ORIGINAL RESEARCH PAPER

Volume-8 | Issue-7 | July - 2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A UNIQUE CASE OF MULTIPLE CARPOMETACARPAL DISOCATION.

Orthopaedics

Dr. Rohit Santhanam* Assistant Professor, Department of Orthopaedics, Sree Balaji Medical College and Hospital, BIHER, No. 7, Works Road, New Colony, Chromepet, Chennai - 600044, Tamilnadu, India.*Corresponding Author

Dr. Vijaiinarasimman Reddy Professor and Head, Department of Orthopaedics, Sree Balaji Medical College and Hospital, BIHER, No. 7, Works Road, New Colony, Chromepet, Chennai - 600044,

KEYWORDS

INTRODUCTION :

Post-traumatic dislocations of carpometacarpal (CMC) joints is an injury that presents rarely amongst the group of wrist joint injuries accounting for about less than 1 percent of it [1]. It usually occurs in association with other dislocation and fractures of the hand and are missed on X-ray of wrist joint and hand due to overlapping of bones [2]. The intensity of the force decides the severity of displacement of the CMC joint. Dorsal CMC joint dislocations are more common than volar CMC joint dislocations while a divergent variety of the same is rarely come across [3,4]. Little literature is available on single CMC joint fracture dislocation as most present with multiple CMC joint dislocation [5]. Poor functional outcome as well as chronic residual pain are some of the noted complications seen arising when there is a delay in treating this condition which at times may prove to be a diagnostic difficulty [2].

CASE REPORT

27 year old lady presented with a history of trauma sustained as a result of a fall on outstretched hand while riding a two wheeler. She was clinically assessed with primary followed by secondary survey and was noted to have no other injuries other than the one sustained to her right hand. Examination of the right hand revealed a closed injury presenting and diffuse swelling over the dorsum of the hand with deformity in the form of a dorsal bony irregularity which was tender on palpation. She was able to actively extend her fingers at the interphalangeal joints but unable to perform complete movements of small joints of the hand as well as that of the wrist due to the pain and swelling. There was no sensory of motor deficit. Roentgenograms (AP and Lateral of the hand) were taken for the same and it revealed a dislocation of the 2nd, 3rd and 4th carpometacarpal joint with no other bony injuries noted. In the Emergency Room set-up , under the cover of adequate analgesia a closed manipulation and reduction was attempted using traction and counter traction method was applied where an exaggeration of the deformity was done dorsally initially and then a push was give to relocate the metacarpal in the volar direction, which was successful and she was immobilised temporarily using a dorsal splint. After basic blood investigations and obtaining a preliminary anaesthetic fitness, under an axillary block she was taken up to the OR for a percutaneous K (Kirschner) wire fixation to maintain the reduction. A 2mm K wire was passed through the third metacarpal and capitate and reduction was checked under C arm image intensifier guidance. She was then immobilised on a below elbow slab for 4 weeks during the time of which maintenance of reduction was checked at an interval of 2 weeks. The K wire was then removed under local anaesthesia infiltration after 4 weeks and and gradual wrist and hand mobilisation exercises were started , both actively and passively. She was then followed up at 6 and 10 week interval and the movements were found to be satisfactory.

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. Furthermore, ulnar sided CMC joints are more mobile than radial CMC joints [8]. The third metacarpal articulation with the capitate is a “key-stone” due to its more proximal location than the carpal articulations of the other metacarpals [6]. High velocity injury is the most common mechanism of injury for CMC dislocation [7,8] and the type of CMC joint fracture dislocation depends on direction of force [9]. These injuries may be associated with other injuries sustained to the hand such as fractured first metacarpal shaft in one case, long oblique fracture of second metacarpal base extending to shaft in one case, and fractured neck of metacarpal . On the anteroposterior radiograph, evaluation of CMC joint is done by parallel “M lines” as described by Gilula [10] In lateral radiograph, it is important to assess the direction of displaced CMC joint fracture dislocation [2] Computed tomography is used to diagnose occult or missed carpal bone fractures. CMC joint fracture dislocation can be treated by close reduction immobilisation, close reduction internal fixation or open reduction internal fixation with K-wires. Because of the force of injury and the resultant degree of capsular damage, reduction of a dorsal or volar dislocation often is unstable. Closed reduction usually is accomplished easily with gentle traction and direct pressure over the dislocated metacarpal bases [14]. Green and Rowland [11] Nalebuff [12] and Clement [13] advocate closed reduction and percutaneous fixation with Kirschner wires. The Wagner technique, as used in Bennett's fracture-dislocations, may be employed for isolated radial or ulnar border carpometacarpal dislocations [15]. In our study as adequate stability post reduction and fixation with a single K wire was obtained , multiple wire fixation through each of the metacarpals was avoided to avoid further risk to damaging the extensor tendon as well as minimalizing the risk of infection. Physiotherapy of hand and wrist joint is required after 6 weeks of immobilisation to avoid postoperative stiffness [16]. In our case report, as no extensor injuries were suspected , a closed reduction was performed and deemed adequate. Post operative mobilisation was started as early as the 4th week and no stiffness along with complete painfree movement of the hand and wrist was obtained at the end of the tenth week along with complete anatomic reduction and alignment of the carpometacarpal joint was noted.

