



## Open Latarjet Procedure for Recurrent Anterior Shoulder Dislocation with Bankart Lesion: A Case Report

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### Abstract

**Background:** Anterior shoulder dislocation is very common among active young adults, especially due to high incidence of trauma. Recurrent dislocation after initial dislocation indicates shoulder instability with potentially disabling pathological lesion, like Bankart lesion. Surgical treatment is the preferred treatment option, including Latarjet procedure. This study aims to review further information on the excellent use of Latarjet procedure for recurrent anterior shoulder dislocation.

**Case Report:** We present a case of recurrent anterior shoulder dislocation with Bankart lesion in a 26 years old active male. He had minimum one shoulder dislocation each year following initial traumatic dislocation from a motorcycle accident nine years ago. Apprehension and relocation test is positive with good range of motion. Open Latarjet procedure is chosen and performed successfully with good 6-months post-operative results.

**Discussion:** Despite being highly praised of the benefits, many concern arises about complications of Latarjet procedure, including: recurrences from coracoid non-union, capsular failure, infection, screw failure, neurological complications, hematoma formations, joint stiffness, etc. In fact, precautions on patient selection and surgical techniques can be done to avoid these complications and still benefited Latarjet procedure.

**Conclusion:** Latarjet procedure is a safe and reliable treatment option for recurrent anterior shoulder dislocation. Proper patient selection, good surgical understanding, avoidance of potential complications and post-operative follow up is the key for excellent surgery and outcomes.

**Keywords:** Latarjet procedure, Recurrent anterior shoulder dislocation, Bankart lesion, Trauma

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## 1 | INTRODUCTION

Shoulder joint is the most frequently dislocated joint in the body. Young adult population with associated trauma or sports injury has the highest risk of shoulder dislocation, particularly anterior dislocations in 85-95% of cases. Re-dislocation and recurrent dislocation often occur following the initial dislocation, especially in younger age (less than 20 years old). According to Sofu et al (2014), risk factors for recurrent shoulder instability includes young age, contact sports activity, previous history of ipsilateral traumatic dislocation, presence of muscle insufficiency, and underlying ligamentous laxity. (1) (2)

In case of recurrent dislocation, shoulder instability may have endured a potential pathological lesion, such as: Bankart lesion and Hill-Sachs lesion. For Bankart lesion, it is classified as bony Bankart lesion, soft tissue Bankart lesion, or combination of both. Spiegl et al (2013) reported the presence of bony Bankart lesion in up to 22% of first-time anterior shoulder dislocation, and up to 73% after recurrent dislocations. High energy trauma may cause an avulsed fracture to the glenoid and produce shoulder instability. An associated soft tissue Bankart lesion refers to the attributable labral tear. (3) (4)

Recurrent anterior shoulder instability could be very crucial as it interferes with daily activities and preventing athlete from returning to sports, as well as early degenerative joint disease that becomes likely inevitable. The primary goal of treatment is to build a stable glenohumeral joint with good shoulder function. Variable treatment options are available, including group of soft tissue procedure and bony procedure. Examples of soft tissue procedures are subscapularis muscle repair (Putti-Platt, Magnuson-Stack procedure), Bankart repair, and capsular reconstruction (Neer capsular shift). Examples of bony procedures are coracoid transfer (Bristow-Latarjet procedure), proximal humerus osteotomy (Weber rotational osteotomy), and bone block (Eden-Hybbinette procedure). Unfortunately, the best treatment method for recurrent anterior shoulder dislocation is still controversial. (5)

Latarjet procedure is one of the most popularly reviewed and has very promising outcomes. A meta-

analysis by Bliven (2018) supports the use of Latarjet procedure for management of recurrent traumatic anterior shoulder instability due to fewer recurrences, better patient-reported outcomes, and less restricted external-rotation motion compared to the standard Bankart repair. Meraner et al (2019) described arthroscopic Latarjet procedure as a valid and reliable method for treatment of shoulder instability. Nonetheless, failed Latarjet procedure is also reported in some researches mostly recurrent shoulder instability due to coracoid nonunion that required a revision surgery. Yet, despite the limitations, Latarjet procedure remains a great treatment option for recurrent anterior shoulder dislocation. This study aims to review further information on the excellent use of open Latarjet procedure in managing recurrent anterior shoulder dislocation. (6) (7)

### Case Report

A 26 years old male is admitted to the Emergency Department with sudden left shoulder pain while completing house chores. He felt uncomfortable and fullness on the front side of the shoulder. He came holding the hand in flexed elbow with arm slightly rotated outward. He is convinced of having another shoulder dislocation as he also mentioned having multiple previous shoulder dislocations for the past 9 years. The first episode of shoulder dislocation was related to a motor vehicle accident and unfortunately associated with concerning 24 hours delay in diagnosis and reposition treatment. He had history of shoulder surgery regarding this condition 5 years ago in another hospital, however he did not recall the kind of procedure. Nevertheless, despite having the surgery, the symptoms still persists and shoulder dislocation occurs non-traumatically as frequent as 1-2 times annually.

