

Dorsal Approach for Dorsal Complex Metacarpophalangeal Dislocation of the Index Finger

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Abstract

Dorsal complex dislocations of metacarpophalangeal joints are a rare injury. Various anatomical structures have been blamed to preclude closed reduction and controversy also exists regarding the ideal approach.

We reviewed 5 patients whom we treated with open reduction via the dorsal approach, and we had consistently good results.

Keywords: Complex dorsal, metacarpophalangeal dislocation, open reduction, dorsal approach.

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Introduction

Complex dorsal dislocation of the metacarpophalangeal joint is a rare injury.¹ It is important to differentiate this injury from simple subluxation,² which can be reduced by closed means.³ The index finger is most commonly involved.¹ Farabeuf⁴ coined the term complex dislocation and Kaplan⁵ published his article describing the anatomical factors preventing reduction. Various structures have been implicated, but all agree that the most important and consistent element preventing reduction is *volar plate interposition* which breaks away from its proximal attachment to the metacarpal neck and comes to lie within the joint space. This requires surgical extraction.

Methods

Five patients who presented with complex dorsal dislocation were evaluated. All suffered hyperextension injuries to the index metacarpophalangeal joint. Four were male and one female. Three were involved in road traffic accidents and one of the patients also had a concomitant forearm fracture. There was no neurovascular deficit.

Classical clinical and radiological hallmarks described by Rockwood were present.¹ The index finger was held only slightly hyperextended with puckering of the palmar skin with the radiological hallmark of *sesamoid within a widened joint space*.

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All patients were operated upon by the dorsal approach within 1-3 days of their injuries. The trapped volar plate was visualized and split longitudinally and this was enough to effect a satisfactory reduction. Though advocated by Kaplan,⁵ we did not cut the natatory ligament and superficial transverse metacarpal ligament, as they did not prevent the reduction.⁶ We did not encounter the problem of a volar dislocation of the deep transverse metacarpal ligament as faced by De Coster⁷ and Murphy.⁸ No splint was used postoperatively and active movement was encouraged immediately with buddy strapping.

Results

We were able to achieve stable and satisfactory reduction in all patients. All patients had stable and painless joints at 4-month follow up visits. The average range of motion was from 70 degrees flexion to 10 degrees extension. There were no incidences of redislocation or infection.

Discussion

Kaplan⁵ described the classic anatomical constricting factors and the required surgical release. Hence, these dislocations are also called *Kaplan's lesions*. He emphasized that along with the volar plate, the distal transverse fibers (natatory ligament) and superficial transverse metacarpal ligament have to be released. We did not have to release the aforementioned structures and we do not see any point in releasing these structures unless they obstruct or preclude reduction.⁶

Murphy⁸ and De Coster⁷ emphasized the role of volar subluxation of the DTML (deep transverse metacarpal ligament), but we did not experience this problem in any of our patients.

The exposure has always been a matter of debate, whether the volar or dorsal approach. Essentially, it is incumbent upon the surgeon's skill, but we concur with Becton et.al⁹ that *dorsal approach is the gold standard* for the following reasons:

1. *Direct exposure* of the main offending impediment – the volar plate. Hence, no need for further release of adjacent structures to facilitate reduction.
2. No danger to the *neurovascular bundle*.
3. Concomitant fixation of the *articular chip fracture* is possible via the dorsal approach.

The only theoretical drawback of the dorsal approach is the necessity to longitudinally split the volar plate^{9,10} to effect reduction which is not necessary in the volar approach. However, this does not adversely affect the final outcome.

Conclusions

We conclude that the dorsal approach and longitudinal splitting of the volar plate effects a stable reduction of complex dorsal metacarpophalangeal dislocations.

Apart from buddy strapping, no immobilization is required and immediate active movement is to be encouraged.

Table (1): Age distribution

<i>Age in years</i>	<i>20-30</i>	<i>31-40</i>	<i>41-50</i>
<i>No. of patients</i>	3	1	1

Table (2): Sex distribution

	<i>Males</i>	<i>Females</i>
	4	1

Table (3): Mode of injury.

<i>Road Traffic Accident</i>	<i>Direct Injury</i>
3	2

Table (4): Time between injury and surgery.

<i>Timing of surgery</i>	<i>Within 24 hrs</i>	<i>Within 48 hrs</i>	<i>Within 72hrs</i>
<i>No. of patients</i>	1	2	2



Figure (1): Lateral view XR, complex dorsal dislocation of index metacarpophalangeal joint.



Figure (2): AP view XR, showing a classical "sesamoid in widened joint space".



Figure (3): Intra operative photograph showing displaced volar plate.



Figure (4): AP view XR, postoperative reduction.



Figure (5): Lateral view XR, postoperative reduction.



Figure (6): Clinical photograph, 4 month follow up.

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المنهج الظهري لخلع السلامة المعقدة الظهرية من السبابة

اجيت سوامي وأميت سوامي

كلية بيتال الطبية، الهند

الملخص

الاضطرابات المعقدة للمفاصل السلامة الظهرية هي إصابة نادرة. وقد تم تبني هياكل تشريحية مختلفة لمنع الخفض المغلق ولكن هناك الكثير من الجدل الموجود أيضا بشأن النهج المثالي. قمنا باستعراض 5 مرضى قاموا بجراحة مفتوحة عبر النهج الظهري وكانت هناك نتائج جيدة متسقة.

الكلمات الدالة: المنهج الظهري، خلع السلامة المعقدة الظهرية.