

Atypical Presentation of Bilateral Acromioclavicular Joint Cysts Extending Medially into the Trapezius Muscles: A Case Report and Literature Review

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Learning Point of the Article:

The aim of this case presentation is to bring awareness to atypical locations of these ACJ cysts that can be easily interpreted as a tumoral process in the neck due to the location of the mass.

Abstract

Introduction: Acromioclavicular joint cysts represent a relatively rare clinical entity, often manifested as an enlarging mass adjacent to the acromioclavicular joint, which can raise concerns for a potential tumor. These cysts are identified for their association with shoulder pathology, particularly extensive rotator cuff tears, and present a diagnostic and therapeutic challenge for misdiagnosis as neoplastic masses. In this case, we are reporting on an unusual presentation of a patient presenting with a swollen mass in the left trapezius causing neck pain. The aim of this case presentation is to bring awareness to atypical locations of these acromioclavicular joint cysts that can be easily interpreted as a tumoral process in the neck due to the location of the mass. Acromioclavicular cysts remain infrequently reported in the literature.

Case Report: We present the case of an 80-year-old male patient. On clinical examination, a soft and palpable mass over the trapezius was noted, with no signs of infection or inflammation. Plain radiographs showed advanced primary osteoarthritis of the glenohumeral joint with a preserved subacromial space. Magnetic resonance imaging of both shoulders showed that cystic masses were developed on both sides from the acromioclavicular joint and extended medially to the trapezius muscles. It was particularly large on the left side, with a diameter reaching up to 12 cm. The surgical intervention was carried out involving resection of the distal end of the clavicle through an open approach and resection of the neck of the cyst. Through a second incision at the dorsal level on the medial aspect of the trapezius, the cyst sac was identified and its subsequent resection was performed.

Conclusion: The presented case of a rare location of bilateral ACJ cysts, treated successfully with cyst resection and ACJ decompression, illustrates a diagnostic and therapeutic challenge due to the atypical nature of the cysts' presentation. This case aims to bring awareness about this pathology when confronted with a painless lump in the upper shoulder region, although far away from the joint in patients with complex shoulder or neck symptomatology.

Keywords: Acromioclavicular cyst, neck mass, shoulder pain, acromioclavicular joint, rotator cuff tear, shoulder tumor.

Introduction

Acromioclavicular joint (ACJ) cysts represent a relatively rare clinical entity, often manifested as an enlarging mass adjacent to the AC joint, which can raise concerns for a potential tumor [1, 2]. These cysts are identified for their association with shoulder

pathology, particularly extensive rotator cuff tears, and present a diagnostic and therapeutic challenge for misdiagnosis as neoplastic masses [3, 4]. The management of ACJ cysts ranges from conservative observation to surgical intervention, including aspiration with a high risk of recurrence, cyst excision,

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Author's Photo Gallery



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Figure 1 & 2: Clinical presentation.

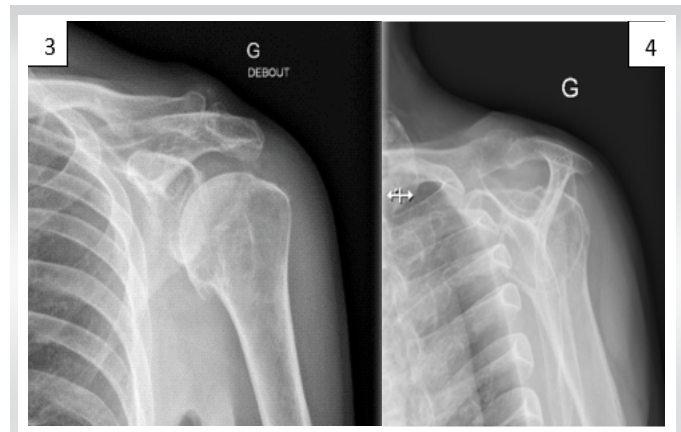


Figure 3 & 4: Plain X-rays.

and in some cases, excision of the AC joint itself coupled with repair of any underlying rotator cuff abnormalities if possible.

In this case, we are reporting on an unusual presentation of a patient presenting with a swollen mass in the left trapezius causing neck pain. The aim of this case presentation is to bring awareness to the atypical locations of these ACJ cysts that can be easily interpreted as a tumoral process in the neck due to the location of the mass. ACJ cysts remain infrequently reported in the literature, with 77 cases documented in the literature and only three cases have been reported with this atypical location in the trapezius muscle.

