EAS Journal of Orthopaedic and Physiotherapy
Abbreviated Key Title: EAS J Orthop Physiother
ISSN 2663-0974 (Print) | ISSN 2663-8320 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-7 | Issue-1 | Jan-Feb, 2025 | DOI: https://doi.org/10.36349/easjop.2025.v07i01.001

Original Research Article

Fifth Metacarpal Neck Treated by L-Shaped Vives Pinning About 10 Cases

A. Antar[1*], O. Aguenaou[1], MR. Fekhaoui[1], MJ. Mekkaoui[1], M. Bouffetal[1], RA. Bassir[1], M. Kharmaz[1], MO. Lamrani[1]

[1]Department of Orthopedic and Traumatology, University Hospital Center, Rabat

Article History
Received: 02.10.2024
Accepted: 07.11.2024
Published: 12.02.2025

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: The fracture of the fifth metacarpal neck is common in hand, traumatology among the young and active population who is the most affected. In the case of an unmoved fracture or a minor displacement, simple immobilization followed by rehabilitation is sufficient, whereas fractures with swaying greater than 30° require surgical management. The L-shaped insertion of the ribs is a simple surgical technique with short hospitalization, obtaining a reduction and quality stability allowing immediate self-rehabilitation, with good anatomical and functional results.

Keywords: Vives-Pinning-Metacarpal-Hand.

INTRODUCTION

Fractures of the fifth metacarpal neck, or fracture of the "boxer" is one of the most frequent injuries of the traumatic hand, it represents 20% of the fractures of the hand. They are most often the result of a direct impact on the head of the fifth metacarpal and generally affect the young, active population.

These fractures, when displaced, can cause a loss of strength, limitation of extension, rotation disorder and aesthetic damage by the disappearance of the dorsal protrusion of the head of the 5th metacarpal.

Different therapeutic options exist, orthopedic treatment is the rule as long as the palmar swells remain below 30°. Beyond the surgical treatment, many techniques of osteosynthesis have been described. The gold standard remains the centromedullary bouquet plugging described by Foucher in 1976.

Other therapeutic alternatives include L-perpendicular insertion, transverse percutaneous insertion, retrograde insertion or screw-mini plate osteosynthesis.

In our series, we recommend the L-shaped surgical technique of Vives for all our patients and present the results of the study whose purpose is to compare the advantages and disadvantages compared to other techniques.

***Corresponding Author:** A. Antar
Department of Orthopedic and Traumatology, University Hospital Center, Rabat

Figure 1: X-Ray of a L-shaped Vives pinning

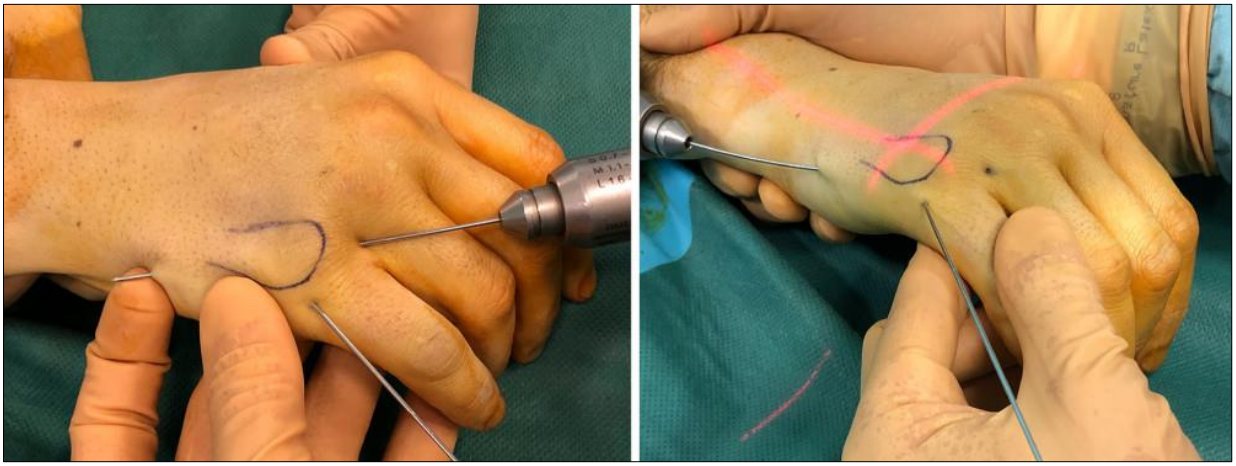

Figure 2: Surgical procedure of a L-Vives Pinning

MATERIEL AND METHODS

Between June 2021 and May 2023, we treated 10 patients (9 male and 1 female) with an average age of 37 years (extreme ranging from 17 to 47 years). All fractures were closed and displaced, with a tilt of more than 30° on a strict profile X-ray or rotational disorder on clinical examination.

