



An Observational Study on Cadaver to Elicit the Variability of Palmaris Longus Muscle in Either Sexes

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ABSTRACT:

Palmaris longus, a superficial flexor of the forearm, converges into a long flattened tendon in the middle of the forearm, crosses the wrist superficial to flexor retinaculum and terminates into a flat palmar aponeurosis. A few fibres interweave with the transverse fibres of the flexor retinaculum. Here we study variant patterns of Palmaris longus with bifurcated tendons and with anomalous insertion to the flexor retinaculum along with its normal continuation as palmar aponeurosis and absence of palmaris longus in another cadaver. In this study, we discuss the relevance of embryogenesis and clinical importance of such variation. Aims and Objective: To determine the incidence of absence and variant pattern of palmaris longus muscle. Materials and Methods: In the present study, fifteen embalmed cadavers (30 upper limbs) were dissected during routine MBBS demonstration classes in the department of Anatomy of KPCMCH. Result: Among 30 upper limbs, we found one upper limb with absence of palmaris longus muscle (3.33%) and in another cadaver, bitendinous insertion of palmaris longus muscle (3.33%). Conclusion: The knowledge of palmaris longus insertion is very important in tendon transfer surgeries and agenesis of palmaris longus is also an important hereditary finding.

Key words: Bitendinous Palmaris longus, Anomalous insertion, Absence of Palmaris longus, Tendon graft, Agenesis

I. INTRODUCTION:

The 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. Muscle with short belly and a long tendon)(1). The palmaris longus is a slender fusiform muscle medial to the flexor carpi radialis muscle, and arises from the medial epicondyle by the common flexor tendon, the

adjacent intermuscular septa and the antebrachial fascia. Its long slender tendon passes in front of the flexor retinaculum and is continuous with the central part of the palmar aponeurosis(2).

Tendon grafts are frequently needed in reconstructive surgery of the hand. Most surgeons agree that the palmaris longus tendon is the first choice as a tendon donor because it fulfils the necessary requirement in length, diameter and availability and can be used without resulting in any functional deformity. The palmaris longus tendon is often considered the ideal donor of tendon grafts for replacement of long flexors of the fingers and thumb. The superficial position of the palmaris longus and its vestigial nature are other important positive points for its choice as a tendon donor(3).

In vertebrates, the palmaris longus is found only in mammals and is best developed in those where the forelimb is used for ambulation. The palmaris longus is variably absent in higher apes such as chimpanzees and gorillas. In humans, the absence of the palmaris longus appears to be hereditary, but its genetic transmission is not clear(3).

Herein, we study an interesting variation in the insertion of the palmaris longus tendon.

II. MATERIALS AND METHODS:

The present study was carried out on thirty upper limbs from fifteen embalmed cadavers of both sexes of different ages during routine dissection for teaching undergraduate students in the department of Anatomy, KPC Medical College, Kolkata over three years. In this respect, flexor aspect of arm, forearm including palm were dissected following standard dissection techniques. All the muscles of forearm were exposed. Palmaris longus muscles were isolated and carefully observed. Any variations regarding their origine, course, insertion, nerve supply, relation with



neighboring structures were studied. Photographs of observed relevant variations were taken. Then embryological basis and clinical importance of such variation were stressed upon. Finally, results were compared with other similar type of studies.

III. RESULTS:

Long slender tendons of palmaris longus muscles pass in front of the flexor retinaculum and are continuous with the central part of the palmar aponeurosis in all cases examined. However, in one case on left upper limb of an approximately 60 year-old female cadaver, we came across the following unusual findings:

The palmaris longus tendon bifurcated toward the insertion (3.33%). The lateral tendon passed over the flexor retinaculum, merged with apex of the flattened palmar aponeurosis. The medial tendon was relatively thin, passed deep to flexor retinaculum and fanned out to merge with transverse tendinous fibres of flexor retinaculum. In another male cadaver, palmaris longus muscle was absent in left forearm (3.33%).

IV. DISCUSSION:

Pai MM et al¹ found absence of palmaris longus tendon in four cases among 60 limbs in his study (6.67%) where Sharma DK et al found absent palmaris longus in 65 cadavers among 400 cases (16.25%)³. In our cadaveric study, we have found one upper limb with absence of palmaris longus among 30 cases (3.33%).

According to Park MJ et al⁵, the incidence rate of agenesis of palmaris longus tendon is 2% to 23%.

Natsis K et al in his case report found one fleshy palmaris longus muscle which splits into two tendons near its insertion, thicker one towards flexor retinaculum and thinner one towards palmaris longus.⁴

In our study, we also found bifurcation of the tendon of palmaris longus near its insertion though the thinner one passed beneath the flexor retinaculum for blending and thicker one inserted in palmar aponeurosis.

Bergman RA et al⁷ reported bifurcation of palmaris longus tendon in middle of the forearm and thinner one get inserted in flexor retinaculum and superficial thicker tendon divided into three slips where central tendon among them continued with the apex of palmar aponeurosis.

Patel RN et al in his study, found duplication of palmaris longus muscle.⁸ The main tendon inserted into palmar aponeurosis and the accessory tendon inserted within flexor

retinaculum. Whereas Paraskevas G et al reported two distinct palmaris longus muscle.⁹

Raimann A et al did a cadaveric study among 1600 cases and found aberrant palmaris longus in 530 cases.¹⁰

Turner MS et al found ulnar nerve entrapment due to palmaris longus aberration in his study¹¹ whereas Alshaham AA et al examined 253 subjects by clinical testing and found V shaped palmaris longus tendon in two cases.¹²



V. CONCLUSION

Though minor differences have been observed between past and present study, knowledge of present study highlighting anatomical variant of palmaris longus muscle seemed to be relevant and clinically noteworthy and it would definitely supplement the understanding of muscular variations of flexor compartment of upper limb.

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