



Massive Synovial Cyst Arising Over the Acromio-Clavicular Joint

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ABSTRACT

Acromio clavicular joint synovial cyst is a rare condition and this is commonly associated with a rotator cuff tear. It generally presents as a painless slow growing swelling over the shoulder, hence this condition must not be taken lightly as in some rare cases it may be associated with a malignancy.

*We report a case of a 65 year old male gentleman, with a painless gradually progressive swelling over the right shoulder joint. On examination, there was a 17 * 14 * 15 cm non-tender cystic swelling on the anterior aspect of the right shoulder extending medially to the coracoid process, superiorly to the acromio-clavicular joint and inferiorly in the delto-pectoral groove.*

The patient was operated under general anaesthesia in the supine position with shoulder and arm resting on an arm support. An incision was made in the delto-pectoral groove proximally extending till the AC joint and distally to the level of deltoid insertion.

There was a synovial fluid with whitish flakes and there was a thickening of the synovium. The swelling was communicating with the AC joint. There were some degenerative changes at the AC joint.

We did not excise the lateral end of clavicle considering the old age of the patient.

Conclusions: *A synovial cyst is a rare entity over the AC joint and it presents with a painless gradually enlarging swelling over the anterior aspect of the shoulder. It may be usually associated with a rotator cuff tear and arthritis of the AC joint. Whenever present excision of the cyst is to be done and the cuff tear is to be repaired and the lateral end of the clavicle may have to be excised. A histo-path examination is of prime importance to confirm the diagnosis. The entire wall of the capsule must be removed to avoid recurrence.*

Keywords: *Synovial cyst; shoulder cyst; swelling over shoulder*

INTRODUCTION

Acromio clavicular joint synovial cyst is a rare condition and this is commonly associated with a rotator cuff tear. It generally presents as a painless

slow growing swelling over the shoulder, hence this condition must not be taken lightly as in some rare cases it may be associated with a malignancy.

This cyst can be observed as a variable-in-size swelling, above the AC joint, that is caused by synovial fluid. [1,2,3,4]

CASE REPORT

We report a case of a 65 year old male gentleman, a farmer by profession, with no history of trauma to the shoulder, with a painless gradually progressive swelling over the right shoulder joint. The activities of daily life were normal. There was no history suggestive of any infectious aetiology.



Figure 1. The patient had a pre-op swelling on the shoulder

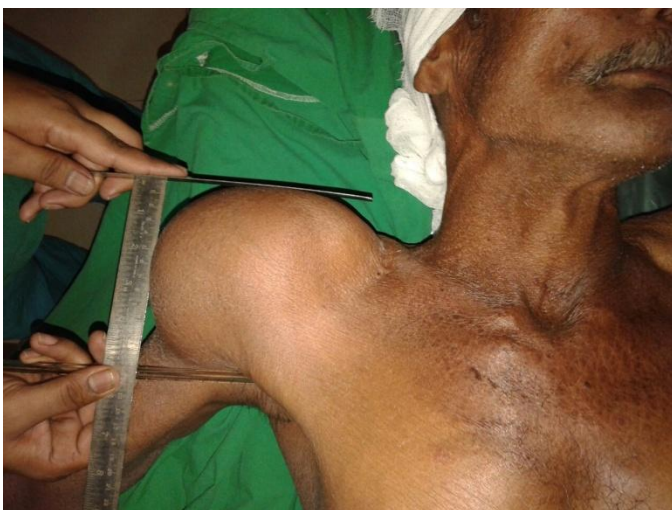


Figure 2. The vertical dimensions of the tumour



Figure 3. The horizontal dimensions of the cyst.



Figure 4. The swelling which was present pre-operatively at the OT table

On examination, there was a 17 * 14 * 15 cm non-tender cystic swelling on the anterior aspect of the right shoulder extending medially to the coracoid process, superiorly to the acromio-clavicular joint and inferiorly in the delto-pectoral groove. Margins were well defined and the swelling was fixed to the underlying structures and not fixed to skin. There were no signs of inflammation.

The patient had a mild pain on cross arm adduction. This was implicative of Acromio-clavicular joint degeneration. All other movements of the shoulder joint were normal and the tests for rotator cuff integrity were normal.

His haemogram, ESR and other blood reports were within normal limits.

Plain x-ray films showed AC joint space narrowing. Sonography revealed a cystic mass arising from the AC joint. No tear in the rotator cuff was demonstrated.

MRI confirmed the presence of a large cystic lesion which was communicating with the AC joint space. The rotator cuff was normal.