Case Report

We present the case of an 80-year-old male patient who is a healthy active regular swimmer. He had no significant past medical history, apart from bilateral rotator cuff repair over 15 years ago, with mild pain on the left side successfully treated with a glenohumeral injection. He was concerned about a growing lump in the left trapezius muscle over the last 6 months with mild pain in the neck. There were no chills, fever, loss of

appetite, or weight associated with it, and no history of trauma or wounds in this location.

On clinical examination, a soft and palpable mass over the trapezius was noted, with no signs of infection or inflammation. Shoulder range of motion and strength were preserved with some crepitus, except for internal rotation which came to L5 against Th8 with a weak Lift-Off test (Figs. 1 and 2).

Clinically, a mass is observed on his left trapezius with no clear signs of tracking from the ACJ.

Plain radiographs showed advanced primary osteoarthritis of the glenohumeral joint with a preserved subacromial space (Fig. 3 and 4), as well as severe ACJ arthropathy. Magnetic resonance imaging (MRI) of both shoulders showed severe synovitis and effusion in the glenohumeral joint extending to the bursa through bilateral massive rotator cuff tears. Cystic masses were developed on both sides from the ACJ and extended medially to the trapezius muscles. It was particularly large on the left side, with a diameter reaching up to 12 cm (Fig. 5 and 6).

Progression of signs of osteoarthritis with narrowing of the joint space and osteophytic changes. Fine diffuse calcifications

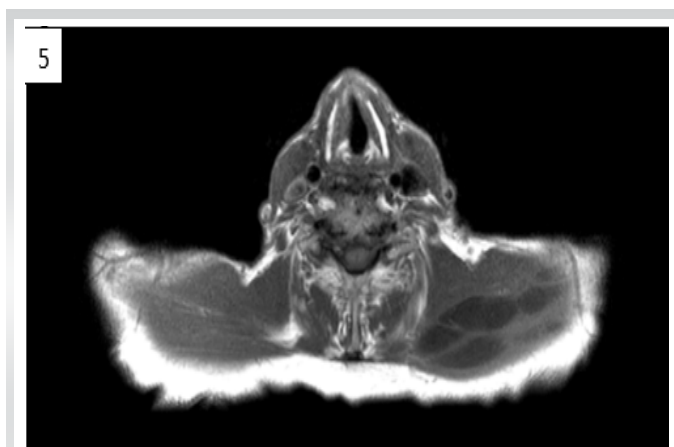


Figure 5: MRI: axial view.

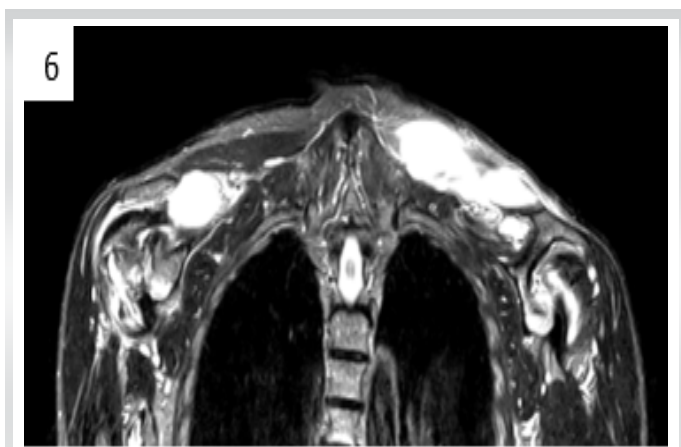


Figure 6: MRI Coronal view.

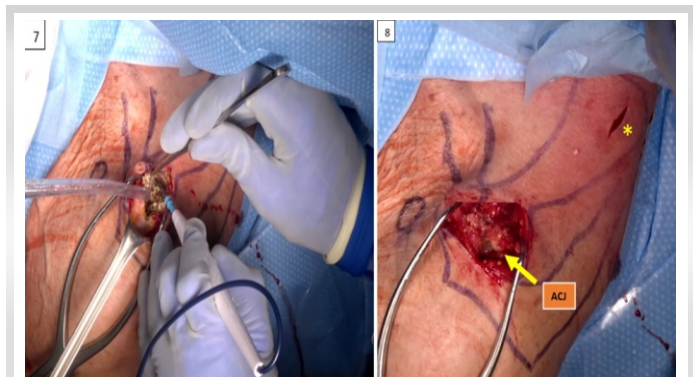


Figure 7 & 8: Intraoperative picture.

within the rotator cuff.

Axial view of the left cyst which is clearly going through between the muscle fibers of the trapezius colonized by the synovitis.

Confirmation of a cystic formation with an arthrosynovial appearance, measuring 12 cm in its largest diameter within the left trapezius, appearing to connect to the left acromioclavicular joint itself, in communication with the subacromial bursa and the underlying glenohumeral joint.

