

Outcome of Latarjet Procedure for Recurrent Anterior Shoulder Dislocation.

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ABSTRACT

Objective: To determine the functional outcome of open Latarjet procedure for recurrent anterior shoulder dislocation.

Methods: This descriptive study was conducted in Department of Orthopaedics Lahore General Hospital Lahore from 21st January 2019 to 29th December 2020. All adults patients of recurrent anterior shoulder dislocation fulfilling the inclusion criteria were operated with open Latarjet procedure. Functional outcome was assessed with Constant-Murley shoulder score at 6th months and rated as very good, good, fair and poor outcome. Comparative analysis of important outcome variables was done with paired-t test and *P* value < 0.05 was considered significant.

Results: The total number of patients were 35. There were 34 (97.14%) male and 1(2.85%) female. The mean age of our patients was 48.4±9.0 years. Right side was involved in 26(74.28%) and left in 9(25.71%). At 6th month postoperatively very good outcome was noted in 23(65.71%), good in 8(22.85%), fair in 2(5.71%) and poor outcome in 2(5.71%) patients. Significant pain reduction and improved range of shoulder motion was documented at 6th month. (*P* value < 0.05).

Conclusion: Open Latarjet technique is a reliable and safe option for recurrent anterior shoulder dislocation as very good functional outcome was achieved in majority of our patients.

Keywords: Bone-block, Coracoid, Dislocation, Latarjet, Shoulder

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INTRODUCTION

The incidence of shoulder joint dislocation is 47/100000 persons years.¹ Non operative treatment has shown acceptable results but recurrent shoulder dislocation has been reported in 90 percent in some patients treated with conservative measures.² Recurrent shoulder dislocation commonly results in damage to the capsule and ligaments of the shoulder joint, glenoid and head of humerus.³ Recurrent anterior shoulder dislocation is usually treated with arthroscopic capsular repair, labral repair, and arthroscopic or open bone-block techniques.⁴⁻⁷ In bone blocking techniques the coracoid process is transferred through the subscapularis muscle to the anterior and inferior margin of the glenoid cavity.^{8,9} It has been reported that arthroscopic Bankart repair has a recurrence rate of 4% without significant bone loss whereas the recurrence rate is 67% when bone

loss is present.¹⁰ Patients with recurrent anterior shoulder dislocation with bone loss the bone blocking technique of Latarjet is the technique of choice. This procedure was first described by Michel Latarjet in 1954.¹¹ This technique has been reported to be effective in 98% of patients in avoiding recurrence without losing external rotation¹² and 73% of patients resumed their pre injury sports 8 months after the procedure.¹³ Although the exact stabilization mechanism of Latarjet is unknown, it has been postulated that the transfer of Coracoid increases the anteroposterior diameter of the glenoid cavity(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 in detail by Patt in 1985 and termed

as the Tripple-Blocking Effect.¹⁴ 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.¹⁵

The objective of our study was to determine the functional outcome of open Latarjet procedure for recurrent anterior shoulder dislocation.

METHODS

We conducted this descriptive study in Department of Orthopaedics, Lahore General Hospital Lahore from 21st January 2019 to 29th December 2020. Patients of either gender and age more than 18 years with recurrent anterior shoulder dislocation more than 2 episodes of dislocation with glenoid bone loss >5% and positive apprehension test were included. Patients with bilateral recurrent shoulder dislocation, epilepsy, multidirectional instability, symptomatic acromioclavicular joint arthritis, generalized hyperlaxity, voluntary instability, rotator cuff tear, humeral head defect >30%, shoulder fractures and previously treated patients were excluded. In the included subjects 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.^{16,17} MRI was done to confirm rotator cuff integrity.

Surgical Technique

All the surgeries were performed in beach chair position under general anaesthesia by the same surgical team following a uniform standard surgical technique. The deltopectoral approach was used with a vertical incision starting from tip of Coracoid to the axillary fold. An interval between the Deltoid muscle and Pectoralis major muscle was created and maintained with a self-retaining retractor. The upper limb was abducted and externally rotated and to facilitate maximum exposure and a Hohmann Retractor was inserted above the Coracoid. The Coracoacromial Ligament was cut 1cm distal to its attachment on Coracoid process and the Coracohumeral Ligament beneath was also cut. The limb was adducted and internally rotated and Pectoralis minor was released from Coracoid to facilitate exposure. Oscillating saw was used for perpendicular osteotomy of the coracoid process 3cm from the tip from medial to lateral side (at the "knee" of Coracoid). The inferior surface of Coracoid was

