

Os Acromiale-Unusual manifestation as superior spur and bursitis-A case report

Abstract:

An Os acromiale is a condition that results from the failure of fusion of the anterior acromial apophysis. It can be asymptomatic. It can also result in subacromial impingement and rotator cuff tear. In this case report of a 39 year old lady we would like to present the management of the painful bursitis and spur formation on the superior surface of a meso-type of os acromiale. Conservative management in the form of rest, anti-inflammatory drugs and physiotherapy did not provide symptomatic relief. Patient then underwent surgical excision of the superior spur. Open reduction and internal fixation was not carried out. Patient had resolution of pain and no recurrence of symptoms or features of impingement at 6 months follow up. To the best of our knowledge there are **are limited reports** in English literature about this rare subset of patients with symptomatic os acromiale with superior spur formation and with no features of impingement or cuff pathology.

Introduction

The incidence of Os acromiale has been reported ranging from 1 to 15 %. Bilateral involvement is seen in 41 to 62% of cases(1-3):

Os acromiale is a developmental anomaly characterised by absence of an osseous union between the ossification centres of the acromion, resulting in a fibrocartilaginous tissue connection. The centres of ossification include pre acromion, Meso acromion and meta

32 acromion. The various centres ossify by 18-25 years of age. The
33 clinical implication of this is that diagnosis can only be made
34 beyond age 25(1). The usual presentation is asymptomatic
35 radiographic finding or a traumatic event causing onset of clinical
36 symptoms(2-6).patients are initially treated with Non surgical
37 modalities and Surgical treatment is reserved for situations for
38 patients refractory to non surgical modalities. Only after nonsurgical
39 management has failed to relieve symptoms. Numerous treatments
40 have been proposed including open or arthroscopic excision of the os
41 fragment(6,7), open reduction and internal fixation (ORIF) with or
42 without bone grafting(8-13) arthroscopic subacromial decompression
43 with acromioplasty(10,14-17) and arthroscopically assisted reduction-
44 internal fixation(18). Williams (19)et al have reported a new
45 technique for symptomatic meso-acromiale-this involves removal of
46 segment of bone between the two ends of os acromiale. Symptomatic
47 patients usually present with impingement and rotator cuff tears (20)
48 and are usually of the mesoacromion subgroup(20,21)

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51 This paper reports a case of unilateral mesoacromion presenting with
52 severe shoulder pain, had spur formation and bursitis on the superior
53 surface of the acromion, without any features of the subacromial
54 impingement or cuff tear. Authors describe surgical management of
55 such a case along with the clinical features, imaging and a brief
56 review of literature.

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58 **Case report**

59 A 39 years old lady, right hand dominant, presented to the Outpatient
60 clinic with complaints of pain in the right shoulder since 4 weeks. She
61 reported worsening of symptoms on overhead activities. Patient
62 denied any history of trauma or history of similar complaints in the
63 past. Patient had not received any treatment for these symptoms prior
64 to presentation.

65 Clinical examination revealed normal muscle bulk bilaterally. A bony
66 hard projection was noted over superior aspect of the lateral border of
67 the acromion. Digital pressure over the acromion was painful .

68 Forward flexion and abduction of the shoulder was painful. Neer's
69 and Hawkin's test for impingement were negative. Jobe's test for
70 supraspinatus and Speed test for biceps were negative.

71 Routine AP and axillary projections of the shoulder revealed normal
72 subacromial space and a meso type of os acromiale (Fig 1). No
73 degenerative changes were noted in the AC joint. CT confirmed the
74 meso type of os acromiale with bony spurs over the superior surface
75 on either side of the pseudo arthrosis (Fig 2 and 3). MRI of the
76 shoulder joint was done, which showed no evidence of rotator cuff
77 tear (Fig 4 and 5).

78 Patient was initially treated conservatively with analgesics and
79 targeted physical rehabilitation programme for 12 weeks. In view of a
80 failed trial of conservative treatment, patient was advised surgical
81 intervention. In beach chair position, using a lateral approach the left
82 acromion was exposed. The bony spurs over the superior surface of
83 the acromion were noted and excised using a saw and the surface
84 smoothed with a burr (Fig 4 and 5). The site of the os acromial was
85 examined, which showed minimal movement. Decision was taken not
86 to excise the fragment due the risk of deltoid weakness. ORIF was not
87 undertaken in view of minimal movement at pseudarthrosis site and
88 no evidence of cuff pathology.

89 **Discussion**

90 Gruder was the first one to report Os acromiale. Prevalence of os
91 acromiale has been reported in 1% to 30% of the general population,
92 with 41% to 62% of cases presenting with bilateral involvement(1-3).

