Variation in the insertion of the palmaris longus tendon

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ABSTRACT The palmaris longus is harvested as a tendon graft in various surgical procedures. We herein report the variations in the insertion of the palmaris longus tendon. During a routine dissection, a rare variation in the insertion of the palmaris longus tendon was observed. In the left forearm, the palmaris longus tendon bifurcated, while in the right forearm, the palmaris longus tendon trifurcated, giving rise to an accessory muscle, which passed superficial to the ulnar artery and ulnar nerve. The accessory muscle was supplied by a deep branch of the ulnar nerve, and the ulnar artery was observed to be tortuous. During reconstructive surgeries, surgeons should bear in mind the accessory muscle. Also, since the palmaris longus muscle provides a very useful graft in tendon surgery, every surgeon should be aware of the variations in the insertion of the palmaris longus tendon.

Keywords: insertion, palmaris longus, tendon graft, variation

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 a short belly and a long tendon). 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 antibrachial fascia. Its long, slender tendon passes in front of the flexor retinaculum and is continuous with the central part of the palmar aponeurosis.

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.

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, but is always present in the orangutan. In humans, the absence of the palmaris longus appears to be hereditary, but its genetic transmission is not clear.

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

CASE REPORT

During a routine dissection of an adult male cadaver aged about 50 years at the Department of Anatomy, Kempegowda Institute of Medical Sciences, Bangalore, India, a rare variation in the insertion of the palmaris longus tendon in both upper limbs was observed. The region of interest was finely dissected and photographed. In the left forearm, the palmaris longus tendon, which measured 15 cm in length and 0.8 cm in its maximum width, bifurcated toward the insertion (Fig. 1). In the right forearm, the palmaris longus tendon trifurcated, measuring 10.5 cm in length and 1 cm in its maximum width (Fig. 2). On both sides, the tendons of the palmaris longus after bi- and trifurcation gave rise to the accessorius ad flexorem digiti minimi, an additional
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The palmar aponeurosis is strengthened by the insertion of the palmaris longus tendon. The longitudinal pretentious region of the palmar aponeurosis represents the distal fascial bundles of the palmaris longus (when the palmaris longus is present). In the absence of the palmaris longus, the flexor carpi ulnaris takes over the role of strengthening the palmar aponeurosis. The proximal end of the palmar aponeurosis receives two important contingents of fibres from the flexor carpi ulnaris tendon. While the superficial contingent of fibres blends with those of the palmaris longus, the deep contingent runs on the surface of the pisohamate ligament and connects the flexor retinaculum to the palmar aponeurosis.

The palmaris longus is a weak flexor of the wrist; the divided palmaris longus is of little importance and does not need to be repaired. Grip strength of the hand is not affected by the absence of the palmaris longus muscle. Cetin et al reported that there were no complaints from patients with absent palmaris longus regarding the performing of daily activities. Therefore, using the tendon of the palmaris longus muscle in a reconstructive surgery of any pathology may not result in any significant functional disorder of the hand. The palmaris longus tendon can be used in reconstructive surgical procedures including lip augmentation, ptosis correction and the management of facial paralysis, without producing any functional deformity.

In conclusion, the tendon of the palmaris longus is the first choice for a tendon donor as it fulfills the necessary requirements pertaining to length, diameter and availability, and can be used without producing any functional deformity. The variations in palmaris longus tendon insertion should be kept in mind while performing palmaris longus graft surgeries. The accessory muscle should not be used, in order to avoid Guyon’s canal syndrome. If possible, the accessory muscle, with its nerve supply, should be left intact to retain the patient’s grip strength.

REFERENCES

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