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Case Report

An Unlikely Case of Isolated Dorsal Fifth Carpo Metacarpal Joint Dislocation

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ABSTRACT:
Introduction: Carpometacarpal (CMC) joint dislocations are uncommon injuries that account for less than 1% of hand injuries.[1] Dorsal dislocations of the CMC joints are more frequent than volar dislocations. Palmar dislocations can be either ulnopalmar or radiopalmar. Due to severe swelling and overlapping of bones on the radiograph of wrist-hand, dislocations are missed. Here we report a case of dorsal dislocation of the 5th CMC joint which was managed with K-wires.
Case Presentation:
A 16 year old male presented to the casualty following a road traffic accident with complaints of pain and swelling over dorsum of right hand extending from the wrist to the metacarpo-phalangeal (MCP) joints. Clinically, there was increased tenderness at the base of 4th& 5thmetacarpals (MC) and ulnar deviation of the 5th digit. Radiologically, there was isolated dislocation of the 5th Carpometacarpal joint(CMC) dorsally and ulnarward. Due to instability, closed reduction was done under C-Arm guidance by longitudinal traction and direct pressure over dorsal base of the 5th metacarpal and 2 K-wires were placed percutaneously. Ulnar gutter slab was applied for maintenance. Wire removal was done at 6thweek postoperatively. Regular physiotherapy was started and normal hand grip strength was restored.
Conclusion:
Isolated carpo-metacarpal dislocations are a rare phenomenon. Thorough clinical examination accompanied with appropriate radiographs followed by early stable reduction and fixation will avoid long term complications.

Keywords: Carpometacarpal joint, casualty, dislocation, K-wiring

INTRODUCTION:

Carpometacarpal (CMC) joint dislocations are uncommon injuries that account for less than 1% of hand injuries.[1] Dorsal dislocations of the CMC joints are more frequent than volar dislocations. Palmar dislocations can be either ulnopalmar or radiopalmar. Due to severe swelling and overlapping of bones on the radiograph of wrist-hand, dislocations are missed. Here we report a case of dorsal dislocation of the 5th CMC joint which was managed with K-wires.

CASE REPORT:

A 16 year old male presented to our casualty following a road traffic accident with complaints of pain and swelling over dorsum of right hand (dominant hand).Clinically, there was gross swelling over dorsum of right hand extending from the wrist to the metacarpophalangeal (MCP) joints.(Fig 1) All distal pulses were palpable and compared with the opposite side.

There was increased tenderness at the base of 4th& 5thmetacarpals(MC) and ulnar deviation of the 5th digit. Movement of the right wrist and metacarpophalangeal joint was normal, however patient was unable to perform hand grip due to severe pain. Radiologically, there was isolated dislocation of the 5th Carpometacarpal joint (CMC) dorsally and ulnarward. (Fig 2)

Immediate closed reduction was attempted with longitudinal traction of 5th CMC joint and radial pressure over base of 5th CMC, however on releasing the radial pressure the joint was found to be unstable.(Fig 3) Hence it was decided to internally fix the same. Closed reduction by longitudinal traction and direct pressure over dorsal base of the 5th metacarpal

was done. Reduction was confirmed under C- arm.
Fixation of the 5th CMC joint with 2 K-wires were placed percutaneously from ulnar aspect of 5th MC with one wire from shaft of 5thMC through 5th CMC joint into the hamate and another wire from base of 5th MC crossing 3rd and 4th MC base.(Fig 4)
After fixing 5th CMC joint no distraction was noted on applying longitudinal traction. Wires were bent and cut off close to the skin. Sterile dressing was applied.

Ulnar gutter slab was given for maintenance of fixation. Postoperative radiographs demonstrated anatomic reduction of the 5th CMC joint with maintenance of alignment and no migration of K-wires.(Fig5)
Wire removal was done at 6thweek postoperatively. (Fig 6)Regular physiotherapy was started and normal hand grip strength was restored.

Figures:

