

# Anterior Shoulder Instability in a Young Individual with Concomitant Coracoid Process Fracture Treated with the Latarjet Procedure – A Rare Case Report

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## Learning Point of the Article:

This case report narrates a rare combination of shoulder instability associated with coracoid fracture in young individuals and tackling both the issues in one go will be helpful in improving the functional outcome in terms of pain, motion, and prevention of future instabilities.

## Abstract

**Introduction:** Coracoid fracture occurs with shoulder instability due to direct humeral head impaction. Incidence coracoid fracture with shoulder dislocation is rare amounts to 0.8–2%. We encountered clinical challenge of unique combination of both shoulder instability and coracoid fracture. This technical note will describe the treatment of the same.

**Case Report:** A 23-year-old male suffering from recurrent shoulder dislocation sustained coracoid fracture. Further evaluation showed glenoid defect of 25%. Magnetic resonance study showed on track lesion with Hill-Sach lesion of 9 mm, labral defect anteriorly with no associated rotator cuff tear. The patient was managed with open Latarjet procedure with fracture coracoid fragment with conjoint tendon as graft.

**Conclusion:** Our purpose of reporting this technical note is to provide an option of dealing both instability and coracoid fracture in single sitting and usage of coracoid fractured fragment as an excellent graft of choice in acute presentation. However, certain limitations such as adequacy of graft in size and shape do exist operating surgeon which must be aware of the same.

**Keywords:** Coracoid fracture, chronic shoulder instability, fractured coracoid graft, Latarjet procedure.

## Introduction

Traumatic shoulder dislocation causes either soft-tissue Bankart, where anteroinferior glenoid labrum deficit occurs or bony Bankart where glenoid loss occurs. Scapular coracoid process fracture in association with glenoid, neck of scapula, or acromion reported in literature [1]. We encountered clinical challenge of unique combination of both shoulder instability and coracoid fracture. This technical note will describe the treatment of the same.

A 23-year-old male sedentary worker sustained road traffic accident 1 year back, fall on outstretched hand, while he was driving two-wheeler. Immediately, he noticed inability to adduct the arm, bony mass below the collar bone. He was taken to nearby local hospital manipulated to reduce dislocation. He was immobilized in adducted position. He was asymptomatic till last 2 months when he experienced one more episode of dislocation which he reduced himself, following which seven episode of dislocation following daily routine activities each reduced by patient himself. Pain aggravated in last few days which made him

## Case Report

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## Author's Photo Gallery



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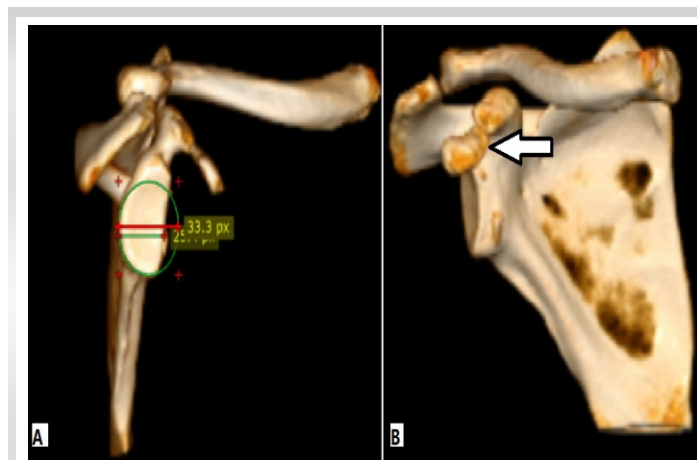
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**Figure 1:** (a) computed tomography image showing glenoid bone loss of 25% and (b) coracoid avulsion fracture (arrow).



**Figure 2:** (a) T2 sequence shows glenoid fracture in coronal section and (b) T2 sequence shows glenoid fracture in sagittal section.

to visit our hospital. On examination, coracoid tenderness present, Neer apprehension test positive, load and shift test positive, anterior draw test was grade 2, with no hyperlaxity. Routine radiographs revealed coracoid fracture. Computed tomography was done to assess glenoid bone loss and avulsion fracture of coracoid (Fig. 1). Coracoid fracture belongs to Ogawa et al., type II, magnetic resonance imaging confirmed the same (Fig. 2). Labrum was deficient anteriorly and there was no associated rotator cuff tear.

After a discussion with patient, open Laterjet procedure using fractured coracoid process in beach chair position under general anesthesia was decided. An incision of 5 cm made over apparent coracoid made standard deltopectoral approach performed. Clavipectoral fascia incised. Fractured coracoid process identified with its partial coracoacromial ligament and pectoralis minor attachment which was separated. Fractured fragment with conjoint tendon attachment separated from underlying structures (Fig. 3). Graft was prepared of size length of 2 cm width of 0.8 mm with good amount of cancellous bed.

