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BILATERAL TRANS-SCAPHOIDRETRO-LUNAR FRACTURE DISLOCATION : CASE REPORT

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ABSTRACT: Trans-scaphoid retro-lunar dislocation is a lesion that is due to the transmission of forces through the wrist in hyperextension that occurs in the context of high-energy trauma. Although exceptional, this lesion deserves to be well known because of its radiological and therapeutic peculiarities because it can lead to a disruption of the integrity of the ligament support of the wrist. In this work, we present a detailed description of a new variety of bilateral trans-scaphoid retro-lunardislocation fracture and its treatment to enrich the knowledge acquired on dislocations of carp bones.

KEYWORDS: Wrist; Perilunar dislocation; Fracture-dislocations of carp

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1. INTRODUCTION

The case: the trans-scaphoretro-lunal dislocation of the carp, occurring mainly during violent high-energy trauma, [1-6] leads to a disruption of the integrity of the ligament support of the wrist. The delay in management, anatomical classification and the open or closed nature of the lesion are the main factors that determine the clinical outcome [2] of trans-scaphoretro-lunal dislocation fractures of carp.[3] Anatomical reduction, percutaneous pin fixation and fixation of scaphoidal fractures by screws were performed under image intensifier control[4]. In this work, we present our technique of surgical treatment and the results obtained for this unusual and complex lesion.

2. MATERIALS AND METHODS

This is a 30-year-old patient, with no notable pathological history, admitted to the emergency department for falling from her height with reception on both hands, both wrists in hyperextension. The patient reports experiencing a violent pain associated with the perception of audible cracking. On clinical examination, both wrists are oedematised. The inspection found sensitivity to palpation of the snuffbox region, limited joint movement, and minimal numbness in the median nerve distribution area of both hands. The mobility of the fingers was normal but painful, with a slight decrease in the grip strength of both hands. Tinel's sign was negative on both sides and vascular status was normal at physical examination (Figure1).

Figure 1: Clinical aspect of the two wrists of the patient

An initial radiographic examination including a front and wrist profile radiograph as well as sciatic images under image intensification was requested showing a bilateral scaphoid fracture, with bilateral lunar retro luxation (Figure 2).

Figure 2: An X-ray of the face and wrist profile and scopic images showing a bilateral scaphoid fracture, with bilateral retro lunar luxation.

Faced with this complex clinical picture, the indication to intervene urgently is posed. Under general anesthesia, we performed longitudinal axial traction for 10 minutes and then flexed the wrist, under control of the image intensifier. After reduction, the percutaneous inter-carpal fixation was applied by the establishment of a triquetro-lunar pin. The reduction was evaluated under fluoroscopy. For scaphoid fracture, we performed a percutaneous fixation using a 3.5 mm size mini-type Herbert compression screw across the fracture line from a distal-palmar direction to a proximal-dorsal direction. The same procedure was repeated for the other wrist. Standard radiographs of control were obtained and both wrists were immobilized by a plaster cuff taking the thumb (Figure 3).

Figure 3: radiological control of face and profile after percutaneous fixation

The patient reported complete symptom relief the day after the surgery. The postoperative period was uneventful. Four weeks after the surgery, the pins, the flat cuffs were removed. New headlines were made for another 4 weeks after control x-rays. The headlines were removed 8 weeks after the surgery. There was formation of hard callus on the 2 scaphoid visible on the control radiographs. Subsequently, the patient underwent several sessions of intensive muscle building exercises to recover the range of motion. The wrist movements on the left side were excellent with 65 ° of palmar flexion, 7 ° of dorsiflexion, complete supination, complete radial and cubital deviation. The right wrist could reach 60° of palmar flexion and 70° of dorsiflexion, complete prono-supination, but with a slight decrease in radial and ulnar deviation. The grip strength of the right hand was 21 kg while the left side was 23 kg, measured with the Jamardynamometer. After 1 year, the patient had no symptoms concerning the median nerve and its functions. The patient was able to perform activities of daily living. The functional result was good on the left side, with a Mayo wrist score (MWS) is 80/100. The functional result was satisfactory on the right side, with an MWS is 70/100. Radiographs of both wrists revealed no abnormality (arthritis, osteonecrosis, nonunion), with the scapho-lunate interval intact, the screw is in place and without signs of instability.

3. RESULTS AND DISCUSSION

The trans-scaphoretro-lunal dislocation fracture is part of carp dislocations [10]. Carp luxation invoices are rare and complex lesions, so classification and processing are really difficult. The trans-scaphoretro-lunal dislocation fracture is the most common form of carp dislocations [1-6]. It is a rare lesion that is due to the transmission of forces through the wrist in hyperextension [9]. These lesions follow a sequential pattern around carp [2] and can be easily overlooked and misdiagnosed. After a diagnosis period of several weeks or months [3-4], the clinical prognosis is poor compared to lesions that are diagnosed and treated early. We initially established the diagnosis in our patient in the acute phase. In the literature, late management of such lesions is rare. [3] Untreated trans-scapho retro-lunal fracture will result in secondary damage. [4-5]. These lesions are difficult to manage and only 50% of patients get excellent Mayo scores after fixation. [2] Treatment options currently used for this type of injury include closed reduction and immobilization with a plaster cuff, closed reduction and Percutaneous fixation, and open reduction. The knowledge of the anatomy [15-16] and biomechanics [13-14] of these injury models has evolved and surgical treatment has become the gold standard for the definitive treatment [8] of these complex lesions in order to maintain adequate reduction of fracture and dislocation. Restore the integrity of ligaments and improve functional outcomes. [6] In addition, the treatment often requires inter-carpal fixation in the proximal row of the carpus. Most authors agreed that the key to a good clinical outcome in the management of trans-scaphoretro-lunal dislocation fractures is the anatomical consolidation of the scaphoid and the restoration of the correct alignment of the carp bones. [6] We prefer a closed reduction and a percutaneous fixation with pins, as well as a percutaneous fixation of the scaphoid by a screw, because we realized a good alignment carpal after reduction by external maneuver and we estimated to maintain this alignment. Other reasons that led us to prefer this minimal approach were to minimize interruption of blood supply to carp and also to obtain rigid fixation during the procedure. Gellman et al suggest that the anatomical reductions of the scaphoid, as well as the medial carpal joint, and the restoration of the articular surface of the lunate are the most important aspects that determine the prognosis. [3] Open reduction further increases the risk of interruption of scaphoid vascular supply. Percutaneous fixation of the scaphoid by a screw minimizes this risk. In addition, rigid fixation with a percutaneous screw can also reduce the immobilization period and allow early rehabilitation. [7] In our case, the wrist amplitude recovery exercises started earlier after the initial procedure. The functional outcome of our patient was satisfactory, with mild pain, good range of motion, and good grip strength. Likewise, Herzberg et al. reported that unsatisfactory x-rays did not equate to a poor clinical outcome [1].

4. CONCLUSION

This detailed description of a new variety of bilateral trans-scaphoretro-lunal dislocation fracture [1-6] and its treatment enriches the knowledge acquired on dislocations of carp bones [6]. Although exceptional, it deserves to be well known because of its radiological and therapeutic peculiarities. However, adherence to basic principles including adequate exposure, early intervention, stable fixation of the fracture, and adequate carpal alignment with restoration of ligament integrity [11-12] can give our patient a normal function. Wrist, reduce the incidence of early arthritis and improve the quality of life [6].

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CONFLICT OF INTEREST

The authors wish to state that there is no conflict of interest associated with the study.

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