

An Isolated Displaced Coracoid Fracture Treated with Open Reduction Internal Fixation with 4 mm Cannulated Cancellous Screw

Gokul Anand Murugesan¹, Sheik Mohideen¹, K U Kamal¹

Learning Point of the Article:

In displaced coracoid fracture, surgical management is better option than non operative treatment to achieve early functional recovery of the limb and promising radiological union.

Abstract

Introduction: Isolated coracoid process fracture of scapula is a rare. Usually, it happens along with the rotator cuff tear, dislocation of acromioclavicular joint, or glenohumeral joint. Displaced fracture will cause impairment of upper limb movement. Since there are very low numbers of cases reported so far, the treatment is still controversial.

Case Report: We report a case of a 42-year-old male laborer with motor vehicle accident, following which he had pain and restricted movements on his left shoulder. On examination, Glasgow Coma Scale 15/15 and left shoulder had swelling and tenderness at mid-third clavicle. Range of motion (ROM) is painful and restricted. Plain radiograph shows suspected fracture at coracoid process and computerized tomography scan confirms displaced isolated coracoid process fracture. He underwent open reduction with internal fixation with a 4 mm cannulated cancellous screw with washer. Following surgery, initial 2 weeks shoulder immobilized in arm sling and gradual pendulum exercise was started as pain tolerable. At the end of 6 weeks, radiological investigation showed fracture united and he was advised to do ROM exercise and restricted activity of daily living. At the end of 3 months, he was able to do his normal activity of daily living as before injury. The patient followed up to 6 months and had full range of movements in all directions and there was no pain and he was able to do daily activities.

Conclusion: In this case of isolated coracoid fracture was found displaced more than 1 cm, hence we preferred open reduction and internal fixation with 4 mm cannulated cancellous screw with washer to avoid non-union.

Keywords: Isolated coracoid fracture, rotator cuff tear, scapula fracture.

Introduction

It is uncommon to have an isolated coracoid process fracture of the scapula. Coracoid process fractures account for around 1% of all fractures and 2–13% of scapula fractures. Usually, it happens along with the rotator cuff tear, dislocation of acromioclavicular joint, or glenohumeral joint [1, 2]. Displaced fracture will cause impairment of upper limb function. Since there are very low number of cases reported so far, the treatment is still controversial [3, 4, 5]. In our case, a 42-year-old male came with the complaints of the left shoulder pain and tenderness after he

met with a motor vehicle accident. He was advised to take radiography and computerized tomography (CT) scan as an isolated coracoid process fracture was diagnosed which was treated surgically.

Case Report

A 42-year-old male manual laborer presented at the orthopedics department with the complaints of pain and restricted movement in the left shoulder following a motor vehicle accident. On examination, Glasgow Coma Scale 15/15 and left

Access this article online

Website:
www.jocr.co.in

DOI:
10.13107/jocr.2022.v12.i01.2608

Author's Photo Gallery



Dr. Gokul Anand Murugesan



Dr. Sheik Mohideen



Dr. K U Kamal

¹Department of Orthopaedic Surgery, Aarupadai Veedu Medical College, Pondicherry, India.

Address of Correspondence:

Dr. Gokul Anand Murugesan,
Department of Orthopaedic Surgery, Aarupadai Veedu Medical College, Pondicherry, India.
E-mail: mganand97@gmail.com

Submitted: 08/07/2021; Review: 18/10/2021; Accepted: December 2021; Published: January 2022

DOI:10.13107/jocr.2022.v12.i01.2608

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License <https://creativecommons.org/licenses/by-nc-sa/4.0/>, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms





Figure 1: Pre-operative image.



Figure 2: 3D CT image showing displaced fracture of the left coracoid (pre-operative CT).



Figure 3: Intraoperative image shows CC screw fixation.



