Intratendinous supraspinatus cyst as a cause of shoulder impingement

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Abstract

We report the case of a 29-year-old gentleman with shoulder impingement. An articular-sided intratendinous supraspinatus cyst was identified as the cause of his symptoms. Arthroscopic cyst debridement resulted in a good outcome at 1-year follow-up. Cysts around the shoulder are a well described pathological entity. They consist of different categories, including intraosseous cysts of the humeral head and glenoid, paralabral cysts and cysts associated with the acromioclavicular joint. Although paralabral cysts that lie intramuscularly or between the muscle bellies have frequently been reported, this is the first report of an intratendinous supraspinatus cyst with an intact rotator cuff. We describe the case, its management and the postsurgical outcome.

Keywords

Ganglion cyst, impingement, paralabral cyst, rotator cuff, shoulder, supraspinatus tendon

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Introduction

Cysts around the shoulder are frequently detected on magnetic resonance imaging (MRI). Intramuscular rotator cuff cysts have been well characterised and found to be associated with rotator cuff disease.⁷ This report describes the very unusual occurrence of a cyst within the supraspinatus tendon itself, causing shoulder impingement. Intratendinous supraspinatus cysts have not been described before. We report the patient's clinical presentation, management, clinical and patient-reported outcomes along with follow-up MRI results.

Case report

A 29-year-old gentleman presented to our clinic with recurrent right shoulder dislocation. Following an initial traumatic dislocation, he felt his shoulder was unstable and could easily dislocate. On examination, he had normal, pain-free range of motion, with mild symptoms of impingement. The anterior drawer test and the anterior apprehension test were positive. Physiotherapy provided no relief of his symptoms. Magnetic resonance imaging (MRI) of his shoulder revealed an anterior labral tear between 3 and 6

o'clock. There was no Hill–Sachs defect. There was a multilocular cyst measuring 17 mm × 5 mm × 6 mm, tracking between the supraspinatus and infraspinatus tendons, directed from the articular surface towards the muscle belly.

The patient underwent arthroscopic anterior shoulder stabilization with the repair of the labral tear using anchors and a subacromial soft-tissue decompression was also carried out. Intraoperatively, there was no evidence of a rotator cuff tear. He initially recovered well from the procedure and regained a good range of motion but his progress plateaued after 3 months despite ongoing rehabilitation, with increasing pain and signs of supraspinatus impingement. A subacromial injection with a mixture of 0.5% bupivacaine and

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Figure 1. Magnetic resonance images of the right shoulder following labral repair, demonstrating an articular-sided supraspinatus tendon cyst causing mass effect and apparent impingement on the articular surface of the tendon. (a) Coronal oblique short T1 inversion recovery image. (b) T2-weighted turbo spin-echo sagittal oblique image.

Figure 2. Intraoperative arthroscopic pictures of right shoulder demonstrating a supraspinatus cyst. (a) Pre-debridement. (b) Post-debridement. HH, humeral head; SST, supraspinatus tendon; LHB, long head of biceps tendon. Arrowheads indicate a debrided cyst.

40 mg of methylprednisolone failed to improve his shoulder pain despite good short-term relief.

Repeat MRI confirmed healing of the labral repair. The supraspinatus cyst had enlarged, measuring 17 mm × 11 mm × 7 mm. The cyst appeared bilocular and lay close to the articular surface of the tendon, and appeared to impinge on the articular surface of the tendon (Figure 1).

Repeat shoulder arthroscopy was carried out after 1 year and a large intratendinous supraspinatus tendon cyst was noted on the articular surface, extending to the infraspinatus tendon, which was debrided using a soft tissue shaver (Figure 2). The previous labral repair was found to be intact. Histological examination of the cyst wall revealed fibrocollagenous tissue.

At 10-month follow-up, the patient recovered well with complete resolution of his symptoms and with a normal range of motion. Repeat MRI showed that the previous cyst had almost completely resolved, with a small 5 mm × 2 mm residual cyst lying within the posterior aspect of the rotator cuff. His Oxford Shoulder Score improved from 40 to 46 and his Disabilities of the Arm, Shoulder and Hand score improved from 30 to 0.

Discussion

This case report demonstrates how an intratendinous supraspinatus cyst can cause pain and impingement and also that surgical debridement of the cyst is an

effective treatment leading to resolution of the symptoms.

Whether the enlargement of the cyst was spontaneous or related to the preceding arthroscopy remains unclear. One study of 29 symptomatic patients after rotator cuff repair showed one postsurgical intramuscular rotator cuff cyst, although with no reported cases of intratendinous cysts previously.¹ An association between the cyst and the labral tear appears to be unlikely because there was no direct anatomical connection between the labrum and the supraspinatus tendon cyst.

The presence of cysts around the shoulder has only become apparent now that MRI has become more routine.

Intraosseous humeral head cysts are well described in the literature.^{2–6} Their prevalence in 100 asymptomatic patients was found to be 24%,⁶ whereas, in patients with rotator cuff tears with shoulder pain, the prevalence of the cysts was reported to be between 9%⁴ and 38%.² Several studies have shown an association with partial and full-thickness rotator cuff tears involving the tendon footprint.^{2–5}

Paralabral cysts occur in 2% to 3% of symptomatic shoulders.^{7,8} They are located mostly medial to the glenoid rim, lying in the supraspinatus or infraspinatus fossa, and can enlarge around the supraglenoid and spinoglenoid notch. They are often asymptomatic but can be associated with rotator cuff tears⁷ or glenoid labral tears.⁸ Dependent on location and size, they may cause suprascapular nerve impingement, especially if they are close to the suprascapular or spinoglenoid notch, giving rise to supraclavicular neuropathy with posterior shoulder pain, muscle fatigue and atrophy.⁹ Most paralabral cysts are amenable to arthroscopic debridement when the labral tear can also be addressed and repaired. Spontaneous resolution of cysts following repair of the labral tear has also been observed.¹⁰

Acromioclavicular joint (ACJ) cysts may occur in a degenerative ACJ or in association with rotator cuff tears.¹¹ To avoid recurrence, a distal clavicle excision can be carried out.^{11,12}

Intra-articular glenohumeral cysts are extremely rare and have only been reported once in association with a labral tear.¹³

To our knowledge, this is the first reported case of an intratendinous cyst causing mechanical symptoms of impingement, which has responded well to decompression of the cyst. The cause of this cyst is unclear, although it may have been the result of progressive degeneration of an intrasubstance tear of the supraspinatus tendon secondary to previous shoulder instability.

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