e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(8); 1704-1713

Original Research Article

Functional Outcome Analysis of Recurrent Anterior Shoulder Dislocation with Latarjet Procedure

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Received: 27-06-2025 / Revised: 25-07-2025 / Accepted: 27-08-2025
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Conflict of interest: Nil

Abstract:

Introduction: Recurrent anterior shoulder instability is a common orthopedic challenge, particularly in young, active individuals, and is frequently associated with glenoid bone loss. The Latarjet procedure has emerged as an effective surgical option for managing such cases, especially when bone defects exceed 15%. Despite substantial global evidence, there is limited research on outcomes among Indian patients.

Methods: This prospective study enrolled 16 patients with recurrent anterior shoulder instability and glenoid bone loss >15%, treated with the open Latarjet procedure at Jhalawar Medical College, India, between January 2023 and April 2025. Clinical, radiological, and functional outcomes were assessed using the American Shoulder and Elbow Surgeons (ASES) and UCLA scores at 12 and 24 weeks postoperatively.

Results: The mean age was 27.8 years; 81.25% were male. Most injuries were sports-related (37.5%) or due to falls/occupational trauma (31.25% each). Preoperative dislocation frequency ranged from 1 to >10 episodes. At 24 weeks, UCLA scores showed 3 patients (18.75%) with excellent outcomes, 8 (50%) good, 4 (25%) fair, and 1 (6.25%) poor. ASES scores demonstrated progressive improvement, with most patients transitioning from fair to good categories. Range of motion recovery was satisfactory; mild restriction in external rotation persisted in some, consistent with global literature. Complications were minimal, with 11 patients reporting none.

Conclusion: The open Latarjet technique is a reliable and effective option for recurrent anterior shoulder instability with substantial glenoid bone loss in Indian patients. It provides favourable functional outcomes, early return to activity, low recurrence, and an acceptable complication profile. Meticulous surgical technique and structured rehabilitation are essential for optimal results. Larger, longer-term studies are warranted for further validation.

Introduction

The shoulder joint has the widest range of motion of any joint in the human body, but this mobility comes at the cost of stability, making it the most commonly dislocated major joint, accounting for nearly 50% of all joint dislocations worldwide [1]. Of these, anterior dislocations represent the majority (95–97%) [2].

In Western populations, the incidence of traumatic anterior shoulder dislocation is about 23 per 100,000 person-years, with up to 39% risk of recurrent instability following the first episode, particularly in males, those younger than 40 years, and individuals with ligamentous laxity [3-5]. Young, active individuals—especially those engaged in overhead or contact sports—are most vulnerable [6]. Recurrent instability may lead to Bankart or Hill-Sachs lesions and glenoid bone loss.

Conservative management (closed reduction, immobilization, physiotherapy) is appropriate initially, but surgery is indicated for patients with recurrent instability, significant bone loss, failed nonoperative care, or high functional demands [7-9]. The open Latarjet procedure, first described in 1954 by Michel Latarjet and later refined by Helfet [10], is particularly effective in cases with substantial glenoid bone loss, owing to its "triple-blocking effect":

- Bony augmentation of the glenoid rim
- Sling effect of the conjoint tendon
- Capsular repair using the coracoacromial ligament [11]

The classic coracoid bone block is especially relevant in Indian patients due to smaller coracoid size, providing a larger healing surface than the

congruent arc variant [12]. This study prospectively evaluates outcomes of open Latarjet stabilization in recurrent anterior shoulder instability among Indian patients.

Methods

Study Design and Participants: A prospective study was conducted in the Department of Orthopaedics, Jhalawar Medical College, between January 2023 and April 2025, following institutional ethical approval. Sixteen patients with recurrent anterior shoulder instability and glenoid bone loss >15% were included, with a minimum follow-up of 6 months.

