

A STUDY ON VARIATION IN ORIGIN OF PALMAR APONEUROSIS IN TELANGANA REGION

Anatomy

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ABSTRACT

INTRODUCTION: The palmar aponeurosis also called as palmar fascia invests the muscles of the palm, It consists of central, lateral and medial portions. The central portion is thick forms aponeurosis proper, it protects nerves, vessels and prevents the underlying long flexor tendons from bow stringing. The medial and lateral parts cover hypothenar and thenar muscles are then to allow movements of the marginal metacarpal bone and their digits. Along the radial and ulnar margins of the palm the aponeurosis is continuous with deep fascia on the dorsum of the hand. The central part is triangular with apex directed proximally and blends with distal border of flexor retinaculum and continuous with the tendon of palmaris longus. Distally, the aponeurosis fans out as thick sheet and at the bases of the fingers splits into four digital slips for the medial four fingers. Each slip divides into superficial and deep sets of fibers. The superficial fibres join with the dermis and blend with the superficial transverse ligament of palm. The deep set of fibres of each slip divides into two bands, which are attached to deep transverse ligament of the palm, palmar ligaments of metacarpophalangeal joints, the bases of proximal phalanges and blends with fibrous flexor sheaths.

AIM AND OBJECTIVE: To study the origin of palmar aponeurosis in the absence of palmaris longus.

MATERIAL AND METHOD: This study was done in Department of Anatomy of Osmania medical college, Koti, Hyderabad. During routine undergraduate dissection on 22 Upper limbs (11 on right side and 11 on left side). The cadavers with visible trauma, pathology or prior surgeries were excluded from the study. Routine dissection of the upper limb was followed. During the dissection of the anterior compartment of forearm, the presence and absence of Palmaris longus muscle and origin of palmar aponeurosis was identified & carefully dissected. Any variations found were noted and photographed. The results were analysed and compared to previous studies.

RESULT: In the present study, we observed that, out of 22 upper limbs, in the absence of palmaris longus, the percentage of appearance of palmar aponeurosis originating from flexor retinaculum is 4%(right side)

CONCLUSION: In the absence of palmaris longus muscle palmar aponeurosis is originating from flexor retinaculum. Knowledge regarding variant origin of palmar aponeurosis is helpful for surgeons during release of pressure in carpal tunnel syndrome. Precise knowledge of variations in the palmar aponeurosis is essential for surgeons, orthopaedic surgeons, plastic surgeons, anatomists and researchers.

KEYWORDS

Palmar Aponeurosis, Palmaris Longus, Flexor Retinaculum.

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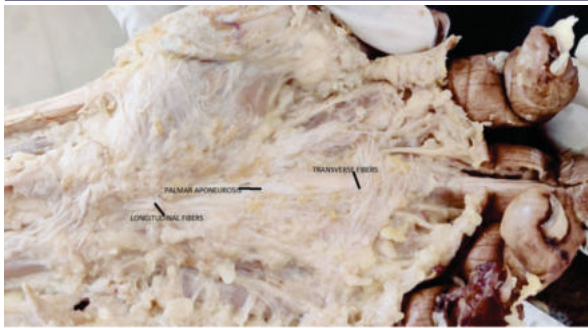
DISCUSSION:

The focal point in the present study was to determine the incidence and morphology of the origin of palmar aponeurosis. From the information gained from this study may aid surgeons, Palmaris longus absence will not affect the function of the wrist significantly [4]. However, the congenital absence of this muscle can be seen as a disadvantage when the use of this muscle is indicated for reconstructive surgery.

Morphological significance: With the development of forelimb as a prehensile organ, the long flexors muscles of the forearm, Palmaris longus muscle started degenerating in a caudo cranial direction. Degeneration of functionless muscle occurred much earlier in phylogenetic forebearers likes Gibbon and Orangutan



FIG 1
FCR-FLEXOR CARPI RADIALIS, PT-PRONATOR TERES, FDS-FLEXOR DIGITORUM SUPERFICIALIS, FCU-FLEXOR CARPI ULNARIS

**FIG-2****CONCLUSION:**

Knowledge of these variations is important for surgeons before harvesting the tendons for graft. In the absence of palmaris longus, palmar aponeurosis is originating from flexor retinaculum. Knowledge regarding variant origin of palmar aponeurosis is helpful for surgeons and orthopaedicians during release of pressure in carpal tunnel syndrome.

REFERENCES

1. Johnson D, Ellis H. Pectoral girdle and upper limb. In: Standring S, ed. Gray's Anatomy. 39th Ed., Edinburgh, Elsevier Churchill Livingstone. 2005; 876-877.
2. Sebastin SJ, Lim AYT, Bee WH, Wong TCM and Methil BV. 2005. Does the absence of the Palmaris longus affect grip and pinch strength? J Hand Surg 30B:406-8.
3. Carlson GD, Botte MJ, Josephs MS, Newton PO, Davis JLW and Woo SLY. Morphologic and biomechanical comparison of tendons used as free grafts. J Hand Surg 1993; 18A:76-82.)
4. Roohi SA, Choon-Sian L, Shalimar A, Tan GH and Naicker AS. A Study on the Absence of Palmaris Longus in a Multi-racial Population. M Ortho J 2007; 1(1):26-28.
5. Ashby BS. Hypertrophy of the Palmaris longus muscle; report of a case. J Bone Joint Surg Br. May 1964; 46: 230-232.
6. Gangata H. The Clinical Surface Anatomy Anomalies of the Palmaris Longus Muscle in the Black African Population of Zimbabwe and a Proposed New Testing Technique. Clin Anat 2009; 22:230-5.
7. Pai MM, Prabhu LV, Nayak SR, Madhyastha S, Vadgaonkar R, Krishnamurthy A and Kumar A. The palmaris longus muscle: its anatomic variations and functional morphology Rom J Morphol Embryol 2008; 49(2):215-7.
8. Bergman RA, Thompson SA, Afifi AK, Saadeh FA. Illustrated Encyclopedia of Human Anatomic Variation: Opus I: Muscular System: Alphabetical Listing of Muscles: P; Palmaris Longus].
9. Aparna Veda Priya, Mohd Imtesal Ali Zishaan, Heena Fathima, Tuniki Meena. morphological variant of fore arm muscles- palmaris longus muscle. 2019; 2277 - 8179.
10. Philips, D. Mass Mechanical analysis of the palmar aponeurosis pulley in human cadavers. 1996.