

## **CASE REPORT**

# **DISLOCATION THUMB CARPOMETACARPAL JOINT WITH FRACTURE 1ST METACARPAL SHAFT, A RARE ENTITY.**

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**ABSTRACT:** Thumb carpo-metacarpal joint dislocation along with fracture first metacarpal bone is very rare entity. Very few cases can be seen in literature. We are reporting a dorsal dislocation of CMC joint thumb along with fracture shaft of 1<sup>st</sup> metacarpal shaft in 43 years old male patient. He presented and admitted in our hospital one week after injury. Immediately after trauma our patient was treated in some peripheral hospital but his pain was not settled so he presented to our hospital Emergency Department. We did close reduction fracture 1st metacarpal and dislocation thumb CMC joint was reduced and both were fixed with 1.4 mm multiple k wires. Postoperative course was uneventful and patient has full recovery after treatment. In English literature we could found only few reported cases like our case.

**Keywords:** Carpo-metacarpal Joint Dislocation, Thumb, 1<sup>st</sup> Metacarpal Fracture, Dislocation, Fracture.

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## **CASE REPORT**

We are reporting a dorsal dislocation of CMC joint of thumb along with fracture shaft of 1<sup>st</sup> metacarpal shaft in 43 years old male patient. Our patient has history of fall during work while holding a wide bored water pipe, according to him his thumb sustained direct injury and thumb was hyper-extended and fully abducted. He is right hand dominant and labor worker.

After injury he developed swelling and pain in his right thumb, initially he was treated in some other hospital where thumb Spica was applied and he was diagnosed as fracture 1<sup>st</sup> metacarpal. He came to our hospital because his pain was not settled after getting treatment from primary hospital. He presented and admitted in our hospital one week after injury. When he presented in our hospital his proper examination for right hand was done and it was noted there is hyperextension of Thumb and patient is unable to do active and passive exercises, there was no neurovascular deficit at thumb or in right hand in initial examination. His x-rays of right hand were taken in antero-posterior, lateral and oblique views. Which revealed fracture shaft of 1<sup>st</sup> metacarpal of thumb along with dislocation of first CMC joint (Figure:1). After initial x-rays CT scan right hand was performed which revealed dorsal dislocation of CMC joint of thumb along with fracture shaft of first metacarpal (Figure:2). Patient was admitted following

all hospital protocols and was prepared for surgery. Close manipulation done and dislocation of 1<sup>st</sup> CMC joint reduced with joy stick method and fixed with 1.4 k-wire than fracture 1<sup>st</sup> metacarpal bone of thumb was also reduced and fixed with K-wires. All procedure was carried out under control of C-arm and satisfactory reduction and fixation were obtained (Figure:3). Postoperatively he was supported in thumb Spica cast for 6 weeks and k wires and thumb Spica was removed and he was referred to physiotherapy for range of motion exercises. His x-rays taken after 6 month shows excellent fracture healing and well reduced 1<sup>st</sup> CMC joint of thumb (figure:4). Patient has excellent functional outcome in 6 months follow-up (Figure: 05).

## DISCUSSION

Usual injury mechanism for CMC joint dislocations longitudinally directed force with slightly flexed metacarpal, whereas, MCP joint injury requires hyper-extension at the joint.<sup>6,10</sup>

In our case, we assume the patient would have had a hyperextension injury to his MCP joint, and then the continued force to the flexed thumb caused the fracture of the base of metacarpal. Similar mechanism has been described by Simonian et al<sup>6</sup> too. Sawalha and De Smet reviewed 73 cases of dislocations of the upper limb digits from the literature, and among them only one case had thumb involvement, so they conclude that fracture shaft of metacarpal and dislocation of the thumb CMC joint is a rare condition.<sup>4,5,8</sup> Dislocations of the 1<sup>st</sup> CMC joint may involve phalangeal fractures<sup>4, 7,9,11</sup> and the dislocation associated with fracture of the of first metacarpal is very rare<sup>7, 11, 12</sup>. We thereby, report a rare CMC joint dislocation

associated with fracture 1<sup>st</sup> metacarpal thumb. It is also very common to miss dislocation of 1<sup>st</sup> CMC joint when you have obvious fracture of 1<sup>st</sup> metacarpal bone<sup>3,6</sup>. In the present case, the MCC joint dislocation was missed initially by primary physician probably due to the poor injury radio-graphs or partly due to the lack of knowledge of the primary care physician. It is also possible the attention has been diverted to the more evident fracture of the first metacarpal bone. As dislocation of 1<sup>st</sup> CMC joint along with fracture shaft of 1<sup>st</sup> metacarpal is very rare entity, this type of possibility must be kept in mind; once fracture 1<sup>st</sup> metacarpal is diagnosed there are high chances to miss dislocation of CMC joint even in expert hands. The missed diagnosis of the dis-location has been reported before by Farzan et al<sup>8</sup>.