Two drill holes were made over graft centimeter apart using 3.2 mm drill bit with special graft holding device. Graft recipient site was approached using upper two-third and lower one-third subscapular split and shoulder capsule incised vertically. Humeral head retracted using fakuda retractor. After adequate exposure and preparation of recipient site offset jig used to place graft parallel to glenoid anterior surface. Bi-cortical drilling performed over glenoid for adequate purchase of screws. After confirming the offset of graft two cannulated cancellous titanium screws of size 36 mm were inserted (Fig. 4). Adequate stability of graft and tenodesis effect of lowed third subscapularis confirmed. To provide triple tenodesis effect, lateral leaf of capsule was sutured over glenoid lateral surface with double loaded 3.5 mm metal suture anchor as adequate amount of coracohumeral ligament was not present with fractured coracoid process.

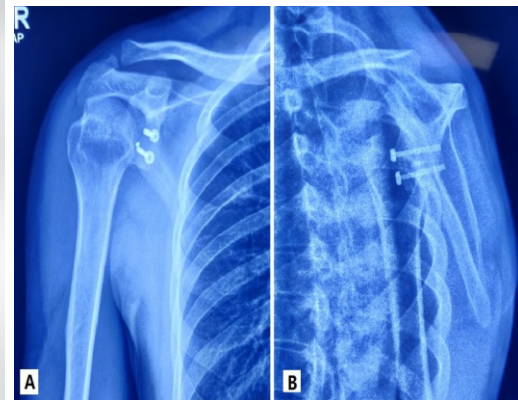
Post-operative rehabilitation includes shoulder immobilizer with chest binder to maintain arm in adducted position. Active elbow wrist exercises, Codman pendular exercises for 2 weeks,



**Figure 3:** Coracoid fracture fragment graft with attached conjoint tendon.



**Figure 4:** Graft in situ with cannulated screw (arrow).



**Figure 5:** (a) post-operative X-ray plain anteroposterior view and (b) post-operative X-ray plain scapulatory-Y view with satisfactory screw position.





**Figure 6:** (a) 6-week follow-up showing 80° abduction, (b) 4-month follow-up showing 110° abduction, and (c) 6-month follow-up showing 180° abduction.

following suture removal isometric rotation exercises and shoulder range of motion exercises, were advised as permitted by pain. The patient called for follow-up at 6-week, 4-month, and 6 months for assessment of pain, range (Figs. 5, 6, 7, 8). At three and 6 month follow-up, CT scan was performed to assess union of graft and allowed to return to sport activity (Fig. 9).

### Discussion

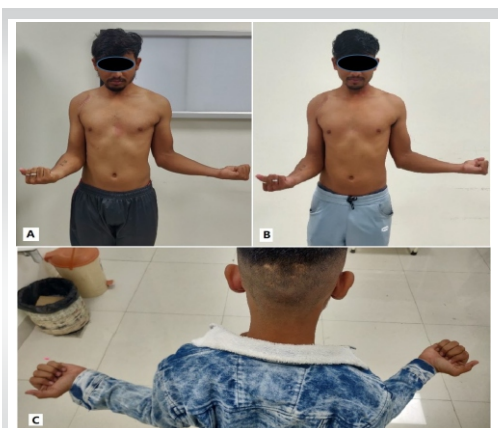
Traumatic anterior shoulder instability is increasing due to contact sport injury and road traffic accidents in young adults [2]. Ogawa and Knapik mentioned association of coracoid fracture with shoulder instability, greater tuberosity fracture, glenoid rim, scapular fracture, acromioclavicular injury, and rotator cuff tear [1, 3, 4]. Occurrence of coracoid fracture with shoulder dislocation is rare amounts to 0.8–2% [5, 6, 7]. Shoulder instability may be soft Bankart or bony Bankart with associated humeral head defect, that is, Hillsach lesion [8, 9, 10]. Anterior labral defects treated with Bankart repair to reinforce the anteroinferior glenoid, associated glenoid loss or



