



ANOMALOUS ORIGIN OF PALMARIS LONGUS MUSCLE – CASE REPORT

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ABSTRACT

Palmaris longus is one of the most variable and most superficial flexor muscles of the forearm. Its absence appears to be hereditary but genetic transmission is not clear. An understanding of its variations is useful as it is often used as tendon graft and for tendon transfer as well as in other reconstructive procedures like ptosis correction, lip augmentation and management of facial paralysis. Therefore, all possible variations in the important muscle should be well known. We report here a variant pattern of origin of palmaris longus, and its probable significance. So, any variation of the palmaris longus is gaining importance as it is becoming very popular amongst graft material for reconstructive surgeries. During routine dissection of the flexor compartment of the forearm on the right side, we found variation in the origin of palmaris longus muscle. However, similar variation was not observed on the contra-lateral side. Knowledge of this variation is important not only for anatomist but also for surgeons, because of its close relation to the median nerve. Therefore, an attempt has been made to highlight its clinical significance.

INTRODUCTION

Palmaris longus has a short belly and a long tendon; it is classified phylo-genetically as a retrogressive muscle. In vertebrates it is found only in mammals and is best developed in those where the forelimb is used for ambulation. Palmaris longus is a slender, fusiform muscle medial to flexor carpi radialis. It springs from the medial epicondyle of the humerus by the common tendon, and from adjacent intermuscular septa and deep fascia. It converges on a long tendon, which passes superficial to the flexor retinaculum. It lies between flexor carpi radialis laterally and flexor carpi ulnaris medially. Median nerve, at the level of wrist lies between its tendon and flexor carpi radialis.

A few fibres leave the tendon and interweave with the transverse fibres of the retinaculum, but most of the tendon passes distally. As the tendon crosses the retinaculum it broadens out to become a flat sheet which becomes incorporated into the palmar aponeurosis. Palmaris longus is often absent on one or both sides. If the wrist is flexed against resistance, the taut tendon of

Palmaris longus will be seen in the midline of the flexor wrist crease as the tendon passes superficial to the flexor retinaculum [1].

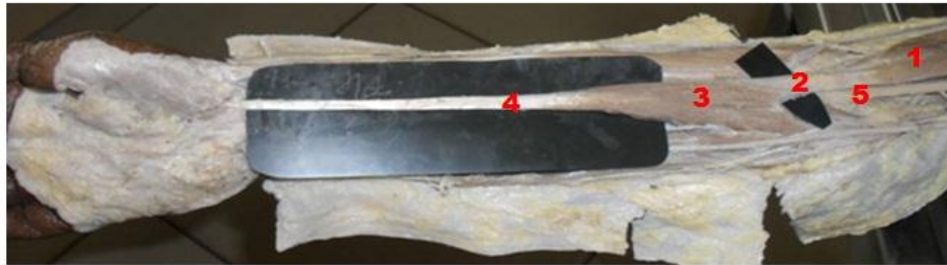
Case report

During routine dissection of cadavers for undergraduate medical students, we detected variation in the origin of palmaris longus muscle, on the right side of a middle aged male embalmed cadaver. This anomalous muscular slip was found arising from the bicipital aponeurosis. Just below the origin this anomalous slip joined the normal palmaris longus fibres, in front of the median nerve at an acute angle. However the insertion was found to be normal. Following the fine dissection, this anomalous muscular slip of origin of palmaris longus was photographed. However, similar variation was not observed on the contra-lateral side (Fig. 1). Patients with such variations may be asymptomatic. Our aim is to contribute to existing knowledge of the variations and explaining their morphological and clinical significance. The details of this variation and its clinical significance are discussed herein.



Figure 1

1. Biceps brachii
2. Bicipital aponeurosis
3. Palmaris longus
4. Tendon of palmaris longus
5. Median nerve



DISCUSSION AND CONCLUSION

This is probably the most variable muscle in the body. It may be absent, more often in the females and on the left side in both sexes. Palmaris longus variations have been classified as (a) complete agenesis, (b) variation in location and form of its fleshy part, (c) aberrancy of attachment at its origin and insertion, (d) duplication and triplication, (e) accessory slips and (f) replacing elements of similar form or position. The muscle shows equal variations in its origin and insertion. The muscle may arise from the medial intermuscular septum, the biceps or brachialis, the fascia of the forearm proximally or one of the neighboring muscles, the coronoid process, or the radius [2].

In a series of 155 subjects (310 limbs), it was absent in 12.6% of all limbs; thus, it was absent on both sides in 7.7% of subjects, absent only on the right, in 4.5%, and absent only on the left in, in 5.2%. In a series of 800 living forearms the palmaris longus was determined as absent more frequently in the female and on the left side in both sexes; bilateral absence was commoner than unilateral absence. It may be well developed or reduced to a tendinous band. The belly of the muscle may lie in the distal instead of in the proximal part of the forearm. It may be digastric. It may be fused with neighboring muscles. It may arise from the medial intermuscular septum of the arm or from the bicipital aponeurosis, from the radius, from the coronoid process, from the radial or ulnar flexor, or from the flexor superficialis muscles. The tendon may terminate in the fascia of the forearm, the nar eminence, the carpus or the abductor of the thumb. The muscle may be partly or wholly doubled [3]. Ethnic variations in the prevalence of the absence of the palmaris longus tendon are well known. Studies have also attempted to correlate its absence with other anatomical anomalies. The prevalence of the unilateral absence of the palmaris longus tendon in an Indian population is comparable to the western population but a bilateral absence is significantly less. In patients with

an absent palmaris longus tendon, the flexor digitorum longus of the little finger is weak, especially in males. The presence of an anomalous superficial palmar arch was more frequently observed when the palmaris longus tendon was absent; therefore, the absence of palmaris longus might be a predictor of the pattern of the superficial palmar arch. It has been postulated that an absence of the plantaris may be associated with the agenesis of the PL tendon. However, most of the studies failed to demonstrate any association between the presence (or absence) of the PL tendon and the plantaris. One advantage of the PL tendon is that it protects the median nerve which passes deep into it. In the absence of the PL tendon, the most superficial structure in the wrist is median nerve, which is at risk of injury during trauma and surgical incisions. The association between the absence of the palmaris longus and other anatomical structures like plantaris and the superficial palmar arch anomalies needs further multicentric studies [4].

Injury to the distal triceps tendon is uncommon and can be difficult to diagnose, especially when a partial rupture or tear occurs. The treatment of a complete rupture of the distal triceps tendon is repair or reconstruction, whereas the management of a patient with a partial triceps rupture is related to the pain, functional deficit, and expectations of the patient. In both patients, surgical reconstruction of the injured tendon was accomplished by using ipsilateral palmaris longus autograft [5].

In the development of the forelimb as a prehensile organ, its function has been taken over by the intrinsic muscles of the hand and the palmaris longus has become degenerate. The palmaris longus belly is largely replaced by tendon, and the degenerated distal tendon of the palm has become the palmar aponeurosis, which retains the five distal slip of attachment. Few case reports of hypertrophy of palmaris longus are proved to produce compression neuropathy of the median nerve [6].



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