

Accessory flexor pollicis longus tendon – a clinical and cadaveric study

Ahmadreza Afshar¹, Ali Tabrizi¹, Mohammad Javad Shariyate² , and Ara Nazarian²

Journal of Hand Surgery
(European Volume)
0(0) 1–3
© The Author(s) 2025
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/17531934251347077
journals.sagepub.com/home/jhs



Abstract

An accessory flexor pollicis longus tendon was found in 25 of the 53 patients who underwent trigger thumb release, as well as in two of five randomly selected cadaveric thumbs. Cadaveric and histopathologic analyses confirmed these variants. Their anatomical, clinical and evolutionary significance is discussed.

Keywords

Accessory flexor pollicis longus, anatomic variation, anthropology, evolution of thumb, ontogeny, trigger thumb

Date received: 28th February 2025; revised: 7th May 2025; accepted: 18th May 2025

In this prospective study on patients undergoing trigger thumb surgery, we investigated the presence of an accessory tendon accompanying the flexor pollicis longus (FPL) tendon. The study included 51 consecutive adult patients (46 females and five males), aged 35–70 years (mean 54 ± 9 years) and two children diagnosed with congenital trigger thumb. In total, 58 thumb surgeries were performed (35 on the right and 23 on the left), including bilateral procedures in five adult patients.

A transverse incision was made along the metacarpophalangeal (MP) crease of the thumb. The A1 pulley was released, and the fibro-osseous tunnel of the thumb was carefully explored. The probable presence, origin, insertion and full course of the accessory FPL tendon were further examined in five fresh-frozen adult cadaveric hands to provide additional anatomical insights.

Twenty-five (47%) of the 53 patients and 25 (43%) (14 rights, 11 lefts) of the 58 thumbs had an accessory FPL tendon. The accessory FPL tendon was noted as a delicate string-like construct 1–2 mm in width, glistening and discrete along the FPL tendon (Figure 1(a)). One adult patient had bilateral accessory FPL tendons and two children had accessory FPL tendons.

Applied traction on the tendon did not affect the interphalangeal (IP) joint mobility. The aberrant tendon was excised, and a histopathologic evaluation

of the excised tissue demonstrated a hypocellular dense fibrotic tissue compatible with a discrete tendinous structure.

In a study of five randomly selected fresh cadaveric thumbs, accessory FPL tendons were identified in two specimens, one in a left thumb and one in a right thumb. The two accessory FPL tendons originated from the FPL and its surrounding synovium at the level of the MP joint and were inserted at the volar plate of the IP joint (Figure 1(b)).

Wulle (1995) identified an accessory tendon accompanying the FPL tendon in 13 out of 24 cases of trigger thumb surgeries. He also noted a similar frequency of accessory FPL tendons in normal thumbs. Additionally, he reported that the prevalence of an accessory FPL tendon in the literature ranges from 10 to 54%. Wilkinson (1953) observed an

¹Department of Orthopedics, Imam Khomeini Hospital, Urmia University of Medical Sciences, Iran

²Musculoskeletal Translational Innovation Initiative, Carl J. Shapiro Department of Orthopaedic Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, USA

Corresponding Author:

Mohammad Javad Shariyate, Musculoskeletal Translational Innovation Initiative, Beth Israel Deaconess Medical Center, Harvard Medical School, 99 Brookline Ave, Boston, MA 02215, USA.
Email: Mshariat@bidmc.harvard.edu
X: @JavadShariati

