

CASE REPORT

A rare origin of abductor pollicis longus

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Abstract

Abductor pollicis longus is known for its variations in the form of multiple tendons at its insertion. The present case reports about a variation in the origin of abductor pollicis longus (APL) which has not been cited in the medical literature until date. It has been shown that the intersection area where the APL and extensor pollicis brevis cross over the tendons of the extensor carpi radialis (ECR) tendons in the forearm can contribute to Intersection syndrome. This can be applied to the present variation where the two bellies of APL entrap the ECR tendons. An awareness of this unusual finding may be clinically relevant for surgical approaches in the forearm region.

Keywords: variant, abductor pollicis longus, origin, intersection syndrome.

Introduction

Awareness of variations in tendons of the hand and fingers is essential for appropriate diagnosis of certain neurological disorders. The present case reports about a variation in the abductor pollicis longus (APL). Abductor pollicis longus muscle takes origin from the posterior surface of radial and ulnar shaft as explained in standard anatomy books [1]. It is inserted to the radial side of base of first metacarpal bone as well as to the trapezium. The muscle has an important association with the carpometacarpal joint of the thumb. Hence, variations in APL tendon or muscle are clinically significant during re-constructive hand and thumb surgery. Abductor pollicis longus (APL) muscle is known to exhibit numerous variations in its pattern of insertions [2–5]. New anatomic and mechanical studies demonstrate the key support structures that must be duplicated by reconstructive surgical procedures if thumb stability is to be maintained [6]. The main purpose of this report is to illustrate the abnormal origin of the abductor pollicis longus muscle fibers, which has not been reported in the medical literature to the best of our knowledge.

Material, Methods and Results

A rare variation in the origin of the abductor pollicis longus muscle in a male cadaver was encountered during routine dissection in the Department of Anatomy. The muscle fibers were arising as two distinct bellies i.e. anterior belly (Ab) and posterior belly (Pb) in relation to the tendon of extensor carpi radialis longus (ECRL) tendon as shown in the Figure 1. The posterior belly as usual originated from the posterior surface of shaft of radius and ulna as well as from the interosseous membrane. The variant anterior belly originated from the lower part of lateral border of radius anterior to the tendon of ECR tendons. Both the bellies were separate but were partly connected by some thin muscle fibers

superficial to the tendon of ECR. At its insertion the anterior belly joined with the medial most tendon of posterior belly of APL (★) and inserted into the medial aspect of the base of first metatarsal bone and merged with abductor pollicis brevis. The posterior belly was inserted by dividing into eleven slender tendons into the usual site i.e. radial side of base of first metacarpal bone (Tn).

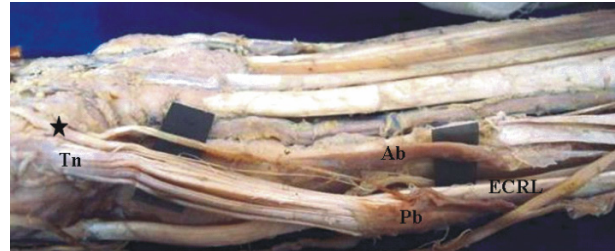


Figure 1 – Lateral aspect of the dissected forearm showing anomalous origin of abductor pollicis longus (APL). Ab, anterior belly of APL; Pb, posterior belly of APL; ECRL, extensor carpi radialis longus; Tn, multiple tendons of APL; ★, medial tendon of APL.

Discussion

Reports about variations in the origin of APL are not as frequent as about its insertion pattern. An additional belly was seen arising from the lateral aspect of the distal portion of the typical APL muscle just proximal to the formation of its tendon on left side of a male cadaver as reported by Vollala VR [7]. Fabrizio PA and Clemente FR report about an additional muscle belly arising from the lateral aspect of the distal portion of the typical abductor pollicis longus muscle [8]. The variant anterior belly of APL observed in the present case has not been cited previously in the medical literature to the best of our knowledge. It has been shown that the confining nature of the intersection area where the APL cross over the tendons of the ECR

longus and ECR brevis in the dorsolateral forearm can contribute to intersection syndrome [9–13]. Furthermore, the presence of additional bellies may be a contributing factor in the etiology of intersection syndrome. Surgical treatment of intersection syndrome usually involves decompression of the typical muscle bellies of the APL and EPB [12]. However, decompression may not be completely effective in cases where the APL2 is present and the retinacular-like structure is left intact to continue compression of the ECR longus and ECR brevis tendons [8]. This can be applied to the present case where the two bellies of APL embrace the ECR longus and brevis tendons.

However, variations in the pattern of insertion of the tendon of APL have been reported by many authors [14, 15]. Although duplication and triplication of APL tendons has been frequently reported [14, 15] a maximum of seven tendons of APL have been reported by Melling M *et al.*, for the first time [16]. The present case reports about the presence of eleven tendons in the posterior belly and an additional tendon from the anterior belly. According Melling M *et al.*, division of the tendons into several parts was observed to result in effective distribution of stress during thumb abduction. de Quervain's stenosing tendovaginitis is a pathological condition that could be caused by the presence of these supernumerary tendon slips [17]. The variations in the number of APL tendons and the corresponding osseofibrous canals have been reported to be involved in the etiology and subsequent decompression of de Quervain's syndrome [14]. These aberrant tendons are clinically important because their presence can cause persistent pain after surgical division of the first compartment of the extensor retinaculum to treat thumb inflammation. Many a times, lack of prior anatomical knowledge may lead to inadequate surgical decompression of de Quervain's syndrome [18]. Therefore, the present report is an attempt to provide precise knowledge of the variant APL tendon morphologies during reconstructive surgery of traumatized hands.

☐ Conclusions

The prior knowledge of possible existence of variation in the origin of APL, as in the present case, should be helpful to the surgeons and clinicians because

usually surgeons are exposed to these variations only during operation of the hand region. Furthermore, decompression of APL may not be completely effective for intersection syndrome when there is an additional belly of APL.

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