

## LETTER TO THE EDITOR

# An Intramuscular Supinator Rupture Disguising as a Partial Distal Biceps Tendon Rupture

## Dear Editor

A painful popping sensation around the elbow is usually caused by a distal biceps tendon rupture. These injuries occur predominantly in men (95% of cases) and are often associated with gymnastics, weightlifting, and bodybuilding.<sup>1,2</sup> A focused physical examination is essential, and imaging can assist in establishing the diagnosis.<sup>3,4</sup> We report a seemingly classic case with an unexpected underlying pathology.

A 33-year-old woman presented to the outpatient clinic with a history of a painful pop in the anterior aspect of her right elbow during CrossFit training two months earlier. At the time of injury, she was performing pull-ups with her forearm pronated. The pain was aggravated by pulling with the elbow extended and the forearm pronated. She reported finger weakness and tingling.

Physical examination revealed tenderness over the radial tuberosity and distal biceps tendon, extending toward the medial epicondyle. The forearm was swollen. The hook test was negative, and the biceps crease ratio was elevated. Resisted supination with the elbow flexed was painful. Finger flexion and extension were weak, and dysesthesia was present in the fingers.

The initial clinical diagnosis was a partial distal biceps tendon tear. However, MRI showed that both bundles of the distal biceps tendon were intact [Figure 1] and demonstrated edema in the supinator muscle near its insertion on the radius [Figure 2]. The final diagnosis was an intramuscular rupture of the supinator.

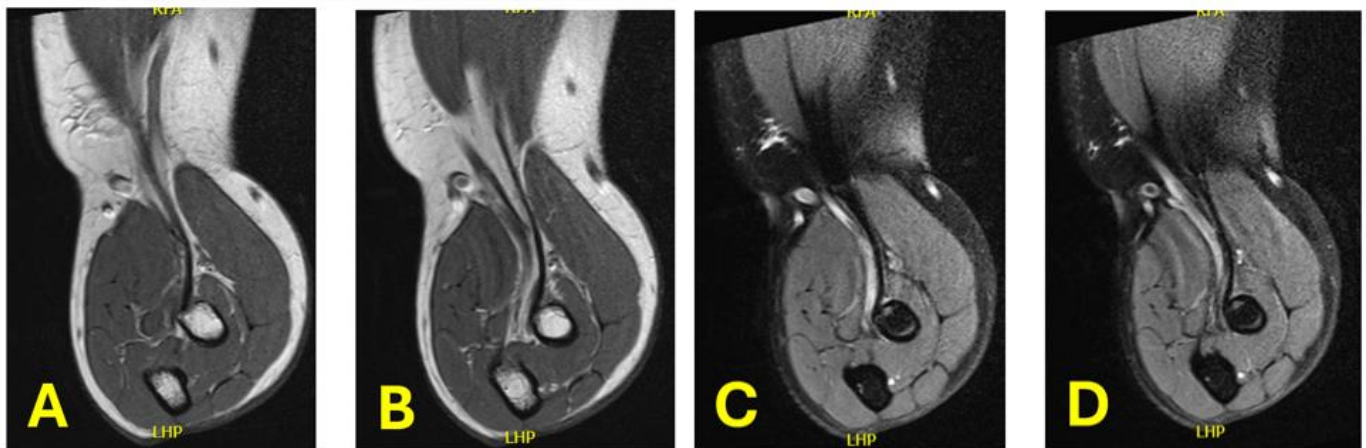


Figure 1. Magnetic resonance imaging images in flexion-abduction-supination (FABS) view of the right elbow. A and B: T1 sequence images showing the intact attachment of the distal biceps tendon at the radial tuberosity. C and D: Short tau inversion recovery (STIR) images of the same segments as A and B. There are no signs of tendinopathy or bursitis around the distal biceps tendon

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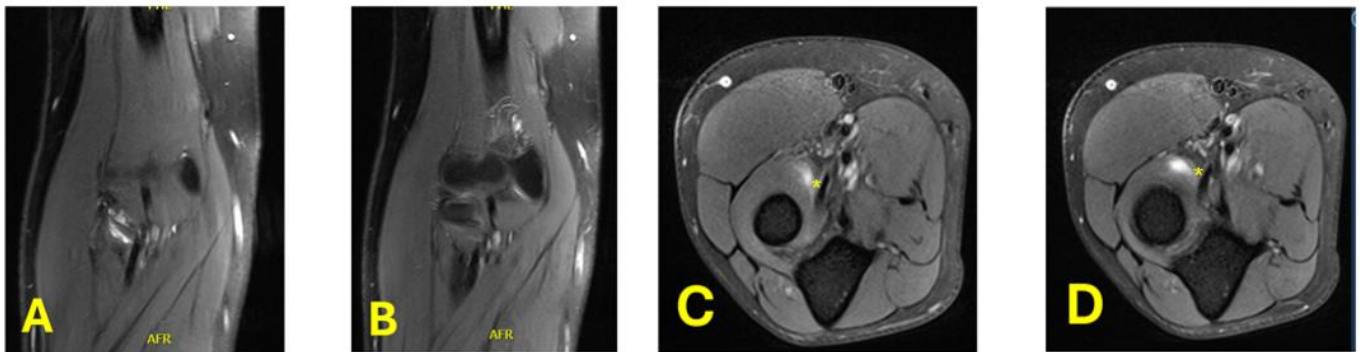


**Figure 2.** Magnetic resonance imaging images of the right elbow in extension using short tau inversion recovery (STIR). A and B: coronal images showing limited, cyst-like fluid accumulation of fluid around the radial neck. There is no joint effusion present. C and D: fluid in the supinator muscle, not in relation to the distal biceps tendon (\*)

Conservative management consisted of pain-guided activity modification and avoidance of high-strain exercises. After one week, the pain had decreased, and physical examination showed a negative hook test, no pain on palpation or supination, and a normal range of motion. She resumed CrossFit after several months. At the two-year follow-up, she still perceived the elbow as weaker during CrossFit or HYROX sessions; nevertheless, she remained able to perform physical work.

Supinator muscle rupture has been described in only two case reports.<sup>5,6</sup> One described a proximal avulsion associated with a distal biceps tendon rupture.<sup>6</sup> The other involved a chronic injury and focused primarily on diagnosis rather than clinical outcome.<sup>5</sup>

The supinator and biceps brachii muscles both contribute actively to forearm supination.<sup>7</sup> The biceps generates four times greater torque when the forearm is positioned between 20 and 40 degrees of pronation because the radial tuberosity acts as a lever in this position.<sup>8</sup> Given this biomechanical relationship, the movement performed by the patient likely generated high isometric stress within the supinator muscle. Posterior interosseous nerve neuropathy was associated with the supinator edema.

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