

Bifid inverted palmaris longus muscle – a case report

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SUMMARY

A bifid inverted Palmaris longus muscle was identified during routine cadaveric dissection while teaching undergraduate students. The muscle belonged to the right forearm of a 54-year-old male cadaver, and had a tendinous origin from the medial epicondyle of the humerus. Distally the muscle passed superficial to flexor retinaculum and bifurcated into a muscular slip and a fascial slip. The muscular slip further descended down and became continuous with the hypothenar muscle and the fascial slip inserted into palmar aponeurosis. The total length of the inverted palmaris longus muscle till bifurcation was 28.0 cm. The length of the muscular slip of the insertion was 2.6 cm, and the length of the fascial slip of the insertion was 3.1cm. Such anatomic variation can lead to compression of the median and ulnar nerves.

Key words: Carpal tunnel syndrome – Inverted Palmaris longus – Muscle hypertrophy

INTRODUCTION

Palmaris longus is a phylogenetically retrogressive degenerating muscle that may originate from the medial intramuscular septum, the biceps or brachialis muscles, the fascia of the forearm, and the coronoid process of ulna or the radius (Bergman et al., 1984).

The palmaris longus muscle may be inserted on the middle phalanx of the 4th digit, the fascia of the forearm, the short abductor of the thumb, the fascia and muscles of the hypothenar eminence, near

the metacarpophalangeal joints, the tendon of flexor carpi ulnaris, the flexor retinaculum, pisiform or the scaphoid bones (Bergman et al., 1984; Durgan et al., 1993).

Numerous variations of Palmaris longus documented in the literature are: a) complete agenesis; b) variation in location and form of its fleshy part; c) aberrancy of attachment at its origin or insertion; d) duplication and triplication; e) accessory slips; f) replacing elements of a similar form or position (Bergman et al., 1984; Reimann et al., 1944).

The palmaris longus muscle is more degenerated in the apes and monkeys than in man (Keith, 1899) and is only present in about 25 per cent of gorillas. The distal end of palmaris longus is of clinical interest because of its relations with median and ulnar nerves, and has a potential to cause compression of these nerves leading to carpal tunnel syndrome or Guyons syndrome (Depuydt et al., 1987; Regan et al., 1988).

CASE REPORT

During routine undergraduate dissection of the right upper limb of a 54-year-old male cadaver, a variant Palmaris longus muscle was found being tendinous in the proximal 2/3 and muscular and bifid in the distal 1/3 part. It originated as a 3.7 mm wide tendon from the medial epicondyle of the humerus with a few fibres being contiguous with flexor digitorum superficialis (FDS). The tendon coursed superficial to FDS for a distance of 18.0 cm, and changed to a muscular belly in distal 1/3rd of forearm. The belly was 10 cm long and 2.2 cm wide at its middle part. It descended down to proximal wrist crease, passed superficial to flexor retinaculum and bifurcated into a muscular and a fascial slip. The former was 2.6 cm long and 0.9 cm broad and it became continuous with hypothenar

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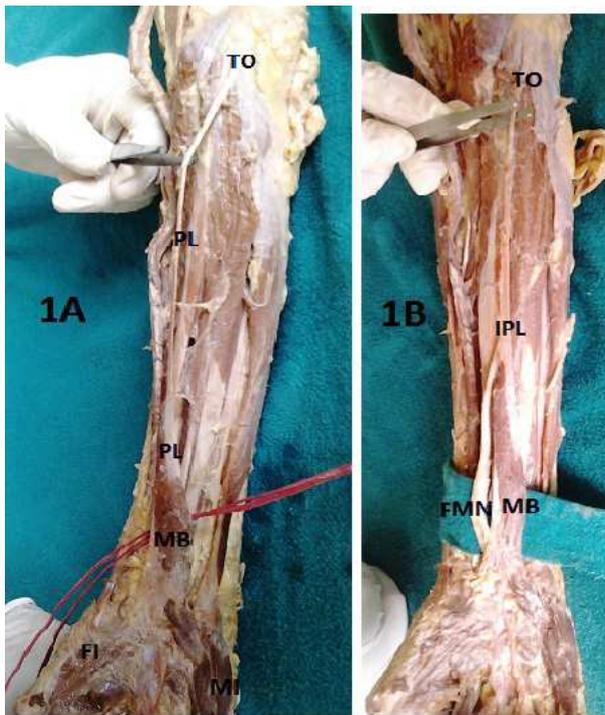


Fig. 1. (A), (B) Bifid inverted palmaris longus muscle (IPL) with proximal tendinous origin (TO) and distal muscular belly (MB). Note the muscular insertion (MI), fascial insertion (FI) and flattened median nerve (FMN) in right forearm.

muscles with no bony attachment of its own while the latter, i.e., the fascial slip, was 3.1cm long and 1.1cm broad and got attached to the superficial aspect of the flexor retinaculum, palmar aponeurosis and abductor pollicis brevis (Fig. 1A). No such variations were observed on the left side.

Since carpal tunnel syndrome is one of the most common nerve entrapment diseases and is often associated with variations in the anatomy of the wrist, thus the median and ulnar nerves were assessed for signs of attenuation from the proximal wrist and into the hand. The median nerve was rounded in shape with a diameter of 0.35 cm during its course between the flexor digitorum superficialis and the flexor carpi radialis tendons. Just proximal to the wrist it traversed between the muscular segment of RPL and the tendon of flexor digitorum superficialis. Here it was flattened and its maximum diameter was 0.63 cm (Fig. 1B). The ulnar nerve was also explored with no abnormalities seen in its course.

DISCUSSION

Wood (1868) conducted a study on 102 subjects comprising 68 males and 34 females, where 31 subjects presented with abnormalities of this muscle. Out of 31 subjects the muscular belly was found to be median or inverted in 5 subjects (3 males and 2 females), 2 on both sides, 2 in the right arm, and 1 in the left arm only.

In the accessible literature, Backhouse et al. (1975) and Fragiadakis et al. (1978) reported reverse palmaris longus muscle in 3 subjects each, Schuurman and van Gils (2000) in 4 cases, while Meyer and Pflaum (1987) and Schlafly and Lister (1987) reported one case each. Giunta et al. (1993) encountered a bilateral reverse palmaris longus muscle in a male subject. Reverse palmaris longus muscle with three heads has also been reported (Yildiz et al., 2000; Seyhan et al., 2005).

An inverted palmaris longus is one such variant which no doubt has been reported earlier also, but in the present specimen the insertion is bifid and the median nerve is also flattened distally. The muscle is of interest to surgeons because of its pivotal role in repairing ruptured collateral ligaments and in the treatment of facial paralysis, digital pulley reconstruction, lip augmentation, ptosis correction and in various nerve palsies.

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