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Persistent Anterior Elbow Pain Caused by a Partial Distal Biceps Tendon Tear With Bicipitoradial Bursitis: A Case Report

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Abstract

Partial distal biceps tendon tears are an uncommon cause of anterior elbow pain and can be difficult to diagnose because physical examination findings may be nonspecific and MRI has limited sensitivity for partial tears. We report the case of a 47-year-old right-hand-dominant man who developed sudden right elbow pain while readjusting a cardboard box. Although his range of motion improved with conservative treatment, pain during forearm supination and elbow flexion persisted and prevented him from returning to work. The MRI demonstrated bicipitoradial bursitis and partial discontinuity of the distal biceps tendon. Because of persistent symptoms and the substantial impact on his ability to work, surgery was selected after discussion of both continued conservative management and surgical treatment with the patient. Intraoperatively, fluid was noted within the bicipitoradial bursa, and an approximately 50% partial tear of the distal biceps tendon was identified after excision of the bursa. The tendon was repaired using two suture anchors. The patient returned to work with activity restrictions six weeks after surgery. At approximately 2.5 years postoperatively, he reported no pain or functional limitations, although mild discomfort occasionally occurred when lifting heavy objects. This case highlights the importance of considering a partial distal biceps tendon tear in patients with a clearly defined onset of anterior elbow pain and of integrating the clinical history, physical examination findings, and MRI findings when establishing the diagnosis.

Categories: Orthopedics
Keywords: antecubital fossa pain, bicipitoradial bursitis, distal biceps tendon, elbow pain, magnetic resonance imaging, partial tear, suture anchor repair

Introduction

A partial distal biceps tendon tear is a potential cause of antecubital fossa pain. Unlike complete ruptures, partial tears may be difficult to diagnose using conventional physical examination tests [1,2]. Furthermore, MRI has limited sensitivity for detecting partial tears, which may therefore be overlooked, leading to delayed diagnosis [2,3].

The bicipitoradial bursa is located adjacent to the distal biceps tendon, and bursitis can also cause anterior elbow pain and tenderness [2]. Williams et al. reported that bicipitoradial bursitis was observed on MRI in 11 of 20 patients (55%) with partial distal biceps tendon tears [4]. Because these conditions can coexist and produce overlapping symptoms, identifying a concomitant partial tear based on clinical findings alone may be challenging [2,4]. Therefore, integrating the clinical history, physical examination findings, and MRI findings is important for establishing an accurate diagnosis. Here, we report a case of a partial distal biceps tendon tear associated with bicipitoradial bursitis in a patient with persistent elbow pain, in which MRI contributed to the diagnosis.

This case was previously presented as part of a two-case presentation at the 37th Annual Meeting of the Japan Elbow Society, held on March 14-15, 2025.

Case Presentation

A 47-year-old right-hand-dominant male office worker presented to our hospital on the day of symptom onset, after experiencing right elbow pain while readjusting a cardboard box. The medical history was notable for hypertension and gout. Initial examination revealed that the range of motion of the right elbow was limited, with extension to -70° and flexion to 110°. Diffuse tenderness was present around the elbow, including both the medial and lateral aspects. Radiographs showed no evidence of fracture or dislocation. Because of the diffuse tenderness, a ligamentous injury was initially suspected. However, a definitive diagnosis could not be established. Therefore, conservative treatment with splint immobilization was initiated.

The patient continued to experience pain during exertion three weeks after the injury, which prevented him from working. Despite improvement in the range of motion in the elbow to 0° extension and 140° flexion,

the pain persisted during forearm supination, with localized tenderness over the distal biceps tendon. As a definitive diagnosis could not be established based on clinical findings alone, an MRI was performed. This revealed signal changes within the bicipitoradial bursa and partial discontinuity of the distal biceps tendon, leading to a diagnosis of bicipitoradial bursitis associated with a partial tear of the distal biceps tendon (Figure *1*). Although preoperative MRI demonstrated a partial distal biceps tendon tear, the extent of the tear could not be accurately determined.

