Accessory belly of the first lumbrical muscle of the hand

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Introduction

Lumbrical muscles in the hand play a vital role in precision movement of fingers. They originate from the tendons of the flexor digitorum profundus (FDP) and are inserted into the extensor expansions (EE) on the lateral side of the corresponding fingers. An anomalous origin of the lumbrical muscles in the forearm has the potential to cause compression of the median nerve in the carpal tunnel. There are previous reports describing such variations of attachments of these muscles. The knowledge of occurrence of such anatomical variations in the hand is very important to hand surgeons. However, such anomalies of lumbrical muscles have not been reported in Sri Lankan literature.

Case Report

An additional lumbrical muscle was found in an 80 year old male cadaver during routine dissection for student teaching. It was seen only in the right hand of the cadaver. This was an accessory muscle belly which took origin from the radial side of the flexor digitorum superficialis (FDS) tendon to the index finger, at the level of the proximal border of the flexor retinaculum. The accessory muscle belly (122 mm in length and 7 mm in width) was placed lateral to the first lumbrical and joined the with it before inserting to the EE of the index finger. The normal first lumbrical muscle took origin from the radial side of the FDP tendon for the index finger as expected (Figure 1). Both the first lumbrical muscle and the accessory muscle belly were innervated by a twig from the median nerve (Figure 2).

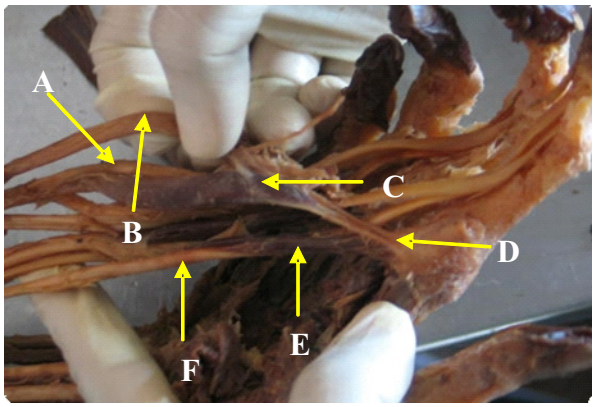

Figure 1: A (FDS tendon), B (Median Nerve), C (accessory lumbrical muscle), D (common tendon of the lumbrical muscle), E (1st Lumbrical muscle), F (FDP Tendon)

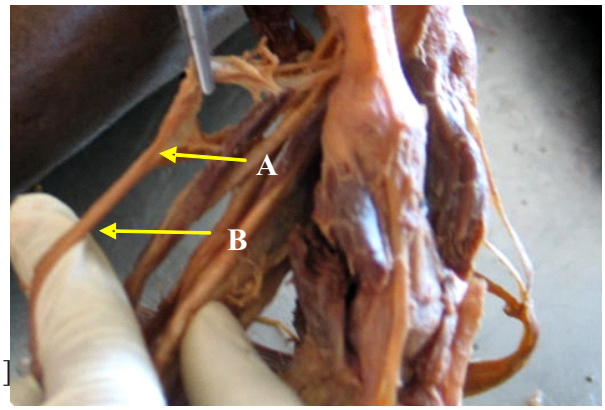

Figure 2: A (Nerve twig from median nerve to the accessory lumbrical muscle), B (Median nerve)

Discussion

There are four lumbrical muscles in the hand, each of which associated with one of the fingers. Usually they originate from the FDP tendons in the palm and pass dorsally around the radial side of the finger to be inserted in the corresponding EE.

The lateral two lumbricals are unipinate and are innervated by the median nerve. The medial two are bipinate and innervated by the ulnar nerve (1). These four muscles become unique by linking the long extensor tendons with long flexor tendons. There are various studies on lumbrical muscle of the hand to show the variations of morphology, attachment and clinical relevance of those abnormalities (2 - 8). There are previous reports describing variations in attachments of these muscles way back in 1866 (3). Russell and Sydney have divided these anomalies into four well defined groups in 1938 as mentioned below (3).

(1) Those cases in which one or more of the lumbricals present an abnormal or accessory head of origin.

(2) Those cases showing abnormal insertions, single or multiple, usually taking the form of additional tendinous slips passing to adjacent fingers.

(3) Cases showing an abnormal origin associated with an atypical insertion.

(4) Those cases showing numerical variation of muscles.

In this particular case had an additional muscle belly of the first lumbrical muscle took origin from the FDS tendon thus it belongs to the group one of the above classification. There are number of recent reports elsewhere on this type of anomalies of lumbrical muscles (3 - 7) and some of them claim that this sort of anomalies mainly seen in Caucasian population (5,7). One study describes the incident of this type of abnormal origin of lumbricals to be around 2.7% (4). In addition to the presence of anomaly there can be clinical implication due to compression of median nerve when the abnormal muscle is originated within or proximal to the carpal tunnel as in this case. Marta *et al* reported a case of carpel tunnel syndrome failed to respond for surgical management due to the presence of an accessory lumbrical muscle in the carpel tunnel (8). Moreover, the anomalous origin, length and volume of the lumbricals are important parameters for the outcome of operations on the carpel tunnel.

Therefore the knowledge of the presence of such anomaly is important not only for anatomist but also for clinician and hand surgeons who deal with various surgical procedures of the hand including carpel tunnel decompression.

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