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Combined Bennett's Fracture and Trapezium Fracture - A Rare Case Report and Literature Review

I. Zeroual[1*], Y. Slaoui[1], M. Bensaka[1], H. Abid[1], M. El Idrissi[1], A. El Ibrahimi[1], A. El Mrini[1]

[1]Department of Traumatology and Orthopedics B, UHC Hassan II, Fez, Morocco

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***Corresponding author:** I. Zeroual
Department of Traumatology and Orthopedics B, UHC Hassan II, Fez, Morocco

Abstract **Case Report**

Association of fracture of trapezium with Bennett's fracture is a rare injury and presents a diagnostic and therapeutic challenge. We report this injury in a 30 years-old-male after a motor vehicle accident, who were treated by percutaneous pinning according to Iselin technique. Functional outcomes were satisfying after 6 months follow-up.

Keywords: Bennett's fracture, trapezio-metacarpal joint, trapezium.

INTRODUCTION

Simultaneous Bennett's fracture and trapezium fracture is a rare injury, and only few cases were reported in the literature. In the absence of treatment, long term evolution may lead to rhizarthrosis.

CASE PRESENTATION

A 30 years-old right-hand dominant male, presented to the emergency department with acute hand trauma after he fell off his motorbike. He complained of pain and swelling in right thumb and painful limitation of movements. Clinical examination revealed pain and oedema in the anatomical snuff box, with no external injuries. Standard radiographs showed Bennett's fracture with subluxation of the CMC joint associated with a type IV Walker fracture of the trapezium (Fig 1).

The patient was operated under regional anesthesia. In the first place, Bennett's fracture was reduced by longitudinal traction, pronation of the thumb and direct pressure over the base of the first metacarpal, and fixed percutaneously with two intermetacarpal K-wires according to Iselin technique (Fig 2). Intra operative fluoroscopic control showed an acceptable reduction of trapezium fracture, and did not require additional fixation. Limb was put postoperatively in a thumb spica cast. Immobilization was maintained for 6 weeks. After this delay, anteroposterior and lateral radiographs showed good healing of the fracture with good reduction of the CMC joint, the K-wires were removed and the thumb was mobilized (Fig 3). Latest follow up at 6 months, the patient had no pain with a normal range of motion and grip strength, and the Kapandji's thumb opposition score was 7.

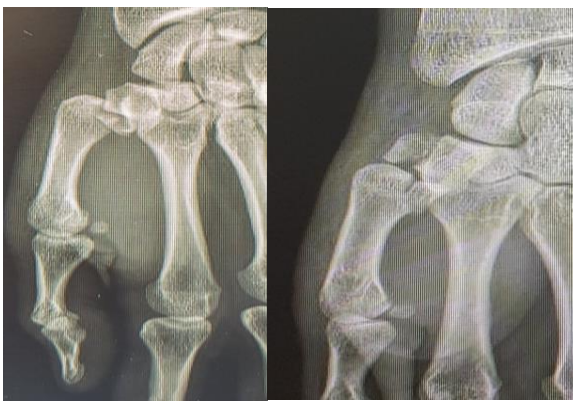

Fig 1: X-rays showing Bennett's fracture with subluxation of the CMC joint associated with type IV Walker fracture of the trapezium

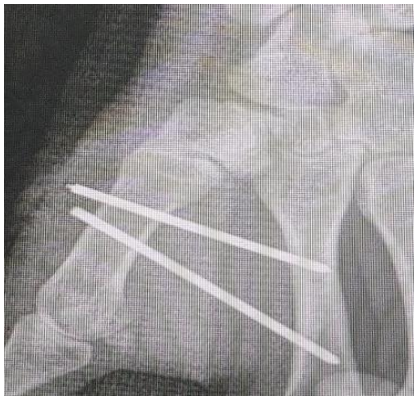

Fig 2: Postoperative radiograph showing reduction of fracture fragments and the CMC joint

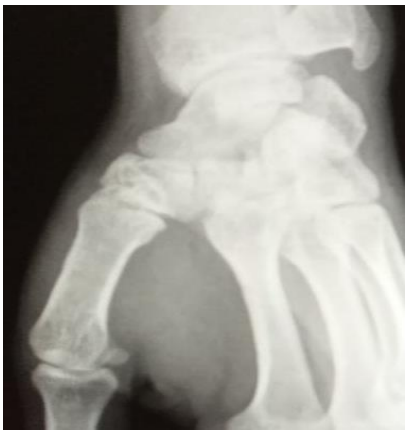

Fig 3: X- rays at the last follow up demonstrating the good healing and reduction of the CMC joint

DISCUSSION

Trapezium fracture is a rare injury, accounting for only 3% to 5% of all carpal bone fractures. It has been associated to a Bennett's fracture in just 15% of cases [1, 2]. In our patient, the mechanism underlying this injury combination appears to be a hyper-abduction shearing force on the first web-space, occurring at the deceleration while holding the handlebar [3, 4]. Clinical examination reveals snuff box pain and tenderness with edema and rarely ecchymosis. The diagnosis is confirmed essentially by plain radiographs. The diagnosis can be missed on anteroposterior and lateral views in case of undisplaced fracture. Thus, special views as kapandji view can be useful. The computed tomography is recommended if there is still any doubt about the diagnosis. In our case, plain radiographs were sufficient for lesions assessment. Adequate treatment of this injury is necessary to avoid long-term morbidity of the thumb column. Stabilisation of the fracture can be achieved by closed reduction and percutaneous fixation with Kirschner wires. A metacarpo-trapezial pinning according to Wiggins-Bundens is not possible in this case. Intermetacarpal simple pinning according to Johnson can be used, however, the intermetacarpal double pinning according to Iselin improves the mounting stability [1, 2, 5]. trapezium fractures require open reduction and internal fixation using Herbert screw [6], scarf screw [3] or Kirschner wires [7]. In our patient, we found that the trapezium fracture was well reduced during intraoperative fluoroscopic views, and its osteosynthesis did not seem essential to us after stabilization of the first metacarpal. The short-term results of surgical treatment of this injury combination are encouraging [2]. However, none of the publications has a follow-up of more than ten years, hence the absence of data concerning the incidence of long-term rhizarthrosis in this type of lesion.

CONCLUSION

Fracture of trapezium associated with Bennett's fracture is unusual and can be missed in standard plain radiographs, emphasizing the importance of the specific views of the trapeziometacarpal joint, described by Kapandji, and of computed tomography. Otherwise, adequate and early treatment is essential to avoid rhizarthrosis which leads to disabling pain and loss of hand function.

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