Floating thumb with double dislocation of carpometacarpal and metacarpo-phalangeal joints

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**ABSTRACT**

**INTRODUCTION:** Double dislocations of carpometacarpal and metacarpo-phalangeal joints are rare. We report an unusual case of simultaneous dislocation of both CMC and MCP joints in the thumb.

**PRESENTATION OF CASE:** A 31 year old male was admitted following a road traffic accident. He was complaining of pain and deformity of right thumb. The X-ray examination revealed simultaneous dislocation of both CMC and MCP joints. He underwent closed manipulative reduction and percutaneous K wire fixation. The wires were removed after six weeks. After a course of physiotherapy he regained full range of pain free movements.

**DISCUSSION:** The incidence of simultaneous dislocation of both CMC and MCP joints in thumb are associated with high energy injuries. The options of treatment are conservative with cast immobilisation and serial X-rays or operative including closed manipulative reduction and K wire fixation or open reduction and internal fixation.

**CONCLUSION:** The option of treating this rare injury with closed manipulative reduction and percutaneous K wiring gives excellent and predictable results.

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1. Introduction

Simultaneous dislocation of the thumb carpometacarpal joint (CMC) and metacarpo-phalangeal (MCP) joint is a rare injury. The terms used to describe these unusual injuries are double dislocation, complete dislocation and floating thumb metacarpal in the past. There are reports of fracture dislocation of the CMC joint and MCP joints in the literature. The treatment for these uncommon injuries varies from closed manipulative reduction and casting, percutaneous K wiring and open repair of the ligaments. We report a rare simultaneous dislocation of thumb metacarpal treated with closed manipulative reduction, percutaneous wiring and cast immobilisation with excellent results.

2. Case report

A 31 year old man was admitted in our unit after sustaining a road traffic accident when his right hand got caught between his body and front seat. He is right hand dominant and works as an architect. He was complaining of pain, deformity and inability to move his right thumb.

On examination there was a visible dislocation of both CMC and MCP joints of first metacarpal. It was a closed and there was no neurovascular deficit. There was tenderness in both CMC and MCP joints and active movements of these joints were painfully restricted. The X-ray examination revealed a double dislocation of the first metacarpal of both CMC and MCP joints (Fig. 1).

2.1. Operative technique

Under general anaesthesia and image intensifier the hand is screened for other fractures and dislocations of carpal and metacarpal bones. The diagnosis was confirmed as pure double dislocation of the thumb metacarpal. The first carpometacarpal joint is manipulated in to the joint and stabilised with a single 1.6 mm K wire passing from the metacarpal into the Trapezius bone. The first metacarpo-phalangeal joint is manipulated in to joint and fixed with a single 1.6 mm K wire across the joint. The stability of both the joints is checked under image intensifier (Fig. 2). Post operatively the hand was kept elevated and immobilised in a thumb spica cast. The hand was inspected after one week for any pin track infection and plaster immobilisation continued for six weeks in total.

After six weeks the patient was seen in the fracture clinic and the K wires were removed under local anaesthesia. The check x-rays showed the joints well reduced (Fig. 3). The patient was then sent for hand physiotherapy. He was assessed again in the clinic at the end of three months to check the thumb movements and

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stability of joints. The patient regained full pain free movements of the thumb. A Quick-DASH score at the end of three months was 21. The patient was pleased with the outcome of treatment and returned back to his job. He was reviewed back in the clinic after 18 months of injury. He demonstrated good functional and pain free range of movements of both CMC and MCP joints (Table 1). The tip, lateral and palmar pinch strength was measured for both right and left sides using a pinch metre gauge which showed good pinch strength compared to the left side (Table 2).

3. Discussion

Concurrent dislocation of the CMC and MCP joints of the thumb are rare.7,8 Double dislocation of the thumb can be at IP and MCP joints,9,10 MCP and CMC joints,2,4,11 or IP and CMC joints.8 The mechanism of CMC joint dislocation is a longitudinal directed force along the flexed MCP joint. The MCP joint dislocation is due to a hyperextension injury.12 The combination of longitudinal force along the metacarpal bone causing the MCP to hyperextend may
4. Conclusion

Simultaneous dislocation of CMC and MCP joints of the thumb are rare injuries with only a few cases reported in the literature. They are usually associated with high velocity injuries. High index of suspicion with adequate clinical examination and careful interpretation of radiographs are needed in the diagnosis of this injury. Even though both non-operative and operative treatments options are advised we recommend closed manipulative reduction with percutaneous K wiring. Both CMC and MCP joints should be checked for ligamentous instabilities.

