

A long head of the biceps tendon confluent with the intra-articular rotator cuff: arthroscopic and MR arthrographic findings

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Received: 10 October 2007 / Published online: 12 January 2008
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Abstract Many anomalous origins of the long head of the biceps tendon (LHBT) have been reported. However, developmental anomalies of the LHBT are rarely encountered in daily practice. We report a patient with an anomalous LHBT that was adherent to and confluent with the rotator cuff throughout its intra-articular course and present the clinical, magnetic resonance arthrography, and arthroscopic findings.

Keywords Long head of the biceps tendon · Anatomic variation · Anomalous origin · Shoulder arthroscopy

Introduction

Many anomalous origins of the long head of the biceps tendon (LHBT) have been reported [1], but developmental anomalies of the LHBT are rarely encountered in daily practice [7]. While the literature describes these various intra-articular biceps tendon anchors, only a few reports detail a LHBT origin associated with the intraarticular rotator cuff tendon [2, 3, 7]. To our knowledge, only one case had been reported about the arthroscopic findings of a LHBT that was adherent to and confluent with the rotator cuff throughout its intra-articular course [3]. We report a patient with an anomalous LHBT that was adherent to and confluent with the rotator cuff throughout its intra-articular

course and present the correlated clinical and magnetic resonance (MR) arthrographic findings to arthroscopic findings.

Case report

A 52-year-old, right-hand-dominant woman presented to our clinic because of pain and limited range of motion (ROM) in the right shoulder. On clinical evaluation, when the pain was persistent during shoulder motion, the patient had positive Neer and Hawkins tests, but negative Speed, Yergason, and O'Brien tests. Preoperative MR arthrography images suggested a bursal side supraspinatus tendon partial tear. On retrospective review of the MR images in the operating room, although the LHBT was not evident within the glenohumeral joint in the oblique sagittal (Fig. 1) and oblique coronal (Fig. 2) images, the LHBT was identified adjacent to the humeral head and within the intertubercular groove (Fig. 3). Only a small prominence on the undersurface of the supraspinatus tendon was observed in the sequential oblique coronal images.

Arthroscopic examination showed an anomalous condition of the biceps tendon at its attachment to the superior labrum. Throughout its intra-articular course, the tendon was adherent to and contiguous with the undersurface of the rotator cuff. Probing the biceps tendon revealed that it adhered to the cuff (Fig. 4a, b). The remainder of the arthroscopic examination was normal (Fig. 4c). Since we postulated that this biceps tendon anomaly was not related to the patient's symptoms, surgery was not planned regarding the biceps tendon. After arthroscopic inspection of a bursal partial-thickness tear of the infraspinatus tendon (Fig. 4d), we opened the thin area of the tendon using a shaver and repaired the rotator cuff tendon using the standard suture

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Fig. 1 The long head of the biceps tendon was not evident within the glenohumeral joint in the three sequential oblique sagittal MR arthrography images

