

Metacarpophalangeal Joint Arthroscopy: Indications Revisited

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• Metacarpophalangeal • Arthroscopy • Thumb • Finger

Arthroscopic surgery has become the gold standard for the diagnosis and treatment of major joint disorders. With advancement in arthroscopic technique, arthroscopy has become feasible in most human joints, even those as small as the finger joints. The metacarpophalangeal joint (MCPJ) is an ideal joint for performing arthroscopic surgery. This joint can become spacious with simple traction. Moreover, the intra-articular anatomy is simple and its major structures can be easily visualized and identified. However, MCPJ arthroscopy has never been popularized. Arthroscopy of finger joints was first described in 1979.¹ Since then, there have been fewer than 10 reports on this subject published in the literature. This article describes our experience with MCPJ arthroscopy and seeks to establish its role in clinical practice.

ANATOMY OF THE MCPJ

The Finger MCPJ

The normal MCPJ is a diarthrodial, condylar-type joint that allows movement in multiple directions

including flexion, extension, radial deviation, ulnar deviation, and circumduction. The metacarpal head is asymmetrical in both the coronal and sagittal planes. The radial condyle of the metacarpal head is larger than the ulnar condyle, which causes the metacarpal head to slope ulnarly in the coronal plane, especially in the second and third MCPJs. The volar surface of the metacarpal head is longer and broader than its dorsal surface, which accounts for the cam effect that tightens the collateral ligaments when the joint is flexed. The normal synovial membrane of the MCPJ is attached around the periphery of the articular cartilage with volar and dorsal synovial reflections. The synovial fold is largest dorsally on the neck of the metacarpal. The volar plate supports the MCPJ volarly and it consists of a membranous part and a cartilaginous part. The membranous portion of the volar plate attaches to the metacarpal neck and has more laxity than its distal insertion. The cartilaginous portion of the volar plate is distal and attaches firmly to the base of the proximal phalanx. The volar plates of adjacent digits are interconnected by the

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fibers of the deep transverse intermetacarpal ligament. The radial and ulnar collateral ligaments, which lie dorsal to the center of rotation of the MCPJ, reinforce the joint. These ligaments are lax when the joint is extended and become taut when the joint is flexed.

The Thumb MCPJ

The basic anatomy of MCPJ of the thumb is similar to that in the finger. However, compared with MCPJ of fingers, only a minor degree of movement in radioulnar plane and rotation is possible because of the greater stiffness of the collateral ligaments, which are important in providing stability to the thumb. There is also great variation in its range of movement between individuals and also between left and right.^{2,3} This variation may be related to different shapes of the metacarpal

head.⁴ People with stiffer metacarpal joints in their thumbs are slightly more prone to injury.²

The presence of sesamoids also represents another difference from finger MCPJ. The sesamoids lie within the lateral and medial margin of the volar plate and at the origin of the fibroosseous sheath of the flexor pollicis longus tendon. The accessory collateral ligament inserts into the peripheral margin of the sesamoid on each side. The tendon of the adductor pollicis inserts onto the ulnar sesamoid, whereas the tendon of flexor pollicis brevis inserts onto the radial sesamoid.

Arthroscopic Anatomy

In the arthroscopic view, the appearance of thumb and finger MCPJ is similar. There are several consistent anatomic landmarks inside the MCPJ (**Fig. 1**). These landmarks include (1) the radial

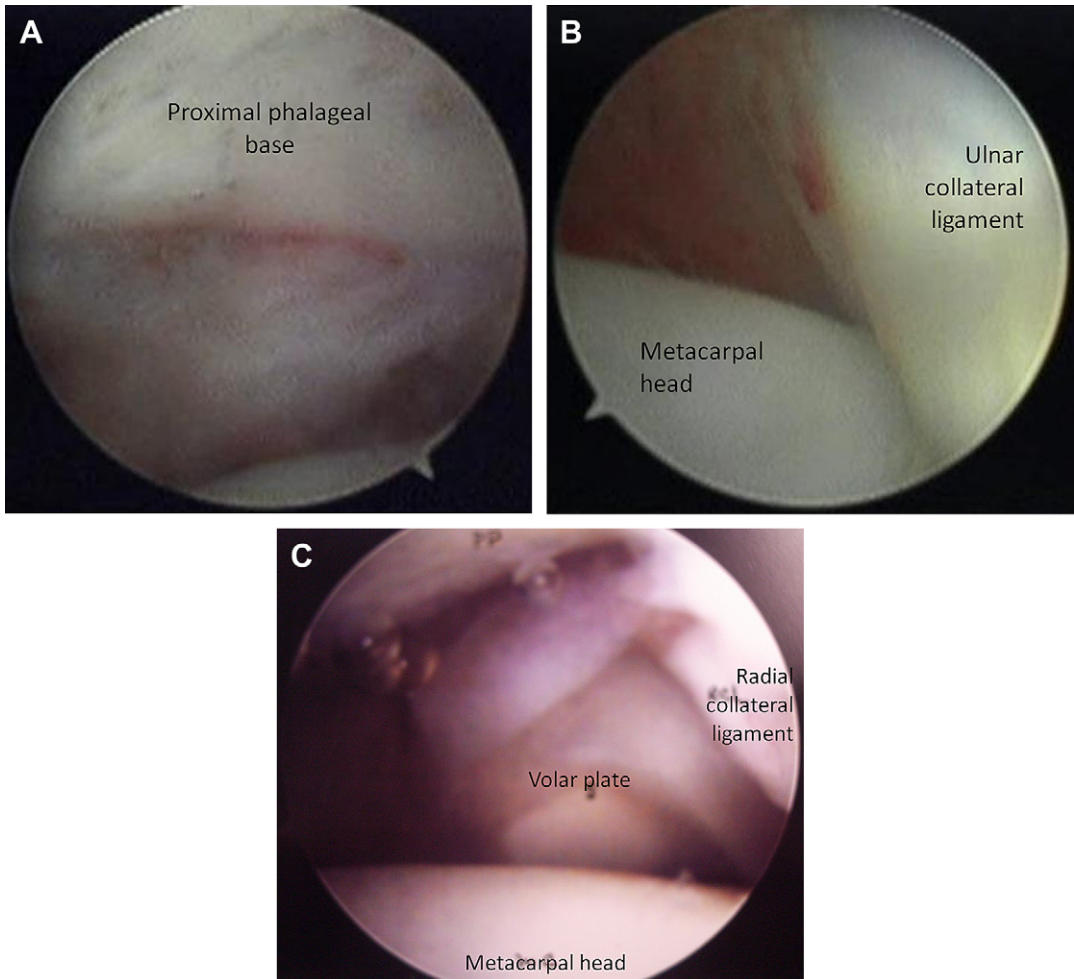


Fig. 1. (A) Intra-articular anatomy: proximal phalanx base. (B) Intra-articular anatomy: ulnar collateral ligament. (C) Intra-articular anatomy: radial collateral ligament.

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