Given the size of the cyst and the patient's concerns about persistent symptoms, a surgical approach was considered. Treatment options were discussed, including a reverse shoulder prosthesis, cyst resection, and acromioclavicular decompression with resection of the distal end of the clavicle. Given the mild symptoms and functional restrictions in the left shoulder, the decision was made to proceed with cyst resection and acromioclavicular decompression.

The surgical intervention was carried out without complications, involving resection of the distal end of the clavicle through an open approach and resection of the neck of the cyst that was identified as arising from the joint (Fig. 7). Through a second incision at the dorsal level on the medial aspect of the trapezius, the cyst sac was identified and its subsequent resection was performed (Fig. 8). The content was mucoid clear liquid and was sent for bacteriologic analyses that came back negative.

Resection of the superior capsule and neck of the cyst.

ACJ was exposed (Arrow), and a second incision was made over the axis of the sac of the cyst (*).

As per the final follow-up at 3 months, the patient has no experienced shoulder or neck symptoms and there are no signs of recurrence (Fig. 9 and 10).

No recurrence, absence of mass, and good healing of the incisions.



Figure 9 & 10: Clinical presentation 3 months post-operation.

Discussion

ACJ cysts most often present as enlarging masses adjacent to the AC joint (Geyser sign) and can be pauci- or asymptomatic. This is what has been published in the literature. However, our case is the fourth case published up-to-date (4 out of 77), where the cyst is not located over the ACJ and this atypical location in the trapezius can be easily interpreted as a tumoral process in the neck not related to the shoulder.

Classification and pathogenesis

AC joint cysts are categorized into two main types, reflecting their underlying pathophysiology. Type 1 cysts emerge primarily from degenerative changes within the AC joint, attributable to factors such as trauma, infection, metabolic disease, or repetitive use. These cysts remain confined to the joint area without involvement of the rotator cuff. The pathogenesis involves long-term degeneration leading to synovial inflammation and subsequent cyst formation [3].

Conversely, Type 2 cysts are a consequence of chronic rotator cuff tears, where the superior migration of the humeral head impinges on the AC joint. This results in degeneration and the formation of a cyst, the degenerate ACJ essentially acts like a one-way valve, allowing synovial fluid to escape from the GHJ into the cyst but otherwise prevents back-flow [3].

After a meticulous review of the literature, 69 cases of Type 2 cysts have been published (89.6%) and there are only eight cases of Type 1 cysts (10.4%)

The case under consideration illustrates a scenario where a rotator cuff tear coexists, aligning it with Type 2 cysts.

Montet et al. also proposed a theory suggesting that AC joint cysts could result from chronic instability of the joint due to massive rotator cuff tears. Their observation that ganglia can dissect inside muscles challenges traditional theories and underscores the need for a nuanced understanding of AC joint cyst pathogenesis. However, the theory proposed by Craig is widely accepted, Montet et al. suggest that it cannot explain the

