



Neglected Dislocation of the Third, Fourth and Fifth Carpometacarpal Joint: A Case Report

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Abstract

Carpometacarpal joint luxation, excluding the thumb, is very uncommon and this injury is often missed at initial examination. The 3rd and 4th carpometacarpal joint fracture-dislocation combined with a 5th carpometacarpal luxation is extremely rare. A few reports have been previously described regarding a neglected type of this injury. A 26-year-old, male laborer, sustained an injury and was admitted to our hospital 5 months later. We reported the case and treatment by using a simple operative technique and our decision for open reduction and primary arthrodesis resulted in excellent hand function.

Subject Areas

Diagnostics, Surgery & Surgical Specialties

Keywords

Carpometacarpal Joint, Neglected Luxation, Metacarpal Bone, Fracture, K Wire

1. Introduction

Carpometacarpal (CMC) joint luxation, excluding the thumb, is very uncommon. Moreover, they are often missed at the initial examination [1]. The 4th and 5th CMC joints are the most affected CMC joints and the dislocation may be accompanied by other hand injuries. This injury combined with a 3rd CMC joint fracture-dislocation is extremely rare. A few reports have been previously described regarding a neglected type of this injury [2] [3] [4]. CMC dislocations represent less than 1% of all hand injuries [5]. The purpose of this paper is to report a case and detailed treatment of a five-month neglected combined CMC dislocation by using a simple operative technique.

2. Case Report

A 26-year-old, right-hand dominant male laborer sustained an injury of the right hand due to compression of a heavy load. After an initial examination at another institution, no obvious fracture or dislocation was detected on succeeding wrist radiographs, and thus no immobilisation was applied. However, five months after the injury, his hand remained painful and he visited our hospital.

The patient had a normal active range of finger motion, and a normal active range of wrist motion. The CMC joint area between the middle and little finger was swollen. Anteroposterior and lateral radiographic view of his right hand revealed fracture-dislocation of the 3rd and 4th and luxation of the 5th CMC joint (**Figure 1**). His right-hand grip strength was 34.8 kg (42.7% of the opposite side), while that of the contralateral hand was 81.4 kg.

Computed tomography (CT) scan confirmed the dorsal fracture-dislocation at the base of the 3rd and 4th, and luxation of the 5th CMC joint. We performed an open reduction (**Figure 2**) and arthrodesis of the 3rd, 4th and 5th CMC joint through a dorsal approach with six 1.5 mm Kirschner (K) wires (Narcissus, Ada, Serbia). After cartilage removal and surface preparation, four K wires were introduced in a retrograde manner bridging the CMC joints and confluence in the capitate bone. Two K wires fixated the metacarpal (MC) bones transversely as shown in **Figure 3**. No bone grafting was used. The K wires were cut beneath the skin.

Postoperatively, a short arm cast was administered for five weeks. The K wires are gradually removed, two at a time, at two-week intervals beginning on the seventh week.

More than one year after the surgery, the patient returned to his usual work as

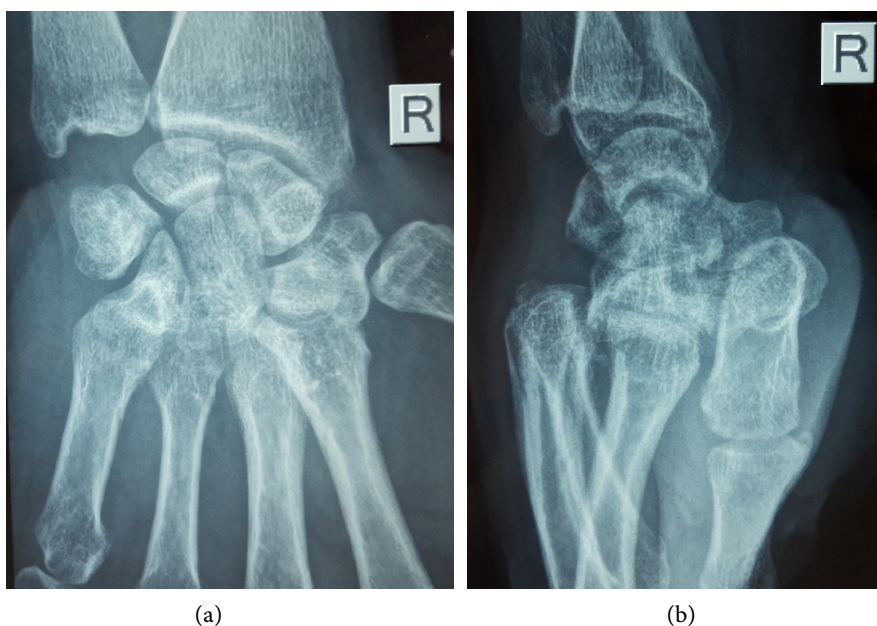


Figure 1. Dorsal fracture-dislocation of the 3rd and 4th, and luxation of the 5th CMC joint: (a) anteroposterior; (b) lateral view.

