

Original Research Article

Irreducible Dorsal Metacarpophalangeal Dislocation of the Thumb: A Case Report and Literature Review

Azriouil Ouahb^{1*}, Rifki Fayçal¹, Margad Omar¹

¹Department of Orthopaedic and Traumatology, Avicenne Military Hospital, Marrakech, Morocco

Article History

Received: 25.10.2024

Accepted: 30.11.2024

Published: 04.12.2024

Journal homepage:

<https://www.easpublisher.com>

Quick Response Code



Abstract: Dorsal dislocations of the metacarpophalangeal joint of the thumb are rare. Complex dorsal dislocations are defined by the entrapment of the sesamoid bones and the soft tissue, such as the volar plate, behind the phalanx at the level of the metacarpal neck. These cases often necessitate open reduction. We present the case of a 22-year-old male patient who was admitted to our institution with a dorsal metacarpophalangeal dislocation of the thumb. Surgical reduction was required following the failure of closed reduction attempts.

Keywords: Irreducible dislocation, metacarpophalangeal joint, thumb, dorsal approach.

Copyright © 2024 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Dorsal dislocation of the metacarpophalangeal joint of the thumb typically results from hyperextension trauma. Complex dorsal dislocations are defined by the entrapment of the volar plate, including the sesamoid bones, behind the metacarpal. These dislocations can either be irreducible from the outset or become so following inappropriate maneuvers during attempts to reduce a simple dorsal dislocation. X-rays reveal an abnormal positioning of the sesamoid bones and widening of the space between the metacarpal head and the phalanx, indicative of volar plate interposition. This injury predominantly affects young male patients. Treatment is almost always surgical, with several surgical approaches available depending on the case.

MATERIALS AND METHODS

We report the case of a young patient who underwent surgery in April 2022 (with a follow-up period of two and a half years) in the Department of Traumatology and Orthopaedic at the Avicenne Military Hospital in Marrakech for a complex dorsal dislocation of the metacarpophalangeal joint of the thumb.

RESULTS

Our patient, a 22-year-old right-handed student, presented to the emergency department with a left thumb

injury following a fall onto the palm of the hand with the thumb in hyperextension. Clinically, the thumb deformity was less pronounced than that typically observed in a simple complete dislocation. The thumb was very painful, immobile, and appeared shortened. No associated vascular or nerve injuries were noted.

X-ray imaging confirmed the dislocation, with the sesamoid bones in a dorsal position relative to the neck of the first metacarpal and widening of the space between the head of the first metacarpal and the base of the proximal phalanx (Figure 1). After the failure of an attempt at reduction using Farabeuf's maneuver, surgical intervention became necessary.

The procedure was performed under regional anesthesia. A curvilinear posterior approach centered on the metacarpophalangeal joint was utilized. Intraoperative findings confirmed the dorsal displacement of the volar plate and sesamoid bones relative to the neck of the first metacarpal (Figure 2). Following the release of the interposed structures, the dislocation was successfully reduced (Figure 3). Lateral stability tests were systematically performed to rule out rupture of the collateral ligaments.

Postoperatively, immobilization was maintained for four weeks using a static orthosis that

*Corresponding Author: Azriouil Ouahb

Department of Orthopaedic and Traumatology, Avicenne Military Hospital, Marrakech, Morocco

allowed free movement of the interphalangeal joint of the thumb. The anatomical outcome was excellent, with a

metacarpophalangeal range of motion from 0° to 75° and satisfactory functional results.



Figure 1: X-ray of the thumb showing complex dorsal dislocation of the metacarpophalangeal joint



Figure 2: Dorsal approach of the metacarpophalangeal joint of the thumb (dorsal displacement of the volar plate and sesamoid bones relative to the neck of the first metacarpal)

