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## Case Report

## Accessory Extensor Pollicis Longus Tendon Incidentally Discovered During Dorsal Distal Radius Plating

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Anatomical variations of the extensor pollicis longus (EPL) tendon are rare. Variations are typically asymptomatic, yet knowledge of these variations poses significance in the setting of dorsal approaches to wrist surgery. We present a case of an accessory EPL tendon that was discovered intraoperatively in the fourth dorsal compartment during open repair of a distal radius fracture with a dorsal spanning plate. If not correctly identified, the accessory EPL could have been entrapped beneath the plate, resulting in limited thumb extension and potentially tendon rupture.

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Anatomical variations of the extensor tendons have been recognized since the 1800s.<sup>1</sup> Among these variations, accessory extensor pollicis longus (EPL) tendons are rare.<sup>2</sup> In addition, EPL variations are vast and may include accessory tendons, aberrant insertions, and anomalous origins.<sup>3</sup> These variations may have important clinical implications in a surgical context. For example, if an accessory EPL tendon is unrecognized in the setting of dorsal distal radius plating, the accessory EPL tendon could become entrapped beneath the plate, resulting in tenosynovitis, limited thumb motion, and tendon rupture. In this report, we present a case of a 67-year-old woman who received a dorsal wrist-spanning bridge plate and was found to have an accessory EPL tendon arising from the fourth dorsal compartment. Through awareness of this anatomic variant, we were able to preserve thumb motion as her radius healed.

## Case Report

The patient is a 67-year-old right-handed woman with no notable previous medical history who presented to the clinic for

consultation of a right distal radius fracture after slipping on ice and falling on an outstretched hand. Initially, she went to urgent care where x-rays revealed a comminuted, intra-articular right distal radius fracture. Her fracture was reduced and splinted by the emergency department, and she was discharged with referral to our clinic, where she was seen 3 days after the initial injury. She was retired but highly active and did not use any tobacco products or alcohol. Repeat x-rays revealed a highly comminuted intra-articular distal radius fracture with dorsal angulation and displacement. A computed tomography of the wrist was obtained to further characterize the fracture pattern for preoperative planning. This revealed widening of the scapholunate interval, which raised suspicion for scapholunate ligament injury; however, it was suspected to be a chronic injury as there was evidence of early radiocarpal arthritis. After the risks, benefits, and alternatives of surgery were reviewed with the patient, she decided to undergo surgical management with open reduction internal fixation with a dorsal spanning bridge plate.

Intraoperatively, the native extensor pollicis longus (nEPL) in the third extensor compartment was identified (Fig. 1A, B). An additional accessory extensor pollicis longus (aEPL) tendon was discovered that traversed through the fourth extensor compartment (Fig. 1A, C). This supernumerary tendon was approximately one-fourth of the size of the nEPL tendon. Traction of the aEPL tendon produced extension of the thumb at the interphalangeal

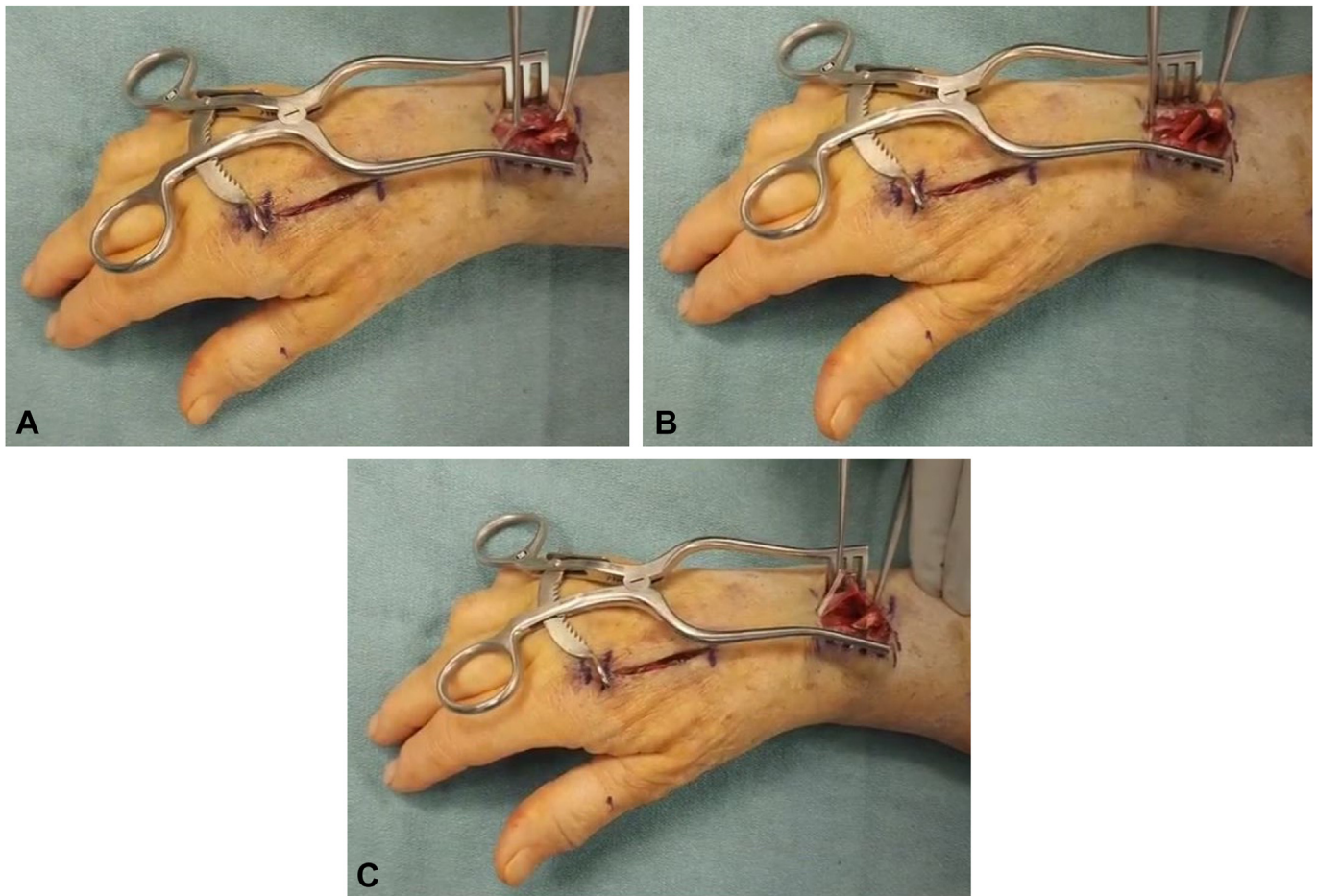
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**Figure 1.** Intraoperative photographs of the accessory EPL tendon (ulnar) and native EPL tendon (radial) with (A) the thumb at rest, (B) traction of the native EPL tendon, and (C) traction of the accessory EPL tendon.

