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Case Report

An unusual duplication of the palmaris longus muscle

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Abstract

The palmaris longus muscle is one of the most variable muscles in the human body. We describe an unusual duplication of this muscle that was found in a female cadaver in the course of a medical school anatomy dissection. The typical palmaris longus, which originates from the medial epicondyle of the humerus and inserts on the palmar apnoneurosis, was replaced by a main muscle that passed deep to the flexor retinaculum, and inserted onto the head of the second metacarpal and an accessory muscle that originated from the distal radius and inserted into the palmar aponeurosis. This variant of the muscle was found bilaterally. An understanding of the variations in the palmaris longus muscle is important, as tendinous portions passing deep to flexor retinaculum can cause median nerve compression and the muscle is often utilized for tendon transfers.

Key words [palmaris longus] [accessory muscle] [muscle variation] [unusual muscle] [duplication]

Introduction

The palmaris longus muscle is one of the most variable muscles in the human body [1] . It usually arises from the common flexor origin at the medial epicondyle of the humerus, and from the intermuscular septum. It inserts into the central palmar surface of the palmar aponeurosis. The palmaris longus is an important muscle for hand surgeons as it is commonly used in tendon graft and tendon transfer procedures. The muscle is typically straightforward to access and can be sacrificed without significant functional deficits [2, 3] . Sometimes, however, harvesting of the muscle can be complicated by an absence of the muscle or by any number of anatomical variations. Its variations include complete agenesis, duplication or triplication, variations in the location and shape of its muscle belly, aberrant attachments, and accessory slips [1] . Here we report a cadaver with an aberrant duplicated palmaris longus muscle with an unusual insertion and a separate accessory muscle belly with a variant origin.

Case Report

Variations in the anatomy of the palmaris longus muscle were observed during a gross anatomy dissection of both upper extremities of a cadaver of 74-year-old female who died of small cell lung cancer. There was no known history of upper extremity symptoms. The same anatomical variations were found in both upper extremities. The main palmaris longus muscle had its normal origin at the medial epicondyle of the humerus as it originated from the common flexor origin and had a normal centrally placed muscle belly. The insertion of the distal tendinous portion was unusual in that it ran deep to the flexor retinaculum and inserted into the head of the second metacarpal. An accessory slip was also found which originated from the lateral edge of the radius, about two thirds of the way from the elbow. This accessory slip began proximally as the muscle belly originated from the radial aspect of the metaphysis of the distal radius, and traveled distally to form a tendinous structure extending towards the main muscle. The accessory slip had a typical insertion into the palmar aponeurosis and did not contribute to wrist flexion when pulled (Figures 1, 2). The flexor carpi radialis muscle was present in its usual location on both sides.

Discussion

In hand reconstructive surgery, the palmaris longus muscle is a commonly used donor tendon because of its length, diameter, availability, and functional redundancy [2, 3] . It is also one of the most variable muscles in the upper extremity [4] . The most common variations are: duplication, reversal, agenesis, and abnormal placement of the tendinous portion of the muscle [1] . Two cases of epifascial accessory slips have been described [5, 6] and reports on normally oriented

duplications are also present [7] . A case of three-headed reversed palmaris longus muscle has also been reported [8] . An accessory slip has also been described to cause ulnar nerve compression syndrome at the wrist [9] .

Because it is not essential for normal function of the hand, the palmaris longus muscle is a preferential donor tendon for tendon transfers. It is also an anatomic landmark for surgery around the wrist. In our case, accessory palmaris longus muscles were found in both upper extremities during a gross anatomy dissection in a cadaver with no known history of upper extremity symptoms. The normally originating muscle inserted in the head of second metacarpal, whereas the accessory muscle originated distally on the radius and inserted in the regular site of insertion of a normal palmaris longus muscle. This accessory muscle slip would not be palpable on a clinical examination and did not appear to have any contribution to wrist flexion. The main slip, which passed deep to the flexor retinaculum, can be a potential cause of median nerve compression as described by Brones [10] and Lorenzo [11] . Fatah [12] described a palmaris profundus tendon passing deep to the flexor retinaculum, but was associated with an absent palmaris longus in one arm and a normal one in the other.

To the best of our knowledge, the variation of the palmaris longus muscle described in this report has not been previously described. It is known that the palmaris longus muscle can be extremely variable and a surgeon's appreciation of such different variations in its anatomy is paramount. A keen awareness of these variations is important to remember while dissecting for tendon transfer procedures and when evaluating and treating for median nerve compression.

