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Case Report

Open dislocation of fourth and fifth carpometacarpal joint – An easily missed injury

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Introduction

Except for the thumb, fractures and dislocations of the carpometacarpal (CMC) joints are a relatively uncommon pattern of injury, and are usually due to high energy trauma. These injuries account for less than 1% of injuries affecting the hand.[1,2] These injuries are often missed initially even by orthopedic surgeon, because of the diffuse hand swelling obscuring deformity and misinterpretation of subtle radiographic features as normal.[3] Hence, diagnosis requires a high index of suspicion and good-quality radiographs.

Case report

A 24-year-old, right hand dominant male patient had sustained injury to his right hand in a road traffic accident 10 days back. Initially he had a painful swelling of hand and a palmer wound which was managed in casualty with irrigation, antibiotics and primary suturing. Radiographs were taken initially which had been interpreted as normal without any major fracture. The individual presented at the tertiary care center with persistent pain and swelling over the dorsum of the hand. The palmer wound had healed (Fig. 1).

On reviewing the initial radiographs on posteroanterior (PA) view there was superimposition of fourth and fifth metacarpal bases with the hamate with widened space between the third and fourth metacarpal. The Gilula arcs were maintained (Fig. 2). There was a doubtful fracture of the base of fourth metacarpal. Even the second and third CMC joints showed overlapping and loss of parallelism. The lateral view of the hand was suggestive of some injury to the CMC joints, however this initial lateral view was of poor quality and interpretation was difficult. CT scan with reconstruction demonstrated dorsal dislocation of fourth and fifth metacarpals, with subluxation of third CMC joint and no major fractures. The hamate articular surface was empty (Fig. 3). A diagnosis of open dorsal dislocation of fourth and fifth CMC joint was made.

Initial two attempts of closed reduction were not successful and the patient was planned for open reduction. The fourth and fifth CMC joints were exposed using a dorsal skin incision. The hamate was found lying volarly and capsule was interposed and preventing reduction. There were no fractures found. The reduction was achieved by applying longitudinal traction and gently levering the fourth metacarpal base over the hamate. The subluxation of the third CMC joint reduced following reduction of fourth CMC joint. The fourth and fifth CMC joint reduction was not stable there was a tendency of the metacarpals to subluxate dorsally. The reduction was therefore stabilized using K wires.

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Fig. 1 – Healed palmar wound at presentation.

Post-operative radiographs showed satisfactory reduction and restoration of parallelism of CMC joints (Fig. 4). A splint was used to immobilize the CMC joints; MCP and IP joints movements were started immediately.

Discussion

Pure dislocations of the CMC joints are very unusual injuries. Generally, these dislocations are fracture dislocations due to avulsion of the ligaments. Most of the literature available is case reports and small series of fracture dislocations. Open dislocation of the CMC joint is even rarer injury. In 2001, Prokuski et al,[4] published a retrospective review of 12 cases of patients with dorsal dislocations and fracture-dislocations of the second, third, fourth, and fifth CMC joints treated with open reduction and internal fixation. This was the first report of an open CMC dorsal dislocation which was present in one of these cases.

Fig. 2 – PA plain radiograph shows overlap of hamate and fourth metacarpal with widened space between third and fourth metacarpals. Fifth metacarpal base appears to be in articulation with triquetral. Gilula arcs are maintained.

Dislocations of the CMC joints can be easily missed because of the diffuse swelling which may mask the deformity and due to subtle radiological findings. In 1983, Fisher et al[5] analyzed radiological findings in these injuries. On the PA radiograph, the CMC joints can be evaluated according to

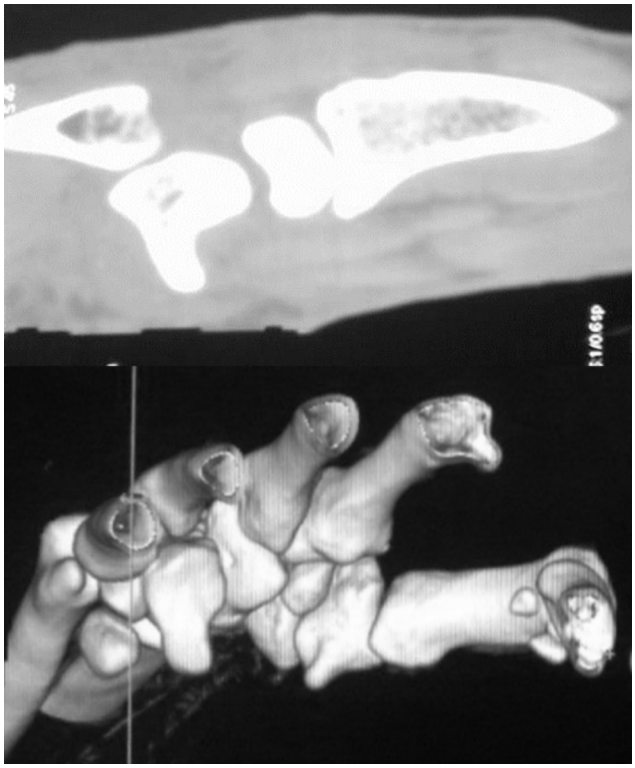

Fig. 3 – CT scan through fourth metacarpal shows dislocated fourth CMC joint and empty hamate. 3D CT showing dorsally dislocated fourth and fifth metacarpals with empty hamate and slight subluxation of third CMC joint.