joint with no motion of the index finger (Fig. 1C). The nEPL and aEPL were preserved and transposed into a subcutaneous position at the end of the case. An intraoperative video showing active traction upon nEPL and aEPL and extension of the thumb interphalangeal joint can be referred to in [Supplemental Video 1](#), available online on the Journal's website at <https://www.jhsgo.org>. Postoperative x-rays at 2 weeks are shown in [Figure 2](#).

At her 6-week postoperative visit, flexion and extension of the thumb were intact. She had a typical postoperative course. The dorsal spanning plate was removed after 3 months. She tolerated this procedure well with no complications or limitations in the range of motion of her thumb or fingers. Her 6-month postoperative clinical photographs demonstrating her range of motion are shown in [Figure 3](#). She had a full range of motion with supination and pronation (Fig. 3B, C). She had 16° of radial deviation and 25° of ulnar deviation. She was able to flex her wrist up to 45° (Fig. 3D) and extend her wrist up to 60° (Fig. 3E). She had full range of motion of her thumb and fingers. Her grip strength of the right hand was up to 35 pounds, which is compared with 50 pounds in the contralateral hand.

## Discussion

The anatomy of the EPL tendon is considered the most consistent of the extensor tendons of the hand.<sup>1,2</sup> When a variation exists, the most common is the extensor pollicis et indicis communis first

described by Wood in the 1800s.<sup>1</sup> In 2010, Türker et al<sup>3</sup> proposed a classification system of EPL abnormalities ([Table 1](#)).

In our case, the aEPL tendon was approximately one-quarter of the size of the nEPL tendon. When traction was applied to the aEPL tendon, the thumb extended at the IP joint with no movement of the index finger, suggesting no communication between the aEPL and the extensor indicis proprius. Traction of the aEPL produced more ulnar deviation than traction of the nEPL, suggesting different insertion sites at the distal phalanx. This finding is most consistent with a Türker class 1a; however, the incision was not extended proximally to identify the origin of the muscle belly, and no preoperative MRI or ultrasound was performed since it was not clinically necessary. Hence, it is impossible to be certain of its exact classification.

The clinical significance of this abnormality is easily overlooked considering that most variations are discovered incidentally during surgery or cadaveric and radiologic studies.<sup>2,4–10</sup> Few cases have presented with symptomatic EPL variations. Regardless of preoperative symptoms, knowledge of these abnormalities is imperative to avoid complications in dorsal plating of the radius. Failure to recognize an aEPL could lead to entrapment or tenosynovitis of the accessory tendon. After surgery, this could lead to the limitations of thumb movement or potentially tendon rupture. It is unknown if the aEPL should be preserved or ligated in an attempt to limit tenosynovitis and if dorsal or volar plating is superior in cases of aEPL. In our case, the aEPL was preserved and dorsal plating was used. At 3





Figure 2. Two-week postoperative wrist x-rays. A Anterior–posterior, B oblique, and C lateral.



Figure 3. Six-month clinical photographs. A Closed fists, B pronation, C supination, D wrist flexion, and E wrist extension.

**Table 1**  
Classification of EPL Variations According to Türker et al<sup>3</sup>

Classification	Subtype	Description
<b>Type 1</b> Separate tendon variations	1a	Double EPL tendons (different compartment)
	1b	Double EPL tendons (same compartment)
	1c	Double origin of the EPL tendon (different compartment)
	1d	Extensor pollicis tertius
	1e	Extensor pollicis et indicis communis
	1f	Extracompartmental two-slip extensor pollicis tendons
<b>Type 2</b> Interconnections of the extensor tendons	2a	Interconnection between the EPL and the EIP (the extensor pollicis et indicis accessories)
	2b	Interconnection between the EPL and EDC2 (junctura tendinum)
	2c	Interconnection between EPL and the extensor apparatus of the index finger (tendon slip from the third compartment)
	2d	Interconnection between EPL and the extensor apparatus of the index finger (tendon slip extracompartmental)

months, the patient did not endorse symptoms of tenosynovitis or have limitations in the movement of her thumb.

We present a case of an accessory EPL tendon discovered intraoperatively during dorsal plating of the distal radius. This case highlights the importance of maintaining vigilance for rare anatomical variations to achieve optimal surgical outcomes in patients requiring wrist surgery.

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