Dorsal dislocation of the metacarpophalangeal joint of the thumb: a case report

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ABSTRACT

Dorsal dislocation of the metacarpophalangeal joint of the thumb is uncommon. We report the case of a 15-year-old patient with a complex dislocation of the left thumb who underwent open reduction after several attempts at closed reduction failed. At 2-month follow-up, full range of movement was regained; strength and pinch grip were comparable to that of the uninjured hand. The patient defaulted subsequent follow-up.

Key words: dislocations; metacarpophalangeal joint; thumb

INTRODUCTION

Dorsal dislocation of the metacarpophalangeal joint (MCPJ) is less common in the thumb than the index finger. It usually occurs in young, active patients. Open reduction is necessary after improper closed reduction by traction.

CASE REPORT

In January 2007, a 15-year-old right-hand dominant boy presented with a 40°-hyperextended left thumb at the MCPJ with slight flexion of the interphalangeal joint. The metacarpal head was prominent in the volar aspect with tethering of the skin. A failed attempt at closed reduction with digital block was performed in the emergency department. Radiographs showed a dorsally dislocated MCPJ of thumb with interposed sesamoids (Fig.). Another attempt at closed reduction under sedation using the McLaughlin technique was unsuccessful. Emergency open reduction under general anaesthesia was proposed, and an intraoperative third attempt at closed reduction was also unsuccessful.

Careful dissection was made via a volar approach. Both the radial and ulnar digital neurovascular bundles were identified and protected. The volar plate and the sesamoids were found jammed inside the joint preventing reduction. Attempt to extract the volar plate and the sesamoids from the joint were unsuccessful despite longitudinal traction of the finger. A separate dorsal incision was therefore made.
The extensor expansion was incised medial to the extensor pollicis longus tendon. The volar plate and the sesamoids were found firmly anchored at the dorsal aspect of metacarpal head preventing extraction via a volar approach. After the volar plate and sesamoids were reduced, the MCPJ spontaneously reduced. There was no associated injury and the collateral ligaments were stable under stress. The volar plate was sutured back to the periosteum of the metacarpal. All incisions were sutured and full passive range of movement was achieved. The thumb was splinted in flexion of the MCPJ for 3 weeks followed by physiotherapy. At 2-month follow-up, full range of movement was regained and the strength and pinch grip were comparable to that of the uninjured hand. The patient defaulted subsequent follow-up.

DISCUSSION

Dorsal dislocation of the MCPJ of the thumb usually results from hyperextension, either from an injury or a fall on an outstretched hand. Clinical and radiographic features can be used to differentiate simple and complex dislocations. In cases of simple dislocation, the joint usually hyperextends to about 90°. In complex dislocations, the metacarpal and proximal phalanx usually lie more parallel to each other, with the metacarpal head palpable in the immediate subcutaneous location and puckering of the volar skin. A widened joint space is suggestive of interposition of the volar plate, and an interposed sesamoid is pathognomonic for a complex dislocation. The likelihood of success for closed reduction of complex dislocations is low and open reduction is required.

The predominant structure preventing closed reduction is the volar plate. Other obstacles include the flexor and adductor tendons, the extensor expansion, the collateral ligaments, the capsule, and the sesamoid bones. An improper closed reduction may convert a simple dislocation into a complex one. Further jamming of the tissues of the MCPJ space makes open reduction difficult. Longitudinal traction must be avoided. The joint should be hyperextended, and then the base of the proximal phalanx should be gently pushed over the metacarpal head to free the interposed volar plate.

Volar or dorsal approaches are commonly used in open reduction depending on the surgeon’s preference and the presence of concomitant injuries. Volar approach carries higher risk of neurovascular injury and provides limited visualisation to release the interposed volar plate (as in our case). A percutaneous technique is reported to be successful and may avoid the risks associated with an open approach. Regardless of the approach, surgeons must know the anatomy well to prevent inadvertent injury to the surrounding structures. Collateral ligament stability must be examined after reduction, as it is commonly injured in dorsal dislocations.

There is no consensus regarding the duration of immobilisation. For isolated dorsal MCPJ dislocation, prolonged splintage of >2 weeks is not necessary and early mobilisation achieves better results.

CONCLUSION

Dorsal dislocation of the MCPJ of the thumb is uncommon. Improper closed reduction using traction alone must be avoided to prevent conversion of a simple dislocation into a complex one. Surgeons should recognise the clinical and radiographic features suggestive of a complex dislocation and understand the anatomy, potential complications, and limitations of different approaches. The collateral ligaments must be examined after reduction. Early mobilisation is advised to prevent joint stiffness.
REFERENCES