

EXTENSOR INDICIS BREVIS REPLACING EXTENSOR INDICIS - CASE REPORT

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ABSTRACT

Variants muscles are often a matter of concern to clinicians as they mislead the diagnosis. In this report we present a variant muscle on dorsum of hand, extensor indicis brevis which replaced extensor indicis proper. It originated from area of fourth compartment of extensor retinaculum, ligament over scaphoid and adjacent carpal bones. It was inserted into ulnar aspect of extensor expansion of index finger. This variant muscle often causes chronic dorsal wrist pain as in fourth compartment syndrome, or may be confused with synovial cyst, ganglion, and soft tissue tumor. The knowledge of presence of such variant muscle is essential for surgeons. We endeavor to discuss the relevance of embryogenesis with respect to the extensor muscles.

Key words: *Extensor indicis brevis, Extensor digitorum brevis manus, Extensor indicis variation.*

INTRODUCTION

The extensor indicis (EI) muscle is one of the extensors known for its variations. It belongs to deep group of muscles of forearm. It normally arises from posterior surface of the ulna and adjoining interosseous membrane. It is inserted into the ulnar aspect of extensor expansion of index finger. This muscle helps in extension of index finger and wrist. The extensor indicis (EI) lies deeper to extensor digitorum (ED) and both these extensors pass through fourth compartment of extensor retinaculum within a common synovial sheath.^{1,2}

CASE REPORT

During routine dissection classes for undergraduates students, in an adult male cadaver, a small anomalous muscle was found on the dorsum of hand, where usually no muscle belly is seen in normal anatomy (Fig.1). The muscle was originating from area of 4th compartment of extensor retinaculum and ligament covering the scaphoid and adjoining carpal bones. The muscle was inserted into ulnar aspect of extensor expansion of index finger. This muscle was identified as extensor indicis brevis (EIB). The extensor indicis (EI) was conspicuous by its absence. EIB

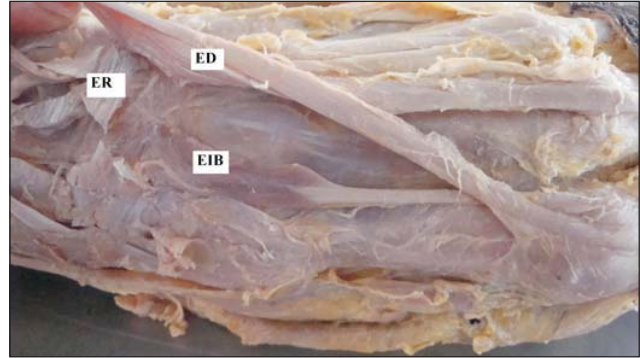


Figure 1 : Dorsum of left hand showing extensor digitorum [ED], extensor indicis brevis [EIB] and extensor retinaculum [ER]. Extensor indicis is absent.

belly measured 4 cm in length and 1 cm wide and the tendinous part was 3.5 cm long. The tendon from ED for the index finger was present along with EIB beneath the extensor retinaculum. EIB was innervated by posterior interosseous nerve at its proximal end. Rest of extensor muscles displayed normal morphology and innervations.

DISCUSSION

Several muscle variations have been reported in literature. The anomalous muscle encountered in this case is EIB which forms a component of extensor digitorum brevis manus (EDBM) muscle. There are some cases reported in literature about EDBM. They include origin from dorsal metacarpal surface or from extensor tendons³. Its insertion has been described as being only into extensor hood of index, middle, ring or little finger as well as combined into more than one finger⁴. Depending upon where it is inserted EDBM has also been named as extensor indicis brevis⁵, extensor digiti III brevis⁶, extensor medii brevis, extensor brevis digiti indicis vel medii, extensor medii and anularis brevis⁷. The EDBM has been found with other muscle variations such as extensor pollicis et indicis communis, extensor indicis radialis⁸. Occurrence of EIB in addition to EI^{9,10,11,12,13,14} and¹⁵, absent EI associated with variations of ED¹⁶, variations of tendons of EI¹⁷ have been reported. But extensor indicis brevis

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replacing extensor indicis is reported only by El-Badawi et al.⁵. El-Badawi reported the EIB originating from lower end of radius and posterior aspect of fibrous capsule of wrist joint and joined with dorsal digital expansion of index finger. The tendon of ED to index finger was present along with EIB beneath extensor retinaculum. In our case EIB was originating from 4th compartment of extensor retinaculum and ligament over scaphoid and adjoining carpals while insertion was same as noted by El-Badawi et al.⁵.

The cause of enormous variability of EI remains obscure. In amphibians, digits are solely controlled by intrinsic muscles, an EDBM being situated on dorsum of manus. In humans however this muscle has disappeared in upper limb, its function being taken over by forearm muscles with long tendons of the digits. Most investigators believe that EDBM is atavistic, representing part of old extensor brevis, a throwback to intrinsic amphibian extensors due to failure of proximal migration of ulnocarpal elements of antebrachial muscle mass¹⁸. Presence of abnormal, additional muscles in 4th compartment of extensor retinaculum may lead to a condition called as fourth compartment syndrome manifested by chronic dorsal wrist pain. Pain is due to increased pressure within 4th compartment ultimately compressing posterior interosseous nerve directly or indirectly¹⁹.

Such muscle can present as suspected synovial cyst¹⁰, swelling over dorsum of hand with pain on exertion¹¹ or as a lesion of radialis dorsalis manus of ulnar nerve¹³.

During surgical reconstruction of Abductor pollicis longus (APL) tendon, the interposition of a tendon graft is considered the best method. Functional considerations make EI muscle best substitution for APL²⁰. Similarly for restoring opposition of thumb, in lesions of median nerve, opponens plasty is done using tendon of EI with good results²¹.

From review of literature it is evident that the occurrence of a short muscle of index finger in the dorsum of hand is common. Its significance in practicing hand surgery must be known to surgeons. It can not be foreseen, when found at random during surgery, and it may necessitate a modification of planning tendon transfers or grafting. So it is essential for surgeons to be aware of variations of muscle and possibility of presence of additional muscle or tendon or a short muscle replacing EI itself.

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