

C A S E R E P O R T

Unrecognized volar subluxation of the metacarpophalangeal joint of the thumb: A case report

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Abstract. We present a 30-year-old female patient with a volar subluxation of the metacarpophalangeal joint of the thumb. Dislocation of the metacarpophalangeal joint is rare; volar subluxation is much more rare. Open reduction was performed through a dorsal incision because of the soft tissue interposition. Ultimately, doctors in the emergency department should pay attention to volar MCPJ subluxation and it is important to assess collateral ligament stability after closed reduction. (www.actabiomedica.it)

Keywords: Neglected volar subluxation, metacarpophalangeal joint, the thumb

Introduction

Dislocation of the metacarpal-phalangeal (MCP) joint is rare; volar subluxation is much more rare (1). Volar dislocation is seen in the injury caused by a force directed onto the proximal phalanx in flexion or hyperflexion of the MCP joint (2). Closed reduction is the first treatment option. Open reduction is required if closed reduction is not achieved. It has been reported that such dislocations are often treated by open reduction (3,4).

Volar thumb MCP dislocations classified as stable, blocked and unstable by Senda and Okamoto (3). Stable dislocations can be reduced by closed reductions and there may be partial ulnar collateral ligament (UCL) damage without Stener lesion. Stable dislocations do not require any surgical intervention. There is a soft tissue interposition that blocks closed reduction in blocked dislocations. UCL injury, which should be repaired during open reduction, is frequently seen in these dislocations. Unstable volar thumb MCP dislocations have complete collateral ligament injury and instability after a closed reduction

The diagnosis of dislocation is made easily by using clinical and radiographic features. Volar subluxation of

the metacarpophalangeal joint of the thumb, if careful physical examination is not performed, or if x-ray is taken in not the correct position, or most importantly if the doctor does not suspect, may be easily neglected. We offer case of unrecognized volar subluxation of the metacarpophalangeal joint treated by open reduction. The purpose of this case report is to draw attention to subluxation that can be easily neglected.

Case report

The patient's written consent was taken. Our patient was a 30-year-old woman and when she fell on her right hand, the MCP joint was in a hyperflex position. Patient presented to another hospital emergency department with pain in her right hand. After physical and radiological examination, the patient was diagnosed as soft tissue trauma and treated conservatively. Two days after the examination, the patient presented to our outpatient department with the complaint of worsening pain in the right hand. The thumb had swelling and slight deformation in the MCP joint. MCP joint movements were painful and limited. Volar subluxation of MCP joint of the thumb was seen in X-ray (Fig. 1).

Closed reduction was performed in the outpatient minor procedure room under local anesthesia (2mls 20 mg lidocaine with 0.0125 mg epinephrine) but it was not successful. The patient was taken to the operating room and an axillary block was made and a tourniquet was inserted. A longitudinal incision was made in the dorsal of the first MCP joint. It was seen that the ulnar collateral ligament (UCL) was partially ruptured and the dorsal capsules were in the MCP joint and prevented the reduction (Fig. 2). Volar structures were unaffected and there was no extension tendon

subluxation. When the dorsal capsule was removed in the MCP joint, the reduction was easily performed. The UCL and dorsal capsules were repaired with non-absorbable sutures (Fig. 3). The skin was closed after the instability of the MCP joint was checked. The thumb was splinted for 2 weeks. Flexion-extension exercises were started on the 16th postoperative day. Our follow-up was three months. She was doing her usual daily activities without any restrictions. She had no pain, rigidity and sensitivity at her MCP joint and her thumb's had full range of motion (Fig. 4.).



Fig. 1. volar metacarpophalangeal joint subluxation



Fig. 2. Volar subluxation of the metacarpophalangeal joint of the thumb and partial rupture of the ulnar collateral ligament are seen.



Fig. 3. The repaired dorsal capsule and ulnar collateral ligament



Fig. 4. 3rd month A-P and lateral radiographs

Discussion

There are many articles related with dorsal (5) and volar (2,6) dislocation in the literature, however little is known about neglected volar subluxation of the metacarpophalangeal joint case according to our knowledge. Dislocation of the MCP joint is rare ; volar subluxation is much more rare. Doctors in the emergency department should be aware that pain is a potential finding for subluxation The authors have noted three difficulties in recognizing these injuries (7).