cleaned and freshened to exposed the cancellous bone of the graft for optimum healing. A 3.2 drill bit was used to make two holes about 1cm apart along the central axis of the coracoid. The conjoint tendon was released at its upper and lateral border for about 5cm and the Coracoid was pushed underneath the Pectoralis major muscle and to expose the superior and inferior margins of Subscapularis muscle. A split was created in the lines of muscle fibres of Subscapularis muscle at the junction of superior two thirds and inferior one third with Mayo scissor. The Subscapularis muscle was free from capsule of the shoulder joint and a swab was pushed into the subscapularis fossa with a retractor placed over the swab. The joint was opened with a 2cm vertical incision at the level of joint line and a retractor was inserted into the glenohumeral joint at inferior part of subscapularis and neck of scapula to expose the area of glenoid at 6 o'clock position to expose the anteroinferior part of glenoid. The labrum and periosteum is incised with cautery (5 o'clock position in right shoulder and 7 o'clock in left shoulder) for 2 cm medially and then vertically and laterally for 3 cm at 2 o'clock position in right shoulder and 10 o'clock position in left shoulder. The flap created was composed of labrum and periosteum and elevated from lateral to medial with the help of osteotome. The anteroinferior surface of glenoid was decorticated with osteotome to make flat recipient area for Coracoid graft. With 3.2mm drill bit first hole was created at 5 o'clock position in glenoid medial to Coracoid about 7 mm distance and parallel to the articular surface of the glenoid. We inserted 4 mm partially threaded cancellous screw in the inferior hole of the Coracoid graft and into the glenoid hole and tightened. Second hole was drilled with 3.2 mm drill bit in the glenoid utilizing the already made hole in the Coracoid graft. An appropriate size 4 mm partially threaded cancellous screw was inserted and tightened. Final position of the coracoid graft was checked and any overhang if noted was removed with Rongeur. The capsule was repaired with remaining part of Coracoacromial ligament with shoulder in external rotation. The wound was closed in layers with a suction drain in situ.

After surgery a cushion sling was used for immobilization and to keep the limb in internal rotation for 6 weeks. The patient was advised active movements of fingers, wrist and elbow. Pendulum exercises were started by the physiotherapist on first post-operative day. The rehabilitation exercises were continued for three months. Post-operative

radiographs were advised on first post operative day.(Fig I & II) Drain was removed after 24 hours.

All patients were advised follow up at 2 weeks, 6 weeks, 3 months and 6 months. Active range of shoulder motion and pain was measured at 6th week, 3 months and 6th month. Final assessment at 6th month was done by an independent observer who was a senior Orthopaedic consultant but not part of this study team. The Constant-Murley shoulder score was calculated and rated as very good (86-100 score), good (71-85 score), fair (56-70 score) and poor outcome (< 56 score).^{18,19}

We used SPSS version 24 for analysis of our data. Continuous data was evaluated using descriptive statistics like mean and standard deviation while qualitative data was analyzed using frequency and percentages. Comparative analysis of important outcome variables were done and *P* value calculated with paired-t test. *P* value < 0.05 was considered significant. The data was presented in table where appropriate.

RESULTS

We operated 35 patients with open Latarjet procedure. Majority (97.14%, n=34) of our patients

Table: Outcome of Latarjet procedure for recurrent anterior shoulder dislocation.

Outcome	6 weeks	3 months	6 months	<i>P</i> value
Pain(VAS)	5.9±0.6	4.3±0.4	1.8±0.7	0.01
Forward flexion	145±9.0°	151±7.4°	160±9.6°	0.03
External rotation	51±2.9°	70.2±6.2 °	78.7±8.6 °	0.02
Constant-Murley shoulder score	69	77	89	0.01

were male while female patient was only 1 (2.85%%). The mean age of our patients was 48.4±9.0 years. Right side was involved in 26 (74.28%) and left in 9 (25.71%). Majority (82.8%, n=29) of our patients were right handed. The mean duration between the first episode of anterior dislocation and Latarjet procedure was 2.2±7 years (range 1.8 to 4.3 years). The mean episode of dislocation was 7±2 (range 4 to 11). The mean glenoid bone loss was 11.3± (range 7 to 13.2%). Outcome at follow up visits is shown in table I. At 6th month postoperatively very good outcome was noted in 23 (65.71%), good in 8 (22.85%), fair in 2 (5.71%) and poor outcome in 2 (5.71%) patients. Significant pain reduction and improved range of shoulder motion was documented at 6th month. (*P* value < 0.05). There were no significant difference in outcome when comparison was made for age, gender, episodes of dislocation, glenoid bone loss and side of surgery or hand dominance. We documented recurrence in 2 (5.71%) patients and graft non union in 2 (5.71%) patients and all were treated with revision. No neurovascular injury and graft malposition or fracture was noted in our series.