Inclusion and Exclusion Criteria: Patients between 20 and 60 years of age with recurrent anterior shoulder dislocation were eligible for inclusion. Only those with radiologically confirmed glenoid bone loss of 15% or greater, a positive apprehension test, and a history of failed prior conservative or surgical management were considered for the study. Patients were excluded if they were younger than 20 years or older than 60 years, presented with a first-time dislocation, or demonstrated multidirectional instability. Additional exclusion criteria included the presence of established glenohumeral arthritis, neuromuscular disorders, epilepsy, psychiatric illness, or medical conditions rendering them unfit for surgery.

Preoperative Assessment: Demographics, injury history, Beighton score, and relevant clinical tests (apprehension, relocation, sulcus sign) were documented.

Surgical Technique: All patients underwent open Latarjet (classic technique). Under general anesthesia and beach-chair positioning, a deltopectoral approach was used. The coracoid process was osteotomized and shaped as a bone graft. After splitting the subscapularis, the graft was transferred and fixed to the anteroinferior glenoid with screws. The capsule was repaired using the coracoacromial ligament. Graft position was confirmed intra- and postoperatively with imaging.

Figure 1: Beach chair position

Figure 2: Delto pectoral apporach

Figure 3: Coracoid bone graft

The postoperative rehabilitation protocol: It included an initial period of immobilization for three weeks, followed by the initiation of passive mobilization. At six weeks, patients began active-assisted exercises, progressing to rotator cuff strengthening at nine weeks. Functional evaluation using ASES and UCLA scores was performed at 12 and 24 weeks. A return to full activity and sports was permitted at 24 weeks, provided recovery was deemed satisfactory.

Outcome Measures Primary: Functional outcomes (ASES, UCLA), Secondary: Range of motion, recurrence, radiological union, complications.

Results

Table 1: Distribution of Age of Patients

Age Group (Years)	Frequency	Percentage (%)
11–20	1	6.25%
21–30	7	43.75%
31–40	3	18.75%
41–50	5	31.25%
51–60	0	0.00%

Table 2: Distribution of Gender of Patients

Gender	Frequency	Percentage (%)
M	13	81.25%
F	3	18.75

Table 3: Distribution of Side of injury of patients

Side of Injury	Frequency	Percentage (%)
Right	9	56.25%
Left	7	43.75%

Table 4: Distribution of Mode of injury of patients

Mode of Injury	Frequency	Percentage (%)
Sports	6	37.5%
Occupational Trauma	4	25.0%
Fall	4	25.0%
Seizure	2	12.5%

Table 5: Relocation Method Distribution

Relocated By	Frequency	Percentage (%)
Doctor	8	50.00%
Self	5	31.25%
Traditional Bone Setter	3	18.75%

Table 6: Number of Dislocations Distribution

Dislocation Range	Frequency	Percentage (%)
1–5	7	43.75%
6–10	7	43.75%
11–20	0	0.00%
21–50	2	12.50%
51–100	0	0.00%

Table 7: Glenoid Bone Loss Distribution Table

Glenoid Bone Loss Range	Frequency	Percentage (%)
15–20%	7	43.75%
21–25%	9	56.25%
26–30%	0	0.00%
31–35%	0	0.00%

Table 8: Distribution of Range of motion of patients

Range of Motion	Flexion Frequency
<50˚	2
50˚–100˚	5
>100˚	9

Range of Motion	External Rotation Frequency
<50˚	10
50˚–100˚	6
>100˚	0

Range of Motion	Abduction Frequency
<50˚	1
50˚–100˚	4
>100˚	11

Functional Outcomes

- **UCLA:** At 12 weeks: 7 good, 8 fair, 1 poor. At 24 weeks: 3 excellent, 8 good, 4 fair, 1 poor.
- **ASES:** At 12 weeks: 3 good, 12 fair, 1 poor. At 24 weeks: 6 good, 9 fair, 1 poor.

Complications: Among the 16 patients included in the study, no complications were observed in 11 cases. Transient postoperative stiffness was noted in two patients, while one patient developed restriction of motion. One case of brachial plexus injury was recorded, which resolved with conservative management. Additionally, one patient reported persistent clicking during movement.