93 The acromion develops from three ossification centres, referred to as
94 pre, meso and meta acromion recognizable from the eighteenth year
95 of life. Initially the meta acromion fuses to the scapula and the
96 preacromion and mesoacromion fuse to each other. All three centres
97 finally fuse to the scapula by the twenty first to twenty fifth year of
98 life(20-23). In situations where these centres fail to finish the process
99 of ossification it results in Os Acromiale(22-24)

100 Some authors have suggested the area of pseudo arthrosis in vicinity
101 of Ac Joint alters function of the acromioclavicular joint and in the
102 presence of an os acromiale as a cause of impingement syndrome and
103 full thickness rotator cuff tears(Williams et al 20). Atoun (18)et al in
104 a prospective study in 2016 proposed the role of os acromiale in the
105 pathophysiology of massive rotator cuff tears-howvere our patient did
106 not have any rotator cuff tear.

107 The initial treatment of symptomatic Os acromiale is conservative
108 which involves subacromial steroid shot and physical therapy(13).The
109 optimal surgical treatment option in a patient with a symptomatic os
110 acromiale following a trial of conservative treatment is controversial .
111 Prunell et al in a systematic review compared the outcomes of three
112 surgical strategies used. The options included for review were
113 excision, acromioplasty and open reduction and internal fixation. The
114 observed higher patient satisfaction results in excision and ORIF
115 group compared to acromioplasty group. Highest complication rate
116 was noted in ORIF group with a need for second elective procedure
117 for removal of hardware(26). Fragment excision has been reported to
118 have complication of deltoid weakness(27). New technique has been
119 reported by Williams et al where by segment of bones is removed
120 between the two fragments and is combined with acromioplasty .They
121 reported their observations on six patients with excellent outcomes.
122 The basis for their treatment was arthroscopic partial resection of the
123 acromial non-union site minimizes any contact between the two
124 fragments which is believed to be a pain generator. When this is
125 combined with acromioplasty that also removes external impingement
126 as source of pain. In their short series All patients had resolution of
127 the point tenderness over the os- acromiale and none developed any
128 complications, including painful instability of either the anterior os
129 fragment or the acromioclavicular joint.

130 Our case involved a patient with a symptomatic meso type of os
131 acromiale without features of external impingement or rotator cuff
132 tear. Also in our case the spur was superior and not inferior. Patient
133 underwent surgical excision of the spurs over the superior surface of

134 the acromion. In view of minimal movement at the interacromial
135 joint, further intervention in the form of excision of the fragment or
136 ORIF was not carried out. It is difficult to explain why spur formed
137 superiorly and not inferiorly, the most plausible explanation would be
138 more stress at non-union site superiorly. Bursa formation was
139 protective in nature secondary to irritation by the superior spur.
140 Irritation of bursa secondary to spur was the cause of pain and
141 excision of spur resulted in resolution of the symptoms. At one year
142 follow up patient had complete symptomatic relief with no wound
143 complications or need for repeat intervention .

144 The authors would like to propose bursitis over the superior surface of
145 the acromion secondary to spur formation as a cause of intractable
146 shoulder pain in this patient. In our case with these features, spur
147 excision and smoothing of edges provides symptomatic relief. This
148 rare subgroup of patients do not require any additional procedures
149 such as acromioplasty, as there were no features of impingement. The
150 rotator cuff was intact. There was no need to perform any open
151 reduction in this case, thereby reducing any risk of complications such
152 as deltoid weakness, hardware prominence and a possible second
153 surgery with symptomatic non-union.

154 To conclude our case was unique presentation of superior spur
155 formation with associated bursitis adjacent to mesoacromion. Patient
156 did not have rotator cuff tear/external impingement or abnormal
157 mobility at the site of os acromiale. To the best of our knowledge we
158 did not come across a report in English literature of superior spur
159 formation with bursitis in mesoacromiale.

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163 Figure 1 X-ray showing Os acromiale and superior spur

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168 Figure 2 Ct Scan showing superior spur



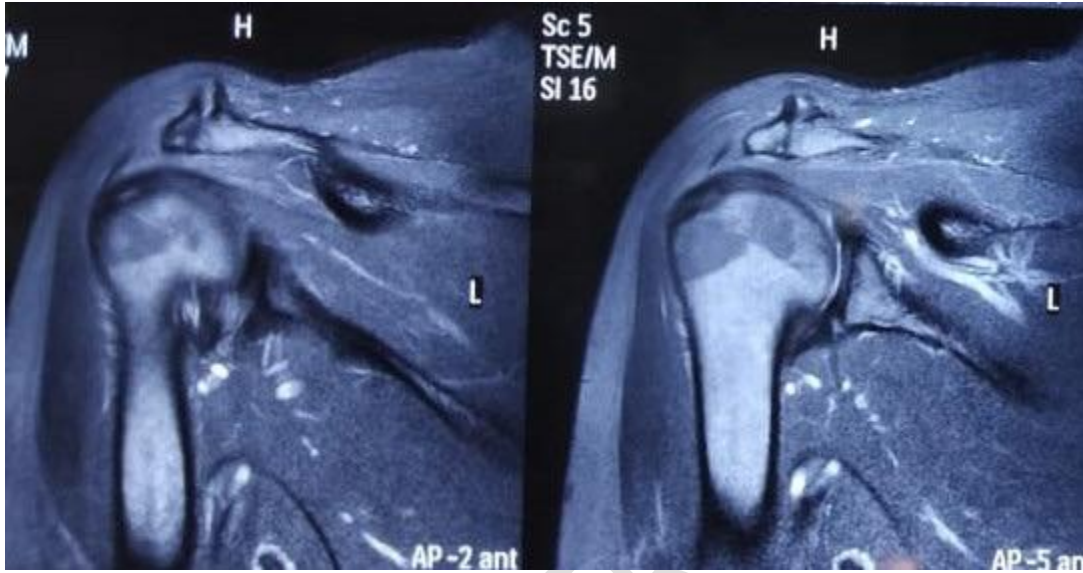
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171 Figure 3 Ct Scan showing OS Acromiale