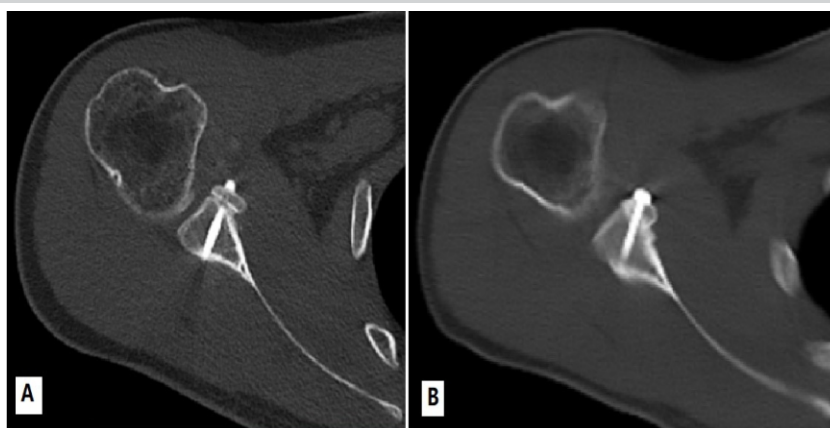
**Figure 7:** (a) 6-week follow-up showing 100° forward flexion, (b) 4-month follow-up showing 150° forward flexion, (c) 6-month follow-up showing 180° forward flexion.

inverted pear-shaped glenoid defect needs anterior support in the form bone graft [11]. Iliac graft and coracoid conjoint tendon graft are time tested procedures to effectively deal with it [6, 11, 12]. Coracoid fractures are commonly result of direct impact with humeral head [6]. Ogawa et al., proposed two types mainly [1]. Type 1 fracture of coracoid base, fracture line passes posterior to coracoclavicular ligament, needs operative fixation [1], whereas type 2 is avulsion type injury of coracoid tip fracture involving anterior to coracoclavicular ligament can be treated conservatively [1]. According to Goss et al., type 1 is avulsion type fracture anterior to coracoclavicular ligament, which may result in painful non-union or may prevent humeral head reduction [1, 13]. Although there is conflict do exist literature regarding coracoid fracture management if coracoid fracture fixation is feasible in young active individuals prevent painful non-union, or if associated with glenoid deformity, AC joint injury, floating shoulder [1, 6].

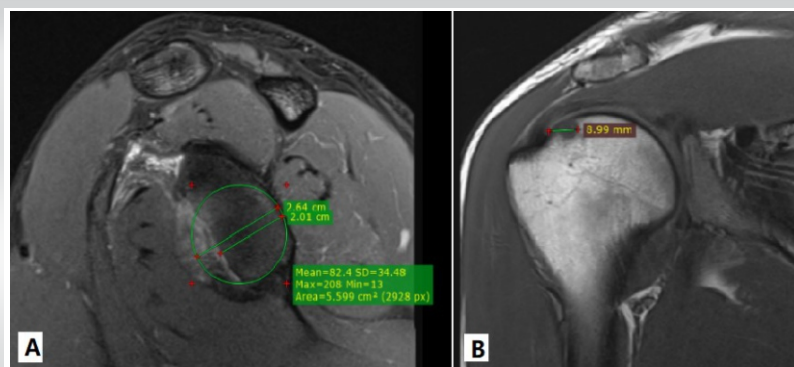
In our study, the patient had chronic instability complaints for 1 year, which resulted in multiple episodes of dislocation one of which may had resulted in coracoid fracture due to direct



**Figure 8:** (a) 6-week follow-up showing 30° external rotation, (b) 4-month follow-up showing 50° external, and (c) 6-month follow-up showing 50° external rotation.



**Figure 9:** (a) 3 month follow-up computed tomography scan showing incorporation of graft and (b) 6 month follow-up computed tomography scan showing incorporated graft.



**Figure 10:** (a) MRI coronal section shows bone loss of 25% with glenoid track of 22.1 mm and (b) MRI sagittal section shows Hill-Sachs lesion of 9 mm.

impaction. Computed tomography revealed glenoid defect of 25% and coracoid fracture of type II according to Ogawa et al. Magnetic resonance study showed on track lesion [14], Hillsach lesion of 9 mm, labral defect anteriorly with no associated rotator cuff tear. As per Giacomo et al., [11, 15] Glenoid track of 22 mm exceeds Hillsach lesion of 9 mm, as on-track lesion with 25% glenoid bone loss anterior bone stabilization by Latarjet will justify the treatment (Fig. 10). The patient had aggravated pain may be due to coracoid fracture. As patient was young with high instability severity score index [16]

open shoulder stabilization preferred over arthroscopic. Open Latarjet procedure using fractured coracoid fragment with conjoint tendon provides excellent graft for the procedure and helps in tackling both problems in one go.

### Conclusion

Our purpose of reporting this case is to provide an option of dealing both instability and coracoid fracture in single sitting and usage of coracoid fractured fragment as an excellent graft of choice in acute presentation. However, certain limitations like adequacy of graft in size and shape do exist operating surgeon which must be aware of the same.

### Clinical Message

This case report presents rare combination of shoulder instability associated with coracoid fracture in young individual. Tackling both the issues in one go will be helpful in improving the functional outcome in terms of pain, motion, and prevention of future instabilities. This clinical description narrates the same.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her 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

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