Discussion

Recurrent anterior shoulder instability remains a significant clinical challenge, particularly among young, active males. The glenohumeral joint's remarkable mobility makes it inherently prone to instability, especially after traumatic dislocations. In our prospective study of 16 patients undergoing the open Latarjet procedure, we assessed demographics, injury mechanisms, functional outcomes (ASES and UCLA scores), and postoperative complications. Our findings align with international literature and affirm the procedure's efficacy in high-risk populations.

Demographics and Risk Stratification: Most patients (43.75%) were aged 21–30 years, and 81.25% were male, consistent with epidemiological trends reported by Zacchilli and Owens (2014), who identified a peak incidence among males in their third decade of life. Farrar et al. (2013) also noted that younger age at first dislocation (<20 years) significantly increases recurrence risk—an observation reflected in our cohort, many of whom had early-onset

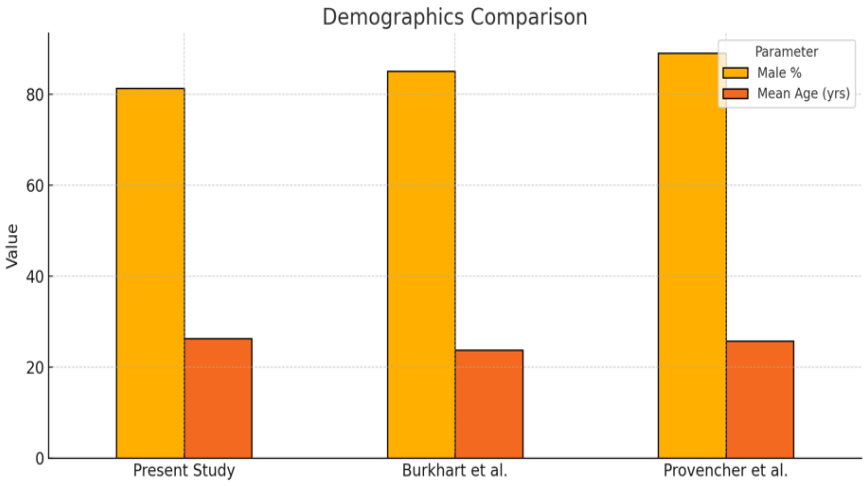

Figure 4: Demographics comparison

Injury Mechanism and Recurrence: Sports-related trauma (37.5%) was the leading cause, followed by falls and occupational injuries. These findings mirror studies by Dickens et al. (2014) and Rossi et al. (2021), which identified contact sports and high-impact activity as primary causes of recurrent dislocation. Notably, 31.25% of our patients had experienced more than 10 dislocations preoperatively—a key indicator for surgical intervention, as emphasized by Kao et al. (2018).

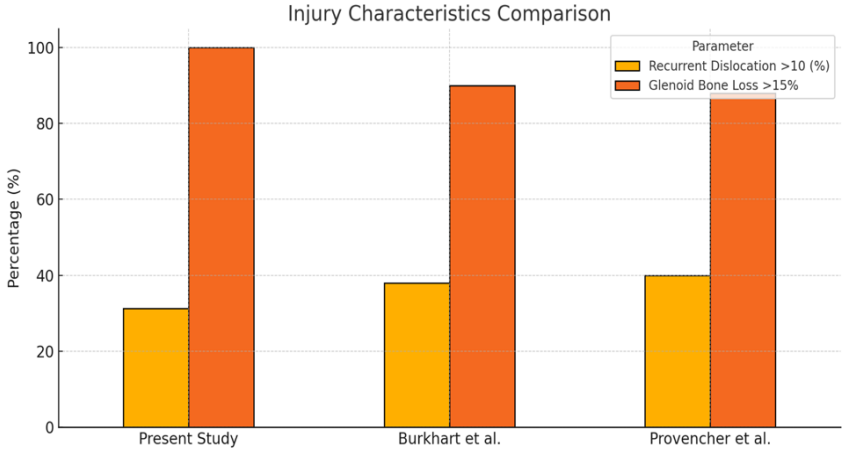

Figure 5: Injury characteristics comparison

Glenoid Bone Loss and Indications for Latarjet: In our study, 56.25% of patients exhibited 21–25% glenoid bone loss, and the rest had 15–20%. Literature by Warner et al. (2000) and Rabinowitz et al. (2017) identifies >15% bone loss as the critical threshold beyond which soft-tissue repairs (e.g., Bankart) become unreliable. Thus, the Latarjet procedure, with its "triple-blocking effect"—bony augmentation, sling effect of the conjoint tendon, and capsular repair—provides superior biomechanical stability, as shown by Helfet (1958) and Verweij et al. (2019).