The dominant hand was affected in 7 cases.

These fractures occurred as a result of a punch in 3 cases, in the context of a sports accident in 5 cases and during a fall in 3 cases. The diagnosis was clinically suspected and confirmed by radiology.

We treated all fractures surgically by double L-pin insertion using the Vives technique.

The intervention is performed under local anesthesia in 9 cases and under general anesthesia in one case.

The patient was placed in a dorsal decubitus, on an arm table, with a pneumatic garrot at the root of the limb and under gloss amplifier.

The reduction is made according to the maneuver of Jahss.

Postoperative compression consisted of a syndactyly between the fourth and fifth metacarpal for 6 weeks.

The spindles were removed at week 6 under local anesthesia followed by rehabilitation.

The resumption of sport activities takes place from the 3rd month.

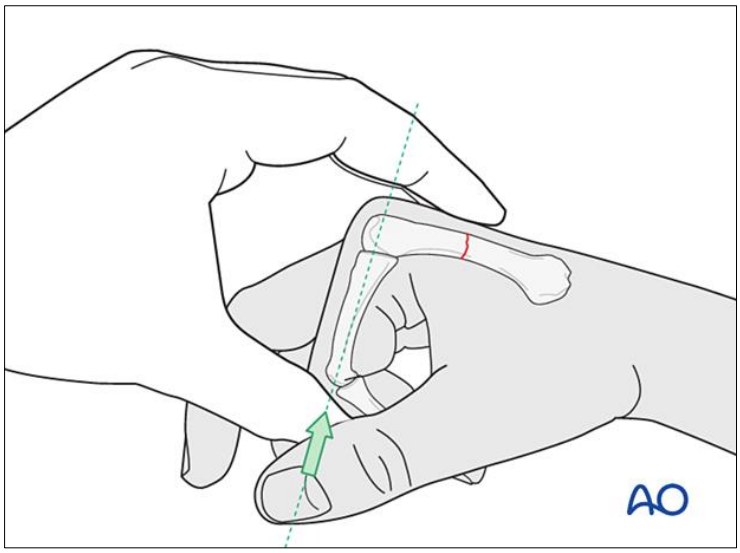

Figure 3: Jahss technique for the reduction of a 5th metacarpal head

RESULTS

Bone consolidation was achieved in 100% of cases within an average of 7 weeks, without secondary displacement or malignant callus or rotational disorders.

We didn't see any cases of infection or metacarpophalangeal joint stiffness. The amplitudes of the metacarpal-phalangeal joint in the fifth finger were normal (90° flexion and 0° extension), with a normal gripping force.

DISCUSSION

Fractures of the fifth metacarpal neck are by far the most common traumatic injuries to the hand. Most often they occur as a result of direct impact on the head of the fifth metacarpal.

Different therapeutic options exist, Orthopedic treatment is the rule as long as the palmar swells remain below 30°. Beyond, the surgical treatment, many techniques of osteosynthesis have been described.

The most widely used techniques of plugging, with several mounting techniques. The double intermetacarpal insertion according to Mitz *et al*., The Foucher *et al*., The technique of double L-shaped splicing proposed by Vives achieves a synthesis between the splicing according to Mitz and that recommended by Foucher. The anterograde centromedullary spindle stabilizes the reduction obtained by external maneuver of the palmar bascule of the distal fragment, while the transverse spindle allows, while remaining extra articular, a fixation of the reduction in rotation of the head of the fifth metacarpal.