Post-operative X-rays image.

shoulder had swelling and tenderness at mid-third clavicle. Range of motion (ROM) is painful and restricted. Neurovascular examinations were normal. On plain radiograph (Fig. 1) shows suspected isolated coracoid fracture and CT (Fig. 2) confirms displaced isolated coracoid process fracture. Since the fracture was displaced >1 cm, to avoid non-union and weakness of the left upper limb, the patient was advised to undergo surgical fixation, pre-anesthetic fitness was obtained. Prophylactic intravenous antibiotics given at the time of anesthesia. Under antiseptic precaution, under supraclavicular block, the patient in beach chair position 5 cm incision made over coracoid process and the fracture site exposed and coracoid process found displaced. Fracture ends freshened and coracoid process reduced over its base and temporary fixed with K-wire. Under C-arm fractured reduction and K-wire position confirmed and length of screw measured indirectly. Using 3.2 mm cannulated drill, bit fracture fragments drilled and 4 mm \times 22 mm cannulated screw with washer used to fix the fracture and position of screw and stability of fixation confirmed with C-arm. Postoperatively, further, two doses of intravenous antibiotic given. Wound inspected and dressed regularly. Suture was removed at the end of 2nd week. Initial 2 weeks shoulder immobilized in arm sling and gradual pendulum exercise was started as pain tolerable. At the end of 6 weeks, the patient reviewed found pain free and X-ray shows implant in situ and CT scan confirms implant position and fracture union. The patient advised to do active ROM as pain tolerable and advised to do restricted activities daily living. At the end of 3 months, he was able to do full ROM and X-ray shows implant in situ and fracture union and the patient advised to do his normal activity

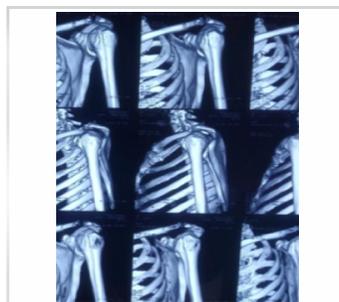
of daily living as before injury. At the end of 6 months, the patient reviewed and he had a pain-free full ROM in all directions. X-ray shows implant in situ and fracture union (Fig. 3). He was able to do activities of daily living as before injury (Fig. 4).

Discussion

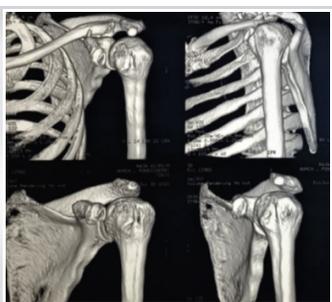
Coracoid fractures have been described as rare injuries; however, there has lately been an increase in the number of occurrences. The incidence has ranged between 2% and 13% of all scapular fractures; they account for 1% of all fractures and 5% of shoulder fractures [6]. Fractures at the base of the coracoid process are common, and they are usually little displaced and associated with acromioclavicular joint injuries. Painful non-union and >1 cm displacement on the coracoid process were acknowledged as indications for surgical therapy. There are no hard and fast rules when it comes to the best way to treat coracoids process fractures. The vast majority of non-displaced fractures are dealt with conservatively. The majority of prior research on this topic were in the form of case reports or small case series, with no definitive conclusion of the optimal treatment approach.

Vaienti and Pogliacomini in a series of nine cases with delayed diagnosis applied conservative treatment, and however, outcome was poor [7].

Anavian et al., in case study, 26 patients taken including scapula fractures. Out of which isolated coracoid process fracture, 14 case surgeries were applied and successful result was obtained for all patients. Other 12 patients treated conservatively [8].



Post-operative 1 month 3D CT image.



Post-operative 3D CT 6 months review image shows fracture united.



Figure 4: Six months follow patient showing good range of movement.

Spormann et al. successfully operated on three instances of isolated coracoid process fractures treated with CC screws. Subramanian et al. reported surgical treatment of an isolated coracoid fracture in an unstable shoulder yielded satisfactory outcomes once more [9, 10].

Archik et al., an isolated displaced coracoid process fracture treated with open reduction and internal fixation and discussed in young athletes surgical surgery, may be a useful choice to achieve early use of the limb, excellent radiographic union, and better clinical function [11].