The patient was operated under general anaesthesia in the supine position with shoulder and arm resting on an arm support. An incision was made in the delto-pectoral groove proximally extending till the AC joint and distally to the level of deltoid insertion. Cephalic vein was retracted laterally and the cystic mass was separated from the underlying tissue by gentle dissection. However, the swelling was adherent to the underlying structures and hence unfortunately there was a rupture of the cyst wall while dissection. There was a synovial fluid with whitish flakes and there was a thickening of the synovium. The swelling was communicating with the AC joint. There were some degenerative changes at the AC joint.

We did not excise the lateral end of clavicle considering the old age of the patient.

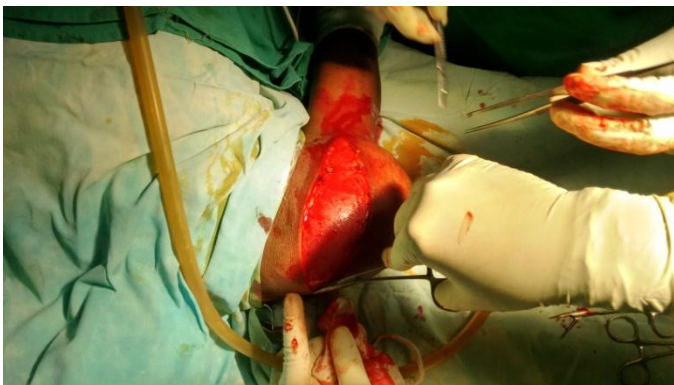


Fig 5. Incision taken on the delto-pectoral groove

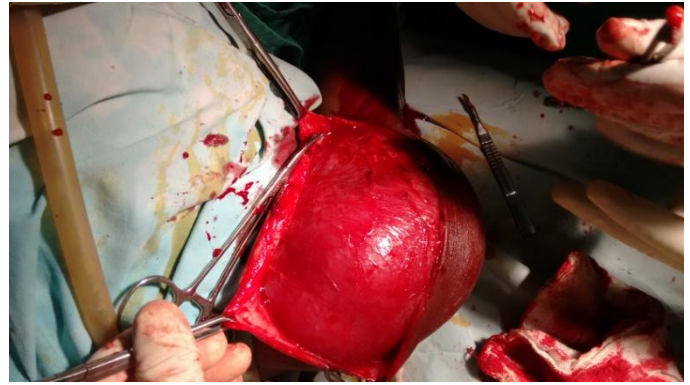


Figure 6. Flaps of skin being dissected out



Figure 7. Further dissection being done.

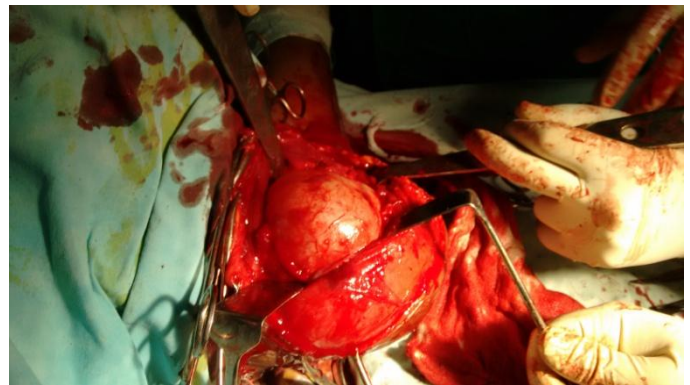


Figure 8. The swelling after complete dissection.



Figure 9. The sac wall broke while excision.



Figure 10. The excised sac wall

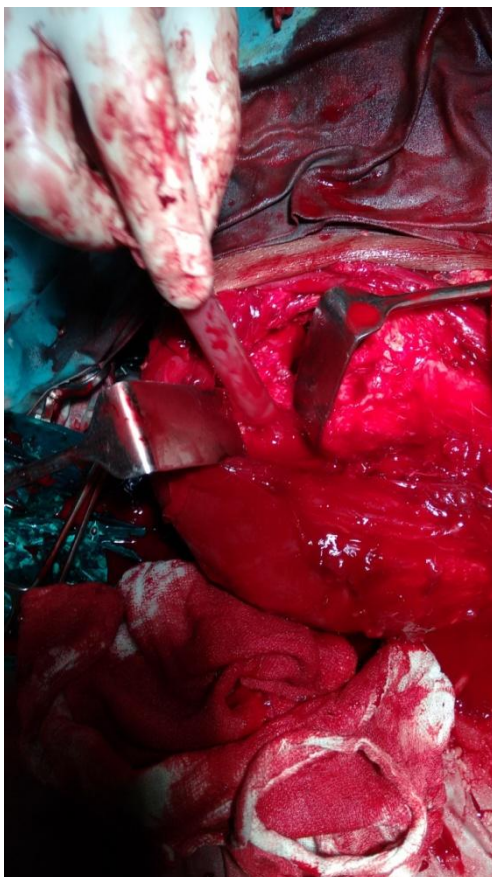


Figure 11. The remaining tissue after cyst removal

Histological examination of the removed cyst was indicative of a synovial cyst (an outer layer of reactive connective tissue with an inner lining layer with synovial cells).