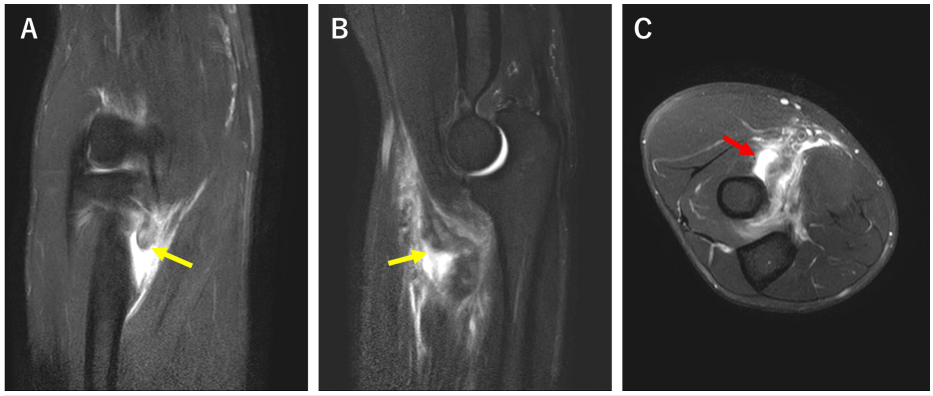


FIGURE 1: Preoperative MRI

Preoperative T2-weighted spectral attenuated inversion recovery (SPAIR) MRI in the coronal (A), sagittal (B), and axial (C) planes demonstrated a partial tear of the distal biceps tendon and bicipitoradial bursitis. The yellow arrows in panels A and B indicate partial discontinuity of the distal biceps tendon, whereas the red arrow in panel C indicates fluid accumulation within the bicipitoradial bursa.

Approximately one month after the injury, resisted forearm supination elicited pain, whereas resisted elbow flexion did not elicit pain. However, elbow flexion to 90° with the forearm in maximal pronation elicited pain even without resistance. Anterior swelling of the elbow and localized tenderness over the distal biceps tendon were also observed, and the hook test was negative. Although the duration of conservative treatment was relatively short, the patient continued to experience elbow pain when pronating his forearm while holding an object or exerting force during work-related activities, preventing him from performing his usual work duties. Following a discussion of continued conservative management and surgical treatment, the patient elected to undergo surgery.

Elbow surgery was performed using an anterior approach. During surgery, fluid was noted within the bicipitoradial bursa. After excision of the bursa, a partial tear was identified and visually estimated to involve approximately 50% of the distal biceps tendon (Figure *2*). The remaining intact tendon fibers were preserved without release. Two JuggerKnot® suture anchors (Zimmer Biomet, Warsaw, IN, USA) were inserted into the radial tuberosity, and tendon repair was performed. The elbow was immobilized postoperatively using a splint. Gentle passive range-of-motion exercises were initiated at three weeks postoperatively. At six weeks postoperatively, active range-of-motion exercises were initiated, and the patient returned to work with activity restrictions. Strengthening exercises were initiated at three months postoperatively. No postoperative complications were observed.

