

Case Report

Do We Need A Bone Block Procedure in Recurrent Anterior Shoulder Instability?: A Case Report

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ABSTRACT

Background: Recurrent Anterior Shoulder Instability (RASI) is usually preceded by trauma. The incidence recurrence rate is high in trauma Induced RASI, especially in younger patients. The right diagnosis and management must be ruled out immediately for a better outcome.

Case Report: The 28-year-old man complained of right shoulder instability for the past eight years, which worsened in the last year. The patient had a history of trauma. Anterior apprehension and relocation test for the right shoulder showed a positive result. Radiologic imaging showed bony bankart loss (27%) and an on-track hillsach lesion of the humeral head. The Instability Severity Index Score (ISIS) is 7 points. Based on these results, an open surgery bone block-Latarjet procedure was done. The surgery was successfully performed, and there was no sign of recurrent instability and pain after one year.

Discussion: The number of recurrent shoulder dislocations is over 75%. Bone loss found in the patient will increase the chance of RASI. No block procedure effectively prevented future recurrence from the bone stop effect, which increases the glenoid cavity, stretching effect, and tensioning effect that prevents excessive humeral translation.

Conclusion: In the case of RASI, treatment decisions need to be based on the patient's exact condition. Bone block-Latarjet procedure is indicated in patients with bony bankart loss >25%, on track hillsach lesion, and >6 ISIS. In this research, the patient showed improved functional and clinical outcomes after eight years of chronic shoulder instability.

Keywords: Shoulder instability; Orthopaedic; Sport injury; Traffic accident

INTRODUCTION

The human shoulder joint has the most extensive range of motion in the human body. It is considered the most mobile and complex joint in the body.¹ The wide range of motion cause this joint to become more prone to instability. Almost half (50%) of all major joint dislocations were shoulder dislocation, with anterior shoulder dislocation being the most common. Most shoulder dislocations (80%) occur in younger patients.² The shallow glenoid of the shoulder Joint, which only articulates with the small area of the humer-

al head, makes this joint less stable and can be easily sprained in any direction, especially the anterior direction.

Dislocation usually occurs from a tremendous force, such as trauma or extreme movement range. However, in a state of notable glenoid bone loss, shoulder dislocation can occur in a minimal degree of movement (with slight abduction or/ and external rotation) and even low-impact injury, such as during sleep. A fallacious sleeping position with the arm abducted above the head and rotated externally can trigger the re-emergence of recurrent symptoms.³ When a dislo-



cation occurs, the fibrous tissue of the joint can be stretched or torn, which can complicate the dislocation and cause recurrent anterior shoulder instability (RASI).

Recurrent anterior shoulder instability is a condition usually preceded by previous trauma or activity that exceeds the shoulder range of motion, such as athletes and military personnel.³ RASI can arise from injuries destabilizing the glenohumeral joints' static and dynamic anterior restraints.² When an anterior dislocation occurs, avulsion of the anteroinferior capsule-labral structure of the glenoid edge or Bankart lesion is often the most common lesion.⁴ The incidence of recurrent shoulder dislocations can also lead to attritional glenoid bone deficiency and/or acute fractures with subsequent loss of static constraint of the glenohumeral joint. Loss of glenoid bone attrition is increasingly recognized as the cause of RASI, in addition to failed shoulder stabilization surgery.⁵

The Bone block Latarjet procedure is one of the most well-known procedures to manage chronic shoulder instability with extensive glenoid bone loss.⁶ Latarjet technique is a glenoid restoring procedure that redeploys the coracoid process to the anteroinferior margin of the glenoid and is expected to give a dynamic sling effect and increase glenoid surface area to reduce the future dislocation. This procedure shows a promising result for the management of RASI.⁷

The data shows that although the incidence rate of RASI is quite rare, which is 1.7%, the relapse rate can be as high as 90%.⁸ Bone block is preferred in cases with a high recurrence rate and massive structural damage. Although the success rate is quite good, the procedure has some serious complications if not done carefully. In addition, the need for anamnesis regarding the patient's expectations after the procedure is carried out and in-depth examination. The present study aimed to describe the treatment of patients with RASI. An assessment was carried out using the instability severity index score

(ISIS) and other examinations to assess the patient's eligibility before the Bone block-Latarjet procedure.

