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Hamate Body Fracture: Percutaneous Herbert Screw a Case Report

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Abstract | **Case Report**

A case of a displaced coronal fracture of the hamate body treated by percutaneous screwing is presented with a review of the literature regarding hamate-body fractures. Mechanism, diagnosis, and treatment options are discussed. This diagnosis should be suspected on initial review of plain radiographs, which must include an oblique view in any patient presenting with pain after blunt trauma to the hand. Open reduction with internal fixation is reserved for unstable, displaced fractures. Care should be taken to preserve the vascular supply to the displaced fragment. We report a rare case of hamate body fracture treated with a percutaneous screwing with preserve soft parts and allows to have good functional results

Keywords: Hamate body fracture– percutaneous reduction –Herbert screw fixation.

INTRODUCTION

Factures of the hamate are rare [1, 2]. A variety of treatments has been reported, including plaster splint or cast [2-5]. Open reduction internal fixation with Kirschner wires [6-7]. Palmer pins, or cortical mini-lag screws. Fractures of the hamate may be missed, since not all fractures are apparent from standard radiographic views of the wrist. Tomograms and carpal tunnel views are often helpful in the assessment of these fractures." Ulnar nerve palsy may result from injuries to the hamate [10] and it is essential that motor and sensory function of the ulnar nerve be assessed and recorded before and after treatment.

CASE REPORT

Our patient is 34-year-old right-handed millwright, was seen in the emergency room first days after sustaining a palmar flexion injury to his right wrist. At work his boot was caught between a heavy skid and a wall, causing him to lose his balance and fall on his palmar flexed radially deviated hand. He treated himself with a bandage and returned to work after the week end. He sought medical attention on the third day after the injury because of persistent swelling, pain, and weakness of grip.

Clinical examination demonstrated decreased grip strength, 'swelling, and ecchymosis on the ulnar aspect of the hand and wrist. Neurovascular examination was normal. Anteroposterior, lateral, and oblique views of the wrist suggested a fracture of the hamate. This was confirmed by tomographic examination, which revealed a displaced intra-articular coronal fracture of the body of the hamate (Fig. 1).

at the operating block, under loco regional anesthesia, the fracture was reduced by external maneuver and traction on the 4th and 5th metacarpal, fixed by a temporary pin which serves as a guide for the Herbert screw, placed under scopic control (Fig. 2). After the operation the patient was treated with a below elbow plaster cast, which was removed at 4 weeks. He was then started on a program of range of motion and strengthening exercises. At 6 weeks the patient returned to work at his usual occupation, and radiographs showed solid union.

Eight months after the operation he had regained full range of motion of the wrist. Grip strength on the Jamar dynomometer at level 2 measured 38 kg on the right side and 36 kg on the left side. Key pinch strength, as measured on the Bunnell pinch meter, measured 22 kg on the right side and 20 kg on the left side.

Fig-1A: X-ray face and the right wrist, showing a coronal hamate body fracture

Fig-1B: X-ray ¾ and the right wrist, showing a coronal hamate body fracture

Fig-2A: X-ray control after percutaneous screw fixation of the hamate body fracture

Fig-2B: X-ray control profile after percutaneous screw fixation of the hamate body fracture.

DISCUSSION

The mechanism of hamate body lesions can be direct or indirect. The direct mechanism involves falls with the wrist in extension or impacts on the hypothenar eminence and, occasionally, repeated trauma caused by practicing certain sports (golf, baseball, tennis). The indirect mechanism involves strong contractions of the flexor carpi ulnaris with avulsion from the base of the hamate body transmitted through the piso-hamate ligament. The largest series of hamate hook fractures is that described by Stark *et al*. [26].

The diagnosis is difficult to obtain in hamate body fractures with a vague pain located in the hypothenar eminence. In any dorsal dislocation of the

base of the 4th and 5th MTC we must always consider a hamate fracture [12, 27, 28]. An MRI scan will provide sufficient bone and soft tissue details, thus surpassing other tests due to its high sensitivity and specificity. It can also be useful to obtain 3D-CT and high-density CT scans with the wrist in a ''praying position'' so as to compare both wrists and exclude congenital anomalies [4, 6, 26]. This is a technique of choice for the diagnosis of hamate hook fractures [6].

The literature reports a high rate of failures [5, 6, 26] with conservative treatment based on immobilization of hamate body fractures. In cases with delayed diagnoses or acute and displaced fractures, the treatment of choice is excision, even if the patients are asymptomatic [4, 10, 23], due to the high risk of pseudoarthrosis [6] and tear of the 4th and 5th finger flexors. For Hirano and Inoue [10] and García Elias et al [13] fixation with screws may be indicated in exceptional cases. It is a demanding technique, although some authors perform it percutaneously through a dorsal approach [5]. Similar results have been published following excision and reduction and internal fixation, although the healing time was shorter with excision [6].

Coronal fractures of the body of the hamate are quite rare. The Herbert screw is designed to produce compression and rigid internal fixation of small cancellous bone fragments [12.13]. It was initially designed to treat scaphoid fractures but has since proven useful in the treatment of other fractures [12]. The advantage of this method of treatment is rigid internal fixation, and compression at the fracture site with a completely buried implant that does not require removal [12,13].

There are different series describing the treatment of this fracture by open screwing, we bring this case of closed treatment to preserve the different structures of the soft parts, less infectious risk and the various advantages of screwing Herbert already cited.

Conclusion

We can conclude that hamate body fractures are usually diagnosed belatedly and their most advisable treatment is excision. Surgical treatment should reduce the displaced fracture and stabilize the lesion. Osteosynthesis with percutaneous Herbert Screw is an interesting technique allowing a fast-functional recovery.

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