Section: Orthopaedics

Original Research Article

FUNCTIONAL OUTCOMES AND COMPLICATIONS OF THE LATARJET PROCEDURE FOR RECURRENT ANTERIOR SHOULDER DISLOCATION: A PROSPECTIVE STUDY

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Received *: 22/03/2024*
Received in revised form *: 20/05/2024*
Accepted *: 04/06/2024*

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DOI: 10.5530/ijmedph.2024.2.100

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2024; 14 (2); 515-520

ABSTRACT

Background: The Latarjet procedure is commonly employed to treat recurrent anterior shoulder dislocations. This study aims to evaluate the functional outcomes, complications, and patient satisfaction following this surgical intervention.

Materials and Methods: A prospective study was conducted on 20 patients who underwent the Latarjet procedure between July 2018 and March 2020 at the Government General Hospital, Kakinada. Patient demographics, mechanisms of injury, interval between dislocations and surgery, and glenoid bone loss were recorded. Functional outcomes were assessed using the ROWE score and quick DASH score. Subjective outcomes, range of motion, and pain levels were also evaluated.

Results: The majority of patients (60%) were aged 18-25 years. The mean interval between initial dislocation and recurrence was 2-5 years for 45% of patients. Road traffic accidents and sports injuries were the primary mechanisms of injury. Glenoid bone loss was greater than 20% in 16 cases. Post-operatively, 95% of patients reported stable shoulders, with significant improvements in pain levels and range of motion. The ROWE score indicated excellent results in 40% of cases and good results in 35%. The mean quick DASH score improved from 47.96 pre-operatively to 14.48 at 6 months follow-up. Radiographic analysis showed proper screw placement and bony union in 90% of cases. Complications included one case each of infection, implant failure, and arthrosis, all in a single patient, with no cases of recurrent dislocation.

Conclusion: The Latarjet procedure provides stable and functional outcomes for patients with recurrent anterior shoulder dislocations. The procedure is effective in reducing pain and improving shoulder stability and range of motion, with a low complication rate.

Keywords: Latarjet procedure, shoulder dislocation, glenoid bone loss, ROWE score, quick DASH score, surgical outcomes, complications, shoulder stability.

INTRODUCTION

Recurrent anterior shoulder dislocation is a prevalent orthopedic issue that often results in significant functional impairment and pain.[1] This condition typically arises from initial traumatic injuries that cause damage to the stabilizing structures of the shoulder, including the labrum, capsule, and bone.[2,3] In cases of recurrent dislocation, especially those involving significant glenoid bone loss or large

Hill-Sachs lesions, surgical intervention is often necessary to restore stability and function.[4]

The Latarjet procedure, first described by Michel Latarjet in 1954, has become a widely accepted surgical technique for treating recurrent anterior shoulder dislocations.[5] This procedure involves transferring the coracoid process with its attached muscles to the anterior glenoid, effectively increasing the glenoid surface area and providing a dynamic sling effect that prevents further dislocations.[6] The Latarjet procedure is particularly indicated in patients with significant glenoid bone loss (greater than 20%) and in those who have failed previous stabilization surgeries.

Despite its widespread use and reported success, the Latarjet procedure is not without complications. Potential issues include infection, graft non-union, hardware problems, and arthrosis.[7] Moreover, the technical demands of the surgery require precise execution to avoid complications and ensure optimal outcomes.

This study aims to evaluate the functional outcomes, complications, and patient satisfaction following the Latarjet procedure for recurrent anterior shoulder dislocation. By analyzing a cohort of 20 patients treated at the Government General Hospital in Kakinada, we seek to provide insights into the effectiveness of the procedure in a real-world clinical setting. The study will focus on key parameters such as glenoid bone loss, post-operative shoulder stability, range of motion, pain levels, and complication rates, contributing to the existing body of knowledge on the management of recurrent anterior shoulder dislocations.

MATERIAL AND METHODS

Study Design

This prospective study was conducted at the Government General Hospital, Kakinada, from July 2018 to March 2020.

Study Group

A total of 20 patients who underwent the Latarjet procedure for recurrent anterior shoulder dislocation were included in the study. Patients were selected based on specific inclusion and exclusion criteria to ensure the appropriateness of the surgical intervention.

Inclusion Criteria

1. Age group: 18-40 years
2. At least three dislocations
3. Presence of bony Bankart's lesion
4. Glenoid bone loss greater than 20%
5. Shoulder instability severity index greater than 6
6. No previous surgeries for the same complaint

Exclusion Criteria

1. Less than three anterior dislocations
2. Glenoid bone loss less than 20%
3. Multidirectional or posterior instability
4. Bilateral dislocations
5. Patients with voluntary dislocations
6. Co-morbid conditions such as epilepsy

Data Collection

Data were collected from the patients through clinical examinations and imaging studies. The following information was recorded:

Mechanism of injury

Age at the time of the first episode of traumatic dislocation

Number of recurrences

Hindrance in regular activities

Surgical Procedure

All patients underwent the Latarjet procedure performed by experienced orthopedic surgeons. The procedure involved transferring the coracoid process to the anterior glenoid to increase the glenoid surface area and provide a dynamic stabilizing sling effect.

Evaluation of Functional Outcomes

Functional outcomes were assessed using the ROWE score and the quickDASH score. Patients were followed up post-operatively with X-rays and clinical examinations at regular intervals. The following parameters were evaluated:

1. Subjective outcomes: Stability and subluxation
2. Range of movements: Flexion, extension, abduction, and rotation
3. Pain levels: Visual analog scale for pain

Radiographic Analysis

Radiographic outcomes were assessed using 3D-CT scans to determine the amount of glenoid bone loss and the position and union of screws. The screw placement in relation to the rim of the glenoid and the union of the transplant were evaluated.

Complications

Complications during the follow-up period were recorded, including subluxation/dislocation, infection, implant failure, and arthrosis.

Statistical Analysis

Descriptive statistics were used to summarize the data. The results were presented in tables and figures to illustrate the distribution of variables and outcomes.

By meticulously following this methodology, the study aimed to provide comprehensive insights into the functional outcomes and complications associated with the Latarjet procedure for recurrent anterior shoulder dislocation.

Ethical Considerations

The study was approved by the Ethical Committee of the hospital, Rangaraya medical college and hospital, Kakinada and informed consent was obtained from all participants.

RESULTS

A total of 20 patients who underwent the Latarjet procedure for recurrent anterior shoulder dislocation were included in this study. The majority of the patients (60%) were in the age group of 18-25 years,

followed by 25% in the 25-35 years group, and 15% over 35 years old (Table 1). The age at the time of first dislocation was found to be inversely proportional to the number of episodes of shoulder dislocation, with 9 patients experiencing their first dislocation before the age of 20, 7 patients before the age of 25, and 4 patients before the age of 35. [Table 2]

The interval between the initial episode of dislocation and recurrence was within 2 years for 8 cases, between 2 to 5 years for 9 cases, and more than 5 years for 3 cases. [Table 3] The interval between the initial dislocation and surgery was less than 2 years for 6 cases, between 2 to 5 years for 9 cases, and more than 5 years for 5 cases (Table 4). The mechanisms of injury were road traffic accident (5 cases), sports injury (8 cases), self-fall (3 cases), and lifting heavy weight (4 cases). [Table 5]

Twelve cases (60%) were affected on the right side, which was their dominant hand, while 6 cases (30%) were affected on the left side with right-hand dominance, and 2 cases (10%) were affected on the left side with left-hand dominance. [Table 6] Fourteen cases were affected on their dominant side, while 6 cases suffered on the contralateral side. The study included 19 males and only 1 female.

Glenoid bone loss was assessed using 3D-CT of the affected shoulder. The results showed that 3 cases had less than 20% bone loss and 16 cases had more than 20% bone loss. [Table 7] All cases with less than 20% glenoid bone loss were associated with a large Hill-Sachs lesion.

Subjective outcomes revealed that 19 cases were stable, 1 case had subluxation, and no cases had dislocation (Table 8). Post-operative range of movements showed no major limitation of flexion, extension, and abduction, but a small decrease in external and internal rotation movement was found in a few cases. The maximum loss of external and internal rotation was a mean of 10 and 5 degrees, respectively.

Pain levels were assessed using the visual analog scale. Pre-operatively, 2 patients reported no pain, 6 patients had mild pain, 11 had moderate pain, and 1 had severe pain. Post-operatively, 15 patients reported no pain, 4 had mild pain, and 1 had moderate pain. [Table 9]

Objective outcomes were assessed using the ROWE score, which showed excellent results in 8 cases (40%), good in 7 cases (35%), fair in 5 cases (25%), and no poor results. [Table 10] The mean DASH score at initial assessment was 47.96, which improved to a mean of 14.48 at 6 months follow-up.

Radiographic outcomes revealed that all 20 cases had screws placed less than 10mm from the rim of the glenoid. Eighteen cases showed bony union at follow-up of 6 months, while 2 cases showed fibrous union as indicated by an area of lucency between the screw head and scapular neck.

Complications observed during the follow-up period included 1 case of infection, 1 case of implant failure, and 1 case of arthrosis. There were no cases of subluxation or dislocation. [Table 11] All complications were seen in a single case. This patient developed a surgical site infection, which was managed with secondary suturing. On further follow-up, it was noted that the inferior screw backed out, and the patient developed early arthrosis. However, there was no history of subluxation/dislocation in this patient.

Figure 1: Post op CT image showing screws in situ and union of graft

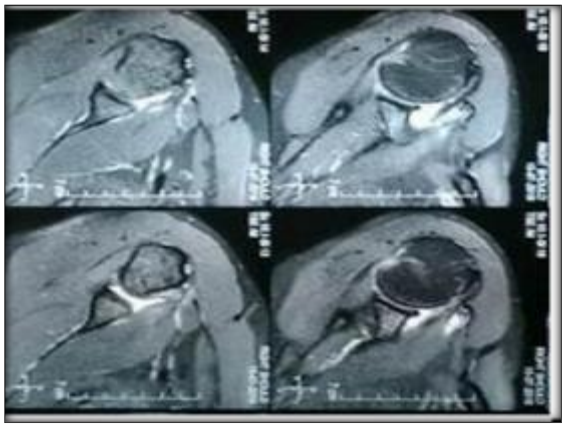

Figure 2: Pre-operative MRI images

Figure 3: Post-operative X -Ray

Table 1: Age Distribution

Age Group	Number of Cases	Percentage
18-25 years	12	60%
25-35 years	5	25%
>35 years	3	15%

Table 2: Age at First Dislocation

Age at First Dislocation	Number of Patients
<20 years	9
<25 years	7
<35 years	4

Table 3: Interval Between Initial Episode of Dislocation and Recurrence

Interval	Number of Cases
<2 years	8
2-5 years	9
>5 years	3

Table 4: Interval Between Initial Dislocation and Surgery

Interval	Number of Cases
<2 years	6
2-5 years	9
>5 years	5

Table 5: Mechanism of Injury

Mechanism	Number of Cases
Road traffic accident	5
Sports injury	8
Self-fall	3
Lifting heavy weight	4

Table 6: Dominance of Hand

Dominance	Number of Cases	Percentage
Right side (dominant)	12	60%
Left side (right-hand dominant)	6	30%
Left side (left-hand dominant)	2	10%

Table 7: Glenoid Bone Loss

Glenoid Bone Loss	Number of Cases
<20%	3
>20%	16

Table 8: Subjective Outcome

Outcome	Number of Cases
Stable	19
Subluxation	1
Dislocation	0

Table 9: Visual Analog Scale for Pain

Pain Level	Pre-operative	Post-operative
No pain	2	15
Mild pain	6	4
Moderate pain	11	1
Severe pain	1	0

Table 10: Objective Outcome - ROWE Score

ROWE Score	Number of Cases	Percentage
Excellent	8	40%
Good	7	35%
Fair	5	25%
Poor	0	0%

Table 11: Complications

Complication	Number of Cases
Subluxation/Dislocation	0
Infection	1
Implant Failure	1
Arthrosis	1

DISCUSSION

The Latarjet procedure has long been recognized as an effective surgical intervention for recurrent anterior shoulder dislocation, particularly in patients with significant glenoid bone loss or failed previous stabilization surgeries. This study provides valuable insights into the functional outcomes, complications, and patient satisfaction following this procedure in a real-world clinical setting.

Functional Outcomes

The majority of patients in this study experienced excellent to good functional outcomes, as evidenced by the ROWE and quickDASH scores. The mean quickDASH score improved significantly from 47.96 pre-operatively to 14.48 at 6 months follow-up, indicating substantial enhancement in shoulder function and reduction in disability. The ROWE score further supported these findings, with 75% of patients achieving excellent or good results.[8] These outcomes highlight the efficacy of the Latarjet procedure in restoring shoulder stability and function, aligning with previous studies that reported high rates of success and patient satisfaction.[9]

Pain and Range of Motion

Pain levels significantly decreased post-operatively, with 75% of patients reporting no pain at follow-up. This reduction in pain correlates with the improved range of motion observed in most patients. Although there was a slight decrease in external and internal rotation, the overall range of movements remained largely unaffected, allowing patients to resume their daily activities without significant limitations.[10] The modest loss in rotation is a known trade-off with the Latarjet procedure, but it does not appear to significantly impact overall shoulder function.

Subjective and Radiographic Outcomes

Subjective assessments revealed that 95% of patients had stable shoulders post-operatively, with only one case of subluxation and no cases of dislocation. Radiographic analysis demonstrated successful screw placement and bony union in the majority of cases, further supporting the procedure's effectiveness.[11] The importance of proper screw placement was underscored, as improper positioning can lead to instability and recurrent issues.[12,13]

Complications

While the Latarjet procedure is generally safe, it is not without potential complications. In this study, complications were observed in only one patient, who developed a surgical site infection, implant failure, and early arthrosis. This patient's inferior screw backed out, emphasizing the need for meticulous surgical technique and careful post-operative monitoring. However, the overall complication rate was low, consistent with existing literature, which suggests that with experienced surgeons and proper patient selection, the risk of complications can be minimized.[14]

Study Limitations

This study has several limitations that should be considered. The sample size was relatively small, and the follow-up period was limited to 6 months. A larger cohort with a longer follow-up period would provide more comprehensive data on long-term outcomes and complications. Additionally, the study was conducted at a single center, which may limit the generalizability of the findings.

CONCLUSION

The Latarjet procedure is a reliable and effective surgical option for patients with recurrent anterior shoulder dislocation, particularly those with significant glenoid bone loss. It provides excellent functional outcomes, significant pain relief, and high rates of shoulder stability with a relatively low complication rate. Future studies with larger sample sizes and longer follow-up periods are needed to further validate these findings and optimize patient outcomes.

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