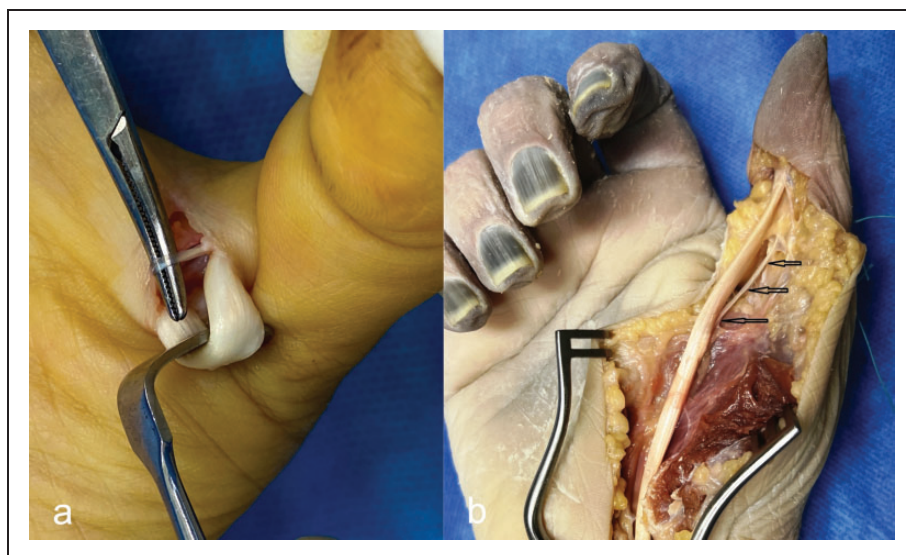


Figure 1. (a) The accessory FPL tendon along the ulnar side of the right FPL tendon in a 50-year-old woman and (b) the accessory FPL tendon (↓) on the right thumb in a 78-year-old female cadaver. The accessory FPL tendon originated from the FPL and its surrounding synovium at the level of the metacarpophalangeal joint and inserted at the volar plate of the IP joint.

accessory FPL tendon in 12 of 42 adult cadaveric hands, with six being bilateral. In our cadaveric dissection and Wilkinson's observations, the accessory FPL tendon originated proximally from the FPL and its surrounding synovial membrane opposite the MP joint, and was inserted distally as a single slender tendon on the ulnar side of the volar aspect of the palmar ligament of the IP joint.

In the human foetus, a phylogenetic regression of the middle phalanx of the thumb and ontogenic fusion of the middle and distal phalanx of the thumb occur (Chavez and Morrell, 2022; Wilkinson, 1953). In this context, a vestigial pollicaeal perforatus tendon, a counterpart of the flexor digitorum superficialis tendon, may remain as an accessory and rudimentary tendon in the FPL fibrosesous sheath (Wilkinson, 1953). Hovius et al. (2019) indicated that the flexor tendons in the triphalangeal thumb can be present as flexor digitorum superficialis and profundus, or as a single FPL.

The accessory FPL tendon is a common anatomical variant, although its prevalence may vary across different ethnicities (Wilkinson, 1953; Wulle, 1995). Standard anatomical texts have not documented an accessory tendon within the FPL fibrosesous tunnel. We do not suggest that the accessory FPL tendon is a cause of trigger thumb, as splitting or resecting the A1 pulley alone typically results in complete resolution of the trigger symptoms.

This finding is significant as it challenges existing anatomical knowledge by expanding our understanding of thumb tendon variations, presents potential

clinical implications for surgeons who may encounter unexpected tendon structures during thumb surgeries and offers insights into human anatomical variation from both evolutionary and developmental perspectives.

Acknowledgements We would like to express our special thanks and profound gratitude to Clinical Research Development Unit of Imam Khomeini Hospital, Urmia University of Medical Sciences, Urmia, Iran, for their guidance, consultation and support.

Declaration of conflicting interests The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding The authors received no financial support for the research, authorship, and/or publication of this article.

Ethical approval The study was approved by the medical research and ethics committee of the Urmia University of Medical Sciences with registered number: IR.UMSU.REC.1403.350. Available at <https://ethics.research.ac.ir/ProposalCertificateEn.php?id=533194&Print=true&NoPrintHeader=true&NoPrintFooter=true&NoPrintPageBorder=true&LetterPrint=true>

Informed consent Written informed consent was obtained from the patient for patient's anonymized information to be published in this article.

ORCID iD Mohammad Javad Shariyate  <https://orcid.org/0000-0001-5085-2808>

References

- Chavez TJ, Morrell NT. The evolution of the human hand from an anthropologic perspective. *J Hand Surg Am.* 2022, 47: 181–5.
- Hovius SER, Potuijt JWP, van Nieuwenhoven CA. Triphalangeal thumb: clinical features and treatment. *J Hand Surg Eur.* 2019, 44: 69–79.
- Wilkinson JL. The insertions of the flexores pollicis longus et digitorum profundus. *J Anat.* 1953, 87: 75–88.
- Wulle C. Die akzessorische Sehne des Flexor pollicis longus [The accessory tendon of the flexor pollicis longus]. *Handchir Mikrochir Plast Chir.* 1995, 27: 46–8.