Asia Pacific Journal of Pain 36(1): 56-59, Mar. 2026
DOI:10.29760/APJP.202603_36(1).0006
Brief Communications

Dynamic Ultrasound Unveils a Rare Rupture of the Extensor Pollicis Longus Muscle

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Rupture of the extensor pollicis longus (EPL) is an uncommon but important cause of wrist and distal forearm pain that may be easily overlooked in clinical practice. Ultrasound—particularly dynamic assessment—offers a reliable and noninvasive method for evaluating musculotendinous integrity. We report the case of a 31-year-old male who presented with a dislocation-like sensation and pain in the left wrist during weight training. Dynamic ultrasound examination revealed a focal anechoic defect with loss of normal fibrillar echotexture within the EPL muscle, confirming muscular rupture. This case underscores the diagnostic value of dynamic ultrasound in detecting EPL injuries and highlights the importance of detailed knowledge of distal forearm sonoanatomy for precise lesion localization.

Keywords: *extensor tendon, injection, pain, ultrasonography, wrist*

Introduction

Rupture of the extensor pollicis longus (EPL) muscle or tendon is an uncommon but clinically significant injury that can result from repetitive wrist motion, trauma, or corticosteroid exposure [1,2]. Early and accurate diagnosis is essential to prevent chronic dysfunction and guide rehabilitation or surgical intervention. Although magnetic resonance imaging remains the reference standard for soft-tissue evaluation, musculoskeletal ultrasound has emerged as a rapid, cost-effective, and dynamic imaging alternative [3]. This report presents a case of EPL muscle rupture identified through dynamic ultrasound, illustrating the technique's diagnostic advantages in localizing and characterizing musculotendinous defects.

Case Presentation

A 31-year-old male presented with a complaint of a dislocation-like sensation in his left wrist during weight training. The symptom occurred while lifting a barbell. He reported difficulty performing forearm supination and described a catching or "stuck" sensation in the distal forearm. On physical examination, mild instability of the distal radioulnar joint (DRUJ) was noted. Manual stabilization of the DRUJ improved the sense of stability, but pain over the distal forearm persisted, accompanied by a recurrent catching sensation. Further history revealed that several months earlier, the patient experienced distal forearm pain following a boxing session. The pain gradually subsided over time, but intermittent discomfort and a sense of in-

Received: 9 October 2025; Accepted: 15 November 2025.
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stability remained, prompting referral for ultrasound evaluation.

Ultrasound Examination

Ultrasound evaluation was performed with a high-frequency linear transducer placed in the axial plane over the dorsal aspect of the wrist. The probe was gradually glided proximally from the distal wrist toward the forearm. Initially, the transducer was positioned at the level where all six dorsal extensor compartments could be visualized and then advanced cranially to approximately two-thirds of the distal forearm.

At this level, two muscular layers were observed. In the deeper layer, a focal anechoic area devoid of muscle fibers was identified immediately superficial to the interosseous membrane (Figure 1). To identify the specific muscle involved, a dynamic ultrasound examination was conducted. The patient was instructed to adduct the thumb and flex the metacarpophalangeal joints, confirming the location of the abductor pollicis longus and extensor pollicis brevis. The lesion corresponded to the region proximal to these muscles.

Subsequently, with the metacarpophalangeal joint stabilized, movement of the distal interphalangeal joint demonstrated that the defect corresponded to the muscular portion of the EPL. Long-axis imaging revealed disruption of the normal fibrillar echotexture and a distinct gap filled with fluid, confirming rupture of the EPL muscle (Figure 2).

Discussion

Ultrasound is a powerful diagnostic tool for identifying musculotendinous injuries [4], offering real-time visualization of muscle architecture and enabling dynamic functional assessment. In the present case, ultrasound allowed clear differentiation of the affected muscle and direct observation of disrupted fibers, providing an immediate diagnosis without the need for advanced imaging modalities.

