Anterior Peri-Lunar Dislocations Transcaphoidal dislocation of the wrist The study of 4 cases

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Citation

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Abstract

the authors report four cases of luxation peri lunar anterior. the discovery s' not made in emergency. in front of a painful and deformed wrist and a good reading of radiographies the diagnosis was posed. the treatment consisted of a dorsal access. in all the cases it had a fracture of the associated scaphoïde. the results were average.

INTRODUCTION

Peri-lunar dislocations of the carpus are rare, traumatic lesions of the wrist. The anterior form is the most rarely reported in clinical fact. The most significant lesions reported have not exceeded five different cases.

This traumatic lesion presents three main problems: an early diagnosis, reduction, and quality of the inter-osseous repair of the ligaments whose rupture determines its severity and intra-carpal stability.

We report retrospectively our work with four different cases over a 14-year period in two orthopedic and trauma departments.

The objectives of this study were to understand the characteristics of this type of lesion and discuss both the therapeutic methods and results.

CASE REPORT

CASE 1

Mr. MB, 30 years old and a boat mechanic, was the victim of an industrial accident. He fell and landed on the heel of his left hand with hyper-dorsal extension. He suffered from absolute impaired mobility (functional impotence) of the wrist, a total tumefaction of the wrist, and a “dinner-fork fracture,” without any vascular or nervous disorders. Radiography of the left wrist (Face and Profile) showed a dislocation of the carpus with fracture of the scaphoid. A diagnosis of anterior trans-scaphoid-lunar dislocation was made 2 days later. ALLIEU I, a reduction by external maneuverings using Japanese fingerstalls, was carried out radiologically, causing diastasis of the scaphoid. Posterior surgical access under general anesthesia using a pneumatic tourniquet was carried out on day 5. While performing an exploratory procedure, we detected a higher polar fracture of the scaphoid with rupture of the scapho-lunar ligament. A screw was put in place without success, and ablation of the higher polar fragment was subsequently carried out.

The following day (post-operative), a recurrence of the dislocation with a new reduction attempt by external maneuverings also failed, resulting in the perpetuation of the dislocation with scapho-lunar disjunction and pseudoarthrosis of the scaphoid.

Three years later, the patient had extreme pain in the wrist with scapho-lunar disjunction, pseudarthrosis of the scaphoid, and carpal osteoarthritis, causing an inability of the patient to perform work. The function of the wrist was evaluated as follows: Flexion: 20°, Extension: 20°, Radial slope: 0°, Cubital slope: 30°, Pronation: 90°, and Supination: 20°, with decreased gripping strength. The indication for a tarsectomy of the first line was posed. During the last revision, 8 months after carpectomy, the evaluation of the wrist gave the following results: Flexion: 20°, Extension: 0°, Radial slope: 0°, Cubital slope: 45°, Pronation: 90°, and Supination: 90°, with a decrease in strength. The patient never returned.

CASE 2

Mr. MN, 36 years old and a right-handed teacher, was the victim of a traffic accident, resulting in a dislocation of the left hip, any paralysis was detected, with an absolute functional impotence of both wrists, and a tumefaction of the left hand. The mechanism of the lesion was not specified.

A radiological assessment (radiographies of the pelvis, the two wrists, and the left hand) confirmed a coxo-femoral, high posterior, left dislocation, a fracture of the left base of Month 5, an anterior marginal fracture of the left radius, and a fracture of the scaphoid of the right wrist. The rectification diagnosis of trans-scaphoid-ante-lunar dislocation was made on day 2. ALLIEU I, a reduction by external maneuverings was made without success. Posterior access under general anesthesia using a pneumatic tourniquet was carried out.

While doing an exploratory procedure, a fracture of the scaphoid to the average third and an anterior marginal fracture of the semi lunar bone with rupture of the scaphoid-lunar ligament were observed. The scaphoid was split with a pin of 14/10 diameters, and a lunar radiography, was completed using a plastered cuff. With radio control, a scapho-lunar diastasis was created. Ablation of the plaster was carried out 5 months later, followed by the Osteosynthesis Removal Equipment/material1 and kinesiology treatments over the next 2 months. Eight months later, the function of the wrist was evaluated with the following results:

flexion: 0, extension: 0, radial slope: 10, cubital slope: 10, pronation: 90, and supination: 90, with a decrease in gripping strength. The patient never returned.