First, because the flexor system is intact, the patient can make a fist, which may lead to an incorrect evaluation of the entirety of the MCP joint. Secondly, soft tissue swelling may mask the deformity in the MCP joint. Thirdly, injury may not be seen if x-ray is taken in not the correct position.

Closed reduction is the first treatment option for dislocations and subluxations in the MCP joint Beck et al.(2) reported two volar dislocations that they treated with closed reduction. Our subluxation case was not reduced with closed reduction. According to Senda and

Okamoto, open reduction is required in most of the cases (3). Glickel et al. also stated that volar dislocation of the thumb MCP joint could not be reduced by the closed method (8). The intervention in closed reduction should start with flexion in the MCP joint and when the joint is brought to the extension, on dorsal direction pressure should be applied to the volar surface of the proximal phalanx (9). We attempted to reduce closed, but failed to achieve anatomic reduction. The most common cause of prevention of closed reduction is the interposition of the dorsal capsule or other soft tissue in the MCP joint (4,10). If closed reduction is taken, stability control should be performed. If a constant reduction is achieved, the thumb should be fixed in the extension. Open reduction has two surgical options, including volar and dorsal approaches. The volar approach carries a high risk of neurovascular injury and makes limited visualization of the interpose volar plate (5). The dorsal approach allows easy removal of the soft tissue trapped from the joint and easy repair of the UCL, and provides an easy reduction of the displaced EPL, EPB tendons. We preferred the dorsal approach to explore the MCP joint. Volar dislocation is seen in the injury caused by a force directed onto the proximal phalanx in flexion or hyperflexion of the MCP joint (2). The pathologies seen in the volar dislocation of the MCP joint are rupture of the dorsal capsule, dislocation of the extensor tendons, and rupture of the volar plate with UCL (4). According to Senda and Okamoto classification, our case was type B. We did not close reduced the volar subluxation of the MCP joint. During the operation, we saw dorsal capsule rupture and dorsal capsules entering the MCP joint and partial UCL rupture.

Unstable volar thumb MCP dislocations have complete collateral ligament injury and instability after a closed reduction. Wood suggested that unstable volar MCP dislocation has been a high risk of recurrent dislocation if treated by closed reduction with pinning (11). After reduction, the stability of the MCP joint should be evaluated. If the collateral ligaments do not stabilize the MCP joint sufficiently, the proximal phalanx is drawn into the palm by the flexor structures. This results in volar subluxation of MCP joint in unstable volar thumb MCP dislocations. Unstable dislocation treatment, emergency open surgery and ligament reconstruction.

Neglected and untreated UCL tears in subluxation cause loss of pinch strength. In addition, thumb causes chronic instability of MCP, painful arthritis and impaired function of the thumb (12). After successful completion of the closed reduction, the displacement of the UCL must be checked (13). UCL can also tear after closed reduction; should be checked after reduction. In the case of unrecognized UCL tears, the restructuring of the UCL within 3 weeks is better in functional outcomes than the reconstruction of the UCL after 3 weeks (14).

In patients, diagnostic failure or inappropriate treatments cause complications. Repeated trials in closed reduction, insufficient open reduction, or prolonged dislocation may cause degenerative arthritis, osteonecrosis of the metacarpal head, joint stiffness, excessive fibrosis and reduction in ROM. Therefore, physicians should consult patients with a hand surgeon if they do not have sufficient experience and avoid aggressive treatment.

Khan et al. (15) reported a case that was diagnosed and operated four weeks later. While the patient's improvement in thumb movements continues in the acute period, the studies have no long-term results. Serdar et al. (6) reported a case report with a 3-year follow-up volar dislocation. No joint pathology was detected in the patient except for 10° flexion loss in the MCP joint. Although our follow-up period was 3 months, we could not detect any joint pathology. Somani et al. (16) did not use post splinting after the operation to avoid re-dislocation of the thumb. We put the thumb on the splint for 2 weeks and then we started moving. We think that short-term splinting is better for healing soft tissues (tendons and ligaments).

Conclusion

Ultimately, doctors in the emergency department should pay attention to volar MCPJ subluxation and it is important to assess collateral ligament stability after closed reduction.

Conflict of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity

interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

Authors' contributions: We declare that we prepared the article together.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

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Received: January 16, 2020

Accepted: March 30, 2020

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