



Case Report

Simultaneously Dislocation of Ulnar Side All Four Carpometacarpal Joints – A Case Report

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Background

Simultaneous ulnar side four carpometacarpal joints dislocations of the fingers are very rare. These injuries mainly occur in young adults and represents less than 1% of all lesions of the hand. Simultaneous CMC dislocations may be dorsal or volar. Dorsal dislocations are more frequent. The reason why dorsal dislocations are commoner is that stronger static (dorsal ligaments) and dynamic (wrist extensors) restraints may cause the failure of bone dorsally, with the frequent rupture of the volar ligaments [1, 2]. The increased mobility on the ulnar side may predispose to the known greater frequency of the injury. The stability at the finger CMC joint is provided by a system of four ligaments, namely the dorsal metacarpal, the palmer metacarpal and the two set of interosseous ligaments [3]. CMC joint dislocations can be treated by closed reduction and immobilizations, closed reduction and internal fixation or Open reduction and internal fixation [4]. However, in case of closed reduction, there is a higher risk of radiolocations of the CMC joints, as compared to open reduction.

The severe swelling associated with these injuries and overlapping of bones on a radiograph of the wrist and hand can cause to miss the diagnosis of CMC dislocations. The purpose of this clinical case report is to highlight this unusual injury to avoid missing diagnosis.

Case Presentation

A 21 year old, prisoner, was admitted to the emergency department of the Alexandra Hospital in Redditch with complaints of relentless pain, discomfort and inability to move his dominant right hand and fingers following forceful punching to a rough wall with a fist hand as a result of an altercation in prison. He had no pathological antecedents and did not present any history of past surgery or trauma.

An initial clinical examination found that he was hemodynamically stable. An examination of his right upper limb showed a significant oedema and a clear deformation at the dorsal side of his right hand with no signs of nerve com-

pression. A vascular examination was normal. Radiographs of his hand showed posteriorly dislocated ulnar side four fingers at CMC joint level (Figure1).



Figure 1: Radiographs of patient hand.

Following day he was taken to operation theatre and prepared for open reduction and internal fixation. But, the initial attempt of closed reduction with traction and counter traction was unexpectedly successful and achieved stable reduction which was confirmed with 'C' arm. It had concentric reduction in AP, Lateral and Oblique views. The stability of the reduction was assessed with full range of movement at wrist joint, CMC joint and Metacarpi-phalangeal joints which confirmed that it was quite stable. Then the plaster cast was applied dorsally for 2 weeks and subsequently reassesses the reduction in two consecutive weeks in fracture clinic with X-ray assessment (Figure 2).



Figure 2: X-ray assessment after 2 weeks.

After 2 weeks it was changed into Future splint by hand surgeon and followed by formal hand physiotherapy after 6 weeks. He has achieved the drip strength and wrist mobility up to near normal over two months (Figure 3).



Figure 3: Radiographs of patient hand after 2months.

Discussion

Dislocation of all four medial metacarpals is rare. These injuries mainly occur in young adult. Road traffic accident and violent trauma are the main aetiology [4].

Clinical diagnosis is sometimes difficult due to oedema that takes place early and masks the deformity. This injury may be missed in an acute setting in a busy accident and emergency unit. Swelling around the wrist with shortening of the knuckle should alert the clinician towards the possibility of such an injury [1, 2, 5].

In these cases, radiology remains an important diagnostic benefit although interpretation of images is sometimes difficult. On routine AP view, evaluation of CMC joints is done by parallel 'M lines' as described by Glula; overlap of joint surfaces, loss of parallelism and asymmetry at the CMC joints should be raised the suspicion of the possibility of a subtle CMC injury.

This article highlights the important of a high index of suspicion, a true lateral radiograph and careful evaluation of radiographs in diagnosing these injuries. Some others recommend a CT scan for better analysis of the lesions and to detect any associated lesions unnoticed by standard radiographs.

Conclusion

Carpometacarpal joints dislocations of the fingers are exceptional; their diagnosis is sometimes difficult and may go unnoticed especially in a patient with polytrauma. The functional prognosis depends on the precocity of diagnosis and the quality of the reduction and rehabilitation.

References

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