Author	Year	N° Cases	Type	Location	Treatment
Burns and Zvirbulis [6]	1984	1	1	ACJ	Cyst excision
Craig et al. [1]	1986	2	2	ACJ	1 Resection
Rowe et al. [7]	1988	2	2	ACJ	1 Shoulder arthrodesis
Nardini et al. [8]	1991	4	2 Type 1 2 Type 2	ACJ	Not described
Postacchini et al. [2]	1993	3		ACJ	Unknown
Gro et al. [9]	1993	4	2	ACJ	Cyst resection RCR
Utrilla et al. [10]	1995	1	2	ACJ	If RCR not possible then a Distal clavicle excision is recommended
Le Huec et al. [11]	1996	3	2	ACJ	Hemiarthroplasties Cyst excision
Segmuller et al. [12]	1997	1	1	ACJ	Acromioplasty
Selvi et al. [13]	1998	2	2	ACJ	RCR with dura mater allograft (unsatisfactory outcome)
Marino et al. [14]	1998	1	2	ACJ	Cyst excision
Echols et al. [15]	2000	1	Myxoma	ACJ	Distal clavicle excision
De Santis et al. [16]	2001	1	Gout	ACJ	Mild ACJ OA
Montet et al. [5]	2004	1	2	Trapezium	Cyst and distal clavicle excision
Tshering Vogel et al. [17]	2005	9	2	ACJ	Unknown
Mullet et al. [18]	2007	1	2	ACJ	ACJ Cyst and Joint Resection + Distal clavicle resection + RCR
Moratalla et al. [19]	2007	1	2	ACJ	RCR
Kontakis et al. [4]	2007	1	1	ACJ	Excision of myxoma
Nowak et al. [20]	2009	1	2	ACJ	Conservatively
Murena et al. [21]	2009	1	2	ACJ	Conservatively
Hartog et al. [22]	2011	1	2	ACJ	CPPD in three patients
Good et al. [23]	2011	1	2	ACJ	Seven surgically treated (1 replacement) Two conservatively
Cooper et al. [24]	2011	1	2	ACJ	Arthroscopic RCR + ACJ resection
Skedros and Knight [25]	2012	1	2	ACJ	Radiology presentation – Not described
McCreech et al. [26]	2014	1	2	ACJ	Cyst and distal clavicle excision
Cho [27]	2014	2	2	ACJ	Cyst and distal clavicle excision
Khor et al. [28]	2014	1	2	ACJ	ACJ and cyst excision
Shaarani and Mullet [29]	2014	1	2	ACJ	RCR
Tanaka et al. [30]	2016	1	2	ACJ	Cyst and distal clavicle excision
Gumina et al. [31]	2016	4	2	ACJ	3 Pts conservatively with aspiration (recurrence) 1 Pt cyst and distal clavicle resection
Zhang and Old [32]	2018	1	2	Trapezium	Cyst and distal clavicle resection
Maziak et al. [33]	2018	1	2	ACJ	Cyst excision and ACJ decompression
Martins et al. [34]	2019	1	2	ACJ	Not described
Schneider et al. [35]	2019	1	1	ACJ	Arthroscopic ACJ resection and Open cyst excision
Purohit et al. [36]	2019	1	2	ACJ	Cyst and distal clavicle excision
Maris et al. [37]	2019	1	2	ACJ	Cyst and distal clavicle excision. Recurrence RTSR performed
Manohara et al. [38]	2020	1	2	ACJ	Cellulitis (oral ATB) No surgical intervention
De Maio et al. [39]	2020	2	1 Type 1 1 Type 2	ACJ	Cyst and distal clavicle excision
Costa et al. [40]	2020	1	2	ACJ	Surgical removal – Unknown procedure
Christodoulou et al. [41]	2020	1	2	ACJ	Cyst and distal clavicle excision
Hattori et al. [42]	2021	1	2	ACJ	Cyst resection and anterolateral thigh flap reconstruction
Spinnato et al. [43]	2021	1	2	Trapezium	Spontaneous disappearance
Kajita et al. [44]	2022	4	1 Type 1 (previous RCR) 3 Type 2	ACJ	Arthroscopic cyst and distal clavicle excision
Higashi et al. [45]	2022	1	2	ACJ	Distal clavicle excision + RTSR
Fujii et al. [46]	2022	1	2	ACJ	Arthroscopic cyst and distal clavicle excision
Sayed et al. [47]	2022	1	2	ACJ	Cyst excision
Emam et al. [48]	2022	1	2	ACJ	RTSR
Tham et al. [49]	2023	1	2	ACJ	Aspiration – recurrence – Died before surgery
Eckl et al. [50]	2023	1	2	ACJ	Cyst and distal clavicle excision arthroscopically assisted.
Chaudhari T. Gupta A [51]	2024	1	2	ACJ	Cyst excision
Cunningham et al.	2024	1	2	Trapezium	Cyst and distal clavicle resection

Abbreviations: ACJ (Acromioclavicular Joint), RCR (rotator cuff repair), RTSR (Reverse total shoulder replacement), OA (Osteo arthritis), CPPD (Calcium pyrophosphate deposition disease)

Table 1: Literature review.



Procedure	Cases	%
Cyst excision	4	5.2
Shoulder arthrodesis	1	1.3
Unknown	11	14.3
Cyst + ACJ Decom + RCR	5	6.5
Cyst + ACJ Decom + Distal clavicle excision	25	32.5
Conservatively	11	14.3
Arthroscopic RCR + ACJ resection	8	10.4
Spontaneous disappearance	2	2.6
Shoulder prosthesis (Hemi or RTSR)	9	11.7
Cyst resection and anterolateral thigh flap reconstruction	1	1.3
Total	77	100
Abbreviations: ACJ Decom (Acromioclavicular joint decompression), RCR (Rotator cuff repair), Hemi (Hemiarthroplasty), RTSR (Reverse total shoulder replacement)		

Table 2: Procedures performed.

cyst mucoid content and fibrous wall [5].