Conflict of interest

There is no conflict of interest in relation to this article.

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Ethical approval

Ethical approval has been got from the hospital trust.

Author contribution

Aysha Rajeev has contributed to study concept, design, data collection, data analysis and writing of the paper. Soliman Noureldin has contributed in the preparation of case report. David Graham contributed towards the management and follow up of the patient.

References

1. Hutchinson JD, Hooper G, Robb JE. Double dislocation of digits. J Hand Surg (Br) 1991;16:114–5.
2. Ibrahim S, Noor MA. Simultaneous dislocations of the carpometacarpal and metacarpophalangeal joints of the thumb. Injury 1993;24:343–4.
3. Moore JR, Webb Jr CA, Thompson, RC. A complete dislocation of thumb metacarpal. J Hand Surg (Am) 1978;3(6):547–9.
4. Drosos GI, Kayias EH, Tsioros K. “Floating thumb metacarpal” or complete dislocation of thumb metacarpal – a case report and review of literature. Injury 2004;36:544–7.
5. Singh D, Krishan LG, Dhaka S, Kumar S, Arora S. Rare fracture dislocation of the thumb: a case report and review of the literature. Chin J Traumatol 2013;16(4):240–2.
6. Marcotte AL, Trzeciak MA. Non operative treatment for double dislocation of the thumb metacarpal: a case report. Arch Orthop Trauma Surg 2008;128:281–4.
7. Levy FM. Liberty simultaneous dislocation of the interphalangeal and metacarpophalangeal joints of the thumb: a case report. Hand Surg Am 1979;4(5):489–90.
8. Wei JT, Chandra D, Satku K. Simultaneous dislocation in the interphalangeal and carpometacarpal joints of the thumb: a case report hand. J Hand Surg Br 1988;13(2):224–6.
9. Cleak DK. Simultaneous dislocation of the interphalangeal and metacarpophalangeal joints in the thumb. Hand 1998;13(2):167–8.
10. Lee JC, See HF, Low CO. Simultaneous open dislocation of the interphalangeal and metacarpophalangeal joints in the thumb – a case report. Singapore Med J 1996;37(3):318–9.
11. Khan Y, El-Halaby R, Glynn M. Simultaneous complete dislocation of the carpo-metacarpal and metacarpophalangeal joints of thumb. J Surg Pakistan 2008;13(4):178–9.
12. Jari S, Wassem M, Srinivasan MS. Simultaneous Bennett’s fracture and metacarpophalangeal joint dislocation of the same thumb in a soccer player. Br J Sports Med 2000;34(6):463–4.
13. Van Ransbeek H, De Smet L. Double dislocation of both interphalangeal joints in the finger: case report and literature review. Acta Orthop Belg 2004;70(1):72–5.
14. Sakuma M, Inoue G. Simultaneous dislocation of metacarpophalangeal and carpometacarpal joints of a finger. Arch Orthop Trauma Surg 1998;117:286–7.
15. Khan H, Darcy P, Magnussen P. Simultaneous volar dislocations of carpometacarpal and metacarpophalangeal joints of the thumb. J Orthop Case Rep 2012;2(3):8–11.
16. Uchida S, Sakai A, Okazaki Y, Okimoto N, Nakamura T. Closed reduction and immobilization for traumatic isolated dislocation of the carpometacarpal joint.
of the thumb in rugby football players. Two case reports. Am J Sports Med 2001; 29:242–4.

17. Afshar A-R, Mirzatoloei F, Abdi-Rad I. Concurrent dislocations of carpometacarpal and metacarpophalangeal joints of the thumb. Arch Iran Med 2005; 8(3):221–2.

18. Marcotte AL, Trzeclak MA. Non operative treatment of double dislocation of thumb: a case report. Arch Orthop Trauma Surg 2008; 128:281–4.

19. Gerard F, Tropet Y, Obert L. Trapezo-metacarpal and metacarpophalangeal joint dislocation of the thumb associated with carpo-metacarpal dislocation of the four fingers. Ann Chir Main 1999; 18(3):205–8.

20. Shih KS, Tsai WF, Wu CJ, Mudgal C. Simultaneous dislocation of the carpometacarpal and metacarpophalangeal joints of the thumb in a motorcyclist. J Formos Med Assoc 2006; 105(8):670–3.