

Pediyatrik Hastada 2. Metakarpofalangeal Eklemi Kompleks Dislokasyonu: Olgu Sunumu

Complex Dislocation of The Index Metacarpophalangeal Joint in a Child: Case Report

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ÖZ

Kompleks metakarpofalangeal eklem dislokasyonları nadir olmakla birlikte, genellikle başparmakta görülür. Bu yaralanma tipi çocuk yaş grubunda daha da nadirdir. Erişkinde kompleks metakarpofalangeal eklem dislokasyonlarının tedavisinde dorsal veya volar yaklaşımla açık redüksiyon veya perkütanöz teknikler tarif edilmiştir, fakat cerrahi tedavi gerekliliği pediyatrik yaş grubunda nadirdir. Bu olgu sunumunda, kapalı redüksiyonla tedavi edilemeyen pediyatrik hastada açık cerrahi redüksiyonun sonuçları gösterildi.

Anahtar Kelimeler: Kompleks metakarpofalangeal eklem dislokasyonları, ikinci metakarpofalangeal eklem dislokasyonu, pediyatrik el yaralanmaları

ABSTRACT

Metacarpophalangeal (MP) joint dislocations are uncommon and usually seen in thumb. Complex dislocation of the mp joint in children is also uncommon, and rarely reported, whereas the condition is well described in adults. Complex mp joint dislocations need an open reduction with a volar or dorsal approach or with percutaneous technique in adults but surgical treatment need is rare in childhood. In our case, we show that the open reduction with dorsal approach is useful to obtain successful results in closely irreducible pediatric complex second MP dislocation treatment.

Keywords: Complex dislocation metacarpophalangeal joint, Second metacarpophalangeal joint, Pediatric hand injury

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INTRODUCTION

Metacarpophalangeal (MP) joint dislocations are uncommon and usually seen in thumb, index, and little finger (1). They can be classified directionally as either being volar or dorsal, although volar dislocations of the MP joint are exceedingly rare (2). Farabeuf, classified MP joint dislocations into three types: incomplete (collateral ligaments are intact), simple complete and complex complete. Simple complete dislocations are those where the collateral ligaments and the volar plate ruptured but the latter is not interposed in the joint, which is usually extended at 90°; and in complex complete dislocations, the volar plate is displaced and interposed (3). Classically described by Kaplan (4) to involve rupture of the volar plate from its weaker proximal attachment to the metacarpal. The volar fibrocartilaginous plate becomes entrapped between the metacarpal head and base of the proximal phalanx and blocks the reduction (5,6). Also, the flexor tendons, pretendinous band of palmar fascia, and lumbricals forms trap around dislocated MP joint which further prevents closed reduction. Attempt to reduce the joint without opening further tightens this trap. Clinically, patients presents with mild extension and ulnar deviation at the MP joint, with flexion of the interphalangeal (IP) joints, puckering of skin over MP joint on palmar region (1).

Radiologically x-ray shows dorsal dislocation of base of phalanx (AP) and MP joint (lateral). MP joints are stable primarily by the volar plate, having thin attachment to the metacarpal and thick attachment to phalanx. Secondary supports being strong capsuloligamentous structure, and laterally, by the collateral and deep transverse ligament. Complex MP joint dislocations need an open reduction with a volar or dorsal approach or with percutaneous technique in adults (7,8,9,10) but surgical treatment need is rare in childhood (11).

CASE

The patient was an 11 year old male, a football player, presented with pain and swelling over left hand, around index finger and second MP joint. On examination there was hyperextension at second MP joint, the distal and middle interphalangeal joints were flexed, and extensor tendons were relaxed (Figure 1a). On volar aspect of hand there was a

smooth round shaped bony mass formed by the head of second metacarp with puckering bilaterally (Figure 1b).

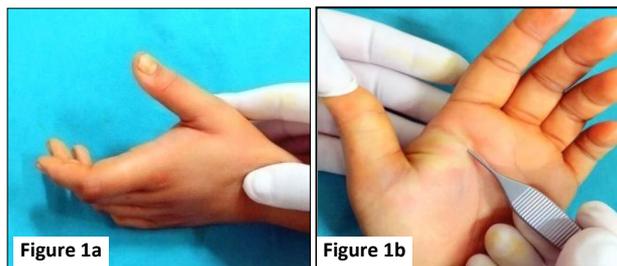


Figure 1a: Dorsal aspect of hand. Hyperextension at 2nd mp joint, flexed distal and middle interphalangeal joints and relaxed extensor tendons.

Figure 1b: Volar aspect of hand. There was a smooth round shaped bony mass formed by the head of 2nd metacarp with puckering bilaterally.

There was no distal neurovascular deficit. X-rays were suggestive of dorsal dislocation of proximal phalanx of the left index finger (Figure 2 a-b).



Figure 2 a-b: Preoperatif x-rays.

With the patient under general anesthesia, closed manipulation was tried without success. Patient was taken to operative table in supine position and hand kept in pronated position for dorsal approach. Tourniquet didn't applied and usual scrubbing done. Incision taken over dorsum of second MP joint (Figure 3).



Figure 3: Dorsal incision over dorsum 2nd mp joint.

After dissection, volar fibrocartilagenous plate and a small avulsion fracture of the

second metacarpal head identified (Figure 4a). With the longitudinal division of volar plate the proximal phalanx was restored to its normal position and the avulsed fragment sutured to the metacarpal head with absorbable sutures (Figure 4b). Wound wash given and closure done with vicryl and ethilon. Postoperatively neurovascular evaluation was within normal limits.