Literature review

A literature review based on a PubMed database search conducted in March 2024 with the title “Acromioclavicular joint cyst” “ACJ cyst” and “Acromioclavicular joint ganglion”. The literature surrounding acromioclavicular (AC) joint cysts has been published since 1984, contributing to our understanding of the complexity and varied presentations of this pathology. ACJ cysts remain infrequently reported in the literature, with only 77 documented cases, and of those 77, only 3 cases (3.8%) were located in the trapezius muscle. Another two cases were reported as a mass at the ACJ, where the mass was identified as a myxoma in one case, and as gout deposits in a second case (Table 1).

Successful treatment involved excision of the cyst, resection of the distal clavicle, and repair of the torn cuff. The importance of addressing both the cyst and the underlying pathology, when possible, for favorable outcomes is well known [1, 2]. In recent years, arthroscopic excision of the cyst and distal clavicle has been reported with satisfactory results [18, 35, 44, 46, 50]. Excision of the cyst and resection of the distal clavicle was the most common procedure with 25 cases of a total of 78 cases (32.5%), eight cases were treated arthroscopically (10.4%), 11

cases were treated conservatively (14.3%), and nine cases were treated with shoulder replacement, hemiarthroplasties or reverse total shoulder replacement (RTSR) (11.7%) (Table 2).

Groh et al. treated four patients with chronic irreparable rotator cuff tears, degenerative arthritis of the glenohumeral joint, and associated cysts over the AC joint with shoulder hemiarthroplasties. This approach suggests that in certain cases, joint replacement may be a viable option for managing extensive AC joint pathology due to the increasing indication of reverse shoulder replacement in recent years [9, 29, 37, 45, 48].

Murena et al. reported the first case of a patient with an ACJ Type 2 cyst, who underwent four ultrasound-guided aspirations, and following the last aspiration the patient developed a fistula draining serous fluid from the puncture site. Therefore, Murena et al. given the high recurrence rate associated with this procedure and the increased risk of determining the formation of a fistula discourage multiple ACJ cyst aspirations [21]. A second case was reported by Emam et al. where the patient due to the fistula underwent a staged reverse total shoulder replacement [48]. Tham et al. described a case where after multiple aspirations the cyst increased in size [49].

Hartog et al. reported a case with spontaneous disappearance of an acromioclavicular joint cyst. Superior migration of the humeral head was a sign of rotator cuff tear. Two months after the first presentation, the symptoms were still minor, and the swelling had completely disappeared [22].

Montet et al. reported the first case of an intramuscular ganglion cyst located in the trapezius muscle arising from the AC joint and associated with a massive tear of the rotator cuff. This represents the first case reported in the literature describing an ACJ cyst, associated with cuff pathology that infiltrated the muscle belly of the trapezius rather than the subcutaneous tissue. Montet et al. treated conservatively the patient due to mild symptoms and minor limitations in the activities of daily life [5]. Zhang and Old was the second case reported of a cyst tracking to the trapezius muscle, which was resected, and a distal clavicle excision was performed with no recurrence after 3 months of follow-up [32]. Spinnato et al. reported the third case to date with the atypical location into the trapezius muscle. The patient was treated with a corticoid injection due to comorbidities and after 8 months, a complete spontaneous remission was observed [43].

In our case, the patient presented with an atypical bilateral mass over the trapezius, with symptomatology on the left side. After confirming with MRI the atypical location of the cyst, a surgical resection of the cyst and the distal clavicle was performed with a double incision. As per the final follow-up at 3 months, the patient has no experienced shoulder or neck symptoms and there are no signs of recurrence.

Conclusion

The presented case of a rare location of bilateral ACJ cysts, treated successfully with cyst resection and ACJ decompression, illustrates a diagnostic and therapeutic challenge due to the atypical nature of the cysts' presentation. This highlights the importance of comprehensive clinical and imaging evaluation in patients with complex shoulder or neck symptomatology.

The aim of this case is to bring awareness about this pathology when confronted with a painless lump in the upper shoulder region, although far away from the joint. Moreover, this case contributes additional evidence to the medical literature on the manifestations and management options of acromioclavicular cysts and puts more emphasis on this atypical location as this case is the fourth case described in the literature.

Clinical Message

This case report highlights the importance of considering acromioclavicular joint cysts in the differential diagnosis of neck masses, particularly those presenting as painless lumps in atypical locations such as the trapezius muscle. The case of an 80-year-old male with bilateral ACJ cysts extending into the trapezius, initially mimicking a tumoral process, illustrates the diagnostic challenges and potential for misdiagnosis associated with this rare pathology.

Successful management through cyst resection and ACJ decompression highlights the necessity for awareness among orthopedic surgeons. Recognizing such atypical presentations can facilitate accurate diagnosis and appropriate treatment, ultimately improving patient outcomes.

This report provides valuable insights that can aid orthopedic and general practitioners in effectively identifying and managing similar cases.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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