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Case Report

Gouty Tophus Mimicking Calcific Tendinitis of the Supraspinatus: A Case Report and Literature Review

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Abstract

Introduction: Gout affecting the shoulder joint is exceptionally rare. It can present with clinical and radiological features similar to calcific tendinitis, leading to misdiagnosis and inappropriate management.

Case Report: A 37-year-old male presented with severe right shoulder pain for three months, unrelieved by repeated steroid injections. Radiographs and Magnetic Resonance Imaging (MRI) demonstrated a radiopaque intratendinous lesion within the supraspinatus tendon, suggestive of calcific tendinitis. The preoperative blood test showed a uric acid level of 6.8, which was within the normal range. Arthroscopic exploration revealed multiple white chalky deposits on the glenoid and humeral head, as well as dense intratendinous infiltration of tophaceous material. Histopathologic analysis confirmed monosodium urate crystal deposition. Because of deep tendon involvement, only partial arthroscopic debridement was performed, followed by side-to-side rotator cuff repair. The patient received urate-lowering medication postoperatively. He experienced rapid pain relief and regained full shoulder motion within three months, with no recurrence at one-year follow-up.

Conclusion: Gouty tophus of the shoulder may mimic calcific tendinitis both clinically and radiographically. Diagnostic arthroscopy remains essential in unclear cases. Even when complete excision is not feasible, partial debridement combined with systemic urate-lowering therapy can lead to excellent recovery and prevent recurrence.

Keywords: Gout; Shoulder; Supraspinatus; Rotator Cuff; Arthroscopy; Tophus

Introduction

Gout is a chronic metabolic disorder caused by deposition of Monosodium Urate (MSU) crystals in joints and periarticular tissues, resulting in recurrent inflammatory arthritis and eventual joint destruction. The condition typically affects the lower extremity joints particularly the first metatarsophalangeal, ankle and knee—while involvement of the shoulder is extremely uncommon [1,2]. Reports of gout affecting the rotator cuff or subacromial bursa are scarce [3,4]. Intratendinous deposition of tophaceous material within the rotator cuff is even rarer and may present with imaging features identical to calcific tendinitis [5,6]. Radiographs, ultrasonography and MRI are often nonspecific and may mislead clinicians. Therefore, arthroscopic or histopathological evaluation is often required to establish the diagnosis. We present a rare case of gouty tophus within the supraspinatus tendon masquerading as calcific tendinitis, successfully managed with partial arthroscopic removal and urate-lowering therapy. The case highlights the diagnostic pitfalls and therapeutic strategies when complete excision is not possible.

Case Report

A 37-year-old male presented with severe right shoulder pain of three months' duration. He had undergone arthroscopic Bankart repair for instability 15 years earlier. Despite three corticosteroid injections administered elsewhere, his pain worsened, reaching a Visual Analogue Scale (VAS) of 9, accompanied by nocturnal pain and complete loss of active motion. The American Shoulder and Elbow Surgeons (ASES) score was 32. The preoperative blood test showed a uric acid level of 6.8, which was within the normal range.

Imaging Findings

Plain radiographs revealed multiple metallic anchors in the glenoid from previous repair and a radiopaque lesion over the supraspinatus region (Fig. 1). Ultrasonography demonstrated a highly echogenic intratendinous lesion with posterior acoustic shadowing (Fig. 2). MRI showed a well-defined, low-signal-intensity lesion on T2-weighted sequences within the supraspinatus tendon (Fig. 3). A diagnosis of calcific tendinitis was initially presumed and arthroscopic removal was planned due to persistent pain and functional loss.

Surgical Findings and Technique

Under interscalene block and in the beach-chair position, standard posterior viewing and anterior working portals were established. Diagnostic arthroscopy revealed multiple white, chalky deposits along the glenoid surface and humeral head. Crystalline material was visible within the synovium. The supraspinatus tendon appeared diffusely infiltrated by a white, toothpaste-like substance, losing its normal elasticity (Fig. 4).

A sample of the material was collected for histopathological examination. Using a shaver and grasper, superficial tophaceous material was debrided. A longitudinal 5 mm incision was made in the supraspinatus tendon fibres and intratendinous tophi were partially removed via suction and compression. Complete removal was avoided to preserve tendon integrity. The residual defect was repaired with side-to-side sutures using No. 2 FiberWire (Fig. 4). Arthroscopic lavage was performed, confirming stable tendon tension at closure.

Postoperative Care and Outcome

The arm was immobilised in a sling for two weeks. Passive motion and pendulum exercises were initiated immediately for pain control. Active-assisted motion began at two weeks and full active motion at six weeks. Strengthening commenced at three months.

