International Journal of Research in Orthopaedics
Lingayat M et al. Int J Res Orthop. 2024 Sep;10(5):1051-1055
http://www.ijoro.org

DOI: https://dx.doi.org/10.18203/issn.2455-4510.IntJResOrthop20242403

Case Series

Functional outcome of Latarjet procedure in anterior recurrent shoulder instability

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Received: 16 June 2024
Revised: 20 July 2024
Accepted: 17 August 2024

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ABSTRACT

The Latarjet procedure is a surgical technique which was described by Michel Latarjet in France in 1954. He described it as an open stabilization technique of the glenohumeral joint in patients with recurrent anterior glenohumeral instability. It is a procedure of combination of coracoid process bone graft and a form of stability provided by the conjoined and subscapularis tendons. The benefits of the procedure are provision of stability, restoration of range of shoulder motion, preservation of shoulder muscle strength and return to premorbid activities of daily living. Patients with recurrent anterior shoulder dislocation with bone loss the bone blocking technique of Laterjet is the technique of choice. This technique has been effective in 98% of patients in avoiding recurrence without losing external rotation. Hence, present study was aimed to determine the functional outcome of open Laterjet procedure for recurrent shoulder dislocation. Case series was conducted based on post-operative Laterjet cases in a government tertiary care centre and medical college, involving 20 patients who underwent Latarjet's procedure, with duration 1st January 2023 to 31st December 2023 patients of either gender or age more than 18 years with recurrent anterior shoulder dislocation. Ethical clearance was obtained from the institutional ethics committee. The indication for the Laterjet procedure was defined with preoperative clinical findings proving recurrence of anterior shoulder instability and confirming the cause of dislocations with radiographs and MRI scans. In the included subject's complete history, physical examination and relevant investigations were done. The incidence of poor, fair, good, and very good outcomes was found to be 1 (5%), 2 (10%), 14 (70%), and 3 (15%) respectively. There was significant improvement in shoulder motion and reduction in pain after 6th month's follow-up. We reported re-dislocation in 1 patient. Mean VAS (Visual analogue scale) for pain among the patients in the study also reduced from pre-operative value of 7.2 to 6.5, 4.5 and 1.5 at 6 week, 3 months and 6 months postop respectively and this reduction in pain was found to be highly significant. Recurrent anterior shoulder dislocation can be effectively treated by open Latarjet technique being a safe and reliable treatment alternative with good functional outcomes. Surgeons should be aware that these procedures are technically demanding.

Keywords: Functional, Latarjet, Recurrent, Shoulder, Dislocation

INTRODUCTION

A surgical procedure known as the Latarjet procedure was first reported in France in 1954 by Michel Latarjet. In individuals with recurrent anterior glenohumeral instability, he defined it as an open stabilization approach for the glenohumeral joint. It involves a coracoid process bone transplant combined with a stabilizing mechanism supplied by the subscapularis and conjoined tendons. The process offers stability, preserves shoulder muscular strength, restores range of motion, and allows the patient to resume their pre-morbid daily activities.[1]

Figure 1 (A-C): X-rays of the Latarjet procedure.

The incidence of shoulder joint dislocation is 47/100000 persons years. Non operative treatment has shown acceptable results, but recurrent shoulder dislocation has been reported in 90 percent in some patients treated with conservative measures. Recurrent shoulder dislocation commonly results in damage to the capsule and ligaments of the shoulder joint, glenoid and head of humerus.[2-4] Because of its unique structure and biomechanics, the shoulder joint is the most prone to instability and frequent dislocation in the human body. The 2% of dislocations occur in the general population, yet account for approximately 50% of all dislocations. In addition to soft tissue injuries, the most prevalent cause of anterior instability is trauma, which is also frequently brought on by glenoid and/or humeral bone abnormalities.[5,6]

Patients with recurrent anterior shoulder dislocation with bone loss the bone blocking technique of Laterjet is the technique of choice. This technique has been effective in 98% of patients in avoiding recurrence without losing external rotation.[7] The exact stabilization mechanism of Latarjet is although unknown, it is stated that the transfer of Coracoid increases the anteroposterior diameter of the glenoidcavity (The bone effect), conjoined tendon acts as sling during abduction and external rotation (The sling effect) and repair of the stump of the Coracoacromial ligament to the capsule (The capsular repair effect) stabilizes the joint. These three effects were described by Patt in 1985 and are termed as the triple-blocking effect. No consensus has been achieved regarding the superiority of arthroscopic or open Latarjet procedure for recurrent anterior shoulder dislocation in terms of outcome or complications.[8,9]

Hence, present study was aimed to determine the functional outcome of open Laterjet procedure for recurrent shoulder dislocation.