CASE 3

Mr. ABK, a 20-year-old, right-handed student, was a victim of an accident in the home. He fell from a height of over 3 m and landed on his left wrist with hyper-palmar flexion. When he came for a consultation on day 90, the wrist was stiff, slightly swollen, and the median region was paralyzed without any vascular disorder. A radiograph of the wrist showed an anterior trans-scaphoid-lunar dislocation . Posterior ALLIEU I was performed under general anesthesia using a pneumatic tourniquet. After an exploratory procedure, an isolated fracture of the scaphoid was observed. A reduction was made and maintained by using scapho-lunar and scapho-big bone pinning. A complementary plaster cast with a standard cuff was applied 3 weeks later. With radio control, an Anterior (Ventral) Instability of the bones of the wrist (VISI) was carried out. The plaster was removed 4 weeks later, an Osteosynthesis Removal Equipment/material treatment was carried out after 2 months, and kinesiology treatments were performed after 3 months.

Twenty months later, the wrist was evaluated using the SCORE OF GREEN and O' BRIEN modified by COONEY: classification based on pain, mobility and some criteria on radiographies. So, by using the latter, no pain was associated with the wrist and the muscular strength as evaluated by a dynamometer had decreased by 47% compared to normal. The subjective index of satisfaction was good. Other parameters were as follows: flexion: 70°, extension: 0°, radial slope: 0°, cubital slope: 10°, pronation: 90°, supination: 35°, and the normal work scores of GREEN and O' BRIEN were good (80 to 89); the radiograph showed a moderate VISI.

CASE 4

Mr. MG, a 25-year-old a right-handed student, was the victim of a sporting accident (volleyball) and presented with a closed trauma of the left wrist with an unspecified mechanism. After consultation at a health center, a diagnosis of wrist sprain was made and rectification n) was made on day 30. He presented with paralysis of the median region, relative impaired mobility (functional impotence), and “dinner-fork fracture.” A radiograph of the left wrist (F/P) showed an anterior trans-scaphoid-lunar dislocation . ALLIEU I of the left wrist was performed. A bloody reduction was made initially after exploratory surgery, which revealed a fracture of the scaphoid to the average third, a rupture of the scaphoid-lunar ligament, and a fracture of the large bone that was undetected with standard radiography, hence the necessity for a tomodensitometry (TDM). The fracture of the scaphoid was repaired with pinning after 6 weeks. Five months later, osteosynthesis had occurred, and the evaluation (SCORE OF GREEN and O' BRIEN) showed the following results: pain felt while carrying out forceful movements; the subjective index of satisfaction was good; muscular strength decreased by 60% compared to normal; and other parameters were the following: flexion: 30°, extension: 38°, radial slope: 0°, cubital slope: 38°, pronation: 75°, supination: 80°, with the ability to perform normal work. The SCORE OF GREEN and O' BRIEN were bad (Inferior to 65°/lower than 65°), and control radiography revealed neuroalgodystrophy.

Figure 1

Fig 1 clinical view deformation fork diner

Figure 2

Fig 2 post operative radiography

Figure 3

Fig 3 radiography profile ante lunar dislocation

Figure 4

Fig 4 view fracture ante dislocation

DISCUSSION

FREQUENCY

Perilunar dislocations are rare, accounting for 2% of general traumas and 15% of the wrist traumas (1). The displacement of the carpal solid mass forward constitutes an exceptional form that is often summarized in clinical facts (2-6).

Herzberg et al. (4) reported that among 166 dislocations collected from seven specialized centers, only five cases of anterior perilunar dislocations were observed. In other series, no anterior form was found. Similar observations were made by Fikry et al. with 39 cases, Lacour et al. (8) with 62 cases, and Bellot et al. (9) with 25 cases.