Conservative treatment of coracoid fractures in athletes and patients engaged in hard manual labor was attempted in investigations by Guttentag and Rehtine, but unsatisfactory outcomes were found in such cases [12].

Surgery was selected in the current case of an isolated coracoid process fracture with >1 cm displacement and a patient engaged in intensive manual labor to avoid non-union due to the action of forces around the coracoid. Despite the fact that this is an uncommon fracture, surgical care is preferable.

Declaration of patient consent : The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient's parents have given their consent for patient images and other clinical information to be reported in the journal. The patient's parents understand that his names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

Conclusion

Isolated coracoid fracture is an uncommon condition that impairs upper limb function. A CT scan can provide a more accurate diagnosis. In our case study, surgery was selected to avoid non-union of the coracoid process fracture due to the isolated coracoid process fracture displaying displacement >1 cm and he involved in hard manual work. In our instance, fracture union was achieved after 6 weeks of fixation with a CC screw, and he returned to his pre-injury activities after 3 months. For displaced coracoid process fractures, we choose open reduction and internal fixation with a CC screw.

Clinical Message

Isolated coracoid process fracture showing displacement >1 cm and he engaged in heavy manual work, surgery was preferred to avoid non-union and impairment of upper limb function. We prefer open reduction and internal fixation with CC screw for displaced coracoid process fracture.

References

- Petty OH. Fracture of the coracoid process of the scapula caused by muscular action. *Ann Surg* 1907;45:427-30. Ogawa K, Yoshida A, Takahashi M, Ui M. Fractures of the coracoid process. *J Bone Joint Surg Br* 1997;79:17-9.
- McGinnis M, Denton JR. Fractures of the scapula: A retrospective study of 40 fractured scapulae. *J Trauma* 1989;29:1488-93.
- Ogawa K, Inokuchi S, Matsui K. Fracture of the coracoid process. *Act Orthop Scand* 1990;61:7-8.
- Eyres KS, Brooks A, Stanley D. Fractures of the coracoid process. *J Bone Joint Surg Br* 1995;77:425-8.
- Fery A, Sommelet J. Fracture of the coracoid process (author's transl). *Rev Chir Orthop Reparatrice Appar Mot* 1979;65:403-7.
- Ada JR, Miller ME. Scapular fractures: Analysis of 113 cases. *Clin Orthop Relat Res* 1991;269:174-80.
- Vaianti E, Pogliacomini F. Delayed diagnosis of isolated coracoid process fractures: Results of 9 cases treated conservatively. *Acta Biomed* 2012;83:138-46.
- Anavian J, Wijedicks CA, Schroder LK, Vang S, Cole P. Surgery for scapula process fractures: Good outcome in 26 patients. *Acta Orthop* 2009;80:344-50.
- Spormann C, Holzach P, Ryf C. Open reduction and internal fixation of isolated fractures of the coracoid-process-presentation of three cases and review of the literature. *Swiss Surg* 1998;4:198-202.
- Subramanian AS, Khalik MA, Shah MM. Isolated fracture of the coracoid process associated with unstable shoulder. *ANZ J Surg* 2007;77:188-9.
- Archik S, Nanda SN, Tripathi S, Choudhari A, Rajadhyaksha H. An isolated displaced fracture of the coracoid process treated with open reduction and internal fixation-a case report and review of literature. *J Orthop Case Rep* 2016;6:37-9.
- Guttentag IJ, Rehtine GR. Fractures of the scapula. A review of the literature. *Orthop Rev* 1988;17:147-58.

Conflict of Interest: Nil
Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this case report

How to Cite this Article

Murugesan GA, Sheik Mohideen, Kamal KU. An Isolated Displaced Coracoid Fracture Treated with Open Reduction Internal Fixation with 4 mm Cannulated Cancellous Screw. *Journal of Orthopaedic Case Reports* 2022 January;12(1):38-40.