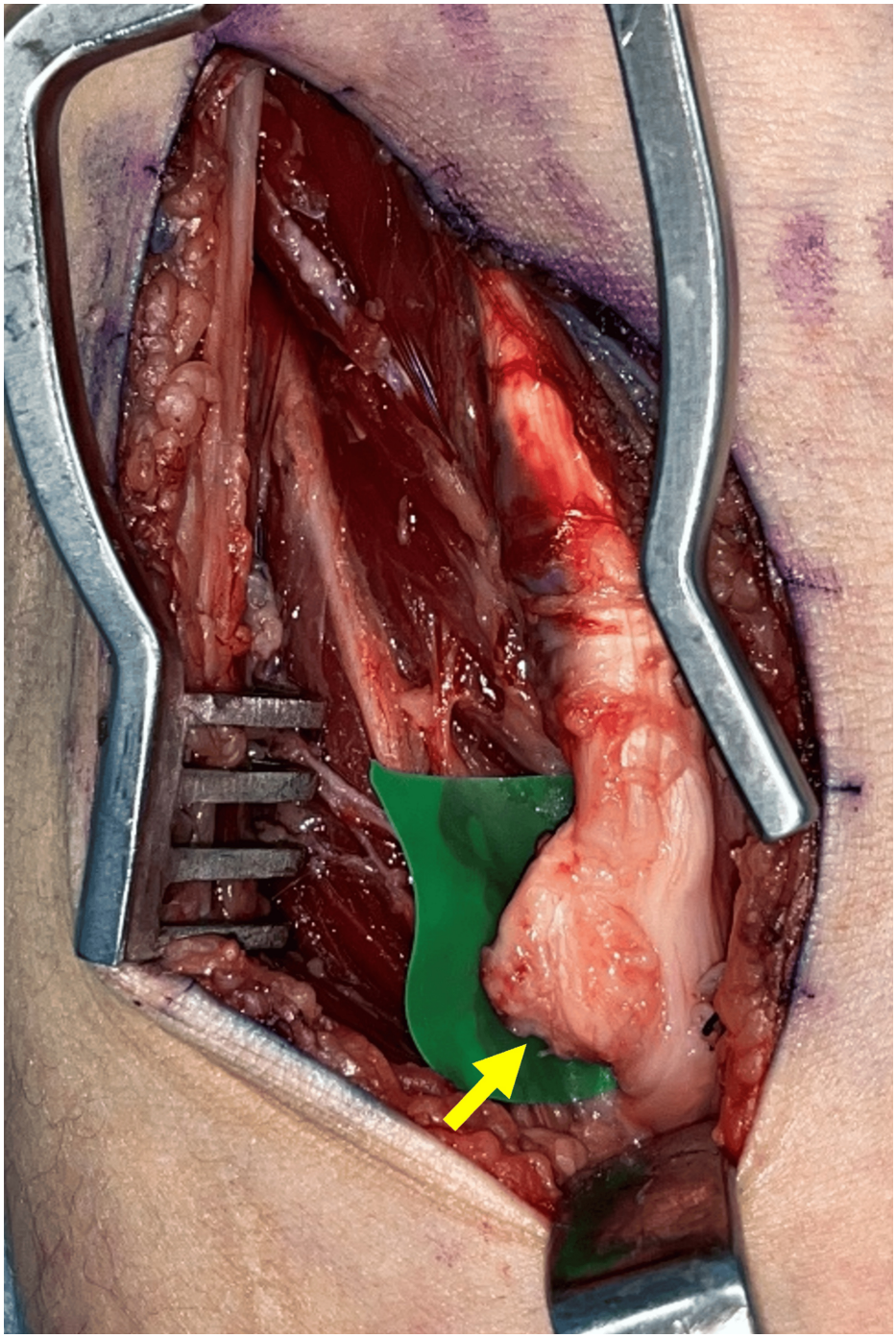


FIGURE 2: Intraoperative findings of the distal biceps tendon

Intraoperative photograph showing an approximately 50% partial tear of the distal biceps tendon (yellow arrow) after excision of the bicipitoradial bursa.

An MRI was obtained three months postoperatively to assess tendon continuity before the initiation of strengthening exercises and demonstrated continuity of the repaired distal biceps tendon without evidence of rerupture (Figure *3*). At the final in-person follow-up 4.5 months postoperatively, the patient reported no pain during forearm supination or pronation, although mild tenderness over the distal biceps tendon persisted. The range of motion in the treated elbow was 5° extension and 140° flexion, and the Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH) score was 22.7 [5]. At approximately 2.5 years postoperatively, during a telephone interview, the patient reported no ongoing pain or perceived functional limitations, although he occasionally experienced mild discomfort when lifting heavy objects.

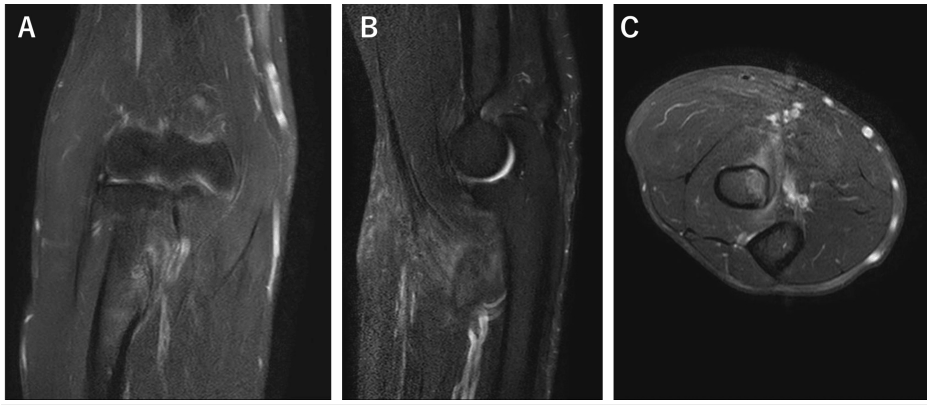


FIGURE 3: Postoperative MRI

The T2-weighted SPAIR magnetic resonance images obtained three months postoperatively in the coronal (A), sagittal (B), and axial (C) planes demonstrated continuity of the repaired distal biceps tendon without evidence of rerupture.

