Open Volar Dislocation of the Thumb Metacarpophalangeal Joint

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Traumatic dorsal dislocations of the thumb metacarpophalangeal (MCP) joint are uncommon,¹ and traumatic volar dislocations of the thumb MCP joint are exceedingly rare. Though a minority of volar dislocations of the thumb MCP joint have been successfully treated and closed, these injuries often require open reduction due to interposed soft tissues blocking closed reduction.^{2–4} We present the first published description, to the best of our knowledge and after an extensive review of English literature, of an open volar dislocation of the thumb MCP joint.

A 78-year-old man presented to our emergency department after a fall onto his right dominant hand with the thumb flexed into his palm. He presented with pain, flexion deformity, and inability to extend the thumb MCP joint. On examination, he had a dorsal wound over the thumb MCP joint. The thumb metacarpal head was visible through a rent in the dorsal capsule. Extensor pollicis longus and extensor pollicis brevis were not palpable, nor were they visible. He was perfused and sensate distally. Radiographs of the right hand demonstrated volar dislocation of the thumb MCP joint and avulsion fracture of the ulnar collateral ligament from the base of the proximal phalanx. Sesamoids were visible on the plain films and did not appear interposed (► Fig. 1).

After the patient was given intravenous cefazolin and tetanus vaccination, he was taken urgently to the operating room for irrigation, debridement, and exploration. Upon wound exploration, the dorsal thumb MCP joint capsule was completely torn, the extensor pollicis brevis tendon was subluxed radially, and the extensor pollicis longus tendon was subluxed ulnarly and interposed in the dislocation, blocking reduction. After clearing the interposed extensor pollicis longus tendon, the thumb MCP joint was manually reduced and pinned in place with two 0.045-in Kirschner wires (K-wires) through the skin. The small, comminuted bony avulsion of the ulnar collateral complex was excised, and the ulnar collateral ligament was reattached with

a suture anchor. The capsule and wound were closed in layers. The thumb was immobilized in a thumb spica splint. He received oral antibiotic prophylaxis for 7 days.

Radiographs at the 2-week follow-up appointment showed a well-reduced joint with pins in place. At 4 weeks, K-wires were removed in the office, and occupational therapy was begun for range of motion. At 8 weeks, the patient reported improved thumb function with no pain. Grip strength was measured to be 10 lb, compared with 40 lb in the contralateral hand. Formal occupational therapy was discontinued. The patient was unable to follow up any further due to other comorbidities. At 1-year telephone follow-up, the patient had DASH (Disabilities of the Arm, Shoulder and Hand) score of 2.5, no pain, and returned to preinjury activities such as gardening.

Traumatic volar dislocations of the thumb MCP joint are rare. An interposed structure frequently blocks closed reduction. Extensor pollicis longus and extensor pollicis brevis are the most common structures, but interposed dorsal capsule, volar plate, ulnar collateral ligament, adductor aponeurosis, and sesamoid have all been reported.⁴ When the extensor pollicis longus is displaced volar to the axis of the MCP joint and interposed in the dislocation, patients may demonstrate paradoxical MCP joint flexion and interphalangeal joint extension on attempted active MCP joint extension. Concomitant collateral ligament injury is also often observed, most commonly the ulnar collateral ligament.² Repair of the torn collateral ligament(s) is crucial to restoring stability of the thumb MCP joint. Open dislocation of the thumb MCP joint is an indication for debridement, open reduction, and surgical stabilization. Though rare injuries, knowledge of dislocation of the thumb MCP joint, the commonly interposed structures blocking closed reduction, and the commonly injured structures necessary for joint stability is paramount to restoration of a stable, functional thumb.

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Fig. 1 Posteroanterior and lateral injury radiographs demonstrate a volar dislocation of the thumb MCP joint as well as bony avulsion of the ulnar collateral ligament.

Conflict of Interest

None declared.

References

- 1 Green DP, Terry GC. Complex dislocation of the metacarpophalangeal joint. Correlative pathological anatomy. *J Bone Joint Surg Am* 1973;55(7):1480–1486
- 2 Alioto RJ, Pellegrini VD Jr. Complex palmar dislocation of the thumb metacarpophalangeal joint. A case report demonstrating paradoxical function of the extensor pollicis longus. *Clin Orthop Relat Res* 1993;(296):118–121
- 3 Gunther SF, Zielinski CJ. Irreducible palmar dislocation of the proximal phalanx of the thumb—case report. *J Hand Surg Am* 1982;7(5):515–517
- 4 Senda H, Okamoto H. Palmar dislocation of the thumb metacarpophalangeal joint: report of four cases and a review of the literature. *J Hand Surg Eur Vol* 2014;39(3):276–281