CASE SERIES

A case series study was conducted based on post-operative Laterjet cases in a government tertiary care centre and medical college, involving 20 patients who underwent Latarjet's procedure, with duration 1st January 2023 to 31st December 2023 patients of either gender or age more than 18 years with recurrent anterior shoulder dislocation. Ethical clearance was obtained from the Institutional Ethics committee. The indication for the Laterjet procedure was defined with preoperative clinical findings proving recurrence of anterior shoulder instability and confirming the cause of dislocations with radiographs and MRI scans. In the included subject's complete history, physical examination and relevant investigations were done. Bilateral profile radiographic view, AP radiograph in neutral position, internal rotation view and external rotation view was obtained in all patients. CT scan was done in all patients prior to surgery and glenoid bone loss was measured as per Pico technique. MRI was done to confirm rotator cuff integrity and to assess Bankart and hill Sachs lesion.

The patient was placed in a supine position on the operating table, with the arm supported on a side table. An incision of 5-7 cm in length was made vertically, starting from the tip of the coracoid process and extending to the anterior border of the axilla. The coracoid was exposed through the deltopectoral interval, with careful dissection of subcutaneous tissue and incision of the clavipectoral fascia aligned to the skin incision. Lateral retraction of the deltoid musculature protected the cephalic vein, and a focus on meticulous haemostasis was maintained throughout the procedure. The coracoacromial ligament, connected to the coracoid tip, was incised laterally 1 cm from its insertion (Figure 2 A). Medially, the release of the pectoralis minor from its attachment to the coracoid was performed. A coracoid osteotomy at the junction of the vertical and horizontal aspects yielded a graft of 22 to 25 mm. Removal of the inferior cortex of the coracoid graft created a flat surface for proper opposition to the glenoid. To maintain exposure, a subscapularis retractor was utilized. This exposed the anterior glenohumeral capsule, allowing for a vertical capsulotomy at the medial origin after the subscapularis split. We did not excise anterior labrum and periosteal sleeve was not stripped, we did not freshen the glenoid anteroinferior cortex as there is flat cancellous bed for optimal graft uptake (this was modification from conventional latarjet procedure which gave us similar better result without distorting or manipulating biological anatomy of glenoid). Kirschner wires were drilled into the graft at before placing it on the glenoid. The coracoid graft's inferior surface was aligned flush with the glenoid's articular surface, and Kirschner wires were advanced further to secure it in the glenoid (Figure 2 B). Bicortical holes were created, and definitive graft fixation was achieved with a 4.0mm cannulated cancellous screw and washers (Figure 2 C). The graft position was confirmed to ensure it lay flush to the glenoid surface without any medial retraction or lateral overhang.

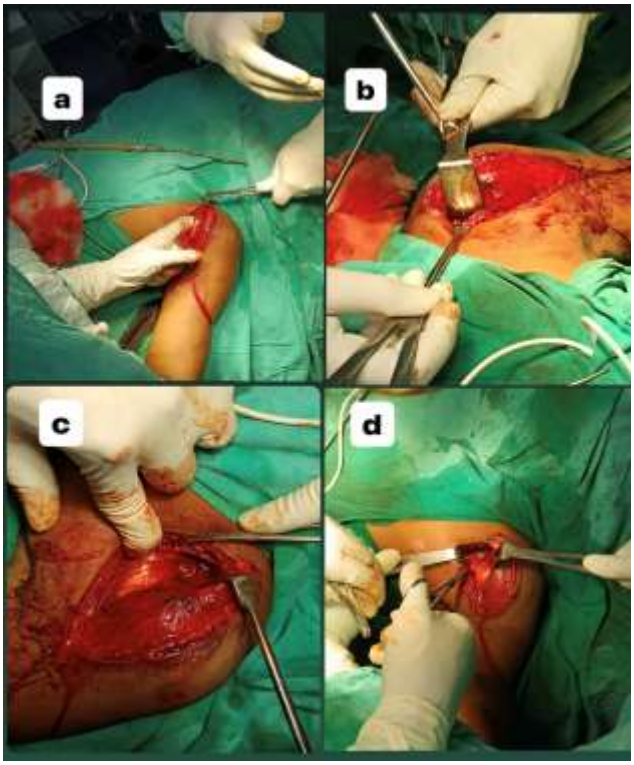

Figure 2 (A-D): Latarjet procedure.