DISCUSSION

Our case is one of the first few cases to be published from India and around 7 to 8 similar cases have been published in the world.

From India Ganga Pilli et al reported in 2014 a case of a Cryptococcal cyst in a patient suffering from AIDS.^[5]

From India Siddharth Shetty et al in 2014 reported a case of a glenoid labral cyst. He concluded that Suprascapular nerve compressive neuropathy secondary to glenoid labral cyst is a rare entity but easily recognizable on a MRI scan and responds quickly to decompression.^[6]

Kontakis et al in 2007 reported a similar case of synovial cyst. He also observed a degeneration of the joint. However there too, his patient had an intact rotator cuff.^[7]

Nardini^[8] reported two cases of AC joint cysts with a torn rotator cuff and mentioned another two cases of possibly isolated AC joint cysts that he encountered during his 25 years practice, without however exclusion of a rotator cuff tear.

Postacchini et al^[9] also reported three patients with large cuff tears and cysts over the AC joint. Simple cyst excision, without addressing the ruptured cuff, resulted in cyst recurrence.

Burns and Zvirbulis^[10] were the first to mention a ganglion of the AC joint, in a patient with no known rotator cuff disease. One year after its excision, there was no recurrence of the lesion.

Groh et al ^[11] 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.

Craig ^[12] reported two cases of large AC joint cysts in patients with rotator cuff tears. One patient was managed conservatively because of concomitant medical problems and the other was treated by AC joint arthroplasty, acromioplasty and cuff repair.

Utrilla et al ^[13] reported a case of an AC joint cyst in a patient with a massive and irreparable cuff tear. Excision of the cyst, acromioplasty and closure of the rotator cuff defect with a dura mater allograft was the selected treatment. The functional result was unsatisfactory.

In a recently published paper, Tshering Vogel et al ^[14] presented 9 cases with AC joint cysts, all of which were associated with rotator cuff tears. The authors concluded that a soft tissue mass arising over the AC joint might be the first presentation of a chronic extensive rotator cuff tear. They emphasised the value of MRI for the demonstration of this combination. Three out of 9 patients suffered from calcium pyrophosphate dihydrate crystal deposition disease, a condition which is frequently associated with rotator cuff tears

Segmuller et al ^[15] published the first documented case of a ganglion over the AC joint, without rotator cuff disease and with concomitant mild degenerative changes in the AC joint. Excision of the ganglion cyst and the lateral end of the clavicle was performed, and 18 months after the surgery the patient was free of symptoms without cyst recurrence.

Le Huec et al ^[16] treated three patients with AC joint cysts associated with massive cuff tears. Treatment combined excision of the cyst, removal of the distal clavicle end, as well as synovectomy of the upper part of the pathological “humero-acromial” joint (without resection of the AC ligament). At a mean follow-up of 26 months, the pain was significantly reduced and no cyst recurrence was recorded.

Selvi et al ^[17] reported two cases of a full-thickness rotator cuff tear followed by AC joint cyst formation in patients with Longstanding erosive poly-articular rheumatoid arthritis.

Cvitanic et al ^[18] considering a cyst over the AC joint as a ganglion, performed aspiration of the cyst. Because of the cyst recurrence, a second aspiration was performed two months later with injection of a corticosteroid, but the cyst again recurred. MRI exam revealed a massive cuff tear with degeneration of the AC joint.

Marino et al ^[19] reported a patient with AC joint cyst associated with a rotator cuff tear. Successful treatment included excision of the cyst as well as resection of the distal one centimetre of the clavicle, and repair of the torn cuff.

Montet et al ^[20] reported a case of intramuscular ganglion, in the trapezius muscle, arising from the AC joint and associated with a massive tear of the rotator cuff. This was the first report of an AC joint cyst related to cuff pathology which had penetrated the muscle belly instead of the subcutaneous tissue.

