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Surgical Treatment of an Isolated, Pure Palmar Carpo-Metacarpal Dislocation of the Fourth Metacarpal: A Case Report

A Roujdi*, C Berouag, A Cala, M Hanbli, O Baba, Y El qadiri, Y Sbihi, O El Adaoui, Y El Andaloussi, AR Haddoun, D Bennouna and M Fadili

Orthopedic and Traumatology Department, Aile 4, Ibn Rochd University Hospital Casablanca, Morocco

***Corresponding author:** A Roujdi, Orthopedic and Traumatology Department, Aile 4, Ibn Rochd University Hospital Casablanca, Morocco

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Abstract

Isolated carpo-metacarpal dislocations are very rare injuries, with palmar cases being particularly exceptional. Few cases of isolated palmar carpo-metacarpal dislocations have been documented. These injuries are generally unstable and require urgent intervention, typically involving closed or open reduction, followed by internal fixation and plaster cast immobilization. We present the case of an isolated dislocation of the fourth left carpo-metacarpal joint in a young woman. Treatment involved cross pinning, with postoperative immobilization using an intrinsic plus splint for three weeks, followed by rehabilitation after removal of the cast. The functional outcome was satisfactory.

Keywords: Dislocation, Palmar, Carpo-Metacarpal, Pinning

Summary

Isolated carpo-metacarpal dislocations are rare injuries, with palmar dislocations being particularly uncommon. Only a few cases of isolated palmar carpo-metacarpal dislocations have been documented. These injuries are generally unstable and require immediate intervention, usually involving closed or open reduction, followed by internal fixation and cast immobilization. We present the case of an isolated post-traumatic palmar dislocation of the fourth left carpo-metacarpal joint in a young female patient. Treatment consisted of cross pinning and postoperative immobilization with an intrinsic plus splint for three weeks, followed by rehabilitation upon splint removal. The functional outcome was satisfactory.

Introduction

Isolated carpo-metacarpal dislocations of the fingers are rare injuries, first documented by Rivington in 1873 **[1]**. Diagnosis is suspected based on clinical presentation, including pain and functional impotence, and confirmed with radiographic imaging. Treatment involves urgent reduction, pin fixation for unstable dislocations, and immobilization in a plaster cast, followed by early rehabilitation to restore function **[2]**.

Case Report

We report the case of a 25-year-old right-handed female housewife, with no significant medical history, who was

admitted to the emergency department after a road traffic accident. The patient landed directly on her left hand with the wrist in a flexed position, resulting in closed trauma to the left hand, accompanied by pain and functional impairment.

Clinical examination revealed edema of the left hand, along with mild palmar deformity, and marked pain upon simple palpation and attempted mobilization. There was partial functional impairment of the hand.

Frontal and lateral X-rays of the left hand revealed an isolated, complete, and palmar carpo-metacarpal dislocation of the 4th ray **(Figure 1)**.

An emergency CT scan of the left hand confirmed the dislocation without any associated fractures **(Figure 2)**.


A


B

Figure 1: Anteroposterior (A) and lateral (B) radiographs of the left hand revealed a pure and isolated palmar dislocation of the 4th metacarpal.

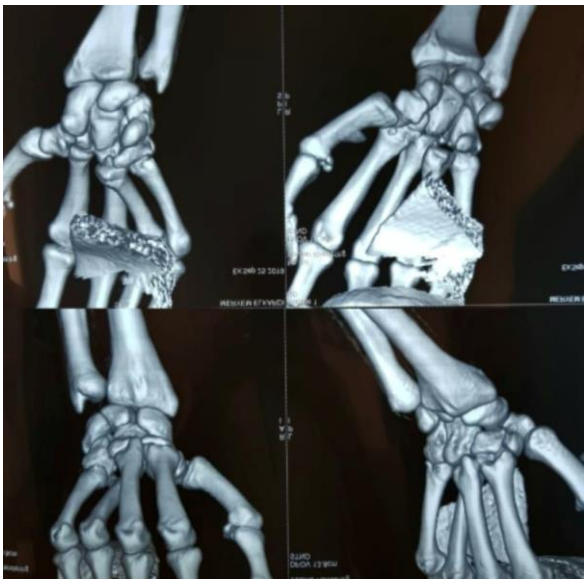

Figure 2: CT scan of the hand showing a pure palmar dislocation of the 4th metacarpal.

Emergency surgical treatment was performed under local-regional anesthesia, with a tourniquet placed at the root of the left upper limb, using a dorsal approach **(Figure 3)**.


A

B

Figure 3: Clinical appearance (A) and post-operative confirmation under fluoroscopy (B).

The dislocation was first reduced using an external maneuver, involving gradual traction on the 4th column with direct pressure applied to the base of the metacarpal; an anterior approach was not necessary.

The reduction was stabilized by double "cross" carpo-metacarpal pinning, along with transverse inter-metacarpal pinning to secure the 4th ray to adjacent metacarpals under fluoroscopic guidance **(Figure 4)**.

Figure 4: Postoperative radiological control.

The wrist was immobilized in an intrinsic plus position using a splint for 3 weeks, followed by functional rehabilitation starting in the third week.

The postoperative course was uneventful, with pins removed at 6 weeks, resulting in grip strength comparable to the opposite hand and a QUICKDASH score of 4.5.