In our study, out of the total 20 patients, there were 80% male and 20% female. The overall mean age was 41.4±15.2 years. The right and left-side involvement was found 50% each. The incidence of poor, fair, good, and very good outcomes was found to be 1 (5%), 2 (10%), 14 (70 %), and 3 (15%) respectively. There was significant improvement in shoulder motion and reduction in pain after 6th month's follow-up. We reported redislocation in 1 patient. In our study, no neurovascular damage, graft malposition, or fracture was seen. The baseline characteristics of patients are shown in Table 1. Functional outcomes were analysed by forward flexion and external rotation pre-op and follow-ups at 6 week, 3 months and 6 months. There was a significant improvement post-surgery and explained in Table 2.

Table 1: Baseline characteristics of patients, (n=20).

Characteristics	N (%)
Mean age (in years)	41.4
Gender	
Male	16 (80)
Female	4 (20)
Side involved	
Right	10 (50)
Left	10 (50)
Rating of outcomes	
Poor	1 (5)
Fair	2 (10)
Good	14 (70)
Very good	3 (15)

Table 2: The functional outcomes of Laterjet technique, (n=20).

Range of movement	Forward flexion mean value	P value	External rotation mean value	P value
Pre op	139.5		46	
6 week	142.6	Sig	51.3	Sig
3 months	149.8	Sig	70.7	Sig
6 months	163.8	Sig	84.4	Sig

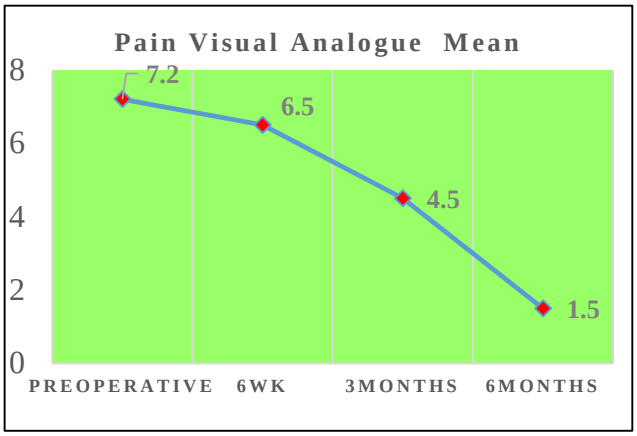

Figure 3: Visual analogue score.

Mean VAS for pain among the patients in the study also reduced from pre-operative value of 7.2 to 6.5, 4.5 and 1.5 at 6 week, 3 months and 6 months postop respectively and this reduction in pain was found to be highly significant (Figure 3).

Case 1

A 25 years old male, athlete had 4 episodes of anterior shoulder dislocation, first episode was during overhead throwing of ball, got operated 8 months back with Latarjet procedure.

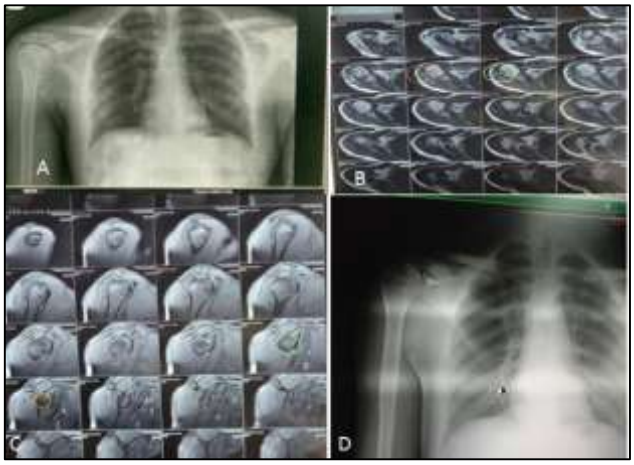

Figure 3 (A-D): Pre-op x-ray; MRI showing Bankart and Hill Sach's lesion and immediate post-op.

