

FUNCTIONAL OUTCOME OF OPEN LATARJET PROCEDURE FOR RECURRENT ANTERIOR SHOULDER DISLOCATION

Muhammad Siraj¹, Qaisar Azim², Ahsan Sajjad³, Awal Hakeem⁴

Correspondence

²Qaisar Azim, SPR Orthopedic
Khyber Teaching Hospital, Peshawar
☎: +92-300-9095986
✉: qaiseraazimtk@gmail.com

¹Assistant Professor, Orthopedic
Khyber Teaching Hospital, Peshawar

³PG, Ortho, Khyber Teaching
Hospital, Peshawar

⁴Ap, Orthopedic, Khyber Teaching
Hospital, Peshawar

How to cite this article

Siraj M, Azim Q, Sajjad A, Hakeem
A. Functional Outcome of Open
Latarjet Procedure for Recurrent
Anterior Shoulder Dislocation. J
Gandhara Med Dent Sci. 2023;10(1):
57-61
<https://doi.org/10.37762/jgmids.10-1.333>

ABSTRACT

OBJECTIVES

To find the functional outcome of the open Latarjet method for recurrent anterior shoulder dislocation.

METHODOLOGY

The current retrospective study was conducted at the Orthopedic and Trauma Department of the Khyber Teaching Hospital in Peshawar from September 2020 to August 2021. A total of 31 patients were included in the study, of which 29 were males and 2 were females. A detailed medical history was obtained through physical examination, and all necessary laboratory tests were requested. AP and axillary views of plain X-ray radiographs were taken. We used a CT scan on all the patients to calculate the humeral and glenoid bone loss. We had all patients undergo an MRI to rule out soft tissue pathology. Six months after surgery, the outcome was graded using the Constant Murley Score on a good, good, fair, and poor scale.

RESULTS

In this study open Latarjet procedure was done in 31 patients with 29 males (93.4%) and two females (6.45%). The right-sided shoulder was involved in 24 (77.14 %) patients, while the left shoulder was involved in 7 patients (22.58%). A bipolar lesion in the shoulder with bone loss was seen on the glenoid side at 17.5% (range 10-25%), and the humeral side was 22.5%.

Follow-up was done for six months in which 22 patients had a very good outcome (70.96%), six patients had a good outcome (19.35%), two patients had a fair outcome (6.45%), and one patient had a poor outcome (3.22%). There were no major complications seen like graft fractures, graft malposition, neurovascular compromise, and hardware breakage.

CONCLUSION

Recurrent anterior shoulder instability can be effectively treated with open Latarjet with excellent functional outcomes and a very low complication rate and recurrence.

KEYWORDS: Recurrent Anterior Shoulder Dislocation, Latarjet Method.

INTRODUCTION

The shoulder joint has a wide range of motion relative to other joints with small bony stability. With a prevalence of 47/100,000 person-years, it is the most commonly dislocated joint of the body.¹ The results of non-operative treatments have been found acceptable. However, a recurrent shoulder dislocation is reported in a few patients treated in conservative ways.² Recurrent shoulder dislocation usually damages the ligaments and capsule of the shoulder joint, head of the humerus, and glenoid.³ Some patients show a recurrent dislocation rate of up to 90 percent and are commonly treated with arthroscopic labrum repair, capsular repair, and open bone-block techniques.^{4,5,6,7} The rates of recurrent instability are documented up to 10–22.5 percent in a few case series and are mostly found in younger patients and patients with substantial bone loss.^{8,9,10,11} It has been observed that the

arthroscopic recurrence rate is 67 per cent in case of bone loss, whereas Bankart repair has reported a recurrence rate of 4 per cent without a bone loss. Michel Latarjet, in 1954, described a blocking technique of later-jet and preferred it for patients having recurrent anterior dislocation of the shoulder with a bone loss.^{12,13} The effectiveness was reported in 98 per cent of patients in sidestepping recurrence without losing external rotation.¹⁴ 73 per cent of patients continued their pre-injury sports eight months after the procedure.¹⁵ The Latarjet method has multiple mechanisms for increasing anterior stability. The Bankart lesion is repaired, providing stability, and the transfer of the coracoid process extends the bony articular arc of the glenoid. Dynamic stability can be provided by the addition of the conjoint tendon.¹⁶ This procedure addresses the problem of glenoid bone loss and has been determined as a major factor in recurrent instability and is also superior to the Bankart

procedure biomechanically.^{17,18} Several other authors have published their stability rates and clinical outcomes succeeding Latarjet reconstruction. No consensus has been developed on the superiority of open Latarjet or arthroscopic surgery for recurrent anterior dislocation of the shoulder in terms of outcomes and complications.¹⁹ The objective of this study was to find the functional outcome of the open Latarjet method for recurrent anterior shoulder dislocation.