Discussion

The carpo-metacarpal joint is known for its high stability, supported by the intermetacarpal, palmar, and dorsal carpo-metacarpal ligaments **[3,4]**. All authors agree that only high-energy trauma, such as road accidents, can compromise this stability and disrupt the joint **[5]**. As a result, pure and isolated dislocations of the metacarpal joints of the fingers are rare injuries, predominantly affecting young adults. According to Frick's 2010 study involving 100 cases of carpo-metacarpal fracture-dislocations, only 12% were pure dislocations without fractures **[6]**.

However, lower-intensity trauma such as punches, has also been associated with dislocations of the mobile metacarpals

[7]. Early diagnosis of this injury can be achieved promptly with a strict lateral X-ray of the hand and wrist, which improves the prognosis, although interpreting these X-rays can be challenging. A strict lateral view is essential to determine the direction of displacement of the metacarpal bases, along with oblique views to differentiate between mobile and fixed metacarpals, and a frontal view **[2]**. Furthermore, some authors recommend an additional CT scan to provide a more comprehensive evaluation of the lesions **[3]**.

Reduction through external maneuvers combined with pinning is an effective treatment when there is no associated vascular or nerve compression. Stabilization of the carpo-metacarpal joints with pins can be achieved through oblique, intramedullary, or crossed pinning techniques **[7]**.

Emergency treatment of carpo-metacarpal dislocations generally results in good outcomes with minimal long-term functional sequelae **[8,9,10]**. However, complications reported in the literature include persistent hand pain, reduced grip strength, subluxations, and secondary displacements **[11]**. Lawlis and Gunther **[7]** further noted that patients with dislocations of all four carpo-metacarpal joints tend to have better outcomes than those with dislocations limited to the second and third rays **[7,12]**. For optimal results, the 4th and 5th carpo-metacarpal joints should be pinned in slight flexion to preserve the natural curve of the metacarpal arch **[13,14]**.

Metacarpal dislocations of the long fingers are very rare injuries, often associated with fractures of the carpus or hand bones, or with ligament tears. These injuries frequently go unrecognized, either due to an incomplete initial examination or because they occur in the context of multiple traumas. This underscores the importance of thoroughly assessing such dislocations in any case of closed hand trauma. Early diagnosis and prompt management significantly improve the prognosis.

Conclusion

Metacarpal dislocations of the long fingers are very rare injuries, often associated with fractures of the carpus or hand bones, or with ligament tears. These injuries frequently go unrecognized, either due to an incomplete initial examination or because they occur in the context of multiple traumas. This underscores the importance of thoroughly assessing such dislocations in any case of closed hand trauma. Early diagnosis and prompt management significantly improve the prognosis.

References

1. Kneife F. Simultaneous dislocations of the five carpometacarpal joints. Injury. 2002;33(9):846. [Ref]
2. Pan African Medical Journal. (2015);22(1). [PubMed]
3. Masquelet AC, Nordin JY, Savary L, Poulizac C. A propos d'un cas de luxation antérieure des quatre derniers métacarpiens. Ann Chir Main. 1986;5(1):63-6. [Ref]
4. Emerson LA. Total metacarpal dislocation. J Emerg Med. 2001;20(3):295-6. [Ref]
5. Bergfield TG., DuPuy TE., Aulicino PL. Fracture-dislocations of all five carpometacarpal joints: a case report. J Hand Surg Am. 1985;10(1):76-8. [PubMed]
6. Frick L., Mezzadri G., Yzem I., Plotard F., Herzberg G. Luxations carpométacarpiennes fraîches des doigts longs: Étude à propos de 100 cas. Chir Main. 2011;30(5):333-9. [Ref]
7. Lawlis JF., Gunther SF. Carpometacarpal dislocations: long-term follow-up. J Bone Joint Surg Am. 1991;73(1):52-9. [PubMed]
8. Gore DR. Carpometacarpal dislocation producing compression of the deep branch of the ulnar nerve. J Bone Joint Surg Am. 1971;53(7):1387-90. [PubMed]
9. Schutt RC., Boswick JA., Scott FA. Volar fracture-dislocation of the carpometacarpal joint of the index finger treated by delayed open reduction. J Trauma. 1981;21(11):986-7. [PubMed]
10. Weiland AJ., Lister GD., Villarreal-Rios A. Volar fracture dislocations of the second and third carpometacarpal joints associated with acute carpal tunnel syndrome. J Trauma. 1976;16(8):672-5. [PubMed]
11. 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. [PubMed]
12. Loudyi D., Amar MF., Chbani B., Bennani A., Boutayeb F. Luxation carpométacarpienne divergente des quatre

derniers doigts (à propos d'un cas) [Divergent carpometacarpal joint dislocations of the ulnar four fingers (a case report)]. Chir Main. 2009;28(3):168-70. [Ref]

13. Ameziane L. La luxation carpométacarpienne complète des doigts longs, à propos de deux cas. Chir Main. 2002;21:309-12. [Ref]

14. Gangloff D., Chahidi N., Sahnoun M., Journeau P., Haumont T. Les luxations carpométacarpiennes du cinquième rayon: étude descriptive à propos de 31 cas. Chir Main. 2007;26(5):206-13. [PubMed]