CASE REPORT

A 28-year-old man comes to health facilities and complains of a sensation of right shoulder joint detachment and shoulder weakness. Complaints of shoulder detachment are felt especially during sleep when the patient unconsciously depressed his shoulder. These symptoms have occurred for the past eight years and worsened last year. The patient work as a farmer who often does work by his arm, for example, to hoe or to plant. Eight years ago, the patient's motorcycle accident injured his right shoulder by hitting the road pavement from behind. During that accident, the patient explained that he had a minimal wound on the skin and shoulder pain, so he decided not to undergo further examination. The case in this patient is unique because he had the symptoms of recurrent shoulder detachment for the past eight years but worsened in the past year with new symptoms of shoulder weakness.

In our physical examination, we found a scar on the posterior right shoulder joint area, with no deformity but slight atrophy of deltoid muscles and no neurological deficit, especially in the axillary nerve. The right shoulder's anterior apprehension and relocation test showed a positive result. ISIS showed a score of 7 points (Table 1).

The patient underwent CT-Scan with a contralateral comparison examination on the right and left shoulder. The CT-Scan revealed a fracture in the anterior side of the glenoid with a fragment that steps off against the joint surface. The fragment width was 0.87 cm. The CT-Scan showed an impression of a bony bankart lesion with bony bankart loss (27%), an on-track lesion, and a fracture on the Spina scapula but no sign of hillsach lesion (Figure 1).



Table 1. Result of the instability severity index score (ISIS)

Prognostic Factor	Points
Aged at Surgery (years)	
≤20	2
>20	0
Degree of Sports Participation (pre-operative)	
Competitive	2
Recreational	0
Type of Sport (pre-operative)	
Contact of forced overhead	1
Other	0
Shoulder Hyperlaxity	
Shoulder hyperlaxity	1
Normal laxity	0
Hill-Sach on Anteroposterior Radiograph	
Visible on external rotation	2
Not visible on external rotation	0
Loss of Glenoid Contour on Anteroposterior Radiograph	
Loss of Contour	2
No Lesion	0
Total	7

The surgeon then decided to continue the examination using an MRI examination. The MRI revealed a minimal joint effusion in the anterior capsule with internal debris, an anteroinferior fracture line of the glenoid accompanied by the labral tear in the superior portion with a 0.5 cm step off the glenoid surface area, bone marrow edema in the greater trochanter area and glenoid, a 0.75 x 0.53 cm (A-P x L-M), dumping sign on the humeral head with nondisplaced fracture line,

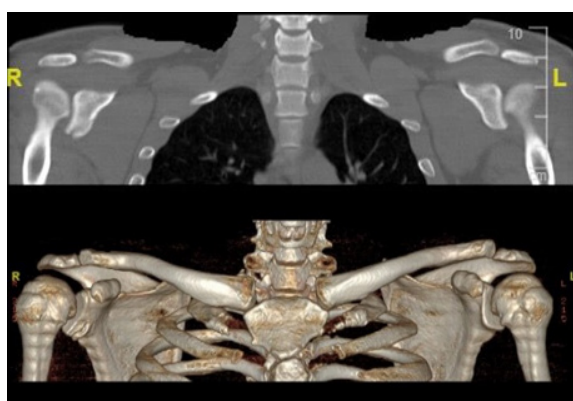


Figure 1. CT-Scan Results showed bankart lesions with bony bankart loss.

unremarkable subacromial subdeltoid bursae, and loss of fiber in the supraspinatus tendon. The impressions showed a bony bankart lesion with a superior anterior labral tear with a step off the glenoid rim by 0.5 cm, hillsach lesion humeral head with a partial tear in supraspinatus tendon articular side, and chronic joint effusion glenohumeral joint (Figure 2).