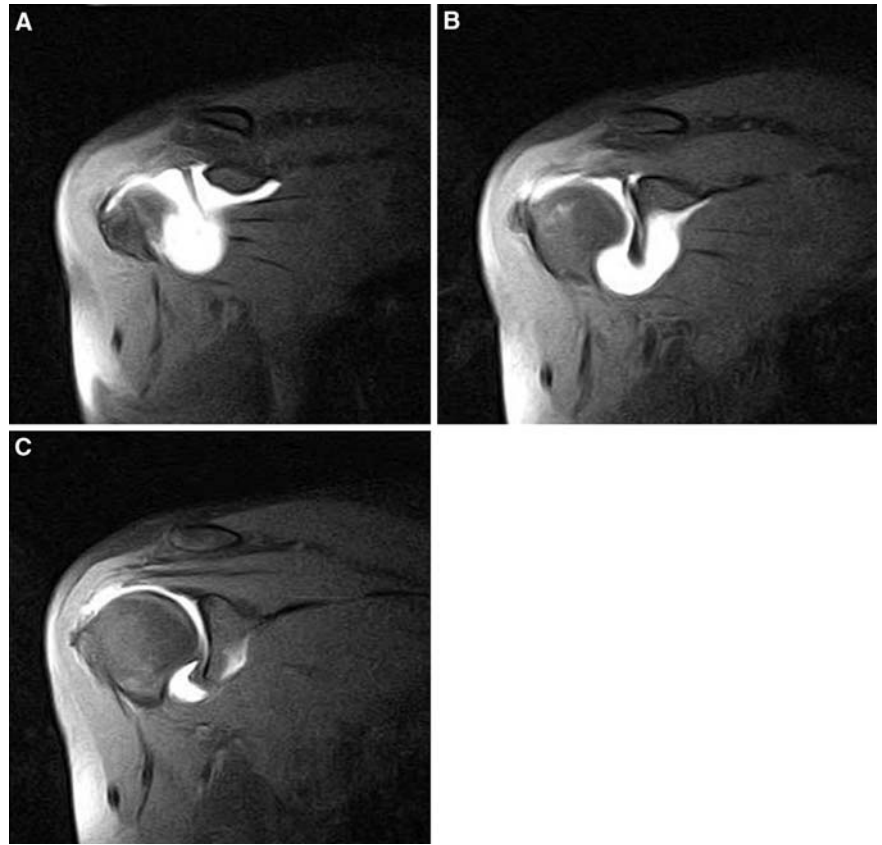


Fig. 2 The long head of the biceps tendon was not evident within the glenohumeral joint in the three sequential oblique coronal MR arthrography images. Only a small prominence was observed on the undersurface of the supraspinatus tendon

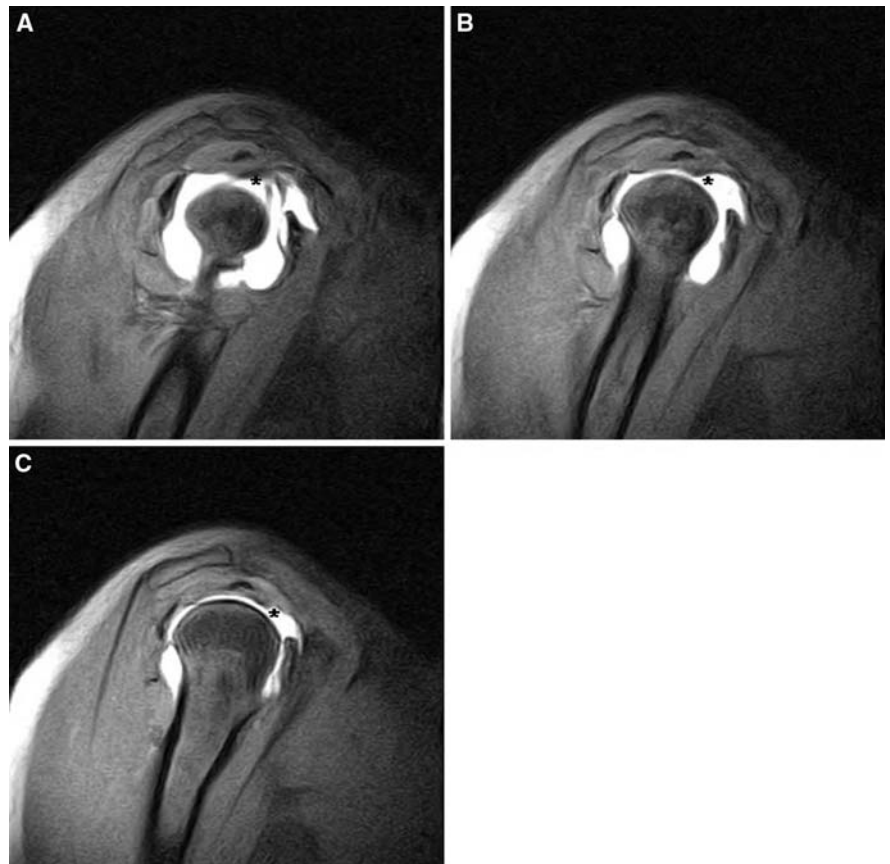


Fig. 3 The long head of the biceps tendon was identified adjacent to the humeral head and within the intertubercular groove in three sequential axial MR arthrography images

