



ORIGINAL RESEARCH PAPER

Orthopaedics

MANAGEMENT OF INDEX METACARPAL JOINT DISLOCATION BY VOLAR APPROACH (KAPLAN'S DISLOCATION) : A CASE REPORT

KEY WORDS:

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INTRODUCTION

Metacarpophalangeal dislocations are less common than interphalangeal dislocations. They occur most commonly in index finger. The fibrocartilagenous plate avulses from its weakest attachment, the volar aspect of second metacarpal neck. The flexor tendons and pretendinous band are displaced ulnarly and lumbrical radially to metacarpal head. The fibrocartilagenous plate is displaced dorsally over the metacarpal head, where it becomes wedged between the base of proximal phalanx and metacarpal head. The lateral collateral ligaments, which are now abnormally displaced, lock the phalanx in abnormal dorsal position. Distally the natatory ligament is situated dorsal to metacarpal head with volar plate and proximally the superficial transverse ligament extends across the metacarpal neck volarly

CASE REPORT

A 7 years old male came to Orthopaedic department of MGM medical college with history of fall while playing on right hand. Patient came to MGM casualty, initial Xray was done which was suggestive of total dislocation of index metacarpophalangeal joint of right hand. Closed reduction trial was given but was not able to reduce. Patient was taken to emergency OT after informed written consent. Total metacarpophalangeal dislocation (also known as Kaplan's dislocation) being a rare injury, open reduction with volar approach was planned. Under tourniquet and under all aseptic precaution, incision was taken at the nar crease at radial base of index finger and continue it into proximal palmar crease and divide all constricting bands. First incision was taken to free the constriction of the cartilagenous plate. Free edge of the torn ligament was incised to the junction of periosteum with proximal phalanx. The incision must penetrate the entire thickness of the plate. Division of the plate alone is however, insufficient. The transverse fibres of taut natatory ligament are divided and another longitudinal incision through the transverse fibres of the superficial transverse metacarpal ligament is made. The third incision which should extend to the ulnar side of first lumbrical muscle, release the constriction below the metacarpal head. The proximal phalangeal base return to its normal place over metacarpal head. This permits immediate replacement of second metacarpal head in line with other metacarpal heads, following flexor tendons, volar plate and nerves and vessels are restored to their normal positions. Close the wound in a routine manner and immobilize the finger in a functional position for about a week



DISCUSSION

Kaplan's lesion is a rare injury. This injury commonly involves the index finger at the metacarpophalangeal joint. Kaplan was the first to describe this injury when the tight capsuloligamentous structures prevent closed reduction necessitating open reduction. Forcing closed reduction here further tightens the anatomical structures around metacarpal head and prevents reduction. Two approaches have been described for open reduction dorsal and volar. Volar approach requires to release structures along with volar plate. There is a need to release the superficial transverse metacarpal ligament and distal transverse fibres (Notatory ligament). The volar approach is useful in open dislocations and anatomy of volar structures can be best explored and demonstrated. However in volar approach the radial digital neurovascular bundles are at risk. With a careful dissection, the risk can be minimized with protection of neurovascular structures. The volar approach allows you to directly arrive to the lesion and allows restoration of joint anatomy and repairment of volar plate. This approach reduces the risk of late instability. On the other hand, the dorsal approach is simple and has no risk of digital nerve injury. The dorsal approach is simple and safe but the volar plate cannot be repaired. Furthermore, the MPJ has delayed healing and approach also leads to instability. To achieve optimal outcomes in MPJ dislocations early treatment is crucial. Delayed treatment or prolonged postoperative



immobilisation and rehabilitation treatment lead to failed results. It is important to avoid hyperextension for a few days postoperatively. Otherwise digital nerve damage, decreased range of motion and degenerative arthritis can be seen

CONCLUSION

Using the volar surgical approach, the metacarpal head can be directly visualised and volar plate, which is longitudinally split for reduction can be repaired. Reduction should be performed within first day from injury and joint should be immobilised in a functional position no more than 3 weeks

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