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Images in Pain Management

Component-Specific Diagnosis of Medial Epicondylitis Using High-Resolution Ultrasound: A Case of Flexor Digitorum Superficialis Tendon Tear

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Medial epicondylitis (golfer's elbow) is a frequent cause of medial elbow pain, and it typically affects individuals in their fourth to sixth decades of life [1]. The primary injury mechanism is that of repetitive eccentric loading of the forearm flexor–pronator complex and is often combined with valgus overload at the elbow [2]. We report a case of left medial elbow pain following an injury, whereby ultrasonography confirmed a partial tear of the flexor digitorum superficialis tendon. The role of high-resolution musculoskeletal ultrasound (US) in precision medicine is noteworthy.

A 57-year-old woman (working primarily in clerical duties) presented with a three-month history of left medial elbow pain. The pain had begun after pulling a suitcase (a gripping task involving eccentric loading of the wrist and finger flexor muscles) during which she had experienced a "tearing" sensation over the left medial elbow. From the following day onward, the pain had been exacerbated by gripping activities and elbow flexion, such as opening a door handle. The peak pain intensity reached from 7 to 8 on the Numeric Rating Scale. She had received conservative treatment—including heat therapy, electrical stimulation, and therapeutic US.

She was referred for a US examination, and initial evaluation revealed tenderness (intensity: 3–4) over the common flexor tendon. The transducer was initially positioned in the axial plane over the proximal volar forearm. From the radial to the ulnar aspect, the pronator teres, flexor carpi radialis, humeroulnar head of the flexor digitorum superficialis, flexor digitorum profundus, and flexor carpi ulnaris were visualized (Figure 1). Subsequently, the transducer was advanced proximally to assess the tendon insertions at the medial epicondyle [3,4]. On long-axis imaging, a focal hypoechoic area—consistent with a partial tear—was identified in the flexor digitorum superficialis tendon, superficial to the flexor digitorum profundus (Figure 2). Superb microvascular imaging demonstrated increased peripheral vascularity around the torn segment (Figure 3). Based on these findings, the patient was diagnosed with medial epicondylitis, with the primary pathology being a partial tear of the flexor digitorum superficialis tendon [5].

Historically, most reports have treated injuries at the medial epicondyle as involving the common flexor tendon as a single structure [1,5-7]. However, high-resolution US, combined with detailed anatomical

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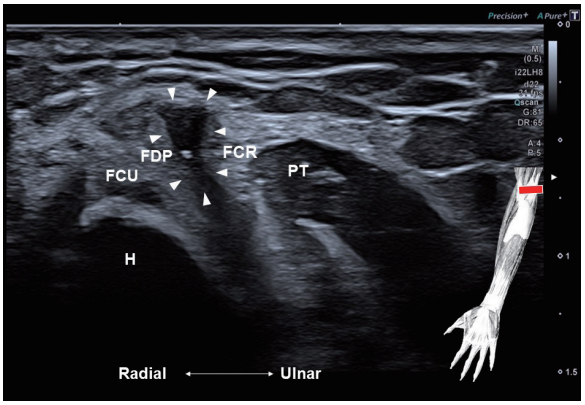

Figure 1. Short-Axis Ultrasound Image of the Common Flexor Tendon Demonstrating a Tear Involving the Flexor Digitorum Superficialis Tendon (White Arrowheads)

Abbreviations: FCR, flexor carpi radialis; FCU, flexor carpi ulnaris; FDP, flexor digitorum profundus; H, humerus; PT, pronator teres.

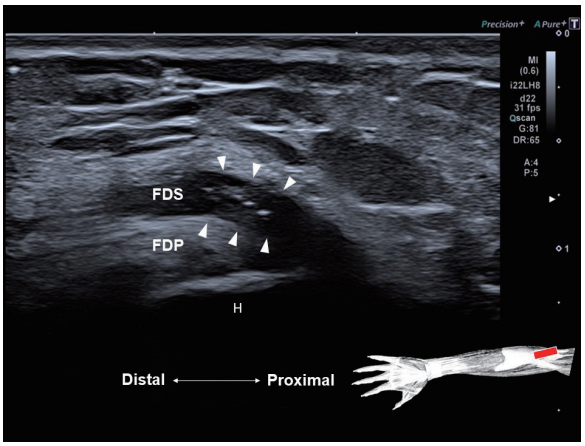

Figure 2. Long-Axis Ultrasound Image of the Common Flexor Tendon Demonstrating a Tear of the Flexor Digitorum Superficialis Tendon (White Arrowheads), Characterized by Focal Tendon Thickening and Loss of the Normal Fibrillar Architecture

Abbreviations: FDP, flexor digitorum profundus; FDS, flexor digitorum superficialis; H, humerus.

knowledge, allows precise localization of injured tendon components. In this case, the tear was identified between the flexor carpi radialis and flexor digitorum profundus (i.e., corresponding to the flexor digitorum superficialis). In addition, dynamic US further facilitated the lesion localization. Selective finger motions during real-time imaging allowed identification of the tendon component most symptomatic or mechanically involved. Eventually, the flexor digitorum superficialis was observed to be the primary injured tendon. High-resolution US not

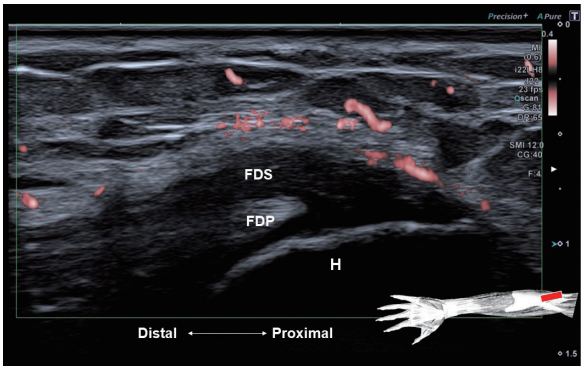

Figure 3. Superb Microvascular Imaging Showing Increased Peripheral Vascularity Surrounding the Torn Tendon Segment

Abbreviations: FDP, flexor digitorum profundus; FDS, flexor digitorum superficialis; H, humerus.

only enables precise targeted injection therapy but may also provide insights for future studies regarding the functional roles and pathological contributions of individual components of the common flexor tendon [8].

In conclusion, this case highlights the value of high-resolution musculoskeletal US for precise anatomical diagnosis of medial elbow pain and its potential to guide targeted therapy and future research.

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