

A doubled palmaris longus muscle: case report

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During routine anatomical dissection of the left anterior forearm of an elderly female cadaver, two separate muscles having characteristics of palmaris longus have been observed. The lateral of the muscles had a typical palmaris longus composition – small proximal muscular belly and a long distal tendon continuing into the palmar aponeurosis. The second, medial muscle started with a thick tendon from the medial epicondyle of the humerus. Its muscular belly occupied the middle third of the forearm; in the lower third it turned into a short, broad tendon attached to the flexor retinaculum and to the proximal attachment sites of the thenar and hypothenar muscles. The clinical importance of this variation is due to the close relations of the distal tendons with the neurovascular structures in the anterior wrist.

Key words: palmaris longus, variation, clinical significance, entrapment

Introduction

Reports on variations of the muscles, arteries and nerves of the upper limb may have both academic and clinic relevance [11]. In the anatomical literature different variations of the palmaris longus muscle have been documented [1, 11, 12]. There are many clinical case reports presenting the significance of these muscular variations for traumatologists, plastic surgeons and neurologists [2, 3, 7, 8].

Herewith, we describe an interesting case of palmaris longus variation.

Case report

During routine anatomical dissection of the left upper limb of an elderly formol-carbol fixed Caucasian female cadaver, from the autopsy material available at the Department of Anatomy, Histology and Embryology of the Medical University of Sofia, an unusual muscular variation was found. After removal of the forearm fascia and presentation of the individual muscles from the superficial anterior group, we noted with surprise the presence of two separate muscles with characteristics of palmaris longus (Fig.1,2).

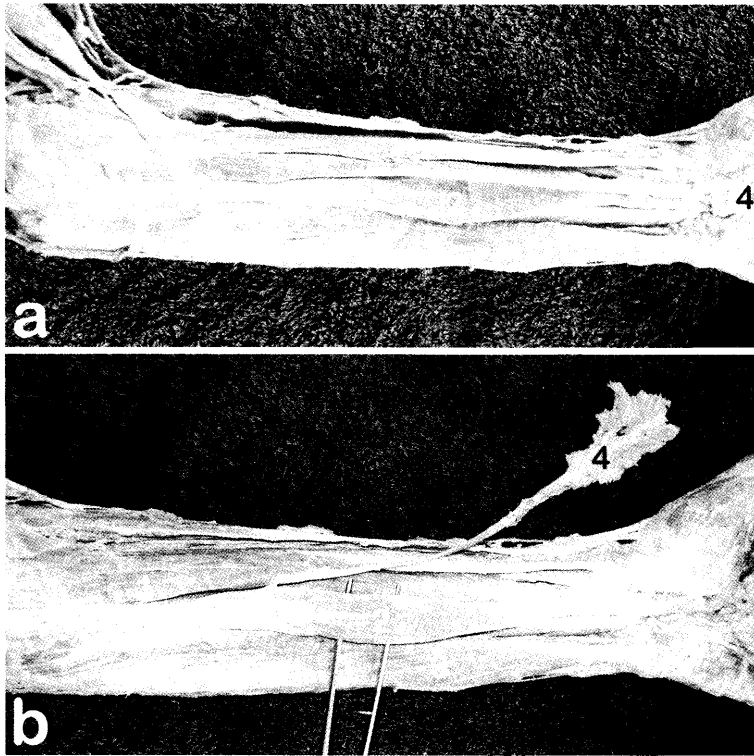


Fig. 1. Photographs of the reported variation of the palmaris longus in situ (a) and after cutting and retracting the palmar aponeurosis (b). Muscles – 1, lateral palmaris longus; 2, medial palmaris longus; 3, flexor carpi ulnaris.

The first muscle, located on the lateral side, had a small proximal muscular belly starting from the medial epicondyle of the humerus, which at mid-forearm turned into a long thin tendon continuing into the palmar aponeurosis. The second muscle, located on the medial side, started with a long thick tendon from the medial epicondyle of the humerus. Its strong muscular belly occupied the middle third of the forearm and was located slightly below and medial to the distal tendon of the lateral palmaris longus. In the lower third of the forearm, the muscle belly turned into a short, broad tendon, which was divided into several bundles attached to the flexor retinaculum and to the proximal attachment sites of the thenar and hypothenar muscles. These tendinous bundles arched over the median nerve and the ulnar artery and nerve at the canal of Guyon.