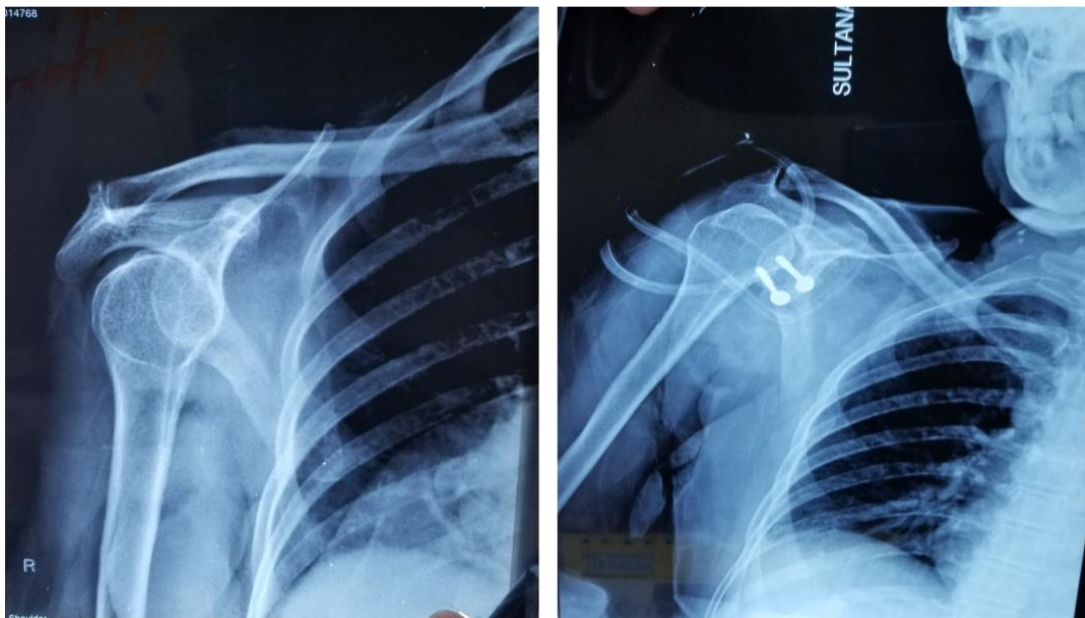


Fig. I & II: Pre and postoperative radiograph of a patient with recurrent anterior shoulder dislocation treated with open Latarjet procedure.

DISCUSSION

We performed open Latarjet in 35 patients and documented very good outcome in 23(65.71%), good in 8(22.85%), fair in 2(5.71%) and poor outcome in 2(5.71%) patients at 6th month follow up. Chillemi and colleague⁶ treated 40 patients with open Latarjet and reported their results with 24 years follow up. The average Rowe score was 84.5 and Walch-Duplay score was 83.5. No recurrence was noted in any patient. Osteoarthritis was noted in 21 patients and non union in 12.5% patients. Since our follow up was short therefore we could not evaluate glenohumeral osteoarthritis. Ernstbrunner²⁰ treated 39 patients with mean age 48 years and follow up of 11 years. He documented Walch-Duplay score of 89 and the results were excellent in 36 and good in 3 patients. No recurrence was noted. Severe dislocation arthropathy was noted in 14 patients and was related to older age of the patients, degree of pre operative degeneration of glenohumeral joint and lateral placement of coracoid graft. Dupley²¹ treated 81 patients with Latarjet and noted improvement of Oxford Shoulder Instability score from 23.2±10.1 to 37±9.2, Constant Shoulder score from 55.1±21.2 to 88.1±9.2, and quick DASH score from 30.3±24.3 to 17.7±23.5 at 2 years follow up. Complications were noted in 8(9.9%) patients: recurrence in 3 patients, deep infection in 2, hematoma in 1, screw breakage in 1 and biceps tendinopathy in 1 patient. Hurley²² reviewed the record of 845 open Latarjet surgeries with a mean follow up period of 16.6 years. The outcome was excellent to good in 86.1%, mean Rowe score was 88.5, return to sports was noted in 84.9% patients and recurrent dislocation was observed in 3.2%.

The design of our study was descriptive but when we searched the literature we found many comparative studies on this topic and with variable results. Randelli²³ in his systemic review found comparable results of arthroscopic and open Latarjet except that the cost of arthroscopic surgery was doubled. Cunningham²⁴ treated 28 patients with arthroscopic Latarjet and 36 with open Latarjet and noted similar functional outcome in both groups. However inaccurate placement of screws and recurrence was more in arthroscopic group than in open group. Bessiere²⁵ treated 93 patients with arthroscopic Latarjet and 93 with open Latarjet. At 6 years follow up open Latarjet patients had better Rowe score and less recurrence than arthroscopically treated patients.

The overall complication rate in our series was 11.4%. We noted recurrence in 2(5.71%) patients and graft non union in 2(5.71%) patients and all were successfully treated with revision. No neurovascular injury and graft malposition or fracture was noted in our series. Larger series in literature however, had reported an overall complication rate of 15 to 30%.^{26,27} In 416 open Latarjet procedures Gartsman and colleagues²⁸ reported an overall complication rate of 0.5%. Injury to the axillary nerve was noted in 7 patients, Musculocutaneous in 4, Suprascapular in 2 and multiple nerve injuries in 2 patients. Complete and partial recovery was documented in 11 patients. Elderly patients were more prone to had complications than younger ones. Frank²⁹ reported complication rate of 7.5% in first 90 days after Latarjet procedure in his 133 patients. Revision surgery was done in 6 cases while 4 cases resolved with conservative measures.

The descriptive design of our study, small sample size and short follow up period were the limitations of our study. Further studies are therefore recommended to confirm our results.

CONCLUSION

Open Latarjet technique is a reