

# Acromion Fracture and Acromioclavicular Joint Dislocation: A Case Report

Mohammad Zarei<sup>1,\*</sup>, Saied Besharaty<sup>2</sup>, Alireza Moharrami<sup>2</sup> and Rasul Ghaedi<sup>2</sup>

<sup>1</sup> Associate Professor, Joint Reconstruction Research Center, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran

<sup>2</sup> Resident, Department of Orthopedic Surgery, Imam Khomeini Hospital AND Joint Reconstruction Research Center, Tehran University of Medical Sciences, Tehran, Iran

\*Corresponding author: Mohammad Zarei; Associate Professor, Joint Reconstruction Research Center, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran. Tel: +98-9126024640, Email: zarei\_mohammad78@yahoo.com

Received 2018 April 10; Revised 2018 July 13; Accepted 2018 September 25

## Abstract

**Background:** Acromion fractures are rare injuries that may occur because of shoulder trauma. This may be associated with distal clavicle fractures, which can be an indication for surgery. There are several methods, which are used for fixation of this type of fractures.

**Case Presentation:** In this paper, we presented a 34 years old man with acromion fracture in contribution with acromioclavicular (AC) joint dislocation. We applied a new method for fixation of this fracture. The fracture was fixed by 2 screws and AC Joint was fixed by a 4-hole hook plate.

**Conclusions:** It is important to be aware of acromial fracture to not miss them and also for early management, so that early recovery and satisfactory results can be gained.

**Keywords:** Acromion; Intra-Articular Fractures; Acromioclavicular Joint; Dislocation

**Citation:** Zarei M, Besharaty S, Moharrami A, Ghaedi R. **Acromion Fracture and Acromioclavicular Joint Dislocation: A Case Report.** *J Orthop Spine Trauma* 2018; 4(4): 74-6.



## Background

Acromion is a large bony process that is located on the superior end of the scapula. 8-16 percent of scapula fractures consist of acromion fractures that occur rarely (1, 2). Recent studies have shown that this fracture occurs with the rate of 5.0-6.9 percent following reverse shoulder arthroplasty (3). This may also occur following a shoulder trauma or overuse injuries. Acromion fractures could occur in association with other injuries including scapula, glenoid process, clavicle distal fractures, and disruption of superior shoulder suspensory complex (SSSC) (4, 5).

In many cases, this fracture is managed non-operatively, but in some conditions, it can be treated operatively, including displaced fractures, symptomatic nonunion, and acromion fractures associated with other lesions of the SSS. Subacromial space could be decreased due to acromion fractures with less displacement, which may need surgery. Despite several indications for operative management of these fractures, there are limited data about the surgical approaches and fixation techniques (6).

Isolated ipsilateral acromial fracture is very rare. We aim to present a case of this fracture in association with acromioclavicular (AC) joint dislocation and we explain the operation technique and the outcome of surgery.

## Case Presentation

A 34-year-old man fell from top of a car with about 1-meter height and suffered direct trauma to his left shoulder. He was admitted to emergency ward with complaint of severe pain and inability to move the shoulder.

On the physical examination, there was a wide ecchymosis on top of left shoulder (Figure 1) and tenderness on AC joint, and range of motion (ROM) of the shoulder was completely restricted.



**Figure 1.** This figure shows the patient's left shoulder ecchymosis and bruise due to both acromioclavicular (AC) joint dislocation and acromion fractures immediately after the trauma.

Due to severe pain of right chest wall, general surgery consult was requested and all findings were normal. Radiological examinations [X-ray (Figures 2 and 3) and computerized tomography (CT) scan (Figure 4)] revealed unstable acromial fracture, so the patient was placed on the list of operations for next day.



**Figure 2.** Left shoulder anteroposterior (AP) X-ray shows acromion fracture with suspected acromioclavicular (AC) joint dislocation.



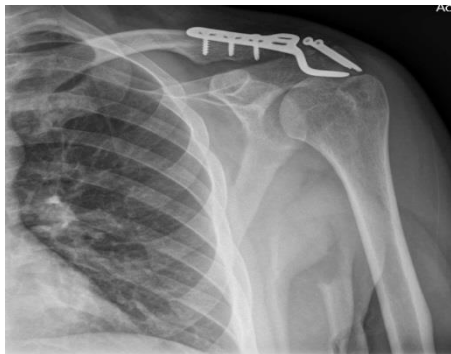
**Figure 3.** Acromioclavicular (AC) joint dislocation in association with acromion fracture approved by the chest Zanca view X-ray

The patient underwent surgery under general anesthesia, in semi-sitting position. A direct longitudinal incision from one-third of distal clavicle to proximal humerus was made.



**Figure 4.** The axial cut in computerized tomography (CT) scan of the left shoulder revealed the acromion fracture and displacement.

The fracture was reduced under C-shaped arm (C-arm) guidance and was fixed by 2 screws. Distal end of clavicle was fixed by a 4-hole hook plate. Joint stability was checked under C-arm on fluoroscopic mode (Figure 5).



**Figure 5.** Post-operative X-ray after one month; this X-ray shows acromioclavicular (AC) joint dislocation and acromion fracture fixed by hook plate in combination with 2 lag screws.