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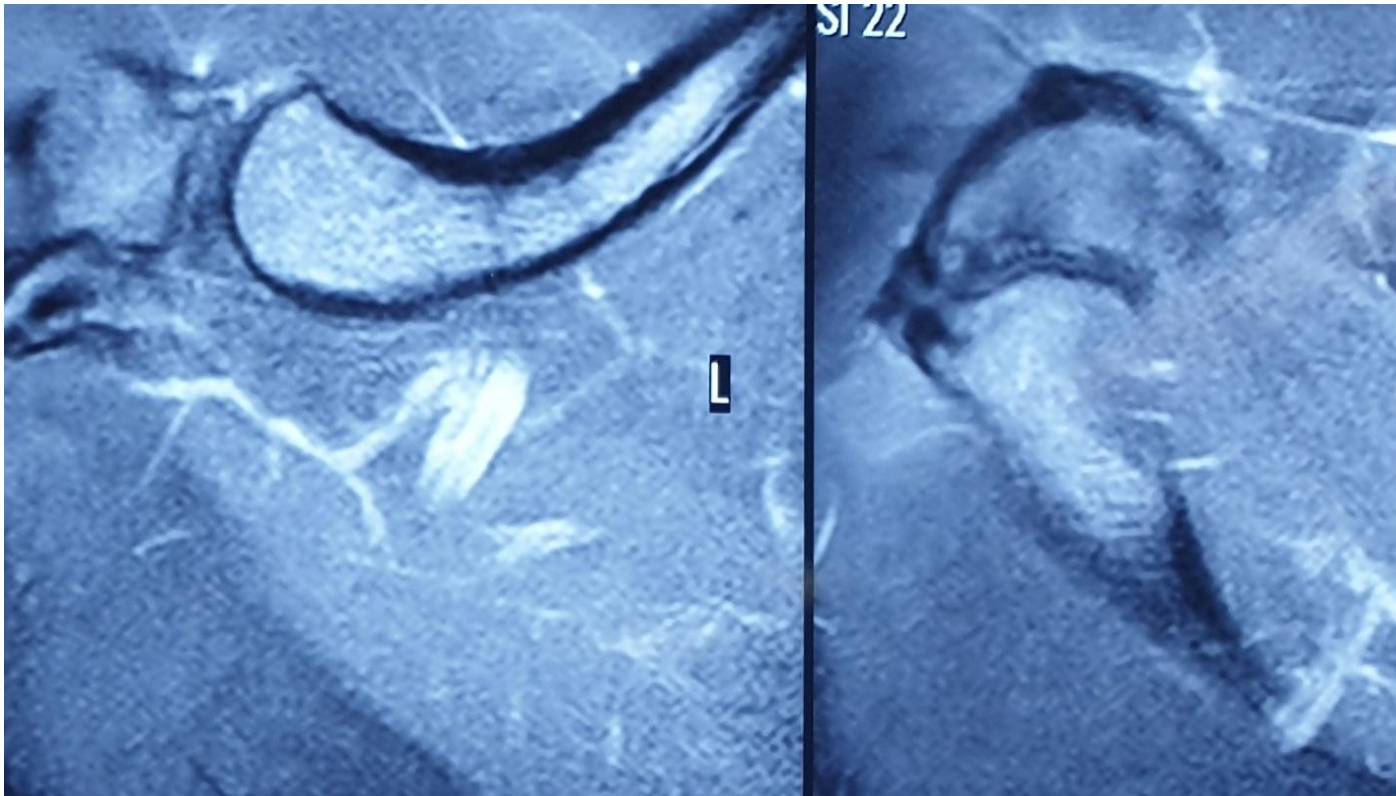
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176 Figure 4 MRI showing superior spur and no evidence of cuff tear

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180 Figure 5 Axial MRI showing Os Acromiale

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