



Fracture of distal radius with first carpo-metacarpal joint subluxation: A rare concomitant injury

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Abstract

Carpometacarpal joint injuries are less common patterns of hand trauma. Most of the dislocations are fracture dislocations and pure dislocation of thumb CMC joint is rare. The dorsal dislocation is commoner form and volar pure dislocation is very uncommon pattern. Association of this injury with distal radius fracture is very rare. Only a single case report has been reported with thumb CMC joint dislocation associated with ipsilateral distal radius fracture. We hereby report a case of volar thumb CMC joint subluxation with similar associated injury appropriately managed.

Keywords: dislocation, fracture, distal radius, carpo-metacarpal joint, injury, hand trauma, management, trapezio-metacarpal joint

Introduction

Carpometacarpal (CMC) joint injuries usually result from high energy trauma and warrant careful assessment of associated adjacent tissue injuries. Acute isolated CMC dislocations are uncommon injuries^[1]. Axial loading in the settings of partially flexed thumb is common mode of injury. The injury may be associated with partial or complete ligament rupture. Certain cases may present with residual instability and may require stress tests to identify the instability. Close reduction of the CMC dislocation should be attempted and the decision about fracture of distal radius requires personality of fracture, patient characteristics, occupation and functional demands as important variables in decision making.

Case Report

A 38 year old lady presented to us with history of slippage over a wet floor leading to a fall over outstretched hand a few hours back. She complained of tenderness and mild swelling over her left wrist region. She had history of no associated injury except stretching and tenderness over base of ipsilateral thumb. The thumb base looked clinically dislocated and was given traction and attempted reduction by emergency team. She was given pain medications for relief and advised radiographic evaluation of injuries. The radiographs showed an extra-articular fracture of distal radius with dorsal angulation. On careful assessment an ipsilateral subluxation of thumb carpo-metacarpal joint was also noted. (Fig.1. a,b) This pattern was considered to be a rare association and patient was explained both conservative and operative options for her distal radius fracture with pros and cons of each. A closed second reduction of the subluxation was advised with provision for additional fixation if the reduction is unstable. Patient chose for the conservative management of both the injuries. She was given a successful second attempt of closed reduction to achieve satisfactory reduction of the fracture and the subluxation. (Fig.1. c,d) The reduction was maintained by a back

slab of plaster of paris. Patient was compliant of plaster instruction which was changed to a cast a week later after the swelling was minimal. Active finger and adjacent joint exercises were encouraged throughout the treatment. The injuries healed well with conservative methods as described and uneventful return to activity was evident on periodic regular follow up. There was no clinical evidence of residual instability of first CMC joint on stress testing. The patient had excellent functions and performance during activities of daily living.

Figures Legends



Fig 1: Radiographs depicting the extra-articular fracture of distal radius with mild subluxation present even after initial reduction of first CM joint dislocation (a,b). Post second reduction radiographs showing satisfactory reduction of both injuries (c,d).

Discussion

Thumb is instrumental in human dexterity and overall function of human hand. Saddle shaped trapezium and first metacarpal form the concavo-convex thumb CMC joint. It has good range of motion and robust ligamentous support. Superficial and deep anterior oblique, posterior oblique, dorsoradial, ulnar collateral and intermetacarpal are the key ligaments around thumb CMC joint. Dorsoradial ligament has been described as important stabilizer of the joint [2]. The appropriate radiographs are necessary including oblique views in suspected cases with overlapping of bones obscuring the injury [3].

The residual instability after conservative management of CMC dislocations may require ligament reconstruction and early ligament reconstruction has been reported with improved outcome [4]. Our case belonged to low socioeconomic status and consented for conservative management and the functional outcome was excellent with no immediate or remote fracture related complication or residual instability. The thumb CMC dislocations have been associated with fracture trapezium, fracture base of metacarpals, metacarpo-phlangeal dislocations or with proximal intermetacarpal ligament [5-7]. The concomitant fracture of distal radius has only once been reported and the case was well managed with closed reduction and plaster splint for distal radius fracture while closed reduction and percutaneous K wire fixation followed by splint was used as treatment method for CMC dislocation. A two year follow up however showed subluxated CMC joint despite uneventful union of fracture of distal radius.

Careful assessment of radiographs of distal radius for presence of other concomitant injuries is instrumental to avoid missing or neglect them. The overall functional outcome depends on addressing each injury with optimal care. The presented report adds an important concomitant injury to rule out in the settings of distal radius injury.

Acknowledgement

None

Conflicts of interest

None.

References

1. Strauch RJ, Behrman MJ, Rosenwasser MP. Acute dislocation of the carpometacarpal joint of the thumb: An anatomic and cadaver study. *J Hand Surg.* 1994; 19A:93-98.
2. Bettinger PC, Linscheid RL, Berger RA. An anatomic study of the stabilizing ligaments of the trapezium and trapeziometacarpal joint. *J Hand Surg.* 1999; 24:786-798.
3. Yoshida R, Shah MA, Patterson RM. Anatomy and pathomechanics of ring and small finger carpometacarpal joint injuries. *J Hand Surg.* 2003; 28:1035-1043.
4. Simonian PT, Trumble TE. Traumatic dislocation of the thumb carpometacarpal joint: early ligamentous reconstruction versus closed reduction and pinning. *J Hand Surg.* 1996; 21A:802-806.
5. Tolat AR, James MW. Carpometacarpal dislocation of the thumb associated with fracture of the trapezium. *Injury.* 1990; 6:411-2.
6. Kuschner SH, Shepard L, Stephens S, Gellman H. Fracture

of the index metacarpal base with subluxation of the trapeziometacarpal joint. A case report. *Clin Orthop.* 1991; 264:197-9.

7. Orhun E, Cepel S, Kantarci U, Nuzumalai E, Polatkan O. Carpometacarpal dislocation of the thumb associated with proximal intermetacarpal ligament rupture. *Hacettepe Ortopedi Dergisi.* 2000; 10(4):127-129.
8. Drosos GI, Kayias EH, Tsioros K. "Floating thumb metacarpal" or complete dislocation of thumb metacarpal. A case report and review of the literature. *Injury.* 2004; 35:544-47.
9. Marcotte AL, Trzeciak MA. Nonoperative treatment for a double dislocation of the thumb metacarpal. A case report. *Arch Orthop Trauma Surg.* 2008; 128:281-284.
10. Milankov M, Miljkovic N. Carpometacarpal dislocation of the thumb associated with ipsilateral fracture of the distal radius. *J Orthop Trauma.* 1997; 11(4):311-4.