Figure 1: Clinical photo showing gross swelling of hand

Figure 2: Radiographs at the time of presentation

Figure 3: Intra-op xray showing failed closed reduction

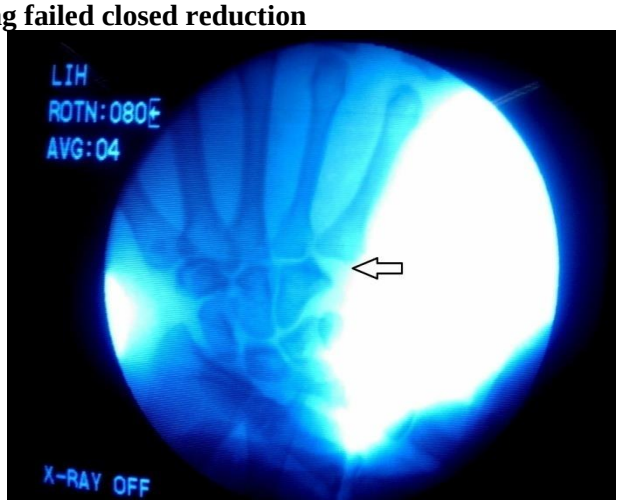

Figure 4: Intra-op radiograph after fixation with K-wires

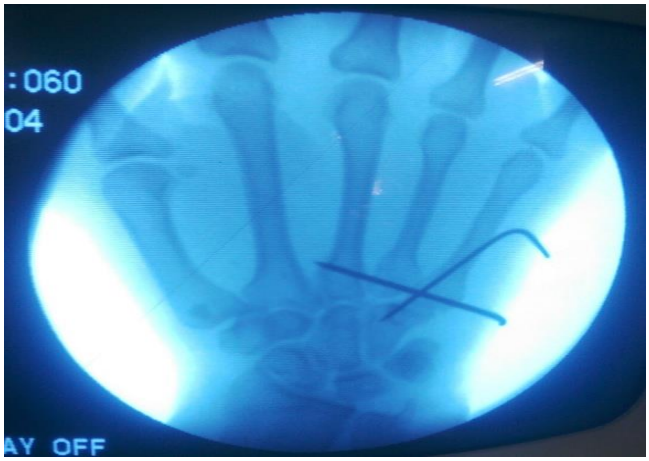

Figure 5: Post-op xrays showing K-wires in position

Figure 6: Radiograph after removing K-wires

DISCUSSION:

CMC joints are saddle joints that are stabilised by volar and dorsal ligaments, transverse metacarpal ligaments, long flexor and extensor tendons, and intrinsic muscles of hand. Dorsal ligaments are stronger than volar ligaments. 5th CMC joint is articulation between convex base of 5th metacarpal and concave facet of hamate.

Isolated dislocation of 5th CMC was first reported by McWhorter in 1918.[2]High velocity injury is the most common mechanism of injury for CMC dislocation.[3,4]Type of CMC joint fracture dislocation depends on direction of force.

As CMC joint dislocations are very rare injuries, health care professionals should have a high degree of suspicion while dealing with hand injuries involving carpal and metacarpal bones. Complete and thorough examination accompanied with appropriate radiographs will lessen the probability of missing out these rare injuries. Despite the paucity of literature, where fracture-dislocations are commonly reported, pure dislocations still remain a rare phenomenon. Motor branch of ulnar nerve lies in front of 5th CMC

joint and is particularly at risk of injury.[5,6] Fracture of hamate and ulnar nerve injury, which are complications associated with 5th CMC joint dislocation, were not present in our case .We recommend surgical fixation as a definitive treatment choice because close reduction alone is insufficient to maintain adequate stability. Most of the case reports published already are about volar dislocation only. Our case report speaks about dorsal dislocation. To summarize, carpometacarpal joint dislocations require early stable reduction and fixation to avoid long term loss of grip strength and to prevent long term arthritic changes and disability.

CONCLUSION:

Isolated carpo-metacarpal dislocations are a rare phenomenon. Thorough clinical examination accompanied with appropriate radiographs followed by early stable reduction and fixation will avoid long term complications.

Clinical Message:

As CMC joint dislocations are very rare injuries, health care professionals should have a high degree of suspicion while dealing with hand injuries involving carpal and metacarpal bones.

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Competing Interests:

The authors declare that they have no competing interests.

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REFERENCES:

1. Sharma A, John J. Unusual Case of Carpometacarpal Dislocation of All the Four Fingers of Ulnar Side of Hand. Medical Journal Armed Forces India [Internet]. 2005 [cited 1 June 2020];61(2):188-189. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4922986/
2. McWhorter GL. Isolated and complete dislocation of the fifth carpometacarpal joint: open operation. Surg Clin Chic. 1918 Aug;2(1):793-6.
3. De Beer J, Maloon S, Anderson P, Jones G, Singer M. Multiple Carpo-Metacarpal Dislocations. Journal of Hand Surgery [Internet]. 1989 [cited 1 June 2020];14(1):105-108. Available from: https://pubmed.ncbi.nlm.nih.gov/2926203/
4. V. B. Simultaneous dislocation of the bases of the four ulnar metacarpals upon the last row of carpals. Plastic and Reconstructive Surgery [Internet]. 1985 [cited 1 June 2020];76(3):486. Available from: https://pubmed.ncbi.nlm.nih.gov/6642305/
5. Peterson P, Sacks S. Fracture-dislocation of the base of the fifth metacarpal associated with injury to the deep motor branch of the ulnar nerve: A case report. The Journal of Hand Surgery [Internet]. 1986 [cited 1 June 2020];11(4):525-528. Available from: https://pubmed.ncbi.nlm.nih.gov/3722763/
6. Young T. Dorsal dislocation of the metacarpal base of the little and ring fingers with ulnar nerve branch compression. Injury [Internet]. 1987 [cited 1 June 2020];18(1):65-66. Available from: https://europepmc.org/article/med/3440623