

# A Rare Anatomical Finding of Undescribed Accessory Palmaris Longus in the Distal Forearm: A Case Report

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**Summary:** Upper limb muscle anomalies and their clinical implications have been described frequently in the literature reviews. In this article, we are presenting a case of aberrant forearm muscle that had not been described before, and could be considered as a palmaris longus muscle variation. A 24-year-old man presented to the emergency department, Hamad General Hospital, Doha, Qatar, with right forearm laceration with multiple cut structures for which he was admitted for exploration and repair. Intraoperatively, flexor digitorum superficialis of the third, fourth, and fifth digits, flexor carpi radialis, and palmaris longus were injured, and all of them were repaired. We noticed an aberrant muscle—which was also injured—that originated from the distal third of the radius on its medial aspect to insert into the palmar fascia; pulling this muscle's tendon resulted in tightening of palmar fascia, same as the palmaris longus. Along with the importance of deep knowledge of typical human anatomy, hand surgeons must be aware that an aberration from normal anatomy might be anticipated, to provide the best care to our patients.

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## INTRODUCTION

Although it is relatively uncommon in the population, muscle anomalies of the forearm may be encountered by nearly all hand surgeons over the course of their careers. These anomalies can be symptomatic but generally speaking, most of them are asymptomatic.<sup>1</sup> Despite its rareness, every surgeon should anticipate the aversion from normal anatomy, as it might have significant impact on the patient's outcome and quality of life. The palmaris longus (PL) muscle has the most common anomalies described in the literature. In this article, we present an incidental finding of an aberrant muscle in one of our patients that was operated for right distal forearm laceration. We believe that this muscle could be considered as

one of the PL muscle variations that has not been mentioned in the literature reviews.

## CASE PRESENTATION

A 24-year-old man, right-handed, laborer, nonsmoker, nonalcoholic, with no past medical or surgical history, sustained a deep laceration to his right distal forearm by a glass during work. He had no hand complaint before the trauma.

On examination, he had a 15-cm deep laceration on the volar aspect of the right distal forearm more on the ulnar side, with weak flexion at proximal interphalangeal joints, weak wrist flexion, normal sensory examination, palpable radial artery, and ulnar arteries with capillary refill less than 2 seconds. After stabilization and initiation of antibiotics and pain killers, he was admitted for exploration and repair of cut structures.

The patient was operated on the next day under regional anesthesia and a tourniquet was applied for 60 minutes on pressure of 250 mm Hg. The wound was extended minimally, proximally, and distally for exploration, and the findings were as follows: complete cut of flexor digitorum superficialis (FDS) of the fourth and fifth digits, partial cut FDS (60 %) of third digit, complete cut flexor carpi radialis, and complete cut PL, all of them at zone 5. Along with that, we noticed an aberrant muscle that was cut completely. All other muscles and their

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tendons, nerves, and arteries were identified and were intact. The abovementioned aberrant muscle originates from the distal third of the radius on its medial aspect and inserts into the palmar fascia separately from PL tendon, pulling its tendon resulted in tightening of palmar fascia (Figs. 1–3). All injured structures were repaired using Ethilon 3-0 by modified Kessler technique (if complete cut) and epitenon continuous suturing with Ethilon 5-0, or horizontal mattress with 4-0 Ethilon (if incomplete).

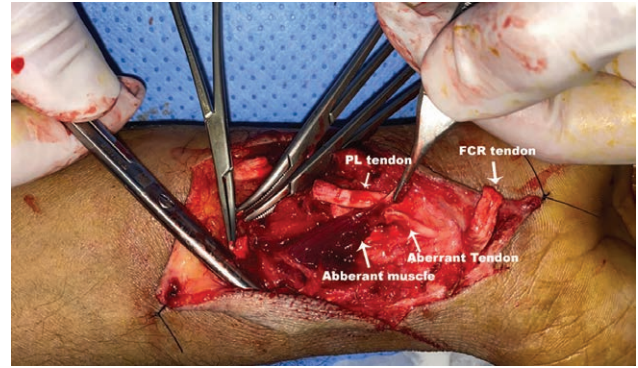
Postoperatively, the patient stayed for 2 days for pain management, and was referred to the inpatient occupational therapist to apply the proper splint and start the rehabilitation program. The patient was discharged on antibiotics for a total of 7 days. He continued occupational therapy for a period of 8 weeks with frequent clinic visits, and after 2 months he had full range of motion and completely healed wounds and resumed his work.

## DISCUSSION

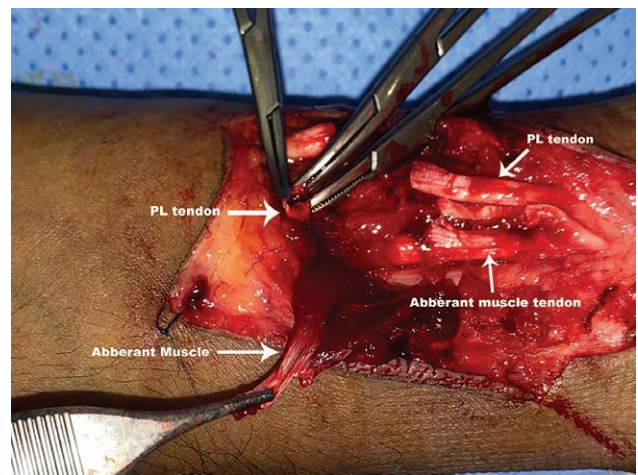
One of the most encountered muscles with aberrations is the PL muscle. The normal PL originates from the medial epicondyle with a proximal muscle belly and long distal tendon that inserts into the palmar fascia.

