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## Case report

# Accessory extensor pollicis longus: A rare tendon anomaly

## *Extensor pollicis longus accessoire : une rare anomalie tendineuse*

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### ABSTRACT

This report provides a complete review of a rare anatomical variation, the accessory extensor pollicis longus (EPL) tendon and its clinical significance. We will describe a case of an asymptomatic accessory EPL that was found incidentally during surgery with a tendon located in the fourth extensor compartment. Pulling on it induced extension of the thumb interphalangeal joint. Very few cases of accessory EPL have been previously reported with various muscle origins and tendon insertions. In the literature, three symptomatic cases of accessory EPL were reported with a tendon running in a compartment other than the fourth. Although this variation is asymptomatic in most cases, knowledge of its existence might be useful in routine procedures to avoid inadvertent tendon damage, or during tendon repair.

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### RÉSUMÉ

Cet article présente une revue complète d'une variation anatomique rare, l'extenseur pollicis longus (EPL) accessoire, ainsi que ses conséquences cliniques. Nous rapportons le cas d'un EPL accessoire asymptomatique découvert de façon fortuite durant une intervention. Le tendon était situé dans le quatrième compartiment, et sa traction entraînait une extension de l'articulation interphalangienne du pouce. Très peu de cas d'EPL accessoire ont été rapportés avec différentes origines musculaires et insertions tendineuses. Dans la littérature, les trois cas symptomatiques d'EPL accessoire rapportés présentaient un tendon localisé dans un compartiment différent du quatrième. Bien que cette variation anatomique soit asymptomatique dans la majorité des cas, sa connaissance peut s'avérer utile afin d'éviter une lésion tendineuse ou durant les interventions de réparation tendineuse.

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## 1. Introduction

Anomalies in the extensor tendons of the hand are well known. However the extensor pollicis longus (EPL) tendon is considered a consistent structure with the least individual variations [1]. An accessory EPL tendon is rare and only a few cases have been reported during anatomical dissections [2–5] or surgical procedures [6–13]. The first was described by Le Double in 1887 [14]. There are various muscle origins and tendon insertions. We

report a case of a supernumerary extensor tendon of the thumb along with a complete review of this rare variation.

## 2. Case report

The unusual extensor tendon was discovered incidentally during a right proximal row carpectomy in a 40-year-old, right-handed woman. Plain radiographs and preoperative magnetic resonance imaging (MRI) of the right wrist revealed stage 3b Kienböck's disease (Lichtman's classification).

During the dorsal approach, a longitudinal incision was made, and the third compartment was opened to identify the EPL and

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protect it during the procedure. The extensor retinaculum was then divided longitudinally to expose the fourth dorsal compartment with the extensor indicis proprius (EIP) and extensor digitorum communis (EDC) tendons. A thin supernumerary tendon was discovered in the fourth compartment, radial to the others including the EIP. It was directed toward the distal phalanx of the thumb (Fig. 1). The thickness of this tendon was one-third of the normal EPL tendon. EPL tendon function was evaluated by applying gentle traction. This caused extension of the thumb's interphalangeal joint (IP) (Fig. 2). Traction on the thin supernumerary tendon caused also thumb IP joint extension but not to the same degree as EPL tendon traction (Fig. 3). There was no extension in others fingers when traction was applied. No other supernumerary tendons were detected. After Berger's capsulotomy [15], the proximal row carpectomy was performed. We did not dissect the entire accessory EPL tendon because it was found incidentally during surgery; consequently, the tendon's origin or insertion were not identified.

### 3. Discussion

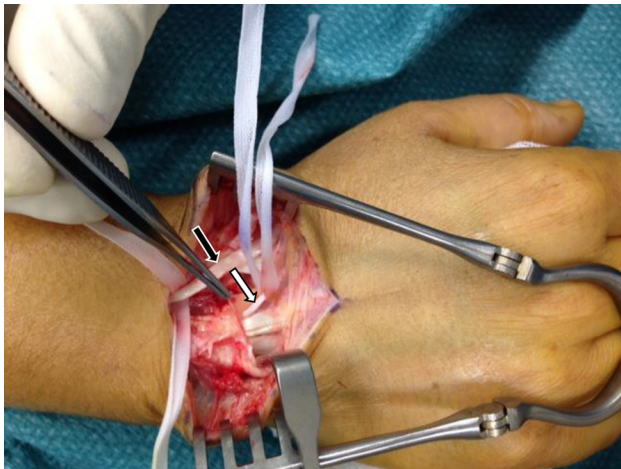
Testut mentioned that variations in the short and long extensor of the thumb are common and essentially consist in supernumer-

ary insertions or split tendons [16]. The split can be partial or complete, and leads to accessory muscles. Le Double was the first to describe in 1887 a supernumerary tendon for the thumb, but he did not specify the muscle origin or tendon insertion [14]. Cited by Chiu, he notes: "a tendon which may come off the tendon or from the muscle of the EIP or even separately from the epicondyle by muscular or tendinous fibers may join the tendon of the long extensor of the thumb at the level of the first metacarpal entering the tunnel of the EPL at the level of the first metacarpal or into the tunnel for the EIP" [2].