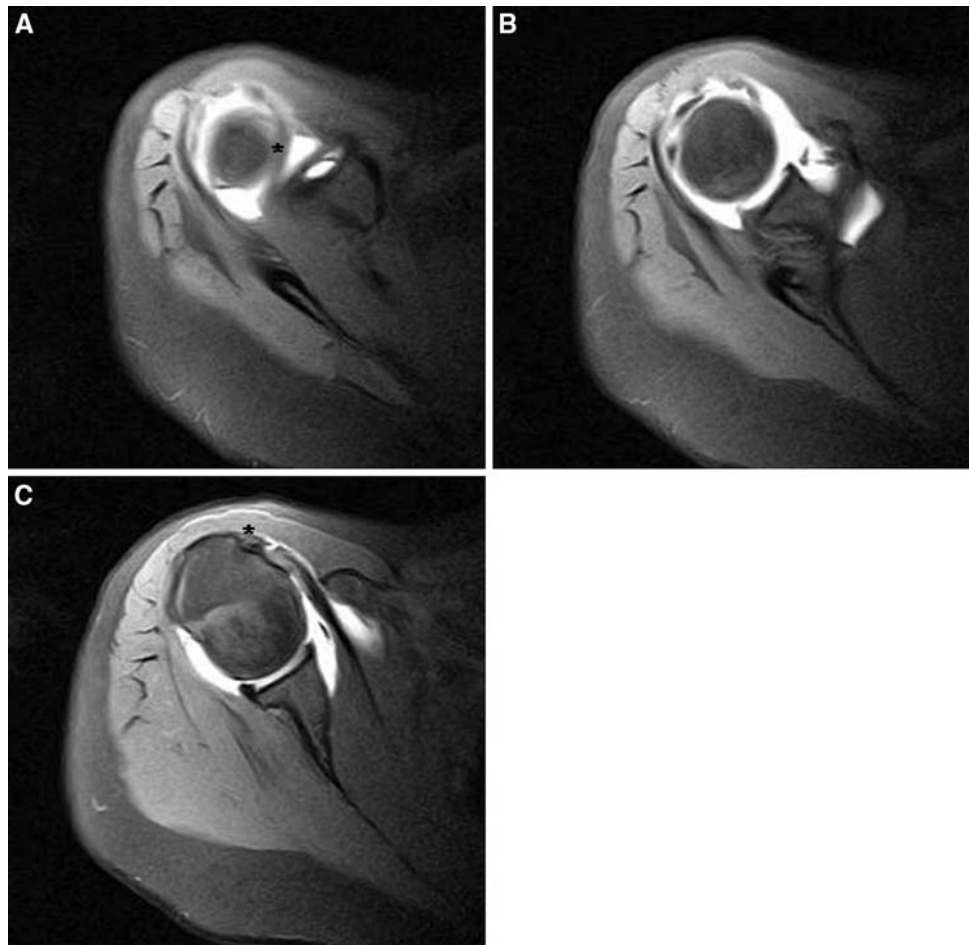
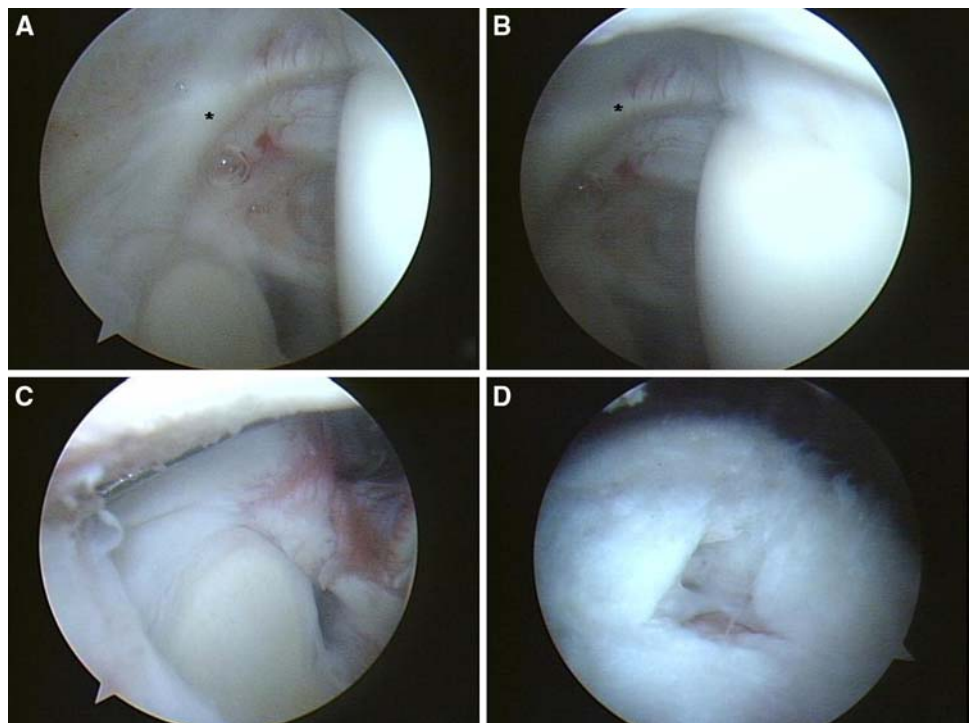