SPAIR: Spectral attenuated inversion recovery

Discussion

Partial distal biceps tendon tears are a recognized cause of antecubital fossa pain [2]. Although swelling and tenderness may occur near the distal biceps tendon insertion, differentiating a partial tear from bicipitoradial bursitis based on tenderness alone can be difficult because both conditions involve the same anatomical region [2]. Tests that are useful for diagnosing complete distal biceps tendon rupture, such as the hook, supination-pronation, and squeeze tests, may remain negative in partial tears [2]. The distal biceps provocation test may aid in identifying distal biceps tendon pathology. However, a positive result does not necessarily indicate a partial tear [1]. Therefore, physical examination findings alone may not establish a definitive diagnosis [6].

In the present case, pain and tenderness gradually became localized to the distal biceps tendon. Although physical examination findings alone were insufficient to distinguish a partial distal biceps tendon tear from bicipitoradial bursitis, the sudden onset of symptoms during a specific activity was an important clinical clue. In patients presenting with symptoms around the distal biceps tendon after such a clearly defined onset, the possibility of a partial tear should be considered rather than attributing the symptoms solely to an inflammatory condition. Because partial distal biceps tendon tears are encountered less frequently in routine practice, awareness of this condition is important to avoid overlooking it in the differential diagnosis [2,7].

An MRI is useful for evaluating distal biceps tendon injuries. However, its sensitivity for partial tears is limited. A previous study reported a sensitivity of 59.1% and a specificity of 100% for detecting partial tears [3]. In the present case, MRI demonstrated both bicipitoradial bursitis and partial discontinuity of the distal biceps tendon, allowing the partial tear to be identified preoperatively. However, because partial tears may be missed on MRI and may coexist with bicipitoradial bursitis, the absence of a clear tear on MRI does not necessarily exclude this diagnosis [3,4]. The MRI findings should therefore be interpreted in conjunction with the clinical history and physical examination findings.

The educational value of this case lies in illustrating the diagnostic reasoning process, from initially nonspecific symptoms to the identification of a partial distal biceps tendon tear through repeated clinical assessments and MRI evaluation, rather than merely reporting the coexistence of a partial tear and bicipitoradial bursitis. Initial treatment for partial distal biceps tendon tears generally consists of conservative management, whereas surgery may be considered for persistent symptoms despite conservative treatment or for larger tears [2,8]. In the present case, although the duration of conservative treatment was relatively short, persistent pain during forearm supination and elbow flexion prevented the patient from returning to work. The MRI confirmed a partial distal biceps tendon tear, which, together with the substantial impact of the symptoms on his ability to work, supported consideration of surgical treatment. Both continued conservative treatment and surgical intervention were discussed with the patient, and surgery was ultimately selected through shared decision-making. Following surgery, pain relief and functional improvement were observed, and the patient returned to work with activity restrictions six weeks after surgery. However, the QuickDASH score of 22.7 at 4.5 months postoperatively indicated that some degree of upper extremity disability remained. This may reflect incomplete functional recovery at this relatively early postoperative stage. At approximately 2.5 years postoperatively, the patient reported no perceived functional limitations during telephone follow-up, although occasional mild discomfort persisted

when lifting heavy objects. The findings from a single case cannot establish the superiority of surgery over continued conservative treatment. Nevertheless, surgical treatment may be a reasonable option for selected patients with persistent symptoms that substantially interfere with work or daily activities [7,8].

This report has several limitations. First, it features a single case, and the findings cannot be generalized to all patients with partial distal biceps tendon tears. Second, because the duration of conservative treatment was relatively short, the outcome of continued conservative management in this patient remains unknown. Third, because bursectomy and tendon repair were performed simultaneously, the relative contribution of each procedure to symptom improvement could not be determined. Fourth, the preoperative QuickDASH score was not obtained, limiting the quantitative assessment of postoperative functional improvement. In addition, elbow flexion and forearm supination strength were not quantitatively evaluated. Finally, the last in-person follow-up was performed 4.5 months postoperatively, and the longer-term outcome was assessed only by telephone interview.

Conclusions

A partial distal biceps tendon tear should be considered in patients with persistent anterior elbow pain, particularly when symptoms begin suddenly during a specific activity and subsequently localize to the distal biceps tendon. An MRI can aid in the diagnosis. However, because partial tears may be missed, MRI findings should be interpreted in conjunction with the clinical history and physical examination findings to achieve an accurate diagnosis.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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