The patient was then scheduled to perform an elective open surgery bone block-Latarjet procedure after undergoing a series of examinations (bony bankart loss >25%) and ISIS Scoring (score >6). The

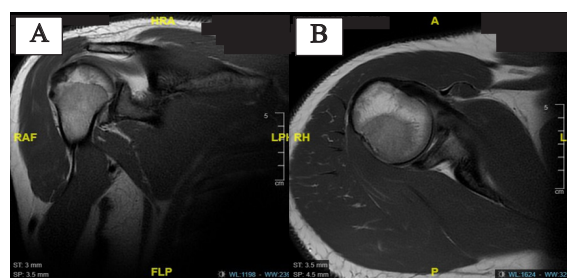


Figure 2. MRI Results (a) Sign of Hillsach Lesion (b) Sign of Bony Bankart Lesion





Figure 3. Latarjet Procedure

surgery was done with general anesthesia, and the patient was supine. A 5 cm incision of the upper right axilla (deltopectoral approach) continued until the coracoid process was found. The incision was carried out at the Coracoid process (2x3cm), transferred towards the lower transverse of the glenoid equator, and then fixated using two screws (Figure 3).

The open surgery was carried out successfully, but during the surgery, there was difficulty in identifying the old fracture structure since the first accident happened eight years ago, and some fibrous healing has already covered it. The patient was allowed for outpatient treatment after two days of hospitalization with arm support and two weeks of passive range of motion training. Active assisted range of motion training was conducted six weeks after the patient finished the passive ROM exercise without complaint. Three months after the Surgery, the patient could achieve maximal ROM capacity without signs of instability. On the follow-up X-Ray examination, a bony union was found (Figure 4). The patient was then allowed to return to his previous daily activity as a field worker, and after a year, no complaint of instability and pain from the patient. Based on the clinical findings and the patient's subjective experience, the surgeon decided that the treatment series was done, and the patient did not need to return for further examination.



Figure 4. Follow-up X-ray Examination (Postoperative) showed a bony Union

DISCUSSION

Recurrent shoulder dislocation occurs when the surrounding structure that stabilizes the joint decreases in function, either by anatomical lesions, changes in coordination and power, or a history of injury involving direct or indirect forces.⁹ Our report is the first to present a case of 8-year chronic shoulder instability. A Similar case reported by Safrizal had a history of recurrence for a year. This presents a new challenge for treatment since Chronic shoulder instability can increase the risk of degenerative arthropathy.^{10,11} Based on patient history, this patient experienced a traumatic injury eight years before the event that led to the first shoulder dislocation, which has continued to occur afterwise. Many studies report that the number of recurrent dislocations in trauma-induced dislocation is over 75%.¹² The patient had no history of an aggravating factor that can lead to shoulder dislocation, such as congenital abnormalities, seizure, or joint infection; the only factor found to be related to the shoulder dislocation is trauma.

Chronic recurrent dislocation can increase the severity of bone loss or labral & cartilage injury. This eventually will make the event of recurrent shoulder dislocation more frequent.¹³ Due to the relatively high rate of chronic recurrent dislocation in trauma-induced shoulder instability, an early diagnosis and appropriate action are needed to prevent future dislocation and improve functional outcomes.^{14,15} An accurate



examination is crucial to understand the patient's condition and making the right management decision. In RASI, a 2/3D CT Scan and MRI are recommended for a young age. Arthrogram MRI can also be used if it is available in health facilities.¹⁶ In this case, CT-Scan and MRI examination showed a bony bankart loss (27%) with anterior-superior labral tear with a step off the glenoid rim of 0.5 cm and on track hillsach lesion of the humeral head. Utilizing the instability severity index score is recommended to predict the recurrence prognosis and plan ideal management.¹⁵ The patient has been experiencing recurrent dislocation for eight years with 7 points on ISIS Score. The instability severity score is a questionnaire that combines patient medical history, physical examination, and radiologic findings. An ISIS of <6 means that the patient will have a 10% chance of experiencing a recurrence of shoulder instability and is recommended to undergo arthroscopic surgery, while an ISIS score of >6 means that the patient has a higher chance of recurrence, so it is recommended to undergo open surgery.¹⁷ A multicenter study by Joo Han oh et al. showed that ISIS scoring is highly reliable for traumatic anterior shoulder instability.¹⁸

Based on the patient examination result (>6 ISIS score and 27% bony bankart loss with on-track hillsach lesion), an open surgery bone block Latarjet procedure is preferred for this patient. Surgical intervention must be the first treatment choice in recurrent instability.¹⁵ Several surgical options are available for treating recurrent shoulder dislocation, either non – operatively or operatively, such as open bankart, arthroscopic bankart, latarjet birstow, or older techniques, such as Putti – Platt and Magnuson - Stack.¹⁹ Open surgery for RASI with <25% bony Bankart loss and Hill Sach Lesion is adequate with only soft tissue repair, but when the bony bankart loss is >25%, a bone block procedure is more recommended.²⁰

Bone block procedures with Bristow or

Latarjet techniques are surgeries that transfer the coracoid process to the anterior part of the glenoid; these techniques are usually indicated for recurrent high-risk cases, and in the presence of bone lesions.²¹ in the Bristow procedure, the coracoid tip will be transferred to the Anterior glenoid rim. In the Latarjet procedure, the transfer involves a larger portion of the coracoid.¹⁵ Both of the procedures also involve the insertion of the conjoint tendon to the anterior aspect of the glenoid; this will create three advantages that is; bone stops effect, which will increase the diameter of the glenoid cavity; stretching effect from the conjoint tendon, and tensioning effect of the joint capsule that prevents excessive anterior humeral translation.¹³ The effectiveness of Bristow or Latarjet techniques for stabilizing recurrent shoulder instability is similar even though this technique is not equivalent.²¹ In a study done on cadavers by Giles et al., the comparison of this technique also shares a similar result in stabilizing the shoulder. However, this study also found that the Latarjet technique shows a better result when substantial glenoid bone loss is present.²² Latarjet procedure can give a superior outcome in a setting where more glenoid bone loss is present due to the greater coverage for the glenoid defect. Meanwhile, the Bristow procedure is easier to be performed.²¹ The decision to perform Bristow or Latarjet procedure is in the surgeon's authority since the result for this technique is similar.²¹

The patient showed improvement in symptoms and never experienced recurrent dislocation after the surgery and routine physiotherapy procedure for a year. Improvement in the patient suggests that the Latarjet procedure can give good results even though the patient has had instability for eight years. It is also a preferred technique for a chronic recurrent shoulder dislocation with bone lesions compared to the other technique in achieving a lower recurrence rate. A long-term retrospective review showed that latarjet had a lower recurrence rate than ar-



throscopic bankart repair in contact athletes.²³ A Systematic Review conducted by Alessandra also showed that the Latarjet procedure is a reliable and secure surgical procedure with a low risk for the development of osteoarthritis.²⁴ Another study by Bessiere et al. shows a significantly higher functional level with latarjet procedure compared to arthroscopic bankart repair.²⁵ However, a study reported that postoperative pain could happen in this procedure related to the screw or graft that may protrude and collide against the humeral head and then cause pain. Also, some studies found external and internal rotation limitations after the Latarjet – Bristow procedure.⁶ This case report has a limitation: the follow-up period was only a year after the surgery. Long-term follow-up needs to be done to achieve any other surgical-related functional outcome.

CONCLUSION

In managing Recurrent anterior shoulder instability, a detailed examination and patient severity scoring are required for a better treatment decision. Treatment needs to be based on the diagnosis and detailed patient conditions. Open surgery bone block Latarjet procedure must be considered when the patient possesses more than 25% bony bankart loss, on-track hillsach lesion, and >6 ISIS Score. The patient, in this case, showed improved quality of life even though he has had the instability for eight years and can perform a daily activity with a significant reduction in pain and absence of recurrence.

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