Fig. 4 **a, b** Arthroscopic examination showed an anomalous condition of the biceps tendon at its attachment to the superior labrum. Throughout its intra-articular course, the tendon was adherent to and contiguous with the undersurface of the rotator cuff. Probing the biceps tendon revealed that it was adherent to the cuff. **c** No superior detachment of the labrum and biceps origin was observed on diagnostic probing. **d** A bursal partial-thickness tear of the infraspinatus tendon was seen on subacromial inspection



method, which involves a full-thickness repair with two suture anchors. Twenty-three months after surgery, the patient has no symptoms related to the rotator cuff tear and no ROM limitation. On clinical evaluation, the patient had negative Neer, Hawkin, apprehension, Speed, Yergason, and O'Brien tests. She has returned to work without restriction and has no subjective or objective signs of a pathological condition.

Discussion

The classical origin of the long head of the biceps brachii is the supraglenoid tubercle. About 50% of biceps tendons are attached to the superior glenoid labrum, and the remainders are attached to the supraglenoid tubercle [6]. Rarely, the biceps presents with a large synovial mesentery attached to the articular side of the supraspinatus tendon [5]. In addition, a few reports have described an anomalous LHBT origin associated with the intraarticular rotator cuff tendon [2, 3, 7]. Yeh et al. [7] reported a cadaver case with an intracapsular origin of the long head of the biceps tendon using MR arthrography, arthroscopy, and anatomic dissection. Richards and Schwartz [3] described a LHBT that originated from the anterior border on the undersurface of the supraspinatus tendon, but was otherwise normal as it traversed the glenohumeral joint. Like presented our case, MacDonald [2] described arthroscopic finding of a LHBT that originated from the supraglenoid area and was adherent to and confluent with the rotator cuff throughout its intra-articular course. Our case report is a description of a rare variation of biceps tendon, which is with its intra-articular course adherent with the undersurface of the rotator cuff. This condition has been previously described and named (BARC complex: biceps attachment into rotator cuff) by

Snyder [4]. However, correlated clinical and MR findings to arthroscopic findings were not reported.

Although the anomalous condition of the LHBT described in this patient might not be considered pathogenic, recognizing abnormalities of the biceps tendon is important because they are a common source of shoulder pain, both alone and in combination with abnormalities of other structures. This report is new with regard to variation of biceps tendon, which is with its intra-articular course adherent with the undersurface of the rotator cuff in the context of detailed MR-imaging and thus valuable to shoulder arthroscopists, bringing them into mind this rare biceps variation. In addition, one important clinical conclusion could be that surgeons should be aware of this condition and not mis-interpret it as a pathology requiring surgical manipulation.

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