The success of ultrasound evaluation depends on a thorough understanding of distal forearm sonoanatomy. The six dorsal extensor compartments can be readily identified at the level of the DRUJ, providing an optimal starting point for tracing individual tendons proximally [5]. Dynamic maneuvers, such as thumb adduction and interphalangeal motion, assist in confirming muscle identity by correlating anatomical structures with their functional motion patterns.

Anatomically, the EPL originates from the posterior surface of the ulna and adjacent interosseous

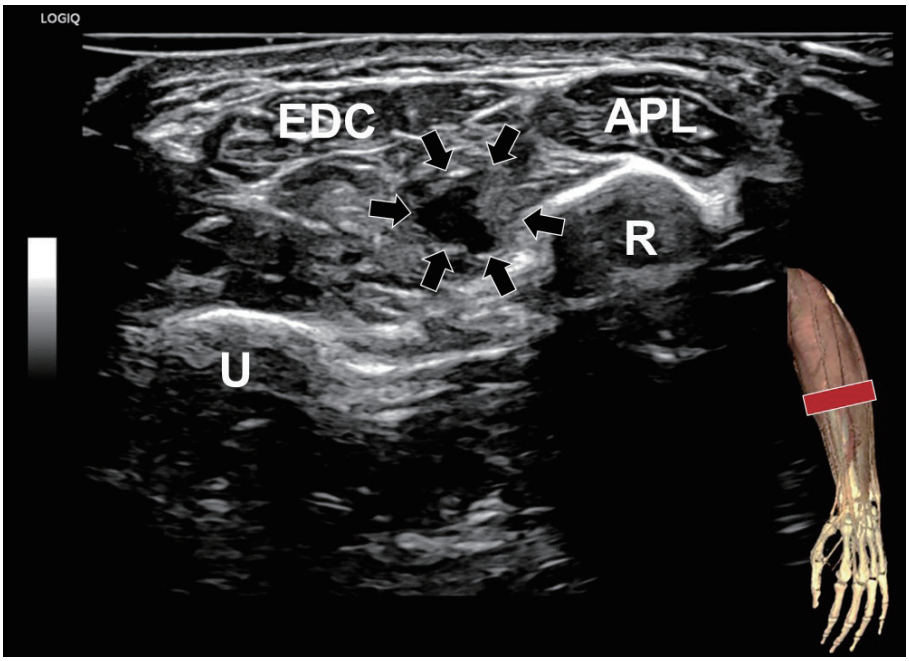

Figure 1. Axial Ultrasound Image Showing Tears (Black Arrows) Within the Extensor Pollicis Longus Muscle
Abbreviations: APL, abductor pollicis longus; EDC, extensor digitorum communis; R, radius; U, ulna.

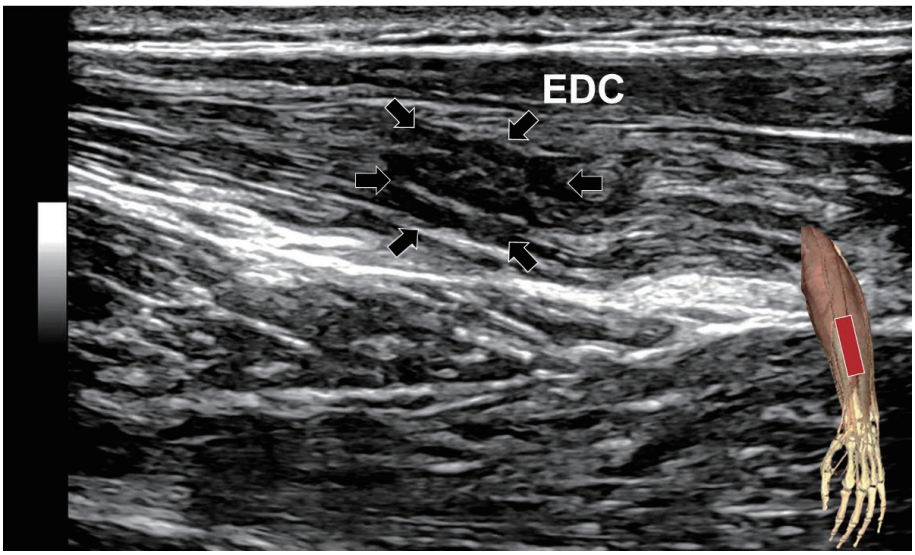

Figure 2. Longitudinal Ultrasound Image Showing Tears (Black Arrows) Within the Extensor Pollicis Longus Muscle
Abbreviation: EDC, extensor digitorum communis.