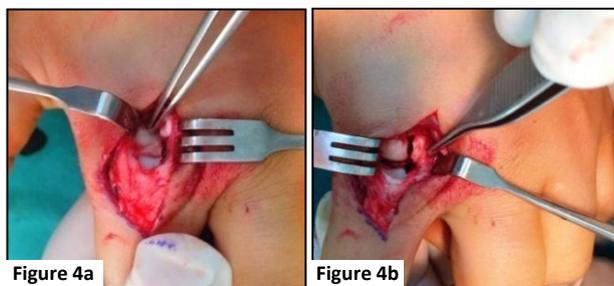


Figure 4a: Volar fibrocartilagenous plate and a small avulsion fracture of the second metacarpal head.

Figure 4b: Reduction of the joint and avulsed fragment

The patient was immobilised with static splint for 10 days. Protected mobilization is initiated after 10 days and the strengthening exercises were started at 3 weeks to allow for ligamentous healing. After 4 weeks follow-up, the patient's active range of motion consisted of MP joint hyperextension to 10° and 80° of flexion, proximal interphalangeal joint extension to 0° and flexion to 90°, and distal interphalangeal joint extension to 0° and flexion to 80°. Follow up was lost after 4 weeks.

DISCUSSION

The volar approach to complex MP joint dislocations has certain disadvantages. Digital nerves are easily damaged during exposure and there is limited view of entrapped fibrocartilagenous volar plate dorsal to metacarpal head (3,5,6,8,12,13). Becton et al reported a series of 13 complex MP joint dislocations of the index finger using both volar and dorsal approaches (14). Those who underwent a dorsal approach had normal function, in two of their patients in whom they volar approach was used, the radial digital nerve was damaged and the patient had no return of sensation to radial side of index finger.

The dorsal approach for this complex dislocation has advantages over volar approach. Neurovascular structures are not risked to injury while operating and there is complete exposure of fibrocartilagenous volar plate (15). Also the

management of osteochondral fracture of metacarpal head, which is a frequent association, is easily possible (3,16). The only disadvantage of the dorsal approach is a delay in recovery and instability after splitting of volar plate longitudinally (1).

Complex dislocation of the MP joint in children is uncommon, and rarely reported, whereas the condition is well described in adults (11,17). In our case, we show that the open reduction with dorsal approach is useful to obtain successful results in pediatric complex second MP dislocation treatment.

REFERENCES

1. Ashish M, Somani AM, Uday D, Mahajan DU. Dorsal approach for open reduction of complex metacarpophalangeal joint dislocation. A case report. *International J. of Healthcare and Biomedical Research* 2015;3(3):241-5.
2. Izadpanah A, Wanzel K. Late presentation of a complete complex thumb metacarpophalangeal joint dislocation. A case report. *Can J Plast Surg* 2011;19:4.
3. Bohart PG, Gelberman RH, Vandell RF, Salamon PB. Complex dislocations of the metacarpophalangeal joint. *Clin Orthop* 1982;164:208-10.
4. Kaplan EB. Dorsal dislocation of the metacarpophalangeal joint of the index finger. *J Bone Joint Surg Am* 1957;39(5):1081-6.
5. Johnson AE, Bagg MR. Ipsilateral complex dorsal dislocations of the index and long finger metacarpophalangeal joint. *Am J Orthop* 2005;34(5):241-5.
6. Adler GA, Light TR. Simultaneous complex dislocation of the metacarpophalangeal joints of the long and index fingers. A case report. *J Bone Joint Surg Am*. 1981;63(6):1007-9.
7. Imbriglia JE, Sciulli R. Open complex metacarpophalangeal joint dislocation. Two cases: index finger and long finger. *J Hand Surg Am* 1979;4(1):72-5.
8. Mudgal CS, Mudgal S. Volar open reduction of complex metacarpophalangeal dislocation of the index finger: a pictorial essay. *Tech Hand UpExtrem Surg* 2006;10(1):31-6.

9. Tavin E, Wray RC Jr. Complex dislocation of the index metacarpophalangeal joint with entrapment of a sesamoid. *Ann Plast Surg* 1998;40(1):59-61.

10. Sodha S, Breslow GD, Chang B. Percutaneous technique for reduction of complex metacarpophalangeal dislocations. *Ann Plast Surg* 2004;52(6):562-6.

11. Maheshwari R, Sharma H, Duncan RDD. Metacarpophalangeal joint dislocation of the thumb in children. *J Bone Joint Surg* 2007;89-B(2).

12. Zemel NP. Metacarpophalangeal joint injuries in fingers. *Hand Clin* 1992; 8(4):745-754.

13. Chadha M, Dhal A. Vulnerability of the radial digital neurovascular bundle of the index finger while using the Kaplan's volar approach for irreducible dislocation of the second metacarpophalangeal joint. *Injury* 2004; 35(11):1182-4.

14. Becton JL, Christian JD Jr, Goodwin HN, Jackson JG III. A simplified technique for treating the complex dislocation of the index metacarpophalangeal joint. *J Bone Joint Surg Am* 1975;57(5):698-700.

15. Patterson RW, Maschke SD, Evans PJ, Lawton JN. Dorsal approach for open reduction of complex metacarpophalangeal joint dislocations. *Orthopedics* 2008;31(11):1099.

16. Barry K, McGee H, Curtin J. Complex dislocation of the metacarpo-phalangeal joint of the index finger: a comparison of the surgical approaches. *J Hand Surg Br.* 1988;13(4):466-8.

17. Sulko J. Metacarpophalangeal joint dislocation of the thumb in children. *Chir Narzadow Ruchu Ortop Pol* 2004;59:331-3.