Functional Outcomes: ASES and UCLA Scores: Marked improvements were seen in both ASES and UCLA scores postoperatively. The mean UCLA score improved from 15.19 (Poor) to 30.38 (Good) at 24 weeks. Similarly, ASES scores rose from 42.94 to 72.81, indicating progressive functional recovery. These outcomes are consistent with reports by Burkhart et al. (2007) and Provencher et al. (2012), who demonstrated substantial functional gains post-Latarjet in high-demand populations. The scoring systems used, particularly ASES (developed by Michener et al., 2002), are validated tools for assessing pain and function.

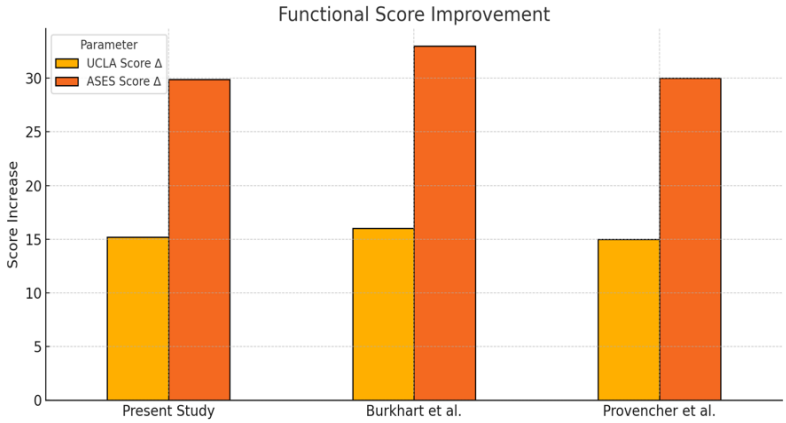

Figure 6: Functional score improvement

Postoperative Range of Motion: 56% patients achieved >100° forward flexion and 68% patients achieved >100° abduction. Mild external rotation limitation (<50° in 62.5% of cases) was observed a known and acceptable trade-off. Long-term studies by Neyton et al. (2004) and Blonna et al. (2014) indicate that minor losses in external rotation do not significantly affect overall outcomes or satisfaction.

Complications and Surgical Considerations: Complications were minimal: 11 of 16 patients had no postoperative issues. Others experienced transient stiffness, clicking, or mild motion restriction. No major neurovascular or hardware-related complications occurred, aligning with data from Shah et al. (2012). We used the classic flat-surface Latarjet, which suits Indian patients with smaller coracoid dimensions, as shown in Armitage et al. (2007). This technique also ensures optimal graft contact, enhancing healing—supported by biomechanical studies from Montgomery et al. (2017). Critical glenoid bone loss (>15%) is recognized as the threshold where soft-tissue repair alone is insufficient [14-16]. The Latarjet procedure addresses this via bony augmentation, dynamic sling, and capsular reinforcement, supporting biomechanical stability as described by Warner [17] and Verweij et al. [18].

Our results showed significant improvement in UCLA and ASES scores at 6 months, aligning with global reports of high satisfaction after Latarjet [10,11,19]. Flexion and abduction recovery was good, though external rotation was mildly restricted—consistent with observations by Neyton et al. [20] and

Complications were minimal, comparable to Shah et al. [22] and Griesser et al. [23]. The classic Latarjet was chosen over the congruent arc, as supported by Armitage et al. [24], due to smaller coracoid dimensions in Indian patients. Careful surgical technique and structured rehabilitation minimized adverse events. This study is limited by its small sample size, short follow-up, and absence of a comparative arthroscopic group. Long-term data on arthritis and multicenter trials would strengthen generalizability.

