



## A Rare Case of Scapula Neck and Displaced Acromian Fracture

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### ABSTRACT

Scapular neck fracture is common among all scapular fractures. Scapular neck fracture along with displaced acromian fracture is rarely seen. Besides there is hardly any literature depicting such scapular fractures. We present a rare case of scapular neck fracture with inferiorly displaced acromian fracture in a young male. The sub-acromian space is reduced by the displaced acromian fragment with impending impingement of sub-acromian structures during shoulder abduction. Expecting a near normal shoulder function acromian fracture was treated by open reduction and internal fixation with plate and screws. With fixation and physiotherapy subacromian space was well maintained and patient achieved near normal shoulder movement and strength.

**Keywords:** Acromian fracture, Internal fixation and impingement.

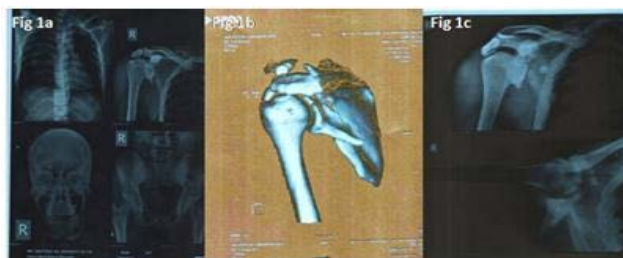
### INTRODUCTION

Fracture of scapula is very rare among all fractures. Fortunately many of them heal by conservative management. Of all scapular fractures mostly fracture of acromian and scapular neck fractures need attention. Many a times scapular fractures are unnoticed as many are associated with life threatening conditions like chest and head injury. In respect to acromian fractures, usually inferiorly displaced acromian fractures is important as these may lead to subacromian impingement.<sup>1</sup> To prevent subacromian impingement, such fractures better to be reduced anatomically. Internal fixation is necessary to maintain the reduction. Besides acromian fracture internal fixation is also necessary when scapular neck fracture is associated with clavicle fracture<sup>2</sup>. We are presenting a unique scapula fracture comprising of inferiorly displaced acromian fracture and fracture of scapular neck. There is no such published report on similar scapular fracture.

### CASE REPORT

A young male of 24 years presented with blunt injury to the shoulder with symptoms of gross swelling and painful shoulder movement. On examination found to have tenderness over acromian process and scapula. Active shoulder movement was painful and limited to 30 to 40 degrees of abduction. On passive shoulder movement all movements were painful and restricted. Most important, passive abduction was only 60 degrees. Radiograph revealed fracture of scapular neck and inferiorly displaced acromian fracture. Subacromian space was grossly compromised. (Figure 1a, 1c) Following a 3D CT was done to assess the fracture pattern. (Figure 1b) Fracture was reduced with various reduction clamps and confirmed under image intensifier. Fracture fixed with 2.5 reconstruction locking plate and screws. Shoulder was

immobilized for two weeks and muscle tone maintained with isometric exercises. After two weeks physiotherapy was started and a mere sling was used for another three weeks. At 15 weeks fracture was well uniting and implants were in position. (Figure 3g) By 15 weeks patient was completely pain free and had pre injury level of shoulder movement. (Figures 3a-e) At 2 years of follow up patient had normal range of shoulder movement and strength. (Figures 4a-h)



**Figures 1a, 1b, 1c:** Pre op X-ray 1; Pre op 3D CT scapula; Pre op X-ray 2.



**Figures 2a, 2b, 2c:** 2<sup>nd</sup> post op X-ray; 4 Weeks post op X-ray; 8 Weeks post op X-ray; **Figure 3a, 3b, 3c:** 15 weeks clinical follow up- Shoulder External Rotation; 15 weeks clinical follow up- Shoulder Overhead Abduction; 15 weeks clinical follow up- Shoulder Abduction.



**Figures 3d, 3e, 3f, 3g:** 15 weeks clinical follow up - Shoulder Internal rotation; 15 weeks clinical follow up - Shoulder External rotation; 15 weeks clinical follow up - Symmetrical Scapular Muscle Mass; 15 weeks post op X-ray.



**Figures 4a, 4b, 4c, 4d, 4e, 4f:** 2 years clinical follow up - Shoulder Internal rotation; 2 years clinical follow up - Shoulder External Rotation; 2 years clinical follow up - Symmetrical Scapular Muscle Mass; 2 years clinical follow up - Shoulder Overhead Abduction; 2 years clinical follow up - Shoulder Overhead Abduction; 2 years clinical follow up - Shoulder Abduction



**Figures 4g, 4h, 4i:** 2 years clinical follow up -Muscle Power Normal Shoulder; 2 years clinical follow up - Muscle Power Operated Shoulder; 2 years follow up – X-ray.

**DISCUSSION**

Scapula fractures are very rare fractures accounting for 0.5% to 1% of all fractures and 3-4% of all shoulder injuries. Acromian fracture is only 7-8% of all scapular fractures.<sup>3,4</sup> Because of its rare incidence treatment plan is also uncertain. We present a rare type of scapular fracture with inferiorly displaced acromian fracture and fracture neck of scapula. (Figure 1a, Figure 1c) As per our knowledge there is no such published case report in the literature. Kunh et al had found 27 cases over a period of 15 years. On their observation they have broadly classified acromian process fractures into three types.<sup>4</sup> Three types of acromian fractures are found, Type I includes, minimally displaced fractures. Avulsion fractures (type IA), Fractures from direct trauma (IB). In Type II, Displaced fractures; laterally, superiorly or anteriorly, but do not reduce the sub-acromial space. In type III: Displaced fractures resulting in reduction of sub-acromial space. This occurs either by inferior displacement of acromian fracture or acromian fracture being associated with an ipsilateral superiorly displaced glenoid neck fracture. Inherently in day to day practice scapular fracture are neglected and diagnosed late. Diagnosis is delayed as these fractures usually associated with variety of life threatening injuries such as head injury, pulmonary injury, brachial plexus injury, vascular injuries or humerus fracture.<sup>5</sup> Besides because of its location posterior to chest its diagnosis is delayed in bed bound patients. It is usually missed in routine chest x-ray and AP view of shoulder. AP view of shoulder is helpful for diagnosis of fracture neck and acromian process fracture, but CT scan is helpful in studying the pattern of fracture and further management. Most of the scapular fractures can be managed by an arm sling or a shoulder immobilizer.<sup>6,7</sup> Movement of shoulder must be started earlier as soon as the pain subsides, to prevent stiffness of shoulder. Certain scapular injuries need surgery such as displacement glenoid fractures involving the articular surface, fracture neck of scapula with angulations and inferiorly displaced acromian process fracture causing subacromian impingement and mechanical obstruction during shoulder abduction.<sup>8</sup> We reported a rare scapular fracture with minimal angulation in neck of scapula and gross inferior displacement of acromian process (Type III).<sup>4</sup> We decided to fix the acromian process to restore the sub-acromial space. It can solve both problems such as prevention of impingement and drooping of shoulder. To get an anatomical reduction we opted for open reduction and stabilization of fracture by reconstruction plate and locking screw. Post operative check X-ray of shoulder was satisfactory. (Figure 2a) Patient was advised to use an arm sling for 2 weeks followed by guided physiotherapy. Sling was removed at six weeks. By six months pt had attained complete range of shoulder movement comparable to opposite shoulder. At one year patient had normal muscle power of shoulder. Even at two years follow up patient had completely pain free shoulder with normal power and range of motion.

## CONCLUSION

Even if Scapula fracture's were not taken seriously by most of the orthopedic surgeons, still we strongly feel certain scapular fracture like this case should be actively managed to get the best functional outcome.

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