membrane in the middle third of the forearm. It passes obliquely around the Lister's tubercle of the radius, where it changes direction before inserting onto the base of the distal phalanx of the thumb. The muscle is innervated by the posterior interosseous nerve, a branch of the radial nerve [6]. Compared with the abductor pollicis longus and extensor pollicis brevis, the EPL has a longer and more angulated course, which increases its susceptibility to frictional stress, impingement, and rupture.

Spontaneous EPL rupture has been described following repetitive wrist motion, trauma, and corticosteroid injection. In this case, repetitive wrist loading during boxing and weight training likely produced microtrauma and progressive fiber degeneration, culminating in rupture. Dynamic ultrasound proved particularly valuable by providing both structural and functional information. It allowed precise identification of the affected muscle, characterization of the extent of rupture, and evaluation of residual contractility—all crucial for clinical decision-making and rehabilitation planning.

Conclusion

This case demonstrates the pivotal role of dynamic ultrasound in diagnosing musculotendinous injuries of the distal forearm. Familiarity with detailed sonoanatomy and the use of dynamic maneuvers enable clinicians to accurately localize lesions and assess muscle integrity in real time. The EPL, owing to its unique course around the Lister's tubercle, is particularly vulnerable to overuse and mechanical stress injuries, which can be effectively identified through high-resolution dynamic ultrasound.

Acknowledgments

This study was funded by the National Taiwan University Hospital, Bei-Hu Branch; the Ministry of Science and Technology, Taiwan (MOST 106-2314-B-002-180-MY3 and MOST 109-2314-B-002-114-MY3); and National Science and Technology, Taiwan (NSTC 112-2314-B-002-134, NSTC 113-2314-B-002-208-MY2, NSTC 113-2314-B-002-209-MY2 and NSTC 114-2923-B-002 -002 -MY3).

References

1. Chen YC, Wu WT, Mezian K, Ricci V, Özçakar L, Chang KV. Dynamic ultrasound examination for extensor pollicis longus tendon rupture after palpation-guided corticosteroid injection. *Diagnostics (Basel)*. 2023;13(5):959. doi:10.3390/diagnostics13050959
2. Milch E, Epstein MD. Traumatic rupture of the extensor pollicis longus tendon. *Ann Plast Surg*. 1987;19(5):460-462. doi:10.1097/00000637-198711000-00012
3. Özçakar L, Kara M, Chang KV, et al. EURO-MUSCULUS/USPRM Basic Scanning Protocols for wrist and hand. *Eur J Phys Rehabil Med*. 2015;51(4):479-484.

4. Chang KV, Wu WT, Özçakar L. Ultrasound imaging and rehabilitation of muscle disorders: Part 1. Traumatic injuries. *Am J Phys Med Rehabil*. 2019;98(12):1133-1141. doi:10.1097/PHM.0000000000001307
5. Chang KV, Wu WT, Tsai YY. De Quervain's Disease Reimagined. In: Chang KV, ed. *Ultrasonography of Musculoskeletal Pain: Insights into the Upper Extremity*. Singapore: Springer Nature Singapore; 2025:213-238.
6. Wu CH, Chang KV, Özçakar L, et al. Sonographic tracking of the upper limb peripheral nerves: a pictorial essay and video demonstration. *Am J Phys Med Rehabil*. 2015;94(9):740-747. doi:10.1097/PHM.0000000000000344