Conclusion

The open Latarjet procedure is a robust, effective solution for recurrent anterior shoulder instability with significant glenoid bone loss in Indian patients. It provides reliable stability, functional improvement, and low recurrence with minimal complications. Strict surgical technique and rehabilitation protocols are critical to optimize outcomes. Further multicenter, long-term studies are required for validation.

Case Illustration: 39-year-old male diagnosed with right anterior shoulder instability with glenoid bone loss treated with Latarjet procedure. Initially presented with dislocation in OPD

Figure 7: Radiograph showing dislocated Sholder

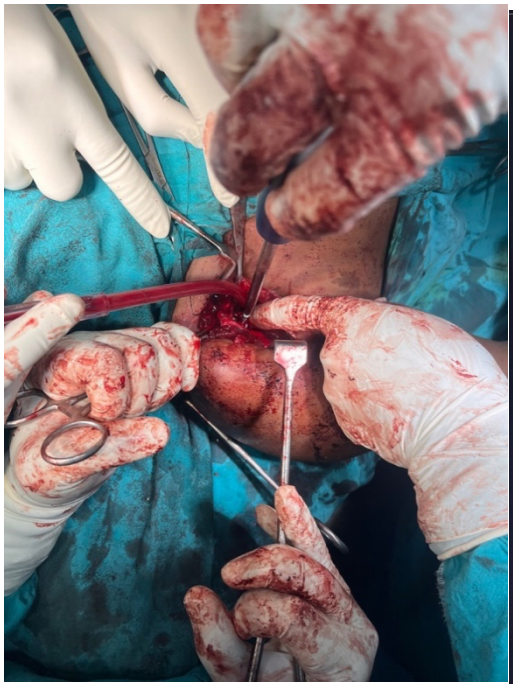

Figure 8: intra op image

Figure 9: Radiograph showing immediate post operative

Figure 10: day 2 of operation with shoulder immobilizer

Figure 11: 3 weeks post operative

Figure 12: 6 month after operation

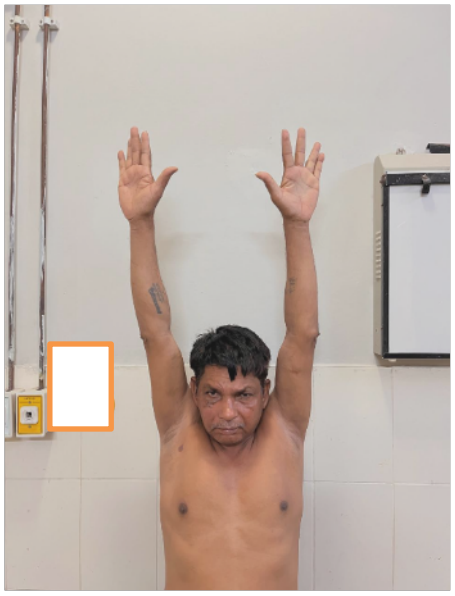

Figure 13: full flexion of arm (front view) (side view)

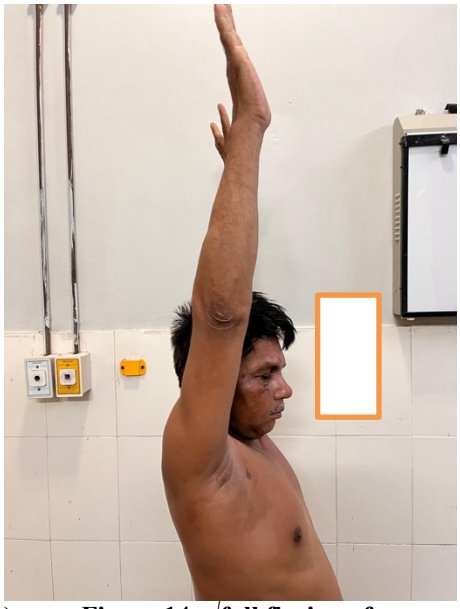

Figure 14: √full flexion of arm

Figure 15: lift off test positive suggestive of intact subscapularis function

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