However, a substantial amount of variation has been noted, with variations reported as duplicate, reversed, centrally located, bifid, divided with an ulnar slip, or hypertrophic, in addition to variations in the muscle belly representing 50% of the anomalies of the PL reported.<sup>2</sup> The PL can originate from the lacertus fibrosis, FDS, flexor carpi radialis, and flexor carpi ulnaris and may insert into the antebrachial fascia, thenar eminence, flexor carpi ulnaris, or into the carpal bones. An accessory tendon may also exist at the ulnar aspect of the main tendon distally.<sup>2</sup> Epidemiologically, in a study by Reimann et al<sup>2</sup>, PL in 9% of the study population exhibited variations with respect to form, origin, or insertion.

Another muscle anomaly is flexor carpi radialis brevis (FCRB), which has been described historically as “short radiocarpal flexor.”<sup>3</sup> The FCRB commonly originates from the volar aspect of the mid to distal third of the radius and courses superficial to the pronator quadratus outside of



**Fig. 2.** A complete cut of PL and aberrant muscle belly and tendon, in addition to a complete cut of the FCR tendon.



**Fig. 3.** The proximal and distal ends of the PL and aberrant muscle tendons.

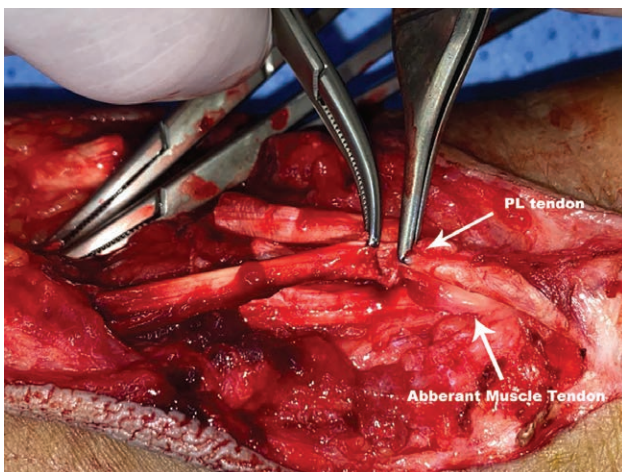
the carpal tunnel.<sup>1</sup> The FCRB has been noted to insert into the second, third, or fourth metacarpals,<sup>4,5</sup> the trapezium,<sup>6</sup> or the capitate.<sup>5</sup> The FCRB may travel distally in the same sheath as the flexor carpi radialis.<sup>7</sup>

One more forearm muscle anomaly is the palmaris profundus (PP). Origins and insertions may vary, but the PP is characterized by its course through the carpal tunnel adjacent to the median nerve and its insertion into the palmar aponeurosis distally. Possible origins include the radial diaphysis, ulnar diaphysis, FDS fascia, PL, flexor pollicis longus, or the medial epicondyle. Insertion variations can include the third metacarpal or the radial carpal bones in some instances. It has also been found as either reversed or bitendinous.<sup>8–10</sup>

As described above, our patient had a muscle anomaly originating from the distal third of the radius and inserted at the palmar fascia, pulling its tendon and resulting in tightening of palmar fascia. Our thorough search in the literature found no records of such an anomaly considering the described origin and insertion.

## CONCLUSIONS

Describing variations of the human anatomy is and has always been essential for the progress of the surgical



**Fig. 1.** The cut PL and, adjacent to it, the aberrant muscle tendon, both with complete cuts.

science. It helps surgeons to anticipate what to face in the surgical field and how to deal with it properly to get the best patient outcomes; this encouraged us to write our article to add this unique presentation to the spectrum of hand muscle variations.

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#### PATIENT CONSENT

*Patients provided written consent for the use of their images.*

#### REFERENCES

1. Andring N, Kennedy SA, Iannuzzi NP. Anomalous forearm muscles and their clinical relevance. *J Hand Surg.* 2018;43:455-463.
2. Reimann AF, Daseler EH, Anson BJ, et al. The palmaris longus muscle and tendon: a study of 1600 extremities. *Anat Rec.* 1944;89:495-505.
3. Kang L, Carter T, Wolfe SW. The flexor carpi radialis brevis muscle: an anomalous flexor of the wrist and hand. A case report. *J Hand Surg Am.* 2006;31:1511-1513.
4. Dodds SD. A flexor carpi radialis brevis muscle with an anomalous origin on the distal radius. *J Hand Surg Am.* 2006;31:1507-1510.
5. Kosiyatrakul A, Luenam S, Prachaporn S. Symptomatic flexor carpi radialis brevis: case report. *J Hand Surg Am.* 2010;35:633-635.
6. Peers SC, Kaplan FT. Flexor carpi radialis brevis muscle presenting as a painful forearm mass: case report. *J Hand Surg Am.* 2008;33:1878-1881.
7. Mantovani G, Lino W Jr, Fukushima WY, et al. Anomalous presentation of flexor carpi radialis brevis: a report of six cases. *J Hand Surg Eur Vol.* 2010;35:234-235.
8. Jones DP. Bilateral palmaris profundus in association with bifid median nerve as a cause of failed carpal tunnel release. *J Hand Surg Am.* 2006;31:741-743.
9. McClelland WB Jr, Means KR Jr. Palmaris profundus tendon prohibiting endoscopic carpal tunnel release: case report. *J Hand Surg Am.* 2012;37:695-698.
10. Bast BO, Winkler M, Kurz M. Reversed palmaris profundus muscle variation. *Int J Anat Var.* 2016;9:21e24.