

Case Report

ANATOMICAL VARIATION OF PALMARIS LONGUS: TENDINOUS ORIGIN AND FLESHY INSERTION

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ABSTRACT

A tendinous origin and fleshy insertion of palmaris longus muscle was observed in the left forearm during routine dissection which was performed on adult male cadaver in the department of Anatomy, Dr. Rajendra Prasad Government Medical College. It was having long tendinous origin from the medial epicondyle of the humerus and the surrounding deep fascia. It was fusiform at the lower middle of the forearm. The fleshy muscular insertion was noted to the flexor retinaculum and few muscular fibers interdigitate with flexor carpi ulnaris muscle and palmar aponeurosis. The length of tendon was 19 inches and fleshy muscular length was 11 inches. The median nerve and ulnar nerve was covered by this fleshy insertion. This palmaris longus variation is helpful for the surgeon and the radiologist, orthopaedic, plastic surgeon during any diagnosis of the forearm because this fleshy part of muscle can compress the median nerve and ulnar nerve or it can be mistaken as a tumor or ganglion during radiological or clinical examination.

KEYWORDS: Palmaris longus, tendinous origin, fleshy insertion, median nerve, ulnar nerve, carpal tunnel syndrome.

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INTRODUCTION

Palmaris longus is a slender fusiform muscle of forearm which arises from medial epicondyle of humerus, deep fascia and from the septa between it and its neighbors, and lie medial to flexor carpi radialis. In the middle of the forearm it thins out into a flat tendon which passes

superficial to the flexor retinaculum but some of the fibers from the tendon interweave with the transverse fibers of the retinaculum and inserts into the apex of palmar aponeurosis [1,2].

The tendon of this muscle can be used as a graft during many surgical procedures including pulley

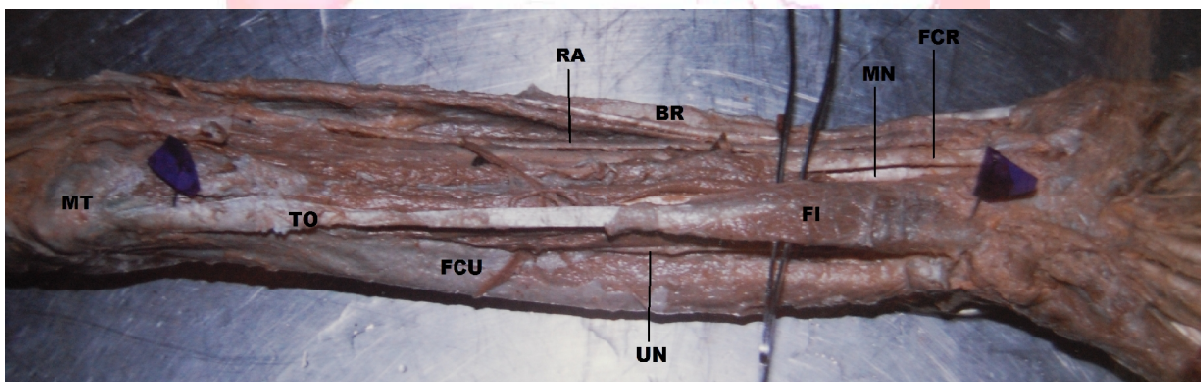
reconstruction, ligament reconstruction, ocular defects, reconstruction of ligaments of thumb and elbow [3,4]. Many studies of palmaris longus have shown its variations in forearm and wrist. It can be absent in 11% of bodies and this absence of muscle is more common in females and that too on the left side of forearm, further bilateral absence is more common than unilateral absence [5]. Usually the palmaris longus muscle is inserted to the apex of palmaris aponeurosis through the tendon but sometimes it is having fleshy insertion and this can be responsible for compartment syndrome of the forearm, wrist, Carpal tunnel syndrome, Guyons syndrome and difficulty in radiological investigation [3]. Just proximal to the wrist the

median nerve projects laterally deep to the palmaris longus and lies in between the flexor Carpi radialis and palmaris longus [7].

MATERIALS AND METHODS

In routine dissection of left forearm of an adult male cadaver in the department of anatomy, Dr. Rajendra Prasad Government Medical College a variation was noted. The cadaver studied did not show any gross anomalies or evidence of surgical procedures on the skin around the area dissected. The superficial flexors of the forearm were dissected and cleaned and the palmaris longus muscle specimen was measured and photographed.

Fig. 1: Dissection of the anterior compartment of left forearm showing tendinous origin and fleshy insertion of palmaris longus muscle. (TO: tendinous origin of palmaris longus; FI: fleshy insertion of palmaris longus; MT: medial tubercle of humerus; UN: ulnar nerve; RA: radial artery; BR: brachioradialis muscle; MN: median nerve; FCR: flexor carpi radialis muscle tendon;).



RESULTS

In our study we have found palmaris longus muscle on the left forearm having long tendinous origin from the medial epicondyle of the humerus and the surrounding deep fascia. It was fusiform at the lower middle of the forearm. The fleshy muscular insertion was noted to the flexor retinaculum and few muscular fibers interdigitate with flexor carpi ulnaris muscle and palmar aponeurosis. The length of tendon was 19 inches and fleshy muscular length was 11 inches (Fig 1). The median nerve and ulnar nerve was covered by this fleshy insertion.

DISCUSSION

The palmaris longus muscle belongs to retrogressive muscle in human body. This muscle is present in the superficial compartment of forearm. The tendon passes in front of the flexor

retinaculum and is continuous with central part of palmar aponeurosis and responsible for flexion of metacarpophalangeal joint, carpal flexion and thumb abduction. The palmar aponeurosis is the degenerated distal part of palmaris longus and it is regressive muscle in the higher vertebrate phylogeny. It is also noted that it is absent in the higher apes (gibbons and gorilla) and lower primates like orangutan [8,9]. This is due to the gradual development of prehension achieved by diversion of muscle strength for the free movements of parts of hands [10]. The palmaris longus variation is helpful for the surgeon and the radiologist during any diagnosis of the forearm because this fleshy part of muscle can be mistaken as a tumor or ganglion [11]. Many studies have shown the unilateral and bilateral absence of palmaris longus. Columbus book, entitled *De Re Anatomica* without any illustration was the first

to describe the absence of palmaris longus muscle which was published soon after his death in 1559 [12].

The various variations seen in palmaris longus muscle show all the phases of muscle development which range from a type that is completely muscular from its origin to insertion to a type that is only a fibrous vestige remain. These variations may be seen in form of centrally placed belly, entirely peripherally placed belly and also in the form of digastric muscle [13]. Palmaris longus muscle variation has been associated with carpal tunnel syndrome due to extra pressure on the median nerve proximal to its insertion in the carpal tunnel. It has also been reported in few studies associated with fleshy insertion and tendinous origin of palmaris longus muscle [5,14]. Most of the previous study explained the median nerve compression in relation to this palmaris longus variation. In this present study both median nerve and ulnar nerve was covered by this fleshy insertion of palmaris longus muscle.

This palmaris longus variation is helpful for the surgeon and the radiologist, orthopaedic, plastic surgeon during any diagnosis of the forearm because this fleshy part of muscle can be mistaken as a tumor or ganglion during radiological or clinical examination, carpal tunnel syndrome.

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Conflicts of Interests: None

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