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# Massive acromio-clavicular joint ganglion cyst associated with cuff tear arthropathy and acromioclavicular joint arthritis with normal functional shoulder-A case report

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## ABSTRACT

Acromio-clavicular joint ganglion cysts are a rare manifestation secondary to either degenerative acromio-clavicular joint arthritis or a rotator cuff tear arthropathy. We report a case of 76 year old female with acromio-clavicular joint cyst associated with cuff tear arthropathy and advanced acromio-clavicular joint arthritis with normal shoulder functions. She had superficial pain over the cyst with no complaints of cuff tear and provocative tests were negative. The shoulder arthrogram revealed the "geyser sign". The cyst was excised en bloc along with distal clavicular resection. The check valve was identified and the defect in the acromio-clavicular joint capsule was treated with capsulorrhaphy. Patient at one year follow up showed no signs of recurrence. Excision of cyst along with distal clavicular resection and capsulorrhaphy is a good procedure in patients with acromio-clavicular joint cysts.

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## 1. Introduction

Acromio-clavicular (AC) joint cysts are a rare sequela of chronic rotator cuff tears or advanced degenerative AC joint arthritis. The reported incidence of ganglion cyst around the shoulder is as low as 1%.<sup>1</sup> Majority of the cases reported in literature were secondary to a chronic rotator cuff tear, wherein the gleno-humeral joint fluid leaks to the communicating AC joint to produce cysts (Type-2 cysts). The type-1 cysts are seen secondary to a degenerative AC joint arthritis with intact rotator cuff.<sup>2</sup> Treatment options are dictated by the underlying aetiology, associated co-morbidities and patient demands. We report a case of massive AC joint cyst associated with chronic rotator cuff tear and associated AC joint arthritis treated surgically.

## 2. Case presentation

Subject was 76 yr old hypertensive female with mass over the right shoulder region for 1 year duration. She also complained of superficial pain in the right shoulder. The patient had initially taken

treatment from local doctor in the form of repeated needle aspirations (2 times) but the mass recurred. Examination revealed a large fluctuant mass of size 8 × 6 × 8 cm over the right acromio-clavicular joint with normal overlying skin. The right shoulder had a functional range of motion with normal forward flexion (0–150°) and abduction (0–160°) (Fig. 1).

Plain radiography revealed advanced cuff tear arthropathy with superior migration of the humeral head and associated AC joint arthritis (Fig. 2a). A soft tissue shadow was seen above the AC joint. Magnetic resonance imaging done with a suspicion of tubercular arthritis revealed the presence of a homogenous, large, lobulated AC joint ganglion cyst and complete tear of supraspinatus, infraspinatus and biceps tendon (Fig. 2b). The synovial fluid from the glenohumeral joint communicated with the subcutaneous cyst through the defect in the acromio-clavicular joint.

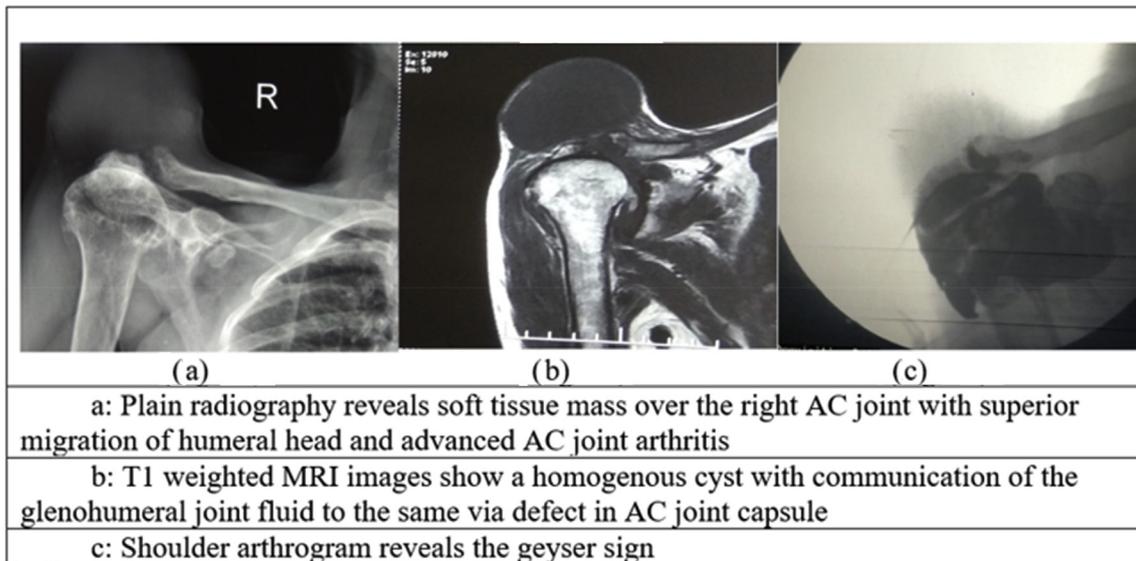
Surgical excision of the mass was planned and executed. Intra-operatively a shoulder arthrogram was done which revealed the geyser sign (Fig. 2c). Patient was positioned in semi-beach chair position. The cyst was removed en bloc, with incision along the Langerhans line and was found to have mucinous material in it. The rent in the AC joint was identified which was working as a one way valve wherein, the glenohumeral joint fluid was ejected into the cyst but unable to return (Fig. 3). The complete cyst wall was excised and purse-string sutures were taken around the valve to prevent recurrence. 1cm of lateral end of clavicle was removed and

