

## Isolated Displaced Fracture of Acromion Process: A Case-Report

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### ABSTRACT

**Background:** Fracture of the acromion process is an uncommon injury, which is often diagnosed late. Though, usually managed conservatively, the indications for surgery in these fractures are very specific. The acromion is a large bony projection on the superior end of the scapula. Acromion fractures are rare injuries. They constitute 8%–16% of scapula fractures. Recently, they are seen at the rate of 5%–6.9% as the complication of reverse shoulder arthroplasty.

**Objective:** We aimed to present a case report to highlight isolated displaced fracture of acromion process.

**Case report:** 58 years old male, known case hypertension, presented to emergency department on 16 December 2021, after history of fall down from ladder on his left shoulder complaining of pain over left shoulder and limitation of movement. Pain was started after fall, dull in nature, not radiating to left upper limb, increased with movement and decreased with analgesia mildly.

**Conclusion:** Acromial fractures are usually associated with other lesions of the shoulder girdle. Isolated displaced fractures of the acromion are clearly the exception to the rule. Acromion fracture can be treated with good results with early surgical treatment and proper fixation. Surgical treatment is important to regain shoulder functions, as it enables early rehabilitation of treatment.

**Keywords:** Acromion process, Isolated displaced fracture, CT, X-ray.

### INTRODUCTION

Scapular fracture is a rare occurrence. The acromion, which is the lateral projection of the scapula's spine, only makes up to 8% of all scapular fractures, is an uncommon orthopaedic problem<sup>(1)</sup>. The majority of these fractures involve concurrent shoulder skeletal and soft tissue damage<sup>(2)</sup>. The normal function of the shoulder may be hampered or the sub acromial area compromised with a severely displaced acromion fracture due to compression of the rotator cuff, long head of the biceps tendon, or deltoid muscle, leading to impingement syndrome<sup>(3)</sup>.

Overuse injuries and shoulder trauma can both result in acromion fractures. In addition to scapula or clavicle distal fractures and rupture of the superior shoulder suspensory complex, acromion fractures can also occur<sup>(4)</sup>. There is no widely used acromion fracture treatment plan or fixing technique<sup>(5)</sup>.

We aimed to present a case report to highlight isolated displaced fracture of acromion process.

### CASE REPORT

58 years old male, hypertensive case was presented to emergency department on 16 December 2021, after history of fall down from ladder on his left shoulder complaining of pain over left shoulder and limitation of movement.

Pain was started after fall, dull in nature, not radiating to left upper limb, increased with movement

and decreased with analgesia mildly. No history of previous attack. Patient was retired and not enrolled in any sport activity. Non-smoker and non-alcoholic.

#### On examination:

Patient conscious, alert and oriented. Not in pain distress. Vitally stable.

#### Local examination of left shoulder:

Left shoulder open wound superficial over acromioclavicular joint, which was sutured. Tenderness over left acromion and scapular spine left sided. Decreased active abduction 0-30 degrees, forward flexion 0- 60 degrees, internal rotation till L2 and external rotation unable to touch his head. Intact distal neurovascular.

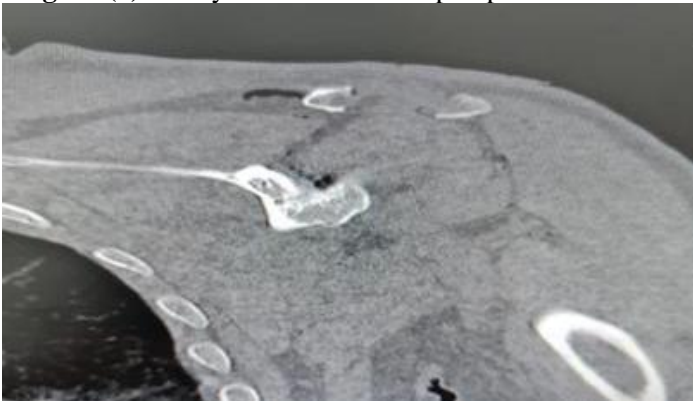
#### Diagnosis:

Case of left acromion process, was diagnosed based on x-rays upon presentation to ER. CT scan and X-ray was done.

Patient was diagnosed accordingly and managed primarily as conservative management that failed as high displacement of acromion process. Patient then was operated by open reduction of the left acromion process and fixation by 2 lag screws and plate. Patient was discharged in good condition and during follow up there was improved range of motion and discharged from clinic accordingly.