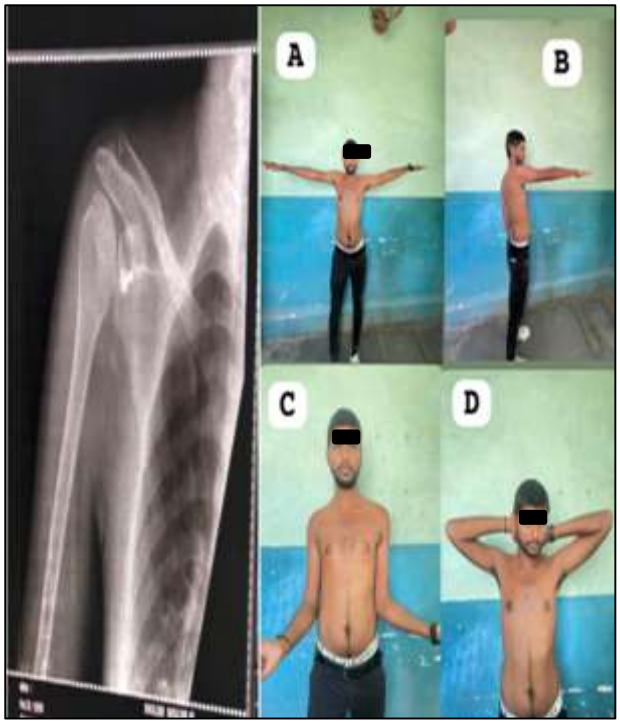

Figure 4 (A-D): 6 months followup x-ray and 6 months clinical rom.

Case 2

A 30 years old male, gymnast had 3 episodes had 3 episodes of anterior shoulder dislocation, had first episode in gymnasium, got operated 9 months back with Latarjet procedure.

Figure 5 (A-D): Preop x-rays; MRI scans showing Bankart and Hill Sach's lesion.

Figure 6 (A-D): Immediate postop x-ray; 6 months followup x-ray; clinical rom 6 months and 9 months respectively.

DISCUSSION

Our study had primary goal was to prevent recurrence of instability, improve functionality and reduce short and long-term complications. Latarjet repair mechanically restores stability by three distinct mechanisms. The primary stabilizing mechanism, the "sling effect", provided by the conjoint tendons, the dynamic by the lower subscapularis and glenoid concavity by the coracoid transfer, which contributes a significant portion of glenohumeral stability which is a safe and reliable therapeutic option with high functional results, can effectively treat recurrent anterior shoulder dislocation. Cunningham et al observed that more than 90% of coracoid graft resorption occurred after Latar jet operations.[10]

Latarjet surgery is potentially a good or excellent satisfied procedure in preventing the future instability because low post-operative recurrence rates of shoulder dislocation. According to Allain et al none of the subjects had a recurrent dislocation and only 1 patient reported a feeling of persistent instability and occasional subluxation.[11] Cassagnaud in his series of 106 Latarjet procedures reported only one re-dislocation [12]. Whereas Collin in his 69 patients had 4 recurrences and 2 subluxations.[13] Our study similarly had no recurrences or re-dislocations post-operatively. Our patients did not have any immediate complications like infection, hematoma, intraoperative graft fracture, graft malposition, mal-union, non-union, hardware complications like screw breakage and neurovascular injury when compared with Shah et al, who reported short-term complications all complications

resolved except 2 patients who had axillary nerve neuropraxia.[14] The follow up of patients for two years duration may not be enough to identify long term complications like resorption of coracoid graft and glenohumeral arthritis using radiography. This forms the limitation in our study.

CONCLUSION

Recurrent anterior shoulder dislocation can be effectively treated by Open Latarjet technique being a safe and reliable treatment alternative with good functional outcomes. Surgeons should be aware that these procedures are technically demanding, and we recommend experienced orthopaedic surgeons familiar with normal and abnormal anatomy of shoulder. We recommend this procedure in patients with recurrent anterior shoulder dislocation with glenoid bone loss. Even though Open Latarjet procedure is a non-anatomical repair it gives excellent functional results and patient satisfaction.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Lingayat M, Kesharwani AK, Vimal PV, Patil S, Kakade R, Sondkar A. Functional outcome of Latarjet procedure in anterior recurrent shoulder instability. Int J Res Orthop 2024;10:1051-5.