Histologic finding are suggestive of monosodium urate crystals, consistent with gout. Medical management with allopurinol or febuxostat and NSAIDs was instituted in coordination with an internist, maintaining serum uric acid below 6 mg/dL. At six- and twelve-month follow-ups, imaging confirmed intact repair without recurrence. At one year, the patient had complete pain relief (VAS 0) and full range of motion, with the ASES score improving to 98.

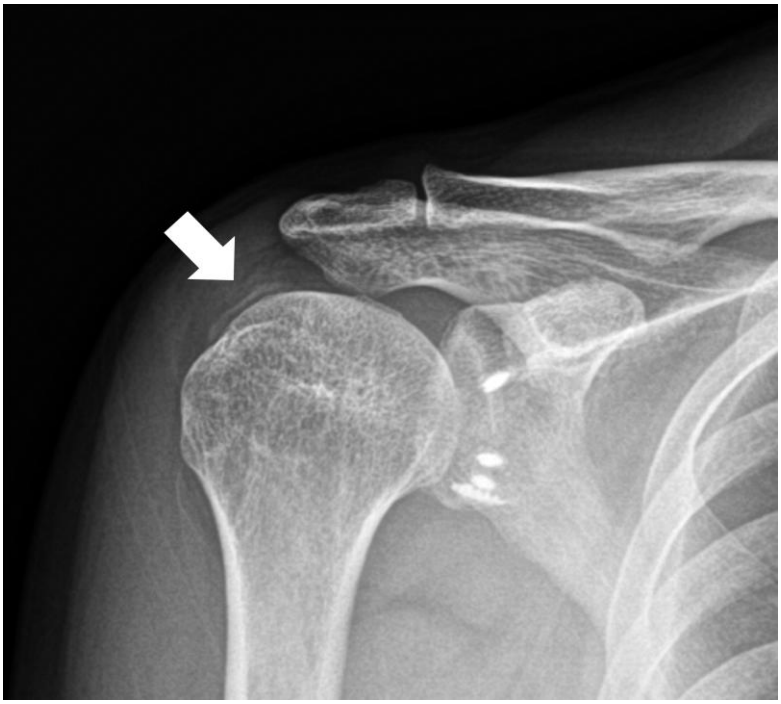

Figure 1: Preoperative anteroposterior radiographs of the right shoulder show multiple metallic anchors in the glenoid (from prior Bankart repair) and a radiopaque lesion over the supraspinatus region.

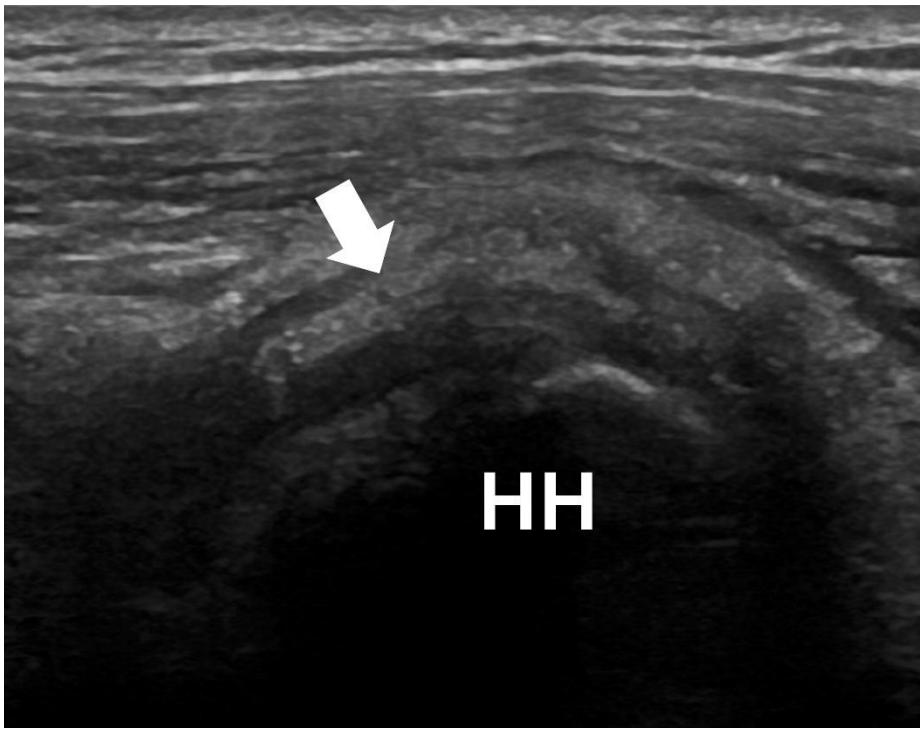

Figure 2: Ultrasound longitudinal view of the supraspinatus tendon demonstrating a highly echogenic intratendinous lesion with posterior acoustic shadowing.