Patient was discharged with an arm sling one day after the surgery. A follow-up visit was considered for the next week. Early ROM was started in arm sling and a week later, active assisted ROM was begun. Full ROM was achieved after one month and patient came back to his work after 3 months (Figure 6).



**Figure 6.** The patient's physical examination and full shoulder range of motion (ROM) three months after the treatment

## Discussion

Acromion fractures are relatively rare. Generally, they are part of scapular fractures and account for only 1% of all fractures reported. This fracture mostly occurs as a result of high-speed traumas such as motor vehicle accidents (7).

There are three common classifications for acromion fractures. The level of comminution and displacement is determinative for Arbeitsgemeinschaft für Osteosynthesefragen/Orthopaedic Trauma Association (AO/OTA) classification (8). Ogawa and Naniwa classified them into two types; the classification considered lateral side fracture as type 1 and the medial side as type 2 (9). Kuhn et al. classified the fracture into 3 types, based on the amount of displacement: type 1, minimally displaced, type 2, displaced without reduction in subacromial space, and type 3 has a reduction in subacromial space (10).

Based on fracture type, Ogawa and Naniwa (9) established a management method for fracture displacement and accompanying ipsilateral shoulder injuries. A surgical treatment was suggested by Kuhn et al. (10) for type 3 fractures that cause reduction in subacromial space, symptomatic stress fractures, and painful nonunions. In the study by Hill et al. (6), surgical treatment was suggested for some conditions including symptomatic nonunion, subacromial impingement, displacement more than 1 cm, open fractures, and disruption of SSSC.

There are several methods for fixation of acromion fractures, but they can commonly be treated with a direct posterior approach using either tension band or low-profile plating in combination with cortical lag screws to obtain a stable construct. This technique not only is effective in achieving fracture union but also is safe for the patient (6).

## Conclusion

In conclusion, it is important to be aware of acromial fracture to not miss them and also for early management, so that early recovery and satisfactory results can be gained.

## Conflict of Interest

The authors declare no conflict of interest in this study.

## Acknowledgments

This study was performed at the orthopedics surgery ward of Imam Khomeini Hospital of Tehran University of Medical Sciences, Tehran, Iran. The authors would like to express their thankfulness to the patient for his participation.

**References**

1. Goss TP. The scapula: Coracoid, acromial, and avulsion fractures. *Am J Orthop (Belle Mead NJ)*. 1996;25(2):106-15. [PubMed: [8640380](#)].
2. Lantry JM, Roberts CS, Giannoudis PV. Operative treatment of scapular fractures: A systematic review. *Injury*. 2008;39(3):271-83. doi: [10.1016/j.injury.2007.06.018](#). [PubMed: [17919636](#)].
3. Crosby LA, Hamilton A, Twiss T. Scapula fractures after reverse total shoulder arthroplasty: Classification and treatment. *Clin Orthop Relat Res*. 2011;469(9):2544-9. doi: [10.1007/s11999-011-1881-3](#). [PubMed: [21448773](#)]. [PubMed Central: [PMC3148370](#)].
4. Cicekli O, Akar A, Topcu HN. Displaced acromion fracture: A rare injury, case report. *Int J Surg Case Rep*. 2017;39:313-6. doi: [10.1016/j.ijscr.2017.08.051](#). [PubMed: [28898793](#)]. [PubMed Central: [PMC5602832](#)].
5. Mulawka B, Jacobson AR, Schroder LK, Cole PA. Triple and quadruple disruptions of the superior shoulder suspensory complex. *J Orthop Trauma*. 2015;29(6):264-70. doi: [10.1097/BOT.000000000000275](#). [PubMed: [25536214](#)].
6. Hill BW, Anavian J, Jacobson AR, Cole PA. Surgical management of isolated acromion fractures: Technical tricks and clinical experience. *J Orthop Trauma*. 2014;28(5):e107-e113. doi: [10.1097/BOT.000000000000040](#). [PubMed: [24270357](#)].
7. Walch G, Mottier F, Wall B, Boileau P, Mole D, Favard L. Acromial insufficiency in reverse shoulder arthroplasties. *J Shoulder Elbow Surg*. 2009;18(3):495-502. doi: [10.1016/j.jse.2008.12.002](#). [PubMed: [19250846](#)].
8. Marsh JL, Slongo TF, Agel J, Broderick JS, Creevey W, DeCoster TA, et al. Fracture and dislocation classification compendium-2007: Orthopaedic Trauma Association classification, database and outcomes committee. *J Orthop Trauma*. 2007;21(10 Suppl):S1-133. doi: [10.1097/00005131-200711101-00001](#). [PubMed: [18277234](#)].
9. Ogawa K, Naniwa T. Fractures of the acromion and the lateral scapular spine. *J Shoulder Elbow Surg*. 1997;6(6):544-8. doi: [10.1016/s1058-2746\(97\)90087-2](#). [PubMed: [9437604](#)].
10. Kuhn JE, Blasler RB, Carpenter JE. Fractures of the acromion process: A proposed classification system. *J Orthop Trauma*. 1994;8(1):6-13. doi: [10.1016/s1058-2746\(97\)90087-2](#). [PubMed: [9437604](#)].