Echols et al ^[21] published a case of juxta-articular myxoma (a benign soft tissue tumour) of the shoulder presenting as a cyst of the AC joint. Underlying rotator cuff pathology (chronic tear) was present. Open staging biopsy confirmed the

diagnosis of juxta-articular myxoma involving the AC joint, a large portion of the acromion and the humeral head. The patient was treated successfully with aggressive surgical excision of the involved tissues.

In general, two mechanisms have been proposed to explain the pathogenesis of cysts in degenerative joint disease: the first implicates elevated intraarticular pressure which permits intrusion of synovial fluid through the joint cartilage, and the second states that the contusion secondary to the impaction of apposing osseous structures results in microfractures and vascular insufficiency, which leads to necrosis and subsequent cyst formation [22].

Regarding the pathogenesis of the acromioclavicular cysts there is limited data in the orthopaedic literature. Probably, in cases with longstanding tears of the rotator cuff, synovial fluid from the glenohumeral joint leaks through the torn cuff into the AC joint [23].

However, in common clinical practice, a minority of rotator cuff tears leads to cyst development. Perhaps an upward migrated humeral head, resulting from massive cuff tear, irritates the AC joint and perforates the frayed inferior joint capsule [20, 8]. The synovial fluid enters and distends the superior capsule of the AC joint, and elevates the skin. With cyst enlargement the channel of communication may be compressed and the flow is impeded [18, 24].

Ganglion cysts are differentiated from synovial cysts by the lack of a synovial lining. Their formation could be attributed to mucoid degeneration and disintegration of collagen fibres in the connective tissue. The increased liquefaction of

the collagen fibres is surrounded by dense collagen bundles, which form a delimiting capsule [26].

Inspissation of the synovial fluid contained in the cyst may produce a further decrease in the flow. A layer of fibrous tissue may totally occlude the communicating channel. This may explain the absence of a demonstrable communication with the glenohumeral joint of cysts during diagnostic evaluation (arthrography, CT arthrography, MRI) [18, 25]

A chronic rotator cuff tear should be the first diagnostic thought when confronted with this condition. MRI has a substantial value in the diagnostic process and can guide to the proper management. Degenerative changes in the AC joint – earlier shown on MRI – the integrity of the rotator cuff and the cystic appearance of the mass which communicates with the AC joint are the clues for the suspicion of an isolated synovial cyst.

The underlying pathology in such a case is AC joint degeneration. Excision of the cyst as well as resection of the distal clavicle and the degenerated joint meniscus, are the essential steps for a successful management and prevention of cyst recurrence.

The early management of the arthritic AC joint in the presented patient could be considered as a prevention of such an evolution. From the presented information it is obvious that the majority of AC joint cysts are manifestations of an underlying pathology (tearing) of the rotator cuff. Usually the cystic masses are located subcutaneously over the AC joint, are non tender and recur after aspiration if the rotator cuff tear is not addressed.

It has been postulated by some authors that the AC joint arthritis can lead to impingement syndrome and may cause rotator cuff tear. The proposed mechanism of such an hypothesis is impingement of the hypertrophic spur, at the under surface of the acromion, on the underlying rotator cuff ^[14, 27]

CONCLUSIONS

A synovial cyst is a rare entity over the AC joint and it presents with a painless gradually enlarging swelling over the anterior aspect of the shoulder. It may be usually associated with a rotator cuff tear and arthritis of the AC joint. Whenever present excision of the cyst is to be done and the cuff tear is to be repaired and the lateral end of the clavicle may have to be excised. A histo-path examination is of prime importance to confirm the diagnosis. The entire wall of the capsule must be removed to avoid recurrence.

REFERENCES

1. Craig EV. The geyser sign and torn rotator cuff: clinical significance and pathomechanics. *Clin Orthop*. 1984 ;(191):213-215.
2. Craig EV. The acromioclavicular joint cyst. An unusual presentation of rotator cuff tear. *Clin Orthop*. 1986 ;(202):189-192
3. Selvi E, Falsetti P, Manganelli S, De Stefano R, Frati E, Marcolongo R. Acromioclavicular joint cyst: a presenting feature of full thickness rotator cuff tear. *J Rheumatol*. 2000; 27(8):2045-2046.
4. Ockert B, Mutschler W, Biberthaler P, Braunstein V. Acromioclavicular (AC) joint cyst. A case report and review of literature

[in German]. *Orthopade*. 2009; 38(10):974, 976-979.