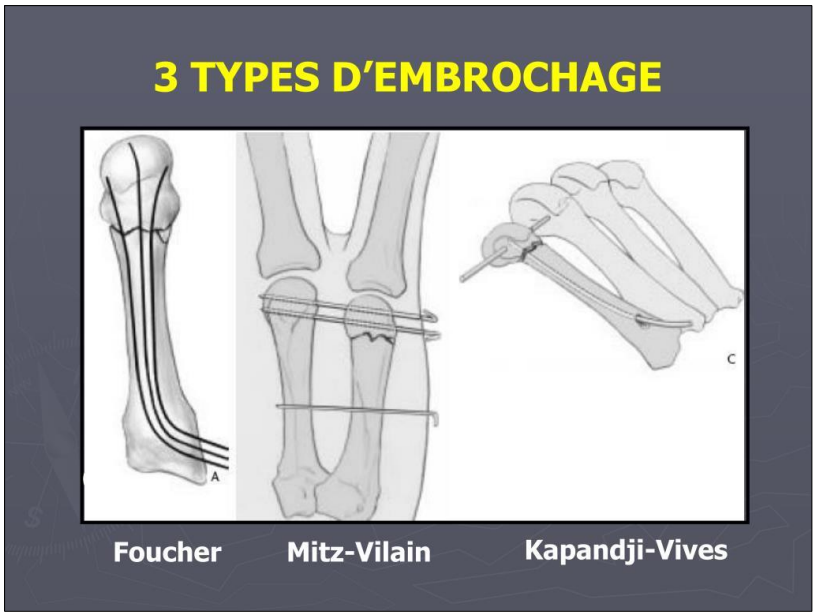

Figure 4: Different techniques of metacarpal pinning

Figure 5: X-Ray of a 5th metacarpal head fracture

CONCLUSION

The highly displaced forms of the fractures of the neck of the fifth metacarpal justify the use of a surgical treatment, several techniques are proposed. The interest of two-pin L-insertion by means, by a simple operative technique, to allow better control of the toggle and as well as an immediate self-education guaranteeing an excellent anatomical and functional result.

REFERENCES

- Ali, A., Hamman, J., & Mass, D. P. (1999). The biomechanical effects of angulated boxer's fractures. *The Journal of hand surgery*, *24*(4), 835-844.
- Ali, A., Hamman, J., & Mass, D. P. (2006). The biomechanical effects of angulated boxer's fractures. *J Hand Surg, 24A*, 835-844.
- Allieu, Y., & Fassio, B. (1973). L'utilisation du tuteur externe en chirurgie de la main. *Acta Orthop Belg*, *39*, 988-1001.
- Foucher, G. (1988). L'ostéosynthèse des fractures des métacarpiens et des phalanges. In *Conférences d'enseignement de la SOFCOT, no 31* (pp. 213-232). Paris.
- Foucher, G. (1995). "Bouquet" osteosynthesis in metacarpal neck fractures: a series of 66 patients. *The Journal of hand surgery*, *20*(3), S86-S90.
- Foucher, G., Chemorin, C., & Sibilly, A. (1976). A new technic of osteosynthesis in fractures of the distal 3d of the 5th metacarpus. *La Nouvelle presse medicale*, *5*(17), 1139-1140.
- Han, S. H., Rhee, S. Y., Lee, S. C., Han, S. C., & Cha, Y. S. (2013). Percutaneous retrograde intramedullary single wire fixation for metacarpal shaft fracture of the little finger. *European Journal of Orthopaedic Surgery & Traumatology*, *23*, 883-887.
- Jahss, S. A. (1938). Fractures of the metacarpals: a new method of reduction and immobilization. *JBJS*, *20*(1), 178-186.
- Kapandji, A. I. (1993). Osteosynthesis using perpendicular pins in the treatment of fractures and malunions of the neck of the 5th metacarpal bone. *Annales de Chirurgie de la Main et du Membre Superieur: Organe Officiel des Societes de Chirurgie de la Main= Annals of Hand and Upper Limb Surgery*, *12*(1), 45-55.
- Kim, J. K., & Kim, D. J. (2015). Antegrade intramedullary pinning versus retrograde intramedullary pinning for displaced fifth metacarpal neck fractures. *Clinical Orthopaedics and Related Research®*, *473*, 1747-1754.
- Lowdon, I. M. R. (1986). Fractures of the metacarpal neck of the little finger. *Injury*, *17*(3), 189-192.
- Mitz, V., Gasnier, F., Sokolow, C., & Vilain, R. (1985). La pathologie du donneur de coups de poing. In *Annales de chirurgie plastique et esthétique* (Vol. 30, No. 1, pp. 69-77).
- Potenza, V., Caterini, R., De Maio, F., Bisicchia, S., & Farsetti, P. (2012). Fractures of the neck of the fifth metacarpal bone. Medium-term results in 28 cases treated by percutaneous transverse pinning. *Injury*, *43*(2), 242-245.
- Vives, P., Robbe, M., Dorde, T., De Lestang, M. (1981). A new treatment for fractures of the neck of the metacarpals by double pinning. *Ann Chir, 35*, 779-782.

Citation: A. Antar, O. Aguenaou, MR. Fekhaoui, MJ. Mekkaoui, M. Bouffetal, RA. Bassir, M. Kharmaz, MO. Lamrani (2025). Fifth Metacarpal Neck Treated By L-Shaped Vives Pinning About 10 Cases. *EAS J Orthop Physiother, 7*(1): 1-4.