We observed four anterior perilunar dislocations at two specialized departments over a period of 14 years.

MECHANISM AND CIRCUMSTANCES OF DIAGNOSES

Anterior perilunar dislocations occur in young males who are victims of violent traumas. The mechanism is often a direct blow to the back of the hand (4,6,8). The speed and brutality of the blow do not give the victim time to prepare with a more adequate, palmar landing (reception).

THE LIGAMENTS

At first, the scaphoid-lunar ligament section constitutes the first stage of the fractured luxation. .The second stage corresponds to both sections: on the one hand, we have the section of the lunopiramidal ligaments placed on the cubital slope; and on the other hand, we have the big bone radiography and the scapho-lunar ligament section placed on the radial slope. Initially, the section of the scaphoid-lunar ligament appears to be first stage. On the cubital slope, the section of the lunopiramidal ligaments appears to be involved; on the radial slope, the sections of the large radio ligament and the scapho-lunar ligament seem to be involved

THE MECHANISMS

The mechanisms necessary for the reproduction of such a lesion are forced hyperextension with axial compression as well as a cubital slope. A radial slope produces a dorsal compressive force that is related to a fracture of the scaphoid (1,4, 8, 10). As observed in Pournaras (3), a motorcyclist who rolled his motorcycle at high speed hit a parked truck. Such diagnoses are often late or delayed (8). For Herzberg (4), this delay occurs about 25% of the time.

For our cases, the average delay was 25 days (range: 2 - 90 days) that can be explained by the following:

- The clinical picture is often misleading.
- Presence of other traumas masks wrist trauma.
- Hasty diagnostic conclusions are carried out within the framework of emergency departments.

DIAGNOSIS OF THE LESION

Anterior perilunar dislocations are often trans-scaphoidal; in most cases, the fracture is at the scaphoid body level (1, 8, 10). According to ALLIEU and WITVOET classification schemes, these lesions are generally ALLIEU I (6, 10, 11) or ALLIEU II, especially if there is an inopportune manual reduction, but rarely ALLIEU III.

THERAPEUTIC ASPECTS

The treatment varies according to the treating physicians authors. Manual reduction was carried out in recent cases (5,6, 8,9). Most of the the treating physicians authors require the maintenance of this reduction by a provisional pinning (5, 10) since the synthesis of the scaphoid is unanimously accepted (5, 6, 9). The type of fixation varies between screwing (7,6,9) and pinning (7).

Anterior access allows both the anatomical control of the median and its decompression. It allows also the control of both anterior fraenum and the suture of the scapho lunar ligament. This repair protected by a pinning, will allow the cicatrisation of the extrinsic and inter-osseous ligaments (1).Posterior access allows only minimal reduction and poor control of the anterior lesions, but allows a repair of the posterior scapho-lunar fibers, which is biomechanically more significant, but the pinning can ensure its cicatrization (3). For Ouarab (9), the dorsal access was much easier for pure dislocation, but in the event of fracture dislocation , palmar access is more logical because the synthesis of the scaphoid is more straightforward

PROGRESSIVE ASPECTS

During the last follow up, only two of our patients were evaluated after 5 and 20 months, respectively. We used the SCORE OF GREEN and O' BRIEN modified by COONEY classification method, resulting in both good and bad results. On an anatomical level, we obtained a VISI for two patients and a scapho-lunar diastasis for two patients. A review of the literature does not indicate any avascular necrosis of the semilunar, which often remains in a normal position under the radial slope (9, 7). Additionally, there is no necrosis of the scaphoid (2, 9, 7, 3); however, Alexander (1) noted a pseudarthrosis of the scaphoid, an anterior trans-scaphoid-lunar dislocation ALLIEU I, which was treated orthopedically. An imperfect, badly stabilized, not regularly supervised reduction and an associated fracture of the scaphoid without osteosynthesis are the primary causes of bad results (2).

Perilunar dislocation remains an exceptional lesion with a generally good prognosis, providing an early diagnosis and an immediate, anatomical, and stable reduction is accomplished.

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