

**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 *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).<sup>7</sup>

Os acromiale is a developmental anomaly characterised by *absence of 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~~Non-  
37 surgical modalities and surgical treatment is reserved for situations for  
38 ~~patients~~patient's refractory to non surgical modalities. Only after  
39 nonsurgical management has failed to relieve symptoms. Numerous  
40 treatments have been proposed including open or arthroscopic  
41 excision of the os fragment(6,7), open reduction and internal fixation  
42 (ORIF) with or without bone grafting(8-13) arthroscopic subacromial  
43 decompression with acromioplasty(10,14-17) and arthroscopically  
44 assisted reduction-internal fixation(18). Williams (19) et al have  
45 reported a new technique for symptomatic meso-acromiale-this  
46 involves removal of segment of bone between the two ends of os-  
47 acromiale. Symptomatic patients usually present with impingement  
48 and rotator cuff tears (20) and are usually of the meso-acromion  
49 subgroup (20,21)

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

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## 59 **Case report**

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

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

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

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

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

## 90 **Discussion**

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

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

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

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

132 Our case involved a patient with a symptomatic meso type of os  
133 acromiale without features of external impingement or rotator cuff  
134 tear. Also in our case the spur was superior and not inferior. Patient

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

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

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

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

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170 Figure 2 Ct Scan showing superior spur



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173 Figure 3 Ct Scan showing OS Acromiale

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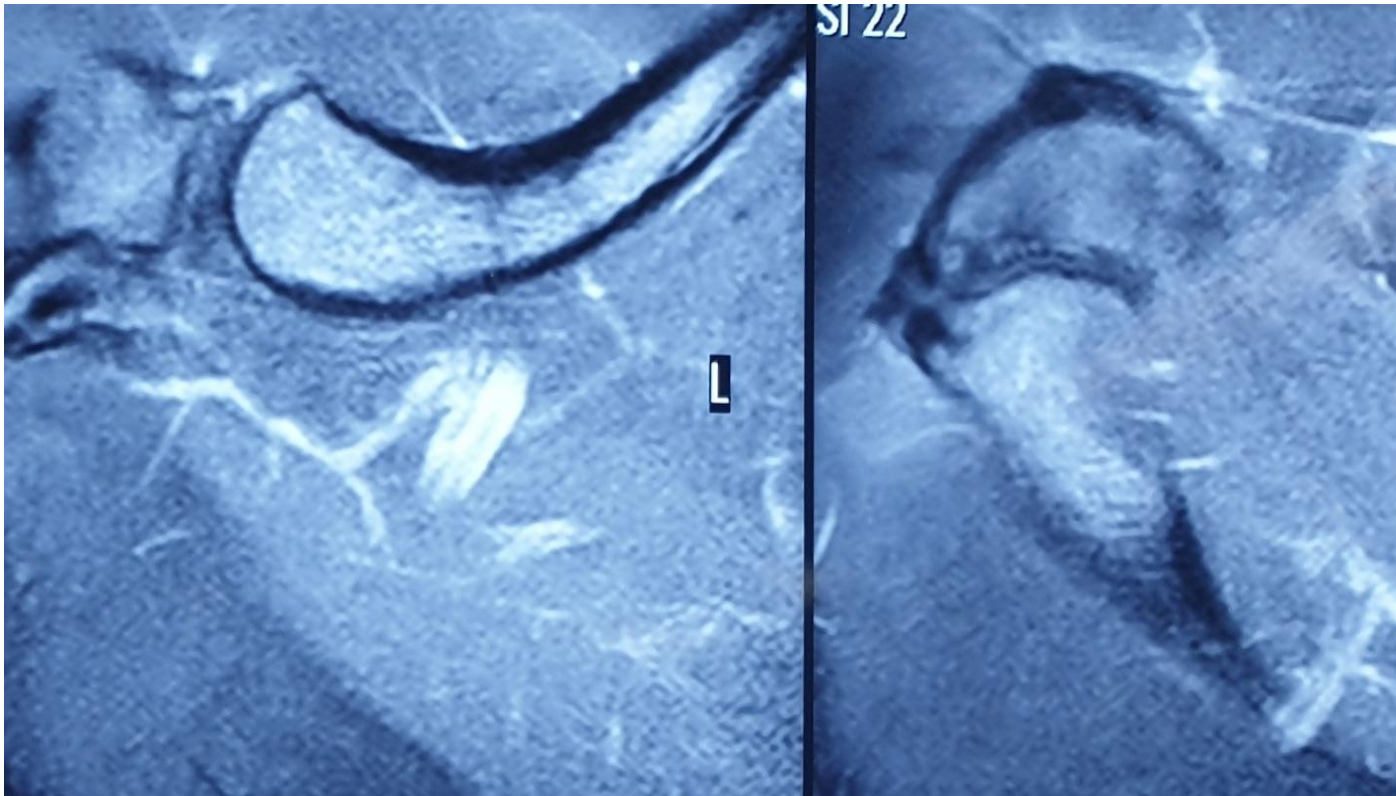
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178 | Figure 4 ~~MRI~~ MRI showing superior spur and no evidence of cuff  
179 tear

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183 Figure 5 Axial MRI showing Os Acromiale

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185 **Disclaimer regarding Consent/Ethical Approval:**

186 As per university standard guideline participant consent and ethical  
187 approval has been collected and preserved by the authors.

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