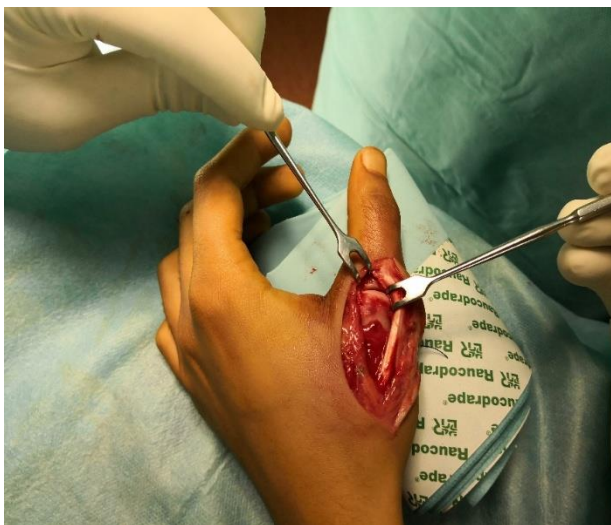


Figure 3: The dislocation reduced

DISCUSSION

Dorsal dislocations of the metacarpophalangeal joint of the thumb are rare and typically result from hyperextension trauma. Farabeuf [1] described three types of dorsal dislocation:

- **Incomplete Simple Dorsal Dislocation:** The proximal phalanx is subluxated on the posterior half of the first metacarpal head.
- **Complete Simple Dorsal Dislocation:** The base of the proximal phalanx is displaced posteriorly to the metacarpal head, with the sesamoids resting on the metacarpal head. However, the sesamoid sling remains anterior to the phalanx.
- **Complex Dorsal Dislocation:** Defined by the incarceration of the sesamoids and the volar plate behind the phalanx at the neck of the metacarpal.

Complex dorsal dislocations are classically described as irreducible and typically require surgical reduction [2]. Afifi *et al.*, [3] studied the periarticular anatomical structures of the metacarpophalangeal joint in cadavers and their contribution to the irreducibility of dislocations. They concluded that the volar plate is the main structure impeding closed reduction of dorsal dislocations. Our patient presented with a complex dislocation. A closed reduction attempt using the Farabeuf maneuver failed, leading to the indication for surgical reduction. Surgical treatment involves various approaches. However, the posterior approach offers several advantages, including a shorter operative time, good visualization of the joint and volar plate, and reduced risk of injury to neurovascular structures [4]. Most authors recommend immobilization for 3 to 4 weeks [5]. Eglseder *et al.*, [6] advocate for early mobilization, while Green *et al.*, [7] prefer immobilization for three to four weeks. For our patient, we opted for a posterior approach with immobilization for four weeks. The functional outcome after a follow-up

of two and a half years was satisfactory and consistent with findings reported in the literature.

CONCLUSION

Complex dorsal dislocations of the metacarpophalangeal joint of the thumb are rare injuries and, as such, are sparsely discussed in the literature. Their treatment is almost invariably surgical, which remains the only approach ensuring a satisfactory functional outcome.

REFERENCES

1. Farabeuf, L. H. (1876). De la luxation du pouce en arrière. *Bull Acad de Chir*, 2, 21.
2. Takase, K. (2018). Irreducible Dislocation of the Metacarpophalangeal Joint. *Clin Surg*, 3, 1997.
3. Afifi, A. M., Medoro, A., Salas, C., Taha, M. R., & Cheema, T. (2009). A cadaver model that investigates irreducible metacarpophalangeal joint dislocation. *The Journal of hand surgery*, 34(8), 1506-1511.
4. Patterson, R. W., Maschke, S. D., Evans, P. J., & Lawton, J. N. (2008). Dorsal approach for open reduction of complex metacarpophalangeal joint dislocations. *Orthopedics (Online)*, 31(11), 1099.
5. Michelle Merle, Gilles Dautel, *Chirurgie de la main l'urgence*, 4ème édition.
6. Eglseder, W. A., Gens, D. R., & Burgess, A. R. (1995). Multiple ipsilateral dorsal metacarpophalangeal and proximal interphalangeal joint dislocations: a case report. *Journal of Trauma and Acute Care Surgery*, 38(6), 955-957.
7. Green, D. P., & Terry, G. C. (1973). Complex dislocation of the metacarpophalangeal joint: correlative pathological anatomy. *JBJS*, 55(7), 1480-1486.

Citation: Azriouil Ouahb, Rifki Fayçal, Margad Omar (2024). Irreducible Dorsal Metacarpophalangeal Dislocation of the Thumb: A Case Report and Literature Review. *EAS J Orthop Physiother*, 6(6): 106-108.