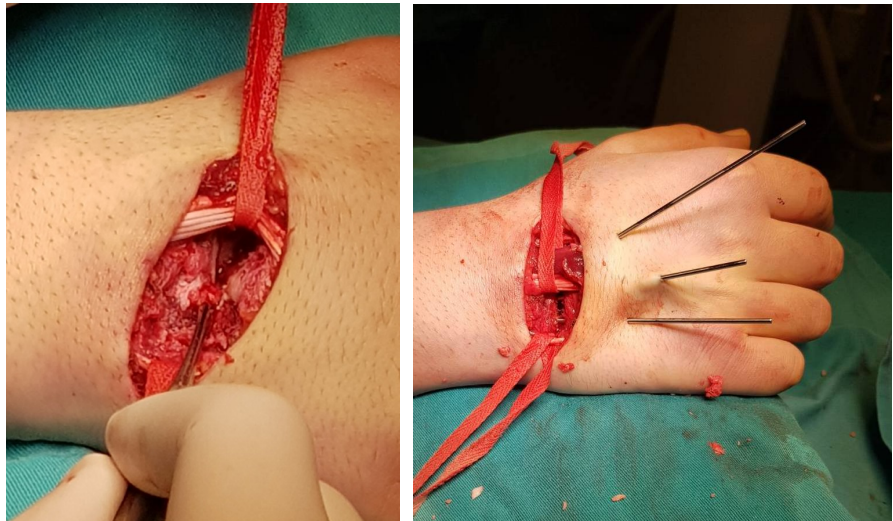


Figure 2. Intraoperative images pre- and post-fixation using K wires.



Figure 3. Postoperative anteroposterior and lateral radiography: (a) anteroposterior; (b) lateral view.

a laborer without any complaints. He had normal active range of finger motion and normal active range of wrist motion. His right-hand grip strength gained 71.8 kg (88.2% of the opposite side).

3. Discussion

As stated earlier, dorsal luxation or fracture-dislocation of CMC joints is a rare phenomenon. In one study of 20 cases, 30% of dislocations involved 2nd through 5th MC bones, 30% involved 4th and 5th MC and 25% represented an isolated 5th MC bone luxation. Only the remaining 15% were combinations including the 3rd to 5th CMC dislocation [6] [7]. These lesions are often associated with carpal fractures, the capitatum and hamatum being the most frequently involved bones [8]. Our case did not include fractures of this kind.

In 30% of cases, these lesions were overlooked in the initial post-traumatic setting but could be seen retrospectively [1] [9]. *Henderson* and *Arafa* reported 15 neglected cases of CMC dislocations but only one case was diagnosed at the 16th week [10].

As stated by *Lefere et al.* [8] such patients are at risk for long-term disability with osteoarthritis.

Injuries with significant cartilage damage and gross instability not amenable to ligament repair could be treated with Hamate-metacarpal joint fusion [3]. Various treatment options are described including K wires, spider plates, cannulated screws and plating [3] [4] [11] [12] [13] [14]. Our treatment option, by using K wires, is affordable, uncomplicated and with no need for further implant extraction. *Daribe et al.* [15] used a similar technique but stabilized transversely only the basis of the 2nd to 5th MC bone using a single K wire. To your opinion, fixing also the MC bones distally in a transverse manner enables a stronger construct. Moreover, if the intermetacarpal ligaments are disrupted, as in our case, *Sedel* [16] recommended synthesizing the mobile MC bones to the fixed ones. Most authors agree that removal of the K wires, in recent dislocations, should be after six weeks [12] [17] [18]. Our decision on removing the K wires gradually, starting at the seventh week, was guided by the fact that it was a five-month neglected dislocation.

As reported by *Lawlis* and *Gunther* delayed diagnosis of CMC dislocation results in a possible decrease in grip strength [19]. The grip strength of our patient (88.2% the opposite side) is above the mean range stated by *Kural et al.* [4]. Our follow-up time, of more than one year, was in the follow-up range stated by the same author. It should be taken into account that our patient is a laborer and 26 years old, younger than the mean of the previous two studies [4] [19].

4. Conclusion

As more than five months had elapsed from the initial trauma, the decision for open reduction and primary arthrodesis resulted in excellent restoration of hand function. Future studies and a greater number of patients are needed to evaluate the effectiveness of this simple procedure.

Informed Consent Statement

Patient informed consent was acquired before writing of this report.

Conflicts of Interest

The authors declare no conflict of interest.

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