

Palmaris Longus - Upside Down!!!!

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Case Report

Abstract: Palmaris longus muscle is a very well known muscle for variations. It can be absent, digastric, duplicated, having proximal tendon. These variations are important in grafting surgeries like tendon transfer, ptosis correction, lip augmentations which use the muscle as a graft. Here, we reported a rare variation of palmaris longus in the form of proximal tendon, middle belly and distal tendon which is continuous with palmar aponeurosis. In the same cadaver, plantaris muscle also dissected to note the variation.

Keywords: Palmaris longus, Variation, Tendinous origin, Distal belly, Tendon Graft.

Introduction

The Palmaris longus is one of the superficial flexor muscles of the forearm. Palmaris longus tendon is often considered the ideal donor for various grafting surgeries e.g. tendon grafting, ptosis correction, lip augmentation as it serves the requirement of length and diameter for grafting surgeries and it can be used without causing any functional deformity. This muscle takes origin from medial epicondyle of humerus, antebrachial fascia and inters muscular septa. Then there is short triangular belly which end in long tendon which is continuous with palmar aponeurosis. This is the most common presentation of this muscle. But numerous variations have been reported in the presentation of palmaris longus e.g. agenesis of muscle, digastric muscle, tendinous split, hypertrophied belly up to the wrist, distal belly-proximal tendon etc. These variations are important for surgeons in grafting surgeries. So, here we reported a rare variation of proximal tendon, thick muscle belly in middle and again distal tendon.

Material and Method

During routine dissection of 65 years old male cadaver in department of anatomy a variation was noted. The superficial flexor muscle of the forearm were dissected and photographed. In the same cadaver plantaris muscle from lower limb also dissected to note variation.

Case Report

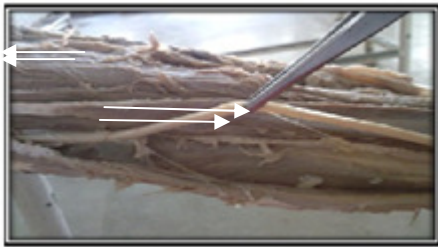
After dissecting superficial flexors, we started identification from lateral to medial side. First muscle is pronator teres, then flexor carpi radialis (FCR). Medial to FCR, we searched for Palmaris longus in its usual presentation i.e. a muscle having short belly and long tendon but instead of this we found a large muscle. We considered this muscle as flexor carpi ulnaris (FCU). With further dissection we found one more muscle medial to the large muscle. Because of this we then searched for ulnar vessels and nerve as they ran in between PL and FCU. With this we came to know that the large muscle found must be Palmaris longus. To confirm the identification we traced the nerve supply to FCU as it was supplied by ulnar nerve and other superficial flexor by median nerve. This confirmed that the large muscle found on both side was palmaris longus. We then traced this unusual PL muscle proximodistally to note the details. This muscle took origin from medial epicondyle of humerus by common flexor tendon and also from antebrachial fascia. But the origin was in the form of a slender tendon which constituted upper 1/4th of the muscle (2.5 cm.). From this tendon a muscle belly started and formed next 1/4th part of muscle (3.5 cm.). Again from the belly, tendon began on medial aspect which continued up to wrist, passed superficial to flexor retinaculum and inserted in palmar aponeurosis. But on lateral aspect lower 3/4th of the muscle was in the form of muscle belly which was continuous with palmar aponeurosis. Thus this unusual palmaris longus was made up of tendon in upper 1/4th, muscle belly in middle 1/4th and tendon in lower 1/2 on medial aspect whereas tendon in upper 1/4th and muscle belly in lower 3/4th on lateral aspect side on both. Plantaris dissected in the same cadaver is found to have usual presentation i.e. short belly and long tendon on both sides.



Photograph 1: Showing Superficial Flexor Muscles of Forearm



Photograph 2: Showing ulnar vessels and nerve running in Between PL(lateral side) and FCU (Medial side)



Photograph 3: Showing nerve supply of FCU by a branch arising from ulnar nerve



Photograph 4: Usual presentation of palmaris longus having shorttriangular belly and the long tendon



Photograph 5: Showing unusual Palmaris longus medial view Showing tendinous origin (upper 1/4th), muscle belly (middle 1/4th) and tendinous insertion (lower 1/2)



Photograph 6: showing unusual Palmaris longus lateral view showing muscular belly in lower 3/4th and tendon in upper 1/4th

Discussion

Palmaris longus is one of the superficial flexor muscle of the forearm. It takes origin from medial epicondyle of humerus as a fleshy belly and forms a long slender tendon which passes superficial to flexor retinaculum and becomes continuous with palmar aponeurosis. But muscle is believed to be functionally redundant muscle and found to have variations very often. It is the muscle of choice for various grafting surgeries e.g. tendon transfer, ptosis correction, lip augmentation and its variations becomes important for these surgeries. Following authors have also reported variations in palmaris longus muscle

1. Reimann *et al* (1944)^[3] studied 1600 cadaver extremities. The incidence of agenesis was 12.9%. The overall incidence of variations was up to 9% excluding agenesis. The author found that the variation in position and form constituted one-half of these cases, where as accessory slips and substituted structures accounted for 32.6% of the cases. They observed the muscle belly may be central, distal or digastrics in position. They

may also be completely muscular from origin to insertion or only a fibrous strand

2. Hollinshead (1956)^[1] reported variations in the form of central or distally placed belly, duplication or splitting of tendon.
3. Williams *et al* (1995)^[6] found variations in the form of proximal tendon; muscle in the form of a tendinous strand, muscle may be digastric or duplicated.
4. Vanderhooft E. (1996)^[7] reported relationship between palmaris and plantaris muscle and found the incidence of variation in both muscle is 2.2% Oommen A. (2002)^[2] found reversal in the muscle-tendon proximodistal orientation on both side.
5. Thejodhar P. (2008)^[5] found that palmaris longus muscle on left side was muscular from its origin right up to the wrist and then continued as the palmar aponeurosis.
6. Rawat J.S. (2010)^[4] also found reversal in the muscle-tendon proximodistal orientation on left side intraoperatively.

In present case, we found a unusual palmaris longus having tendinous origin (upper 1/4th) and tendinous insertion (lower 1/2) with muscle belly in middle 1/4th on medial aspect. Whereas on lateral aspect it has tendon in upper 1/4th and muscle belly in lower 3/4th. So, there is reversal of muscle-tendon proximodistal orientation with proximal and distal tendon and muscle belly in middle on medial side and proximal tendon and distal belly in lateral side. Thus this is an uncommon variation reported by us which is not reported previously.

Conclusion

In present case also we found reversal in the muscle-tendon proximodistal orientation on both side with thick muscle belly. With this we believe that every surgeon must be aware of the variations, since this otherwise an unimportant muscle, provide a very useful graft for various grafting surgeries such as tendon graft, lip augmentation, ptosis correction etc. Secondly, such a hypertrophied palmaris longus can compress median nerve giving rise to symptoms and signs of median nerve compression.

Conflicts of Interest The authors declare that there are no conflicts of interest.

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