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(CASE REPORT)

Pinning-in treatment according to the ISELIN technique of a pure carpo-metacarpal dislocation

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Abstract

Trapezo-metacarpal dislocations are rare, accounting for only 1% of hand trauma. The mechanism is generally indirect by axial compression and retropulsion (Kindle theory) or by shearing (Monsche theory). We report a clinical case of this lesion which occurred in the context of multiple trauma. Due to the rarity of this entity, this dislocation went unnoticed during the first assessment in a 28-year-old patient admitted as part of a multiple trauma by road accident and whose mechanism of injury is poorly understood. The aim of this study is to highlight the place of pinning-in according to the ISELIN technique in the treatment of this rare entity and to assess the functional hand's prognosis after treatment.

Keywords: Trapezo-metacarpal; dislocation; ISELIN pinning; ligamentoplasty; hand surgery

1. Introduction

Carpo-metacarpal dislocations of the fingers represents a rare lesion. The first case was described by Rivington in 1873 [1]. However, Trapezo-metacarpal dislocations represents 1% of all hand's trauma and can be unnoticeable during the first assessment especially when associated to other injuries [2]; well or untreated would be the cause of the Trapezo-metacarpal instability which inevitably leads to Rhizarthrosis. Stabilization is essential because orthopedic treatment is consistently unsuccessful [3]. We report a recent case of Trapezo-metacarpal dislocation treated by pinning according to the ISELIN technique and we discuss the therapeutic methods proposed in the management of this rare lesion.

2. Case presentation

This is a 28-year-old patient, with no particular pathological history, a worker, the victim of a public road accident (motorcyclist struck by a car) during which he presented a multiple trauma associating a fracture of the zygomatic arch, open fracture of the right femur, fracture of the right ulna, fracture of the pelvis and thoracic contusion.

Faced with this polytrauma, the lesional mechanism leading to the Trapezo-metacarpal dislocation of the thumb is not understood, including the diagnosis. In addition, six days after the trauma, and faced with the persistence of pain, the functional impotence of the thumb and the deformation of the base of the left thumb associated with a sensation of piston (objectified by a pulling movement - compression of the spine thumb), we decided to take standard radiographs with frontal and 3/4 views (Figure 1) which confirmed the diagnosis of Trapezo-metacarpal dislocation of the left thumb without associated osteo-cartilaginous lesion.

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Figure 1 Trapezo-metacarpal dislocation. There is no longer contact between the base of the metacarpal and the underside of the trapezius on the AP and 3/4 view.

The therapeutic decision was fixation by ISELIN type inter-metacarpal pinning (distal pinning from M2 to M1 then proximal from M1 to M2) without approach to the joint, associated with immobilization by inter-commissural splint for 6 weeks. Immediately postoperatively, the setup was stable with satisfactory fluoroscopic control. (Figure 2)

Figure 2 Reduction and pinning-in according to the ISELIN technique.

However, the braces were removed at six weeks followed by physiotherapy.

At the 6-month follow-up, questioning noted the persistence of pain associated with discomfort during activities of daily living caused by subjective instability. Moreover, this discomfort does not affect the professional life of the patient. Clinical examination did not show instability by a drawer in joint mobilization.

The recovery of the overall function of the thumb column was compared to the opposite hand by the measurement of:

- Joint amplitudes (opposition according to Kapandji)
- Thumb's separation angle which was 40 ° (N = 20-45 °).
- Subterminal forceps and grip which was identical to the contralateral hand.

The radiological assessment at follow-up was not carried out, we prefer to do it only at the greatest follow-up to better assess the articular congruence and the existence or not of Rhizarthrosis.

3. Discussion

The carpo-metacarpal joint is a very stable joint [2], many authors have underlined the extreme violence necessary to disrupt joint interlocking [3]. This makes this type of dislocation a rare lesion. It most often affects young adults. However, very violent injuries like traffic accidents are the main causes. The other lesions occur during lower energy trauma such as punches which generally lead to dislocation of the movable metacarpals [4]. The functional prognosis of the thumb is better if the diagnosis is made urgently by taking X-rays of the hand and wrist, the interpretation of which is sometimes difficult. It is essential to achieve a strict profile view showing the direction of displacement of the metacarpal bases, an oblique view releasing the mobile or fixed metacarpals and a frontal view. In addition, some authors recommend a complementary tomodensitometric study in the event of fracture of the base of M1 [2]. Reduction by external maneuvers with percutaneous pinning is a good treatment in the absence of vasculo-nerve compression. For other authors, the risk of secondary instability justifies starting the joint with early reconstruction by ligamentoplasty [5, 6]. The result of these urgently treated carpo-metacarpal dislocations is good and leaves few sequelae [7-8]. Several complications have been reported in the literature, such as residual pain in the hand which was observed in our patient. In addition, the evolution can be marked by a decrease in grip strength, subluxations and secondary displacements [9].

For chronic instabilities, ligamentoplasty is required; different procedures have been proposed using the flexor carpi radialis [5], the abductor digitorum longus, the extensor carpi longus [2], the extensor digitorum brevis [10], the ligament anterior annulus of the carpal [11], the long palmar or the extensor retinaculum [12]. Currently, the most widely used ligamentoplasty are those of Eaton-Littler, Brunelli and Péquignot [2, 5, 13].

4. Conclusion

Trapezo-metacarpal dislocations are rare lesions but should not go unnoticed and be embedded in a context of polytrauma because inappropriate treatment makes Rhizarthrosis inevitable and precocious. The ISELIN technique, easy to perform, can treat this type of lesion with good functional results.

Compliance with ethical standards

Conflict of interest statement

The authors declare that there is no conflict of interest regarding the publication of this article.

Statement of ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

Statement of informed consent

Consent of patient was received.

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