There are four ligaments which give this joint stability anterior oblique, dorso-radial, posterior oblique and inter-metacarpal. The dorso-radial ligament is the most important in preventing dislocation.<sup>1, 2</sup> Usually surgical treatment is recommended due to instability of 1<sup>st</sup> CMC joint<sup>3</sup>. Cross pinning has advantage that it is closed procedure and k wires are removed after 6 weeks and joint range of motion can be started.<sup>5, 9</sup> Farzan et al "accept that tendon remaking had advantage in two planes, reconstituting the volar diagonal tendon and furthermore making another tendon radially in a piece of the joint container, which is feeble and membranous"<sup>8</sup> Simonian and Trumble express that "shut decrease can't forestall insecurity and joint pain in the long haul. In 8 cases shut decrease and sticking for about a month and a half was done, three cases required careful recreation for symptomatic unsteadiness and one case for

post-horrible joint pain. Eaton accepted consequences of decrease were to a great extent flighty in any event, when the joint is cross-stuck. Anyway as a rule careful treatment is necessary".<sup>6</sup>

To summarize, we report a rare dislocation of the CMC joint associated with extra-articular fracture of base of thumb. It has the following learning points: (1) metacarpal fracture combined with dislocation of the thumb is a rare injury pattern and it usually occurs following

high energy trauma. (2) These injuries may be missed at the initial presentation. (3) Clinical examination of the whole hand is important in such cases. Radiographs, when viewed in isolation without clinical correlation, may lead to missed diagnosis. And (4) such injury pattern involving combined extra articular fracture-dislocation of the same digit warrants operative intervention for good functional outcome.



Figure 1: Immediate x-ray Hand after Trauma



Figure 2: Immediate CT scan Hand after Trauma

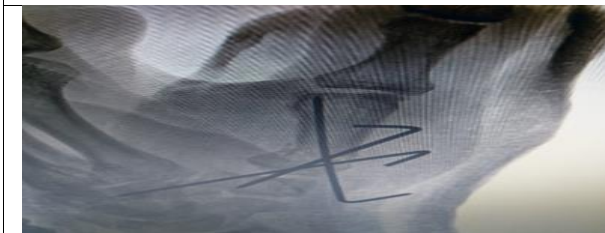


Figure 3: x-ray after surgery



Figure 4: x-ray after 6 months of surgery

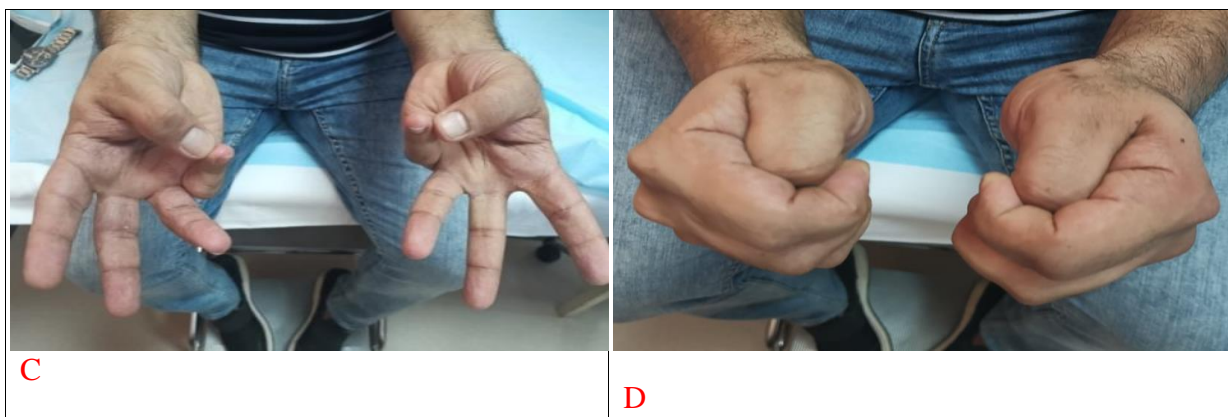
Figure 05: clinical pictures 6 months after surgery ABCD



A



B



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