CONCLUSION

In conclusion, CMC joint fracture dislocation from second to fifth finger is an extremely rare injury that needs thorough clinical examination and radiological assessment. Missed diagnoses are frequently reported. Hence, adequate evaluation with immediate intervention to reduce the dislocation must be made, which should be further stabilised using closed or open reduction techniques using percutaneous pinning following which mobilisation within 4 to 6 weeks of reduction must be advocated to prevent stiffness.

CASE ILLUSTRATION

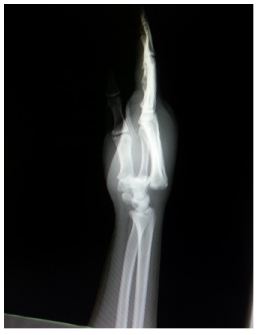

Fig 1. Pre op Lateral X ray

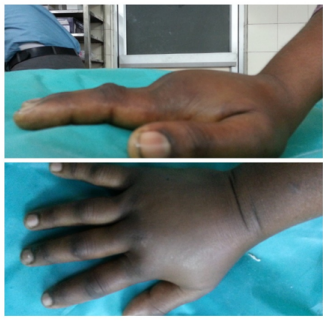

Fig 2. Pre op Clinical picture

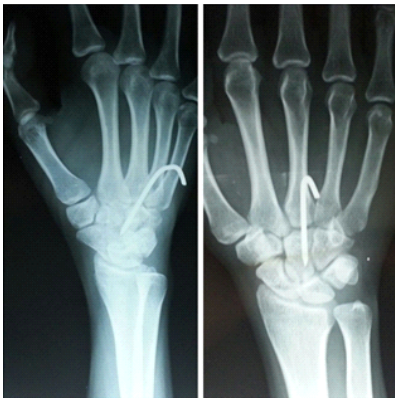

Fig 3. Immediate Post Op X ray with K wire insitu

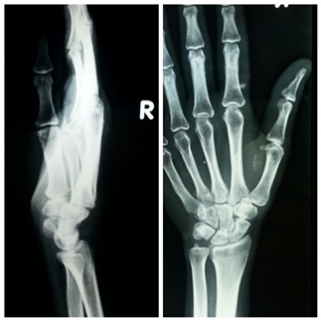

Fig 4. Post K wire removal at 4 weeks

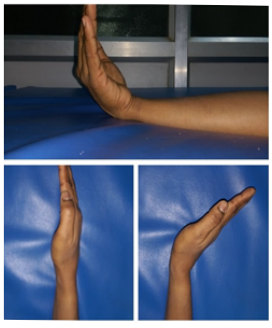

Fig 5. Clinical picture at 6 weeks post op.

Fig 6. Clinical picture at 10 weeks post operatively

REFERENCES

1. Sharma AK, John JT. Unusual case of carpometacarpal dis¬location of all the four fingers of ulnar side of hand. Med J Armed Forces India. 2005;61(2):188-9.
2. Henderson JJ, Arafa MA. Carpometacarpal dislocation: an easily missed diagnosis. J Bone Joint Surg Br. 1987;69(2): 212-4.
3. Kumar R, Malhotra R. Divergent fracture-dislocation of the second carpometacarpal joint and the three ulnar carpo-metacarpal joints. J Hand Surg Am. 2001;26(1):123-9.
4. Gunther SF, Bruno PD. Divergent dislocation of the car¬pometacarpal joints: a case report. J Hand Surg Am. 1985; 10(2):197-201.
5. Kumar S, Arora A, Jain AK, Agarwal A. Volar dislocation of multiple carpometacarpal joints: report of four cases. J Or-thop Trauma. 1998;12(7):523-6.
6. Hartwig RH, Louis DS. Multiple carpometacarpal disloca¬tions: a review of four cases. J Bone Joint Surg Am. 1979; 61(6A):906-8.
7. de Beer JD, Maloon S, Anderson P, Jones G, Singer M. Mul¬tiple carpo-metacarpal dislocations. J Hand Surg Br. 1989; 14(1):105-8.
8. Breiting V. Simultaneous dislocations of the bases of the four ulnar metacarpals upon the last row of carpals. Hand. 1983;15(3):287-9.
9. Waugh RL, Yancey AG. Carpometacarpal dislocations with particular reference to simultaneous dislocation of the bases of the fourth and fifth metacarpals. J Bone Joint Surg Am. 1948;30A(2):397-404.
10. Gilula LA. Carpal injuries: analytic approach and case exer¬cises. AJR Am J Roentgenol. 1979;133(3):503-17.
11. Green DP, Rowland SA: Fractures and dislocations in the hand. In Rockwood CA Green DP, editors: Fractures, Philadelphia, 1975, J. B. Lippincott Co., p. 323
12. Nalebuff EA: Isolated anterior carpometacarpal dislocation of the 5th finger: Classification and case report. J Trauma 8:1119-1123,1968
13. Clement BL: Fracture-dislocation of the base of the fifth metacarpal. A case report. J Bone Joint Surg 27:498- 499, 1945
14. Ker HR: Dislocations of the fifth carpo-metacarpal joint. J Bone Joint Surg 37-B:254-256, 1955
15. Wagner CJ: Method of treatment of Bennett's fracture dislocation. Am J Surg 80:230-231, 1950
16. Bell T, Chinchalkar SJ, Faber K. Postoperative management of carpometacarpal joint fracture dislocation of the hand: a case report. Can J Plast Surg. 2010;18(3):e37-40.