On physical examination, a noticeable 8 cm skin scarring from the previous surgery is found on the anterior part of shoulder. Classical squared off defor-

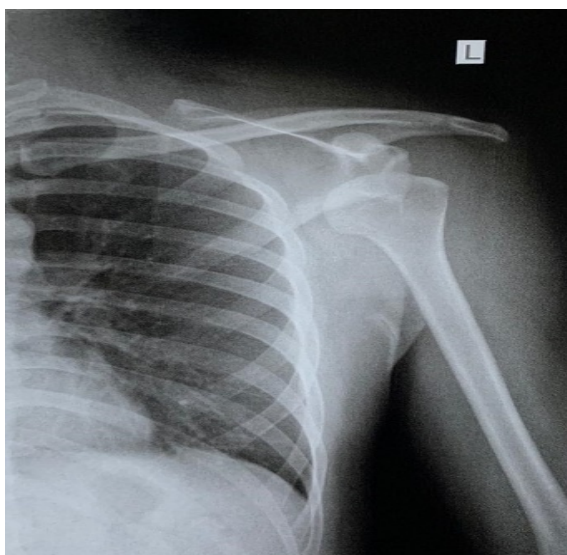
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**Supplementary information** The online version of this article (<https://doi.org/10.52845/JMRHS/2022-5-2-6>) contains supplementary material, which is available to authorized users.

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mity is present with arm position in slight abduction and external rotation. There is slight tenderness over the shoulder with no neurovascular disturbances in the distal forearm and hand. Limited shoulder range of movement is observed with resisted adduction and internal rotation. Plain radiograph confirms an anterior shoulder dislocation in sub-coracoid type (Figure 1). Immediate shoulder reposition using Kocher method is performed successfully. Arm sling is applied to hold the shoulder in neutral position and elbow flexed to 90 degrees.



**FIGURE 1:** Plain radiograph of left shoulder showing an anterior shoulder dislocation

A week after the reposition procedure, he came to our Orthopaedic Outpatient Clinic with good shoulder range of movement but instability persists. On physical examination, apprehension and relocation test is positive. Hence, a subsequent surgical approach with open Latarjet procedure is chosen to address the shoulder instability and any possible associated pathological lesion. Patient is positioned supine under general anaesthesia. Surgical incision of standard deltopectoral approach across the coracoid process along the skin scarring from previous surgery is made. Blunt dissection is done through the subcutaneous tissue, clavico-pectoral fascia up to coracoid process and the glenoid capsule.

Coracoid graft is prepared by identifying coracoid process, keeping the coracoclavicular ligament intact, producing coracoacromial ligament (CAL) cuff about 1 cm from coracoid process, and coracoid osteotomy using oscillating saw just in front of the

coracoclavicular ligament insertion. The remaining soft tissue is debrided and the medial side is decontaminated aiming for a broad, flat, cancellous surface. Glenoid recipient site is prepared by splitting subscapularis muscle between superior two-thirds and inferior one-third, exposing glenoid and the glenohumeral capsule, T-shaped capsulotomy, and shaping the anterior glenoid into cancellous surface. Intraoperative findings include Bankart lesion of both soft tissue labral tear and glenoid bone loss with no avulsed fracture to be found. Then, we proceed with coracoid transfer to anterior-inferior glenoid margin with both cancellous surfaces facing towards each other. Transfer fixation is performed using 2 cancellous screws placed vertically and about 1 cm apart (Figure 2). CAL cuff is sutured into glenoid labrum for capsular repair and followed by subscapularis repair.



**FIGURE 2:** Plain radiograph of left shoulder showing 2 screws used for coracoid transfer fixation in the glenoid and good humeral head position

The overall surgery went successfully. Shoulder joint immobilization using arm sling is used for the first 2 weeks. Surgical wound heal nicely, good range of motion and negative apprehension is achieved. Physical rehabilitation program went very well for 3 months. At 6 months follow-up, patient is very satisfied with no more shoulder dislocation and good shoulder function.

## 2 | DISCUSSION

Our patient portrays a classic case of recurrent anterior shoulder dislocation treated with a successful open Latarjet procedure. The patient has more than enough risk factors predisposing him for a recurrent anterior shoulder dislocation, such as: young age of 16 years old, history of motor vehicle accident trauma, and 24 hours delay of treatment at the first event of dislocation. Another additional factor contributing the patient for recurrent shoulder dislocation are neglect to obtain proper definitive treatment for 9 years and neglect to follow up for proper treatment following the unsuccessful previous surgery. Physical examination of positive apprehension and relocation test is sufficient to establish diagnosis, though other physical examinations may also be useful, for example: load and shift test, sulcus sign, Beighton score to assess generalized ligamentous laxity, and hypermobility.