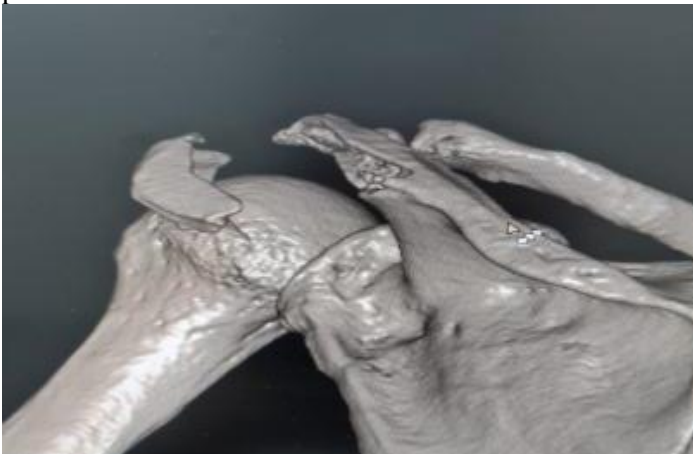
**Figure (1):** X-ray of left shoulder upon presentation.



**Figure (2):** CT-scan of left shoulder showing displaced acromion process.



**Figure (3):** 3D CT-scan showed displaced acromion process.



**Figure (4):** 3D CT-scan showed displaced acromion process.



**Figure (5):** Immediate post-operative X-ray of left acromion process.



**Figure (6):** Immediate post-operative X-ray of left acromion process



**Figure (7):** 6 weeks postoperative.

On regular follow up 2 weeks then 4 weeks then 6 weeks, patient have painless range of motion of left shoulder flexion 0-130, abduction 0-140 and external rotation with no limitation.

**Declaration of patient consent:**

An approval of the study was obtained from Dammam Medical Complex Hospital (Saudi Arabia) Academic and Ethical Committee. The patient was informed that the case would be published as case-report and this was accepted. This work has been carried out in accordance with The Code of Ethics of the World

Medical Association (Declaration of Helsinki) for studies involving humans.

## DISCUSSION

Acromion fractures are rare injuries. In patients with polytrauma, diagnosis and treatment of acromion fractures can be delayed or overlooked. In improperly treated acromion fractures; pain, movement restriction, subacromial impingement, rotator cuff injury and symptomatic nonunion can occur<sup>(5,6,7)</sup>.

**Kuhn et al.**<sup>(8)</sup> in a review of 27 fractures of the acromion during a 15-years period defined five distinct types that were classified into three groups. Stress fractures, Type I with minimal displacement and Type IA avulsion fractures, which heal rapidly. Type IB fractures result from direct trauma, with minimal displacement. Type II displaced fractures that do not reduce the sub acromial space and are treated by a non-operative technique. However, a type III with inferior displacement and with sub-acromial space involvement that requires surgical treatment<sup>(8)</sup>.

Scapular fractures have been classified into three types including acromion, coracoids and body fractures. These fractures are usually caused by a direct trauma or a violent contraction of the surrounding muscles, and may be isolated or associated with other shoulder injuries. To the best of our knowledge there are only few case-reports in the literature about isolated acromion fracture. The causes of the fracture include superior displacement of the humeral head, stress fracture or evulsions by a single violent muscle contraction of deltoid or subscapularis tendon or repetitive sub-maximal load to the shoulder<sup>(9-11)</sup>. This fracture can be managed by non-operative or surgical means depending on the initial displacement. For fixation of displaced acromion fracture, a variety of techniques including tension band wiring, screw, reconstruction plate and Kirschner wire have been advocated<sup>(7,8)</sup>.

In our case, patient was operated by open reduction of acromion process and plating. On regular follow up 2 weeks, 4 weeks then 6 weeks, patient have painless ROM of left shoulder flexion 0-130, abduction 0-140 and external rotation with no limitation.

In case of comminution, plating is preferred. The advent of multiple methods demonstrates not only the lack of consensus on the best method but also the variability in the presentations of an os acromial<sup>(12)</sup>.

Early surgical intervention to the patient can have a positive effect on fracture healing.

**Kim et al.**<sup>(13)</sup> compared early and late treated acromion fractures and found out that while all the early surgically treated patients came back to their pre-fracture activities, the rate for late treated patients is 44%. On his study, **Hill et al.**<sup>(5)</sup> showed that late treated patients can also get back to their work just as early treated patients do and reported that their shoulder

scores are good. In our case, patient with after history of fall down from ladder on his left shoulder c/o pain over left shoulder and limitation of movement got back to his normal life 8 weeks after surgery.

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