METHODOLOGY

This retrospective study was conducted in the Orthopedic and Trauma Department at Khyber Teaching Hospital Peshawar from September 2020 to August 2021. Patients of gender and age more than 18 years with more than 1 episode of dislocation, both humeral and glenoid bone loss, and positive apprehension tests were included in the study. Patients having a history of epilepsy, multidirectional instability, bilateral dislocations, generalized ligamentous laxity, previous surgery, glenohumeral arthritis, rotator cuff tear, and humeral bone loss > 35 % were excluded. Detailed history, thorough physical examination, and investigations were made. Plain radiographs AP and axillary views were obtained. CT was done in all patients to calculate both humeral and glenoid bone loss. MRI was done to exclude soft tissue pathology. The procedure's outcome was assessed at six months based on the Constant Murley Score, where a score of 86-100 was classed as very good, 71-85 as good, 56-70 as fair, and below 55 as poor. Data were analyzed by using SPSS v-26. The mean and the range were calculated for all quantitative variables. Frequency and percentage were calculated for all qualitative variables. The Shapiro-Wilk test was used to check the normality of data. All surgeries were performed by the same surgical team in a supine position with a bolster in the inter-scapular area under general anaesthesia. A deltopectoral approach with a vertical incision from the coracoid to the anterior axillary fold was used. An interval between the deltoid and pectoralis major was identified, and the cephalic vein was retracted laterally. Clavipectoral fascia was incised. The conjoined tendon was followed to the coracoid, and the retractor was placed at the base of the coracoid. Coracoacromial and pectoralis minor were released from the coracoid, and osteotomy of the coracoid was done with an oscillating saw. The conjoined tendon, along with the coracoid, was released from the underlying subscapularis muscle, and the subscapularis was split into the line of fibres at the middle and inferior third junction. The capsule was opened at the anteroinferior part of the glenoid. The

surface of the coracoid was refreshed with a saw to expose cancellous bone for optimum graft healing. The coracoid to glenoid was fixed with one or two 4 mm cannulated cancellous screws. The wound was closed reversely, and the limb was placed in polysling. A Post-op radiograph was performed on the first post-op day. The patient was advised to active movements of fingers, wrist, and elbow. A physiotherapist started Pendulum exercises as the patient tolerated. The Post-op rehabilitation program was continued for six months. All patients were advised to follow up at two weeks for wound assessment and stitches removal and then at 6,12, and 24 weeks for active range of motion and pain assessment. The final assessment was done at six months, and Constant Murley's shoulder score was calculated and rated as excellent (86-100), good (71-85), fair (56-70), and poor < 56.

RESULT

Table 1: Basic Demographics of the Study

Mean age	32.3 years (range 19- 45)
Mean episodes of dislocation	6 times (range 3-9)
Mean of duration between first episode and surgery	15 months (range 6-24 months)
Distribution of patients according to gender (n=31)	
Male patients	29 (93.5%)
Female patients	02 (6.5%)
Distribution of patients according to side involvement (n=31)	
Right shoulder dislocation	24 (77.41%)
Left shoulder dislocation	07 (22.58%)
Dominant side involvement	27 (87.09%)
Non-dominant side involvement	04 (12.91%)
Degree of bone loss	
Mean glenoid bone loss	17.5 % (range 10-25 %)
Mean humeral bone loss	22.5% (range 15-30 %).

Table 2: Outcomes of the Latarjet Procedure Based on Constant Murley Score

Excellent (86-100)	22 (70.96 %)
Good (71-85)	06 (19.35%)
Fair (56-70)	02 (06.45%)
Poor (<55)	01 (03.22%)

Table 3: Complications Encountered in the Study

Graft fracture or malposition	None
Neurovascular injury	None
Recurrence at one year follow up	None
Hardware complications like screw breakage	None
Wound infection	One patient (superficial wound infection managed with IV antibiotics)

Figure 1: Functional Outcome of Open Latarjet Procedure for Recurrent Anterior Shoulder Dislocation



DISCUSSION

The shoulder joint is a ball and socket synovial joint. The body is one of the largest, most complex joints, with the most mobility, enabling the upper limb to perform a wide range of motion.²⁰ However, this wide range of motion comes with the disadvantage of the instability of the shoulder joint. This instability is, however, compensated for by the rotator cuff muscles, tendon, ligament, and glenoid labrum. The prevalence of anterior glenohumeral instability is around 2%.²¹ Anterior instability is caused by the forced shoulder abduction and external rotation, which causes the anterior dislocation.²² A Bankart lesion is an injury to the shoulder's anteroinferior glenoid labrum that results in anterior shoulder dislocation, which results in the formation of a pocket on the anterior part of the glenoid, allowing the head of the humerus to dislocate into it. Sugaya et al. discovered that recurrent anterior

shoulder instability was associated with bony erosion in 40% of individuals, and 50% had a bony Bankart lesion.²³ IT indicated that most patients with recurrent anterior shoulder instability had a bony lesion, whether bony Hill Sachs or Bankart. When glenoid bone loss exceeds 25%, the surgical approach must include a procedure for bone reconstruction.²⁴ Our study's most significant conclusion is that excellent functional outcomes with a low risk of complications and recurrence can be achieved with the Latarjet technique. Additionally, athletes had a high rate of return to sport. Our research revealed that patients reported high levels of functional results following the Latarjet operation, with 90% having good to excellent outcomes. Patient's satisfaction rate with the procedure was more than 90%. Warth et al. indicated that the ability to return to sporting activity was the main concern of patients receiving anterior shoulder instability surgery. It might reflect the high satisfaction rate of patients in our study due to the high incidence of return to sports activity after surgery in our study.²⁵ Regarding glenohumeral stability, the open Latarjet treatment has proven effective in clinical and biomechanical investigations, with consistent outcomes. Recent literature suggests that the Latarjet procedure produces better results and has fewer or equal long-term complications than the Bankart repair.²⁴ Vincent et al. conducted a meta-analysis and systematic review of eight comparative case series where they compared the Latarjet method and Bankart repair and concluded that the Latarjet treatment had a lower risk of recurrence.²⁶ They discovered that the Latarjet procedure, compared to the Bankart repair, produced less loss of external rotation and a greater Rowe score. Griesser et al. conducted a systematic review of complications of the Latarjet procedure and reported that the recurrences rate in the first year was 73%.²⁷ While Zimmerman et al., who included 93 patients in their study with ten years of follow-up, concluded that all recurrences occurred in the first two years.²⁸ Hovelius et al. concluded a 3.4% recurrence and a 98% success after 15 years of follow-up in a prospective study of 118 patients.²⁹ In a retrospective review of 68 Latarjet procedures, Mizuno et al. reported a 5.9% recurrence rate after a mean follow-up of 20 years.³⁰ Bhatia et al. conducted a comprehensive review of ten clinical studies and found recurring instability in 0–8% of patients.³¹ We avoided medial positioning of the graft by ensuring the flush placement of the graft against the glenoid during the procedure which according to Bhatia et al. was a key factor in the recurrence of dislocation. According to Allain et al., the lateral location of the graft will result in long-term postoperative arthritis.³² Thus, long-term postoperative arthritis and recurrence of dislocation

can be avoided by proper placement of the graft. Although it is established that the most commonly damaged nerve during the Latarjet procedure is the musculocutaneous nerve, our study had no reports of damage to any nerve.³³ Gartsman et al. performed 416 Latarjet procedures and reported a rate of less than 5%. They documented 13 cases of neurologic problems, where 11 patients recovered to normal and without any deficits upon the last follow-up examination.³⁴ In a study of 48 shoulders, Shah et al. found that 10% of patients suffered neurologic damage.³⁵ Complications related to hardware like Screws after a coracoid transfer are reported to occur in 4.7–14% of patients.²⁹ However, we did not encounter any case of screw complications. Also, the revision/redo surgery rate is documented as 7% in the literature. We did not encounter any cases requiring revision surgery.

LIMITATIONS

Every study has some limitations, and our study is not an exception. One of the key limitations of our was the small sample size, as most of the patients in our setup either neglected their symptoms by using over-the-counter pain or alternative medication. Another limitation was the short follow-up period due to a lack of awareness and the frequent changing of doctors in patients. Similarly, the data was collected from a single institute, and thus the generalizability of our result can be doubted. We suggest a multicenter study with a large sample and ample duration of follow-up for future studies

CONCLUSION

Recurrent anterior shoulder instability can be effectively treated with open Latarjet with excellent functional outcomes and a very low complications rate and recurrence.

CONFLICT OF INTEREST: None

FUNDING SOURCES: None

REFERENCES

- Zacchilli MA and Owens BD. Epidemiology of shoulder dislocations presenting to emergency departments in the United States. *JBJS*. 2010; 92: 542-9.
- Rowe CR. Acute and recurrent anterior dislocations of the shoulder. *Orthopedic Clinics of North America*. 1980; 11: 253-70.
- Rollick NC, Ono Y, Kurji HM, et al. Long-term outcomes of the Bankart and Latarjet repairs: a systematic review. *Open access journal of sports medicine*. 2017; 8: 97.
- Levy DM, Cole BJ and Bach Jr BR. History of surgical intervention of anterior shoulder instability. *Journal of Shoulder and Elbow Surgery*. 2016; 25: e139-e50.
- Rao AJ, Verma NN and Trenhaile SW. The "Floating Labrum": bankart lesion repair with anterior capsular extension using 2 anterior working portals. *Arthroscopy techniques*. 2017; 6: e1607-e11.
- Chillemi C, Guerrisi M, Paglialunga C, Salate Santone F and Osimani M. Latarjet procedure for anterior shoulder instability: a 24-year follow-up study. *Archives of Orthopaedic and Trauma Surgery*. 2021; 141: 189-96.
- Hurley ET, Manjunath AK, Matache BA, et al. No difference in 90-day complication rate following open versus arthroscopic Latarjet procedure. *Knee Surgery, Sports Traumatology, Arthroscopy*. 2021; 29: 2333-7.
- Castagna A, Markopoulos N, Conti M, Delle Rose G, Papadakou E and Garofalo R. Arthroscopic Bankart suture-anchor repair: radiological and clinical outcome at minimum 10 years of follow-up. *The American journal of sports medicine*. 2010; 38: 2012-6.
- Gill TJ, Micheli LJ, Gebhard F and Binder C. Bankart repair for anterior instability of the shoulder. Long-term outcome. *JBJS*. 1997; 79: 850-7.
- Porcellini G, Campi F, Pegreff F, Castagna A and Paladini P. Predisposing factors for recurrent shoulder dislocation after arthroscopic treatment. *JBJS*. 2009; 91: 2537-42.
- Shibata H, Gotoh M, Mitsui Y, et al. Risk factors for shoulder re-dislocation after arthroscopic Bankart repair. *Journal of orthopaedic surgery and research*. 2014; 9: 1-7.
- Burkhardt SS and De Beer JF. Traumatic glenohumeral bone defects and their relationship to failure of arthroscopic Bankart repairs: significance of the inverted-pear glenoid and the humeral engaging Hill-Sachs lesion. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 2000; 16: 677-94.
- Latarjet M. Treatment of recurrent dislocation of the shoulder. *Lyon chirurgical*. 1954; 49: 994-7.
- Walch G and Boileau P. Latarjet-Bristow procedure for recurrent anterior instability. *Techniques in Shoulder & Elbow Surgery*. 2000; 1: 256-61.
- Bohu Y, Abadie P, van Rooij F, Nover L, Berhouet J and Hardy A. Latarjet procedure enables 73% to return to play within 8 months depending on preoperative SIRSI and Rowe scores. *Knee Surgery, Sports Traumatology, Arthroscopy*. 2021; 29: 2606-15.
- Latarjet M. Techniques chirurgicales dans le traitement de la luxation recidivante de lepaule (Antero -interne)[Surgical technics in the treatment of recurrent dislocation of the shoulder (antero-internal)]. *Lyon Chir*. 1965; 61: 313-8.
- Lo IK, Bishop JY, Miniaci A and Flatow EL. Multidirectional instability: surgical decision making. *Instructional course lectures*. 2004; 53: 565-72.
- Wellmann M, De Ferrari H, Smith T, et al. Biomechanical investigation of the stabilization principle of the Latarjet procedure. *Archives of orthopaedic and trauma surgery*. 2012; 132: 377-86.
- Horner NS, Moroz PA, Bhullar R, et al. Open versus arthroscopic Latarjet procedures for the treatment of shoulder instability: a systematic review of comparative studies. *BMC Musculoskeletal Disorders*. 2018; 19: 1-9.
- Quillen DA, Wuchner M and Hatch RL. Acute shoulder injuries. *American Family Physician*. 2004; 70: 1947-54.
- Hovelius L, Augustini B, Fredin H, Johansson O, Norlin R and Thorling J. Primary anterior dislocation of the shoulder in young patients. A ten-year prospective study. *JBJS*. 1996; 78: 1677-84.
- Kaplan LD, Flanigan DC, Norwig J, Jost P and Bradley J. Prevalence and variance of shoulder injuries in elite collegiate football players. *The American journal of sports medicine*. 2005; 33: 1142-6.
- Sugaya H, Moriishi J, Dohi M, Kon Y and Tsuchiya A. Glenoid rim morphology in recurrent anterior glenohumeral instability. *JBJS*. 2003; 85: 878-84.

24. Mologne TS, Provencher MT, Menzel KA, Vachon TA and Dewing CB. Arthroscopic stabilization in patients with an inverted pear glenoid: results in patients with bone loss of the anterior glenoid. *The American journal of sports medicine*. 2007; 35: 1276-83.
25. Warth RJ, Briggs KK, Dornan GJ, Horan MP and Millett PJ. Patient expectations before arthroscopic shoulder surgery: correlation with patients' reasons for seeking treatment. *Journal of shoulder and elbow surgery*. 2013; 22: 1676-81.
26. An VVG, Sivakumar BS, Phan K and Trantalis J. A systematic review and meta-analysis of clinical and patient-reported outcomes following two procedures for recurrent traumatic anterior instability of the shoulder: Latarjet procedure vs. Bankart repair. *Journal of shoulder and elbow surgery*. 2016; 25: 853-63.
27. Griesser MJ, Harris JD, McCoy BW, et al. Complications and re-operations after Bristow-Latarjet shoulder stabilization: a systematic review. *Journal of shoulder and elbow surgery*. 2013; 22: 286-92.
28. Zimmermann SM, Scheyerer MJ, Farshad M, Catanzaro S, Rahm S and Gerber C. Long-term restoration of anterior shoulder stability: a retrospective analysis of arthroscopic Bankart repair versus open Latarjet procedure. *JBJS*. 2016; 98: 1954-61.
29. Hovelius L, Sandström B, Sundgren K and Saebö M. One hundred eighteen Bristow-Latarjet repairs for recurrent anterior dislocation of the shoulder prospectively followed for fifteen years: Study I-clinical results. *Journal of shoulder and elbow surgery*. 2004; 13: 509-16.
30. Mizuno N, Denard PJ, Raiss P, Melis B and Walch G. Long-term results of the Latarjet procedure for anterior instability of the shoulder. *Journal of shoulder and elbow surgery*. 2014; 23: 1691-9.
31. Bhatia S, Frank RM, Ghodadra NS, et al. The outcomes and surgical techniques of the Latarjet procedure. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*. 2014; 30: 227-35.
32. Allain J, Goutallier D and Glorion C. Long-term results of the Latarjet procedure for the treatment of anterior instability of the shoulder. *JBJS*. 1998; 80: 841-52.
33. Frank RM, Gregory B, O'Brien M, et al. Ninety-day complications following the Latarjet procedure. *Journal of Shoulder and Elbow Surgery*. 2019; 28: 88-94.
34. Gartsman GM, Waggenspack Jr WN, O'Connor DP, Elkousy HA and Edwards TB. Immediate and early complications of the open Latarjet procedure: a retrospective review of a large consecutive case series. *Journal of Shoulder and Elbow Surgery*. 2017; 26: 68-72.
35. Shah AA, Butler RB, Romanowski J, Goel D, Karadagli D and Warner JJ. Short-term complications of the Latarjet procedure. *JBJS*. 2012; 94: 495-501.

CONTRIBUTORS

1. **Muhammad Siraj** – Concept & Design; Supervision
2. **Qaisar Azim** – Data Acquisition; Drafting Manuscript; Final Approval
3. **Ahsan Sajjad** – Data Analysis/Interpretation; Critical Revision
4. **Awal Hakeem** – Concept & Design; Final Approval