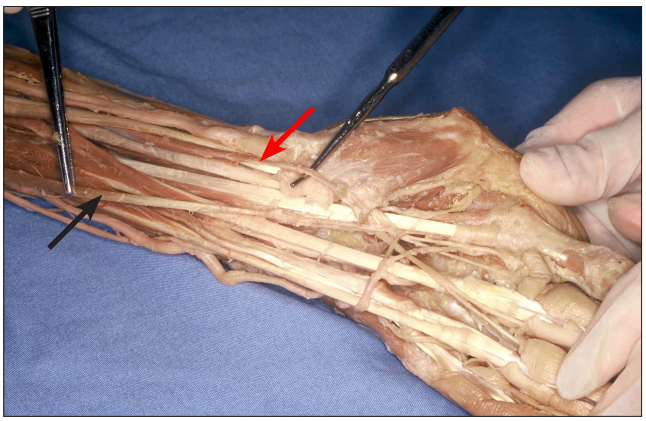

Figure 1. View at dissection. The *palmaris longus muscle (**black arrow**)* and its *duplicated accessory muscle (**red arrow**)* are shown after dissection of the arm and hand and reflecting the flexor retinaculum.

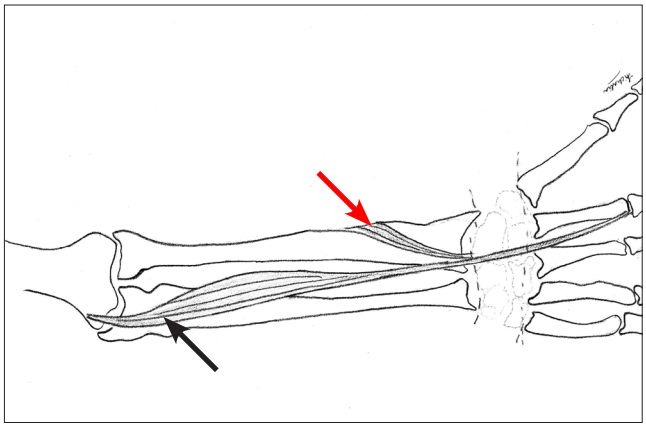

Figure 2. Schematic depiction. The *palmaris longus muscle (**black arrow**)* is shown originating from the medial epicondyle and inserting into the head of the second metacarpal bone. The *duplicated accessory muscle (**red arrow**)* is seen originating from the lateral edge of the radius and inserting into the palmar aponeurosis.

References

[1] Reimann AF, Daseler EH, Anson BJ, Beaton LE. The palmaris longus muscle and tendon, a study of 1600 extremities. Anat Rec. 1944; 89: 405–505.

[2] White WL. Restoration of function and balance of the wrist and hand by tendon transfers. Ann Plast Surg. 1984; 12: 547–568.

[3] Troha F, Baibak GJ, Kelleher JC. Frequency of the palmaris longus tendon in North American Caucasians. Ann Plast Surg. 1990; 25: 477–478.

[4] Bozkurt MC, Tagil SM, Ersoy M, Tekdemir I. Muscle variations and abnormal branching and course of the ulnar nerve in the forearm and hand. Clin Anat. 2004; 17: 64–66.

[5] Tiengo C, Macchi V, Stecco C, Bassetto F, De Caro R. Epifascial accessory palmaris longus muscle. Clin Anat. 2006; 19: 554–557.

[6] Rubino C, Paolini G, Carlesimo B. Accessory slip of the palmaris longus muscle. Ann Plast Surg. 1995; 35: 657–659.

[7] Pai MM, Prabhu LV, Nayak SR, Madhyastha S, Vadgaonkar R, Krishnamurthy A, Kumar A. The palmaris longus muscle: its anatomic variations and functional morphology. Rom J Morphol Embryol. 2008; 49: 215–217.

[8] Yildiz M, Sener M, Aynaci O. Three-headed reversed palmaris longus muscle: A case report and review of the literature. Surg Radiol Anat. 2000; 22: 217–219.

[9] Spritzendorfer E. [An anatomical variation as an unusual cause of the ulnaris compression syndrome]. Handchirurgie. 1979; 11: 177–179. (German)

[10] Brones MF, Wilgis EF. Anatomical variations of the palmaris longus, causing carpal tunnel syndrome: Case reports. Plast Reconstr Surg. 1978; 62: 798–800.

[11] Sanchez Lorenzo J, Canada M, Diaz L, Sarasua G. Compression of the median nerve by an anomalous palmaris longus tendon: A case report. J Hand Surg Am. 1996; 21: 858–860.

[12] Fatah MF. Palmaris profundus of Frohse and Fränkel in association with carpal tunnel syndrome. J Hand Surg Br. 1984; 9: 142–144.