



Extensor mechanism variation of the index finger

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The extensor indicis proprius (EIP) tendon and extensor digitorum communis (EDC) tendons are the main extensor tendons of the second finger. Different variations of extensor tendons are frequently reported. In our report, we describe a variation of the index finger extensor mechanism in a healthy subject.

Keywords: Extensor mechanism variation; index finger.

Extension of the index finger is one of the most important functions of the hand. The extensor indicis proprius (EIP) tendon and the extensor digitorum communis (EDC) tendons are the main extensor tendons of the second finger. The EIP, with the exception of certain variations, is located in the ulnar side of the EDC. Both tendons fuse together at the level of the metacarpophalangeal joint and are stabilized with sagittal bands to prevent slippage. Distal to this level, the extensor mechanism constitutes a wide and flat layer above the proximal phalanx composed of oblique and transverse fibers. The extensor tendon becomes the central slip at the level of the proximal interphalangeal (PIP) joint and attaches to the dorsal part of the middle phalanx, allowing extension of the PIP joint. Distally, the lateral bands fuse together and insert into the base of the distal phalanx, providing extension of the distal interphalangeal (DIP) joint. The triangular ligament stabilizes the lateral bands dorsally and prevents volar subluxation and formation of boutonniere deformity. At the same level, the transverse retinacular ligament stabilizes the terminal lateral bands on the volar side and prevents dorsal subluxation and formation of swan neck deformity. Lumbrical muscles and interos-

seous muscles also have roles in the extensor mechanism of the hand.^[1–4]

In our report, we describe a variation of the index finger extensor mechanism in a healthy subject.

Case report

In a 19-year-old male patient, we incidentally observed that the extensor tendons of both index fingers were separate until the level of the middle phalanx, which was prominent during DIP joint flexion and PIP joint hyperextension (Figure 1). Lateral slips were distinct and were seen as a continuation of the tendons, which end at the base of the DIP joint. Central slippage was not prominent. The tendons did not luxate during finger movements; this variation caused no problems in hand function. The variation was bilateral and symmetric. Radiologic imaging was not performed, as there were no health problems.

This case was a healthy subject who had not undergone any previous surgical procedure, experienced injury of the index fingers, or had any other systemic anomalies.

The illustrations of both normal anatomy and the anatomy of this variation are shown in Figures 2a and b.

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Fig. 1. Extensor mechanism variation of the index finger in a 19-year-old male. [Color figures can be viewed in the online issue, which is available at www.aott.org.tr]

Discussion

Different variations of extensor tendons are frequently reported.^[4-9] However, we were unable to find any reports in the literature of extensor tendon variations similar to the present report, a congenital variation of the extensor mechanism which did not cause any functional

anomaly in finger extension. Variation was not detectable when the finger was in neutral position, but it was prominent during DIP joint flexion and PIP joint hyperextension when the extensor mechanism was stretched. The variation was present in both index fingers and was symmetric.

The triangular ligament plays an important role in the stabilization of lateral slips. In triangular ligament injuries, boutonniere deformity develops due to lateral displacement of the lateral bands. In the variation we present, there were no problems regarding lateral band stabilization. Even in DIP joint flexion and PIP joint hyperextension movements, there were no lateral subluxations.^[1-4]

In swan neck deformity, lateral bands subluxate dorsally because of a defect in the transverse retinacular ligament, preventing stabilization of lateral bands volarly at the level of the middle phalanx. There were no problems in transverse retinacular ligament function in our case.^[1-4]

Aberrant extensor tendons to the index finger are the extensor medii proprius, extensor indicis medii proprius

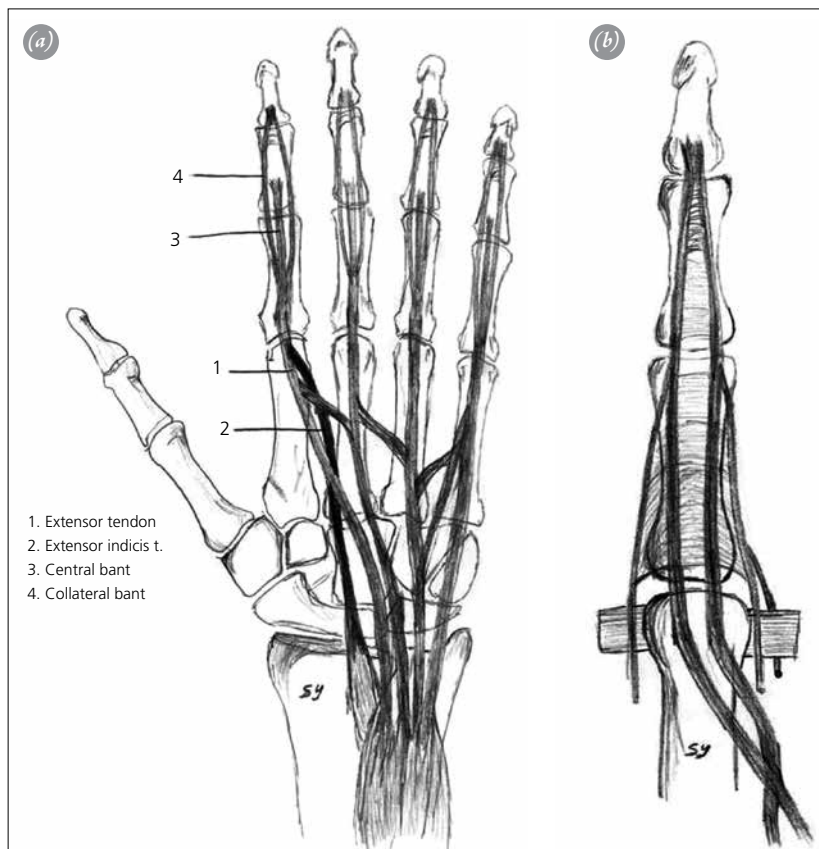


Fig. 2. (a) Illustration of normal anatomy of extensor mechanism, (b) illustration of extensor mechanism variation of index finger.

(EIMP), extensor digitorum brevis manus, and extensor indicis accessories. In the literature, controversy exists surrounding the incidence of these muscles and the insertion points of their tendons. These muscles are often small in width and are generally covered by the EDC.^[4-9]

Since the EDC and EIP tendons of the index finger have independent functions, the EIP, extensor medii proprius, and EIMP tendons have been transferred to restore mobility for a variety of hand movements. For this reason, awareness of the anatomy and variations of the extensor tendons of the index finger is essential when assessing a traumatized hand and when considering tendons for tendon transfer. The EIP tendon can be utilized very often as graft material or for tendon transfer.^[4-9] In our case, as there was no fusion of extensor tendons at the level of the metacarpophalangeal joint, probable removal of the EIP tendon could disturb the balance of the index finger movements.

We believe that this report of a rare variation provides a useful contribution to the literature.

Conflicts of Interest: No conflicts declared.

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