Figure 3: T2-weighted MRI of the right shoulder showing a low-signal-intensity intratendinous lesion within the supraspinatus tendon.

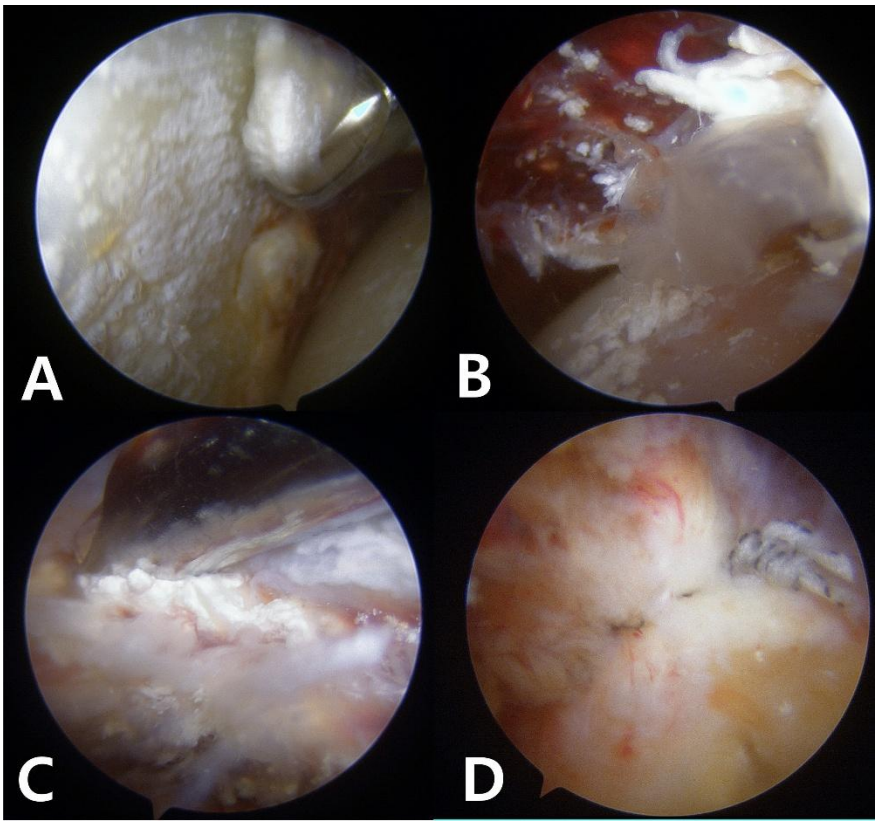

Figure 4: Arthroscopic findings (posterior portal view): (A) multiple white tophaceous deposits over the glenoid surface; (B) chalky material on the humeral head; (C) diffuse intratendinous infiltration within the supraspinatus; (D) post-debridement view showing side-to-side rotator cuff repair using FiberWire after partial tophus removal.

Discussion

Gout of the shoulder joint is exceptionally rare and preoperative misdiagnosis as calcific tendinitis is common because imaging features are often indistinguishable. Lee, et al., and Chiou, et al., demonstrated that gouty deposits within the rotator cuff can appear similar to calcium hydroxyapatite deposits on radiographs or ultrasound [7,8]. MRI findings may show low-signal intensity lesions that mimic calcification [9]. The gold standard for diagnosis remains identification of MSU crystals under polarised light microscopy [10]. Dual-Energy CT (DECT) can non-invasively detect urate deposits [11]. However, its availability for shoulder evaluation remains limited. Therefore, diagnostic arthroscopy remains invaluable for both confirmation and treatment. Several authors have reported successful arthroscopic management of gouty tophus in the rotator cuff [12-14]. Kim, et al. and Kang, et al., demonstrated favourable outcomes after partial arthroscopic removal, emphasising the importance of tendon preservation [12,13]. Our experience supports these findings: even partial decompression combined with urate-lowering medication provided durable pain relief and functional recovery.

Long-term control of serum uric acid is critical to prevent recurrence [15]. Continuous medical therapy, diet modification and periodic monitoring remain integral parts of management.

Conclusion

Gouty tophus within the supraspinatus tendon is an exceptionally rare entity that can mimic calcific tendinitis both clinically and radiographically. Arthroscopic inspection is the most reliable means of diagnosis. When deep intratendinous infiltration precludes complete excision, partial removal with tendon repair and systemic urate-lowering therapy can yield excellent functional outcomes without recurrence.

Clinical Message

When a shoulder lesion presumed to be calcific tendinitis fails to respond to conservative management, clinicians should suspect gouty involvement. Arthroscopic evaluation enables accurate diagnosis and limited debridement combined with urate-lowering therapy can restore shoulder function effectively.

Conflict of Interests

The authors declare that there is no conflict of interest related to this study.

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None.

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