Careful analysis of imaging studies provides great insight of the shoulder condition and the possible pathological lesion causing the recurrent dislocation. Plain radiograph of shoulder done in this patient serves a good imaging in understanding the humeral head position, and intact surrounding anatomical structures (coracoid, glenoid). However, due to the lack of lateral view, glenoid was unable to be assessed clearly. Computed tomography (CT) scan is particularly helpful in assessing the bony and soft tissue pathology. Unfortunately, it was not able to be done in this patient due to administrative reasons. According to Spiegl et al (2013), 3D CT reconstruction aids better glenoid visualization regarding bony Bankart lesion and to measure the extent of glenoid defect size. In Davos Hospital Switzerland where Spiegl conducted the research, the treatment algorithm suggests operative surgery for patients with glenoid bone defect of more than 5%, which are an internal fixation for 2–3-part fractures and a Latarjet procedure for comminuted fracture. (3) (8)

Soft tissue and bony Bankart lesion found intraoperatively in this patient confirms the pathological lesion contributing to recurrent anterior shoulder instability. There are 3 types of bony Bankart classification by Bigliani, which are: type I avulsion fracture with attached capsule, II medially displaced

fragment malunited to the glenoid rim, III erosion of the glenoid with less (A) or more (B) than 25% deficiency of the glenoid diameter. In research by Joshi et al (2021), a successful open Latarjet procedure is performed in 24 patients with more than 20% glenoid bone loss (bony Bankart) as arthroscopic procedure may not be appropriate and more difficult. According to Randelli (2016), arthroscopic technique is more time-consuming with higher costs. (9) (10) (11)

Latarjet procedure has been performed worldwide for treating recurrent anterior shoulder instability. It serves its exceptional purpose in 3 ways, which are: increasing anterior-posterior glenoid diameter by bone blocking in the anterior inferior glenoid, sling effect of the conjoint tendon, and Bankart effect of the coracoacromial ligament cuff acting as connecting stump to labrum. Since introduced in 1954, the Latarjet procedure has gained popularity of the benefits, as well as the drawbacks. Complications of Latarjet procedure, mainly recurrences have been reported in several researches. Khan (2020) mentioned among 16 patients underwent revision surgery following previous Latarjet surgery, the main causes of recurrences are coracoid non-union and capsular failure (retear). Other complications include: infection, frozen shoulder, hematoma formation, screw failure, screw impingements, biceps tendinopathy, neurological complications, loss of external rotation, joint stiffness, etc. (12) (13)

Respectful to those complications, many researches are studying about pitfalls and limitations, hence developing some recommendations to perform a successful Latarjet procedure. Domos (2017) recommends 2 important factors, which are: careful patient selection with good indication, and avoiding complications with adequate surgical techniques. Latarjet procedure is more favourable for young patients (< 50 years old). Unfortunately, for patients with concomitant rotator cuff injury, microinstability, and prosthetic anterior instability, it is more appropriate to perform soft tissue surgery rather than Latarjet surgery. Patients with voluntary dislocation caused by generalized ligamentous laxity do not benefit with Latarjet surgery. Patients with comorbidity of uncontrolled epilepsy should get convulsion treated before undergo Latarjet surgery. (14) (15)

On the other hand, Doms also recommends some important notes for surgical techniques. Preparing and transferring coracoid is a very essential step in Latarjet surgery. When preparing coracoid graft: make clear debridement of the surrounding soft tissue for great visualization of the important anatomical structure, preferably use 90° oscillating saw than osteotome due to potential glenoid fracture, protect important structures with careful traction to surrounding neurovascular, and fully aware of creating broad-flat-cancellous surface of coracoid to ensure union (avoiding non-union or osteolysis complications). When transferring and fixating the coracoid to glenoid: make sure of proper positioning coracoid graft (when placed too lateral, it will not give the bone block effect, and when it is placed too medial, it will create joint impingement), ensure proper distance between 2 screws for strong fixation and avoid osteolysis of coracoid, do not overtightening the screw, use proper size and length screw (longer screw may cause screw impingement or symptomatic screw). Hematoma formation can be avoided by placing drain or bone wax to coracoid osteotomy site. Infection can be avoided by proper aseptic and the use of prophylaxis antibiotics. Post operatively, early gentle stretching is required to prevent joint stiffness. (15)

According to study by Dupley (2019), complications of Latarjet procedure may occur, but the complication rate itself is not as high as those reported by many other studies. Thus, Latarjet surgery remains an excellent surgery for treating patients with recurrent anterior shoulder instability. Proper patient selection, skilled and experienced surgeon, as well as avoidance of potential complications make a great addition to the overall surgical techniques. (16)

### 3 | CONCLUSION

Latarjet procedure is a safe and reliable treatment option for recurrent anterior shoulder dislocation. It is also very appropriate for associated pathological Bankart lesion, which is the bony Bankart with or without soft tissue Bankart lesion. Proper patient selection, good surgical understanding, avoidance of

potential complications and post-operative follow up is the key for excellent surgery and outcomes.

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**How to cite this article:** S.L., A.E.W., I.G.N.P.W.P. **Open Latarjet Procedure for Recurrent Anterior Shoulder Dislocation with Bankart Lesion: A Case Report.** *Journal of Medical Research and Health Sciences*. 2022;1796–1800. <https://doi.org/10.52845/JMRHS/2022-5-2-6>