Discussion

The palmaris longus is probably the most variable muscle in the human arm and one of the most variable muscles in the human body [7, 8, 12]. The most common variations concerning this muscle are the following: absence (in around 10% of the individuals), presence of digastric muscle, reversed muscle, bifid reversed variation and duplication [7, 8, 10, 12]. There are also reports of variations in the origin and insertion of the palmaris longus [5].

In the clinical practice, the aberrant palmaris longus could be incidentally found during clinical examination without provoking any symptoms and may simulate a soft tissue tumor [10]. The clinical importance of the palmaris longus variations is mainly due to the close relations of its distal tendon with the neurovascular structures in the anterior wrist. In the literature, there are many reports of the median and/or ulnar nerve compression due to the existence of a variant palmaris longus [4, 7, 8, 10, 12]. Such patients usually present with swelling, reduction of the hand's muscular power, pain and numbness in the area of distribution of the compressed nerves [6, 9]. In addition, the palmaris longus is often considered as an ideal donor in reconstructive and plastic surgery and the knowledge of its variations is important to provide safe and successful surgical procedures [7]. This muscle could be used for tendon grafts in the replacement of the long flexors of the fingers, the flexor pollicis longus tendon, dorsal finger injuries involved with both soft tissue loss and extensor tendon defects [12]. It is also utilized as a simple static support in the treatment of facial paralysis, in digital pulley reconstruction, lip augmentation, and in various nerve palsies as a tendon transfer [7, 12].

In conclusion, the aberrant palmaris longus muscles, reported in this study, may cause entrapment neuropathies, cosmetics defects and functional disability, and may also play an important role in plastic and reconstructive surgery.

References

1. Coskun N, Sarikcioglu L, Donmez BO, Sindel M. Arterial, neural and muscular variations in the upper limb. *Folia Morphol (Warsz)* 2005; 64: 347-352.
2. Kaufmann RA, Patek CA. Pulley reconstruction using Palmaris longus autograft after repeat trigger release. *J Hand Surg Br* 2006; 31: 285-287.
3. Lin CH, Wei FC, Lin YT, Chen CT. Composite palmaris longus venous flap for simultaneous reconstruction of extensor tendon and dorsal surface defects of the hand-long-term functional result. *J Trauma* 2004; 56: 1118-1122.
4. Lisanti M, Rosati M, Maltinti M. Ulnar nerve entrapment in Guyon's tunnel by an anomalous palmaris longus muscle with a persisting median artery. *Acta Orthop Belg* 2001; 67: 399-402.
5. Macalister A. Additional observations on muscular anomalies in human anatomy (third series), with a catalogue of the principal muscular variations hitherto published. *Trans Roy Irish Acad* 1875; 25: 85-86.
6. Netsher D., Cohen V., Ulnar nerve compression at the wrist secondary to anomalous muscles: a patient with a variant of abductor digiti minimi. *Ann Plast Surg*, 1997, 39(6):647-651.
7. Sebastian SJ, Lim AY, Bee WH, Wong TC, Methil BV. Does the absence of the palmaris longus affect grip and pinch strength? *J Hand Surg Br* 2005; 30: 406-408.
8. Seyhan T. Median nerve compression at the wrist caused by reversed 3-headed palmaris longus muscle: case report and review of the literature. *Am J Orthop* 2005; 34: 544-546.
9. Simodynes E. E., Cochran R.M. 2nd, Anomalous muscles in the hand and wrist – reports of three cases, *J Hand Surg Am*, 1981, 6(6):553-554.
10. Turner MS, Caird DM. Anomalous muscles and ulnar nerve compression at the wrist. *Hand* 1977; 9: 140-142.
11. Wadhwa S, Vasudeva N, Kaul JM. A rare constellation of multiple upper limb anomalies. *Folia Morphol (Warsz)* 2008; 67: 236-239.
12. Zeybek A, Gürünlüoğlu R, Cavdar S, Bayramiçli M. A clinical reminder: a palmaris longus muscle variation. *Ann Plast Surg* 1998; 41: 224-225.