumas like traffic accidents the main cause of injury.

However, low impact injuries such as punches have been reported in cases involving the mobile metacarpals [5]. Diagnosis of this type of injury is often made at the emergency department on plain lateral radiograph of the hand and wrist. Outcome is often favourable after operative management although realisation and interpretation of emergent wrist radiographs is sometimes difficult. It is essential to perform a strict lateral view showing the direction of displacement of metacarpal bases and oblique views separating the mobile and fixed metacarpals as well an

AP view. In addition, some authors recommend CT imaging [2]. Closed reduction with percutaneous pinning is a valid treatment option in the absence of neurovascular damage. Carpo-metacarpal pinning may be oblique, intra medullary or cross-shaped [5]. Outcome of carpometacarpal dislocations is often favourable after closed reduction with little to no sequelae [6-8]. However several complications have been reported in literature, like persistent pain, decreased grip strength, subluxations and secondary displacements [9]. Furthermore, Lawlis and Gunther [5] reported that patients with dislocation of the four carpal metacarpal joints have better functional outcomes than those with dislocation of the second and third metacarpal rays [5, 10]. The 4th and 5th carpo-metacarpal joints should be slightly flexed on pinning to maintain the curvature of the metacarpal arch [11, 12].

## CONCLUSION

Carpometacarpal dislocations are rare injuries, often associated with carpal or hand bone fractures. Many are undiagnosed either due to a summary or poor review in the setting of a polytrauma. Subject to emergent and adequate management, they have good functional outcome.

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