

Dislocation of Thumb Carpo-Metacarpal Joint : Case report

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Abstract:

Dislocation of thumb carpo-metacarpal joint is very rare and accounts for less than 1% of all hand injuries. There are very few cases of this injury described in the literature. Thumb is responsible for wide range of functions of hand and this injury cannot be neglected. There are various treatment modalities like Close reduction and cast application, Close reduction and K wire fixation, Open reduction and ligament reconstruction for treating this injury. There is a lot of controversy regarding treatment options. We present a case of dorsal dislocation of thumb carpometacarpal joint treated with Close reduction and Internal fixation with K wires

Key words: Carpo-metacarpal joint of thumb, dislocation, open reduction.

Introduction

Thumb carpo-metacarpal joint is the articulation between first metacarpal and trapezium. Dislocation of this joint is very rare injury. Carpo-metacarpal dislocation of the thumb accounts for less than 1% of all hand injuries.¹ Due to the importance of thumb in providing about 40% of hand function, their rarity does not decrease the importance of them.² There is thick and strong volar ligamentous complex in first carpo-metacarpal joint due to which dislocation occurs dorsally through thin dorsal capsule.³ There are various treatment modalities like close reduction and cast application, close reduction and K-wire fixation, ORIF with K wire for treatment of this injury.

We present a case of dislocation of thumb carpo-metacarpal joint treated with closed reduction and K wire fixation.

Case Report

A 14 years old male came with chief complaints of pain. This is a case report of a 20 years old male student who fell from motorcycle and sustained injury to his right thumb. He presented to us within one hour of injury. He complained of pain and swelling in right thumb. Also patient complained of deformity and restriction of motion at right thumb. A plain radiograph of his right hand was performed which showed dorsal dislocation carpo-metacarpal joint of thumb (Fig. Mo. 1). Patient was given immobilisation and NSAIDs for pain relief. Then blood investigation like complete blood count, random blood sugar, renal function tests were performed and consent for surgical procedure was

taken.

Patient was taken to operation theatre next day, and supra-clavicular block was given for anaesthesia. Then closed reduction of dislocation of first carpo-metacarpal joint was performed which was acceptable under image intensifier. Reduction was fixed using two K wires passed from first metacarpal to trapezium (Fig. No. 2). After completion of procedure, immobilisation (thumb spica) in abduction was given. After 6 weeks, K-wires and thumb spica was removed and radiograph was performed which showed acceptable position of first carpo-metacarpal joint (Fig. No. 3). Physiotherapy was started after 6 weeks to gain range of motion. After 2 months follow up, we noticed pain free joint without instability and good functions at thumb carpo-metacarpal joint (Fig. No. 4)..

Discussion

Dislocation of first carpo-metacarpal joint is very rare. It is a saddle joint concave in one direction and convex in the other. Both trapezium and metacarpal surfaces have double inverse curvature in the shape of a saddle. Any derangement of the biomechanics of the thumb can lead to defective hand function. An injury which is occasionally reported is carpo-metacarpal dislocation of the thumb, can lead to long standing hand disability if not properly treated.⁴

Trapezio-metacarpal joint relies on ligament for stability. There are four ligaments that stabilize the thumb CMC joint. These include the intermetacarpal ligament, the anterior oblique ligament, the radial (dorsoradial) ligament, and the posterior oblique ligament.⁵ The anterior oblique ligament is considered as the strongest ligament which imparts stability to the joint² while Strauch et al described that the dorsoradial ligament is the main restraint to dorsal dislocation of the joint.⁶ There is no general consensus on the ligaments imparting stability to TM joint.

The mechanism of the injury has been described as axial

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Figure 1: a- Preoperative radiograph showing CMC dislocation. b- Post operative radiograph with reduction and K wire fixation. c- follow up radiograph at wire removal. d-e, final follow up showing good clinical outcome.

loading and flexion of the thumb metacarpal bone. Rarely dislocation of first carpo-metacarpal joint is associated with fracture of trapezium.⁵

There are various techniques for treatment of this injury like close reduction and cast application, close reduction and k-wire fixation, ORIF with k wire, open reduction and capsulorrhaphy. There is a controversy regarding optimal treatment option. Closed reduction and a plaster cast with the thumb in abduction, and kept for 4-6 weeks is the preferred treatment if the joint is stable but if the joint is unstable, it is preferable to hold the reduction with K wires, with or without capsulorrhaphy.⁴

In our case, the joint was reduced by closed reduction technique but after reduction joint was unstable. So we used two K wires to hold the reduction. Watt and Hooper treated 3 of 12 patients of thumb carpo-metacarpal dislocation with closed reduction and k wire fixation. They didn't observe any pain or instability in patients treated with closed reduction and k wire fixation. They concluded that acute traumatic dislocation of the trapezio-metacarpal joint is not invariably associated with instability of the joint after reduction and the injury should not be considered simply as a "Bennett's fracture without a fracture"⁷. Shah and Patel also obtained good results with closed reduction and pinning in a patient of thumb carpo-metacarpal dislocation⁸.

Various open reduction and ligament reconstruction techniques using tendon graft have been described to treat dislocation of TM joint, but closed reduction techniques may still gives equally good results.⁴ Open reduction techniques should be considered in grossly unstable and incongruous joints.

In our case, close reduction and K wire fixation was effective and we believe that if close reduction fails in grossly unstable joints, ORIF with K wire with or

without capsulorrhaphy should be considered.

Conclusion:

Dislocation of thumb carpo-metacarpal joint is very rare injury. There is controversy regarding optimal treatment option. We believe that treatment depends on degree of instability and close reduction and internal fixation with K wire can also give good results.

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Conflict of Interest: Nil
Source of Support: Nil

How to cite the article:

Supe AC, Badole CM, Wandile KN. Dislocation of Thumb Carpo-Metacarpal Joint : Case report. *Journal of Trauma & Orthopaedic Surgery*. April-June 2015; 10(2):13-14