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Case Report

Absence of extensor indicis: A rare anatomical variant

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Abstract

Variations of the extensor group of muscles in the superior extremity are commonly reported. We are reporting a case of bilateral complete absence of extensor indices muscle. Variation of the extensor indices is not uncommon showing cases with two, three and four tendons going to index fingers have been reported by many workers. The cases with bilateral absence of this muscle are barely reported, incidence usually ranging from 0 to 1 %. In a single study a high frequency of 4% has also been reported.

Key Messages: extensor indicis, variation, clinical relevance

1. Introduction

The prehensile nature of the human hand is unique in the animal kingdom. The grasp of the human hand to do the precision work requires use of both long extensor and flexor tendons as well as short muscles of hand. The role of the thumb and index finger seems to be of foremost importance in performing these tasks. A vast variety of literature suggests that extensor tendons show considerable anatomical variations. Extensor indicis normally arises from the lower part of posterior surface of ulna and interosseous membrane and is inserted to the medial side of the first tendon of extensor digitorum. The complete absence of the extensor indicis muscle is reported earlier by very few authors [1&2]. However, single double and triple tendon of extensor indicis going to index finger have been reported repeatedly by many authors [3, 4,5,6,7 & 8].

Usually, two tendons are seen going to index finger i.e. the first tendon of extensor digitorum communis and tendon of extensor indicis lying on the deeper and medial aspect. Extensor digitorum communis splits into four tendons deep to extensor retinaculum, which diverge to enter the medial four digits. All these tendons are connected to each other by fibrous bands called juncturae tendinum. Tendon of extensor indicis when present is seen as independent tendon going to index finger and does not present with any connection to adjacent tendons.

2. Case Report

During the routine dissection of a normal male cadaver, extensor indicis muscle was seen missing from the dorsum of forearm and hand. The lower most muscle arising from posterior surface of forearm bones and Interosseous membrane were extensor pollicis longus and brevis. There were no traces of the extensor indicis muscle seen, along the course of the muscle. Only one tendon was seen going to index finger coming from extensor digitorum. The tendons of extensor digitorum were seen connecting normally with each other through juncturae tendinum.

Fig 1: Dissected forearm and dorsum of hand showing bilateral absence of extensor indicis muscle

Index figure received only one extensor tendon i.e 1st tendon of extensor digitorum

Fig 2: Dissected forearm and hand (Left)

a- Tendons of extensor digitorum, a1-first Tendons of extensor digitorum (Going to index figure)
b- Extensor policis longus,
c- Abductor pollicis longus and Extensor policis brevis,
d- Extensor carpi radialis,
e- Extensor carpi radialis lngus

Fig 3: Diddected forearm and dorsum of hand (Right)

a- Tendons of extensor digitorum a1- first Tendons of extensor digitorum (Going to index figure)
b- Extensor policis longus,
c- Abductor pollicis longus and Extensor policis brevis

3. Discussion

Embryologically, the extensor group of muscles develops from three parts, radial part developing Brachioradialis, Extensor Carpi Radialis Longus and Extensor Carpi Radialis Brevis muscles. Further, extensor muscles are divided into superficial and deep groups. Radial and Superficial group are stable and hardly presents with variations whereas, deep group is highly unstable and presents with evolutionary changes as a result of which variations are commonly noted[7] Variation of extensor indicis is rare including its origin, insertion or complete absence [9&10] In hand movements, thumb and index fingers are most commonly involved. The tendon of extensor indicis is the most commonly injured tendon in the extensor group and often used donor muscle for tendon transfer because of its independent muscle belly and tendon[11]. Extension of index finger can be performed either by extensor indicis or first tendon of extensor digitorum[12, 13 & 14]. Due to absence of the extensor indicis tendon, the independent extension movement of the index finger will be mildly compromised as the tendons of extensor digitorum are linked to each other by juncturae tendinum. Further independent extension movement of index finger can be achieved by excision of juncturae tendinum between index and middle finger [15].

4. Conclusion

A sound knowledge of extensor tendons of hand is important from the surgical point of view, specially the tendon of extensor indicis because of its use in tendon transfer and frequent involvement in hand injuries. Functionality of the index finger is not much compromised by the absence or removal of extensor indicis muscle. For the independent extension of index finger the juncturae tendinum between the tendons of extensor digitorum going to index and middle finger should be excised.

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