5. Pilli GS, Patil MY, Khanpet MS, Mujawar T, Nigam LK, Gosavi M, Metgud S. Cryptococcal cyst of the acromioclavicular joint: A rare presentation. *Indian j health sci* 2014; 7:61-4
6. Glenoid labral cyst presenting with suprascapular nerve palsy. Siddharth Shetty et al, *NUJHS* Vol. 4, No.3, September 2014, ISSN 2249-7110
7. Isolated synovial cyst of the acromioclavicular joint associated with joint degeneration and an intact rotator cuff; George M. KONTAKIS,; *Acta Orthop. Belg.*, 2007, 73, 515-519
8. Nardini C. [The significance of acromioclavicular cysts. Their association with rupture of the rotation cuff.] (in Italian). *Minerva Orthop* 1991; 42: 211-216.
9. Postacchini F, Perugia D, Gumina S. Acromioclavicular joint cyst associated with rotator cuff tear. A report of three cases. *Clin Orthop* 1993; 294: 111-113.
10. Burns SJ, Zvirbulis RA. A ganglion arising over the acromioclavicular joint : a case report. *Orthopedics* 1984; 7: 1002-1104.
11. Groh GI, Badwey TM, Rockwood CA Jr. Treatment of cysts of the acromioclavicular joint with shoulder hemi arthroplasty. *J Bone Joint Surg* 1993; 75-A: 1790-1794.
12. Craig EV. The acromioclavicular joint cyst. An unusual presentation of a rotator cuff tear. *Clin Orthop* 1986; 202:189-192.

13. Utrilla LA, Gomez ML, Aznar PA, Gomez CR. Rotator cuff tear and acromioclavicular joint cyst. *Acta Orthop Belg* 1995; 61: 144-146.
14. Tshering Vogel DW, Steinbach LS, Hertel R, Bernhard J, Stauffer E, Anderson SE. Acromioclavicular joint cyst: nine cases of a pseudotumor of the shoulder. *Skeletal Radiol* 2005; 34: 260-265.
15. Segmuller HE, Saies AD, Hayes MG. Ganglion of the acromioclavicular joint. *J Shoulder Elbow Surg* 1997; 6: 410-412.
16. Le Huec JC, Zipoli B, Schaefferbeke T, Moinard M, Chauveaux D, Le Rebeller A. [Acromio-clavicular joint cyst. Surgical treatment] (in French). *Acta Orthop Belg* 1996; 62: 107-112.
17. Selvi E, De Stefano R, Frati E, Manganeli S, Manca S, Marcolongo R. Rotator cuff tear associated with an acromioclavicular cyst in rheumatoid arthritis. *Clin Rheumatol* 1998; 17: 170-171.
18. Cvitanic O, Schimandle J, Cruse A, Minter J. The Acromioclavicular joint cyst: glenohumeral joint communication revealed by MR arthrography. *J Comput Assist Tomogr* 1999; 23: 141-143.
19. Marino AJ, Tyrrell PN, el-Houdiri YA, Kelly CP. Acromioclavicular joint cyst and rotator cuff tear. *J Shoulder Elbow Surg* 1998; 7: 435-437.
20. Montet X, Zamorani-Bianchi MP, Mehdizade A, Martinoli C, Bianchi S. Intramuscular ganglion arising from the acromioclavicular joint. *Clin Imaging* 2004; 28: 109-112.
21. Echols PG, Omer GE Jr, Crawford MK. Juxta-articular myxoma of the shoulder presenting as a cyst of the acromioclavicular joint: a case report. *J Shoulder Elbow Surg* 2000; 9: 157-159.
22. Resnick D. *Diagnosis of Bone and Joint Disorders*. 4 ed. WB Saunders, Philadelphia, 2002, pp 1271-1279.
23. Craig EV. The acromioclavicular joint cyst. An unusual presentation of a rotator cuff tear. *Clin Orthop* 1986; 202:189-192.
24. Jaysen MI, Dixon AS. Valvular mechanisms in juxta-articular cysts. *Ann Rheum Dis* 1970; 29: 415-420.
25. Malghem J, Vandeberg BC, Lebon C, Lecouvet FE, Maldague BE. Ganglion cysts of the knee: articular communication revealed by delayed radiography and CT after arthrography. *AJR Am J Roentgenol* 1998; 170: 1579-1583.
26. Treadwell EL. Synovial cysts and ganglia : the value of magnetic resonance imaging. *Semin Arthritis Rheum* 1994; 24: 61-70
27. de Abreu MR, Chung CB, Wessely M, and Jin-Kim H, Resnick D. Acromioclavicular joint osteoarthritis: comparison of findings derived from MR imaging and conventional radiography. *Clin Imaging* 2005; 29: 273-277.