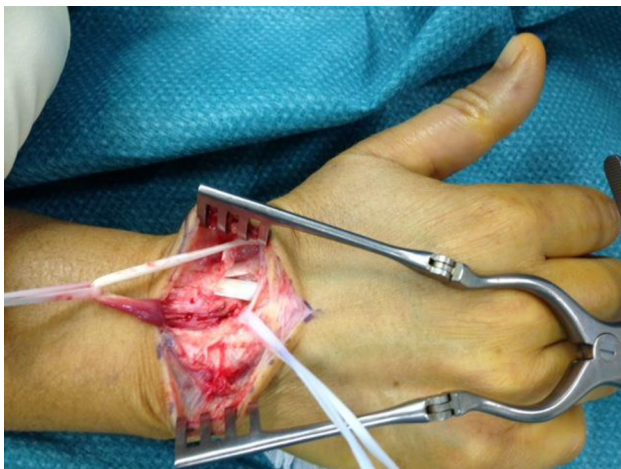
Regarding the origin of this accessory EPL, various muscle belly insertions have been reported. The origin of the muscle can be muscular, attached to the proximal end of the EIP [5] or attached to the ulnar border of EPL [8]. More frequently, the muscle belly originates independently from the lower third of the dorsal surface of the ulna [2–4], distal to the origin of the EPL [4] or proximal to the origin of the EIP [2,3]. It then runs in the dorsal compartment of the forearm as a separate muscle between the EIP and EPL [3]. This muscle is innervated by a short branch from the posterior interosseous nerve entering its deep surface [3,5].

Based on various reports available in the literature, Türker et al. organized the tendons anomalies of the EPL into a two-part classification. This classification is focused on tendon variations and does not include the muscle origin. The first part relates to true supernumerary long extensor tendons of the thumb and has six subtypes. The second part relates to aberrant interconnections between the long extensor tendon to the thumb and neighboring tendons and has four subtypes.

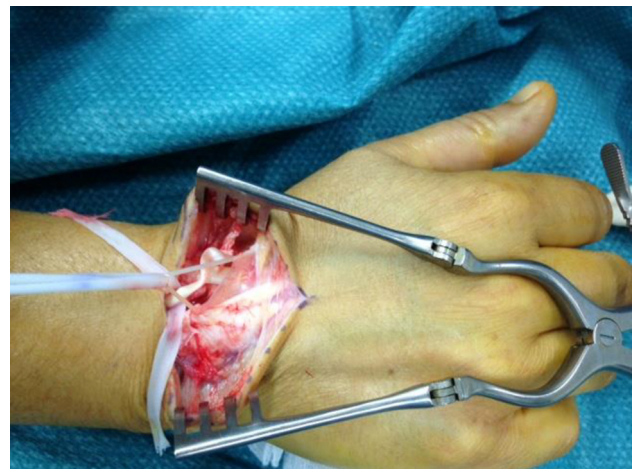
Accessory EPL type 1a has been reported in cadaver dissection [2,4] or during surgery [7,12]; the tendon passes through the fourth dorsal compartment joining the tendon of the EPL at the level of the midshaft of the first metacarpal [2,4]; it has a separate attachment on the base of the distal phalanx of the thumb. In type 1b, the tendon runs parallel to the EPL in the third extensor compartment and has also a separate attachment at the base of the distal phalanx [8]. In type 1c, the tendon exits from the fourth compartment and runs parallel to the EPL towards the thumb; the tendon is attached on the distal portion of the EPL tendon [6]; it was also reported in a cadaver dissection [5]. In type 1d, the tendon passes through the fourth compartment, turns obliquely and laterally over the radial extensor tendons then over the EPL and inserts on the proximal phalanx of the thumb, medial to the insertion of extensor pollicis brevis (EPB); traction on this tendon causes partial extension of the proximal phalanx [3]. The type 1e variant in Türker's classification corresponds to an extensor muscle



**Fig. 1.** The extensor pollicis longus tendon (black arrow) runs in its normal location ulnar to Lister's tubercle through the third compartment and then passes over the extensor carpi radialis tendons. A thin supernumerary tendon was found (white arrow) in the fourth compartment, radial to the others.



**Fig. 2.** Traction on the extensor pollicis longus caused extension of the thumb's IP joint.



**Fig. 3.** Traction on the thin supernumerary tendon caused extension of the thumb's IP joint but to a lesser degree than EPL tendon traction.

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