

Case Report:

Duplication of Palmaris longus muscle: a case report

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Abstract:

The palmaris longus muscle (PL) is located in the superficial layer of the anterior compartment of the forearm. It has a small belly arising from the medial epicondyle of the humerus, and its long thin tendon inserts into the palmar aponeurosis in the hand. The muscle is innervated by median nerve (C7,C8).The muscle exhibits significant anatomical variance compared with other muscles of the upper extremity. The most frequent variation is complete absence of the muscle, but a number of other variations exist. These variations include reversed, duplicated, bifid, or hypertrophied palmaris longus muscles. Many authors have reported the variations in case reports and described them using their own terms. During a routine anatomical dissection for medical students, we found duplicate palmaris longus muscle.

Key words:Palmaris longus,duplication

Introduction:

Palmaris longus is often described as one of the most variable muscles in the human body and is phylogenetically classified as a retrogressive muscle i.e. a muscle with a short belly and a long tendon^[1]. The palmaris longus muscle (PL) is located in the superficial layer of the anterior surface of the forearm. It has a small belly arising from the medial epicondyle of the humerus, and its long thin tendon inserts into the palmar aponeurosis in the hand. The muscle is innervated by median nerve(C7,C8). The most frequent variation is complete absence of the muscle, but a number of other variations exist. These variations include reversed, duplicated, bifid, or hypertrophied palmaris longus muscles. The palmaris longus is also commonly utilized landmark during volar approaches to the wrist and forearm. The tendon may be readily visualized in individuals with normal anatomy by bringing

the tips of the thumb and the small finger together while actively flexing the wrist joint. The palmaris longus muscle is commonly used for various reconstructive surgeries because it is easily accessible, it is adequate in length and diameter, and the absence of the muscle does not compromise flexion or any other motion at the wrist^[2,3]. Therefore, knowledge of anatomical variation of Palmaris longus muscle is imperative to surgeons as well as anatomists.

Case Report:

During the routine undergraduate dissection of abdomen of a 52-year-old male cadaver in the Department of Anatomy, NIMS Medical College, Jaipur we found duplication of Palmaris longus muscle on right side in 52 year old male cadaver (figure 1). Left forearm had normal variant of Palmaris longus.

Both the bellies of the duplicated muscle were proximal and their tendons were distal. Both

muscles were taking origin from medial epicondyle with common flexor origin ,the insertion usual tendon was to the apex of

palmer aponeurosis and insertion of the accessory tendon was to the flexor retinaculum(figure 1,2).

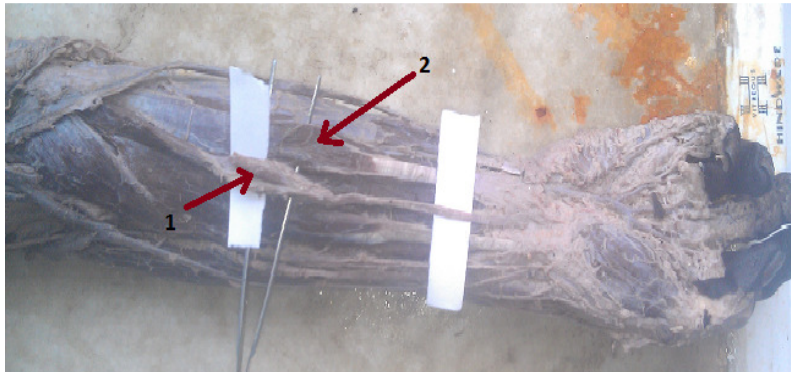


Figure 1:showing duplication of Palmaris longus,(1) Palmaris longus (2) duplicate Palmaris longus

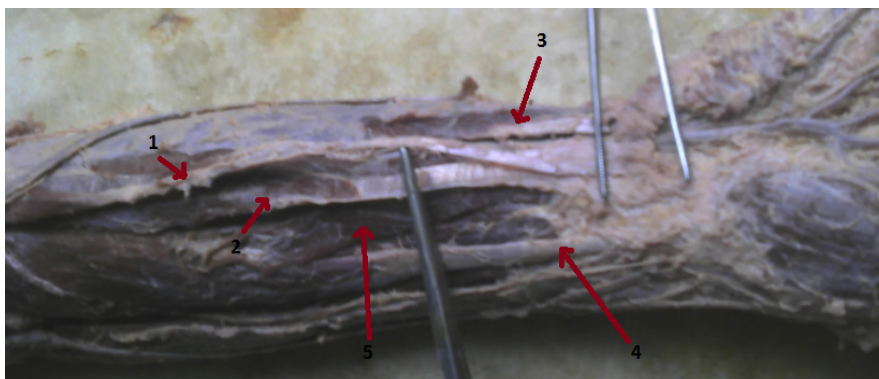


Figure:2 showing muscles of superficial layer of anterior compartment of forearm:1.Palmaris longus 2.duplicate Palmaris longus 3.flexor carpi ulnaris 4.flexor carpi radialis 5.flexor digitorum superficialis

Discussion:

The variation of the PL was classified by Reimann et al. (1944) as follows: complete agenesis, variation in the location and form of the fleshy portion, aberrancy in the attachment at either extremity, duplication or triplication, accessory slips or substitutions of similar form or position^[4].

Absence of Palmaris longus has been reported in the literature in 11.2% of arms^[5].

Variation in the insertion of Palmaris longus muscle has been widely described, The muscle may get inserted into the fascia of forearm, thenar fascia, hypothenar fascia,pisiform bone or scaphoid bone^[6] or into the tendon of flexor carpi ulnaris^[7].

Flexor muscles of forearm develop from the flexor mass,which subsequently develops in to two layers, superficial and deep.The deep layer give rise to the flexor digitorum superficialis,

flexor digitorum profundus and flexor pollicis longus. The superficial layer of flexor mass give rise to pronator teres, flexor carpi radialis, Palmaris longus and flexor carpi ulnaris^[8]. The embryological bases of the present variation can be explained due to the additional cleavage of the superficial layer of the forearm flexor mass during development.

Palmaris longus muscle is an important graft material for various cosmetic and reconstructive surgeries like lip augmentation, repair of Tendo Calcanei, auto graft for ruptured extensor tendons, acute thenar injury-amitiz opponensplasty^[9]. Ultra sound or MRI studies can be used to assess for Palmaris longus variations in patients who are to undergo tendon transfer procedures, carpal

tunnel release or Guyon's canal release or who have had previous failed nerve releases^[10].

Conclusion:

The normal palmaris longus muscle is functionally insignificant in human beings—although there is no doubt regarding its utility in various reconstructive surgeries. All hand surgeons should be familiar with the potential anatomic variations of the palmaris longus muscle, not only because of the utility of the Palmaris longus tendon as a valuable conduit in surgical procedures but also for the rare cases in which early recognition of the variant muscle can help avoid repetitive, unsuccessful surgical exploration or other nontherapeutic measures. The present variation may be helpful for surgeons during tendon graft surgeries.

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