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**Fig. 1.** Clinical photograph of the patient with right sided AC joint ganglion cyst with normal shoulder abduction.



**Fig. 2.** a: Plain radiography reveals soft tissue mass over the right AC joint with superior migration of humeral head and advanced AC joint arthritis. b: T1 weighted MRI images show a homogenous cyst with communication of the glenohumeral joint fluid to the same via defect in AC joint capsule. c: Shoulder arthrogram reveals the geysier sign.

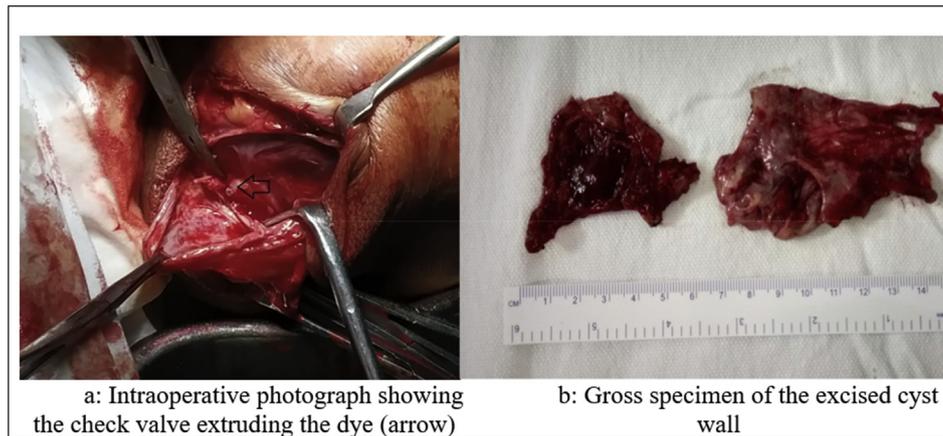
double breasting of the AC joint capsule was done. Post operatively patient had no complaints. The histopathological examination revealed fibrocollagenous and adipose tissue with lymphoplasmacytic inflammatory infiltration without evidence of granuloma (Fig. 4). Follow up after 1 year showed no recurrence with relief of pain.

### 3. Discussion

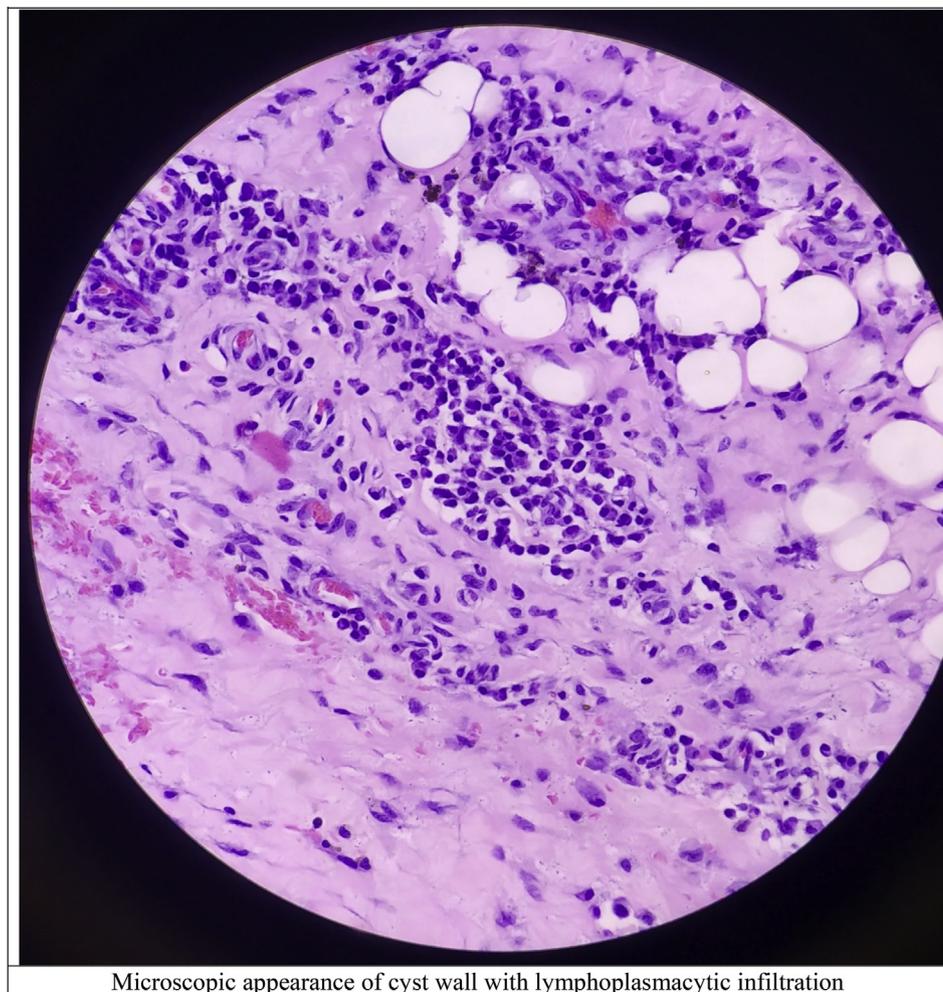
Acromio-clavicular joint cysts are rare sequelae of advanced AC joint arthritis or chronic rotator cuff tear. They are classified as type-1 and type-2 cysts in accordance with its aetiology. Type-1 cysts are seen in advanced AC joint arthritis wherein, there is synovial inflammation and the cysts so formed are limited to the joint and are not associated with rotator cuff tear.<sup>2</sup> The pathology of the Type-2 cyst on the other hand is dependent on the rotator cuff morphology. Complete tear of the rotator cuff especially the supraspinatus tear in cuff tear arthropathy predisposes to superior

migration of the humeral head, leading to irritation and deterioration of AC joint capsule. Increased synovial fluid production and formation of check valve causes the escape of the synovial fluid into the AC joint capsule creating the ganglion cyst.<sup>3</sup> Craig described the spewing of the fluid from AC joint capsule as ‘geyser sign’ in shoulder arthrogram.<sup>3,4</sup> The fluid hence accumulates in the subcutaneous plane and forms the cyst.

The current treatment guidelines of AC joint cyst insist surgical management owing to recurrence associated with aspiration.<sup>5,6</sup> Kontakis et al treated an isolated AC joint cyst with AC joint arthritis and intact rotator cuff with distal clavicular resection and subacromial bursectomy.<sup>7</sup> Rohit et al. in his report mentioned complete resolution of the AC joint cyst using conservative management.<sup>8</sup> The various options include arthroscopic debridement with repair of the rotator cuff tear, distal clavicular resection, humeral head replacement, total shoulder arthroplasty and shoulder arthrodesis.<sup>9-12</sup> Skedros et al<sup>12</sup> have used allograft patch to seal the surfaces of the resected bones and the remaining AC joint ligaments



**Fig. 3.** a: Intraoperative photograph showing the check valve extruding the dye (arrow). b: Gross specimen of the excised cyst wall.



**Fig. 4.** Microscopic appearance of cyst wall with lymphoplasmacytic infiltration.

& the anterior deltoid was advanced to augment the excision site. Conservative treatment is never advised owing to the presence of the check valve which will continue to extrude the fluid through it.

Our case represents a unique situation wherein the patient complaint wise had only cosmetic concerns and superficial pain.

Radiographs and magnetic resonance revealed advanced cuff tear arthropathy with superior migration of humeral head and associated AC joint arthritis but, patient clinically had functional shoulder range of movement and no symptoms pertaining to the cuff tear. We took surgical line of management and performed en bloc

excision of the cyst with double breasting of the defect in the AC joint capsule along with resection of lateral end of clavicle. The check valve was identified intra-operatively allowing only unidirectional flow of the fluid from glenohumeral joint into the ganglion cyst. The full thickness rotator cuff tear of the patient was not addressed owing to the shoulder having functional range of movements and lack of pain on provocative tests. On follow up at 1 year the patient is asymptomatic with no signs of recurrence.

#### 4. Conclusion

We report a unique case of massive acromio-clavicular joint cyst in a 76 year old female having advanced cuff tear arthropathy with normal shoulder function and associated AC joint degeneration treated with surgical excision, lateral end clavicle resection and double breasting of the AC joint capsule defect. We would recommend double breasting of the AC joint capsule defect along with distal clavicle resection and en bloc excision of the cyst as a viable option in treatment of AC joint cyst associated with rotator cuff tear with functional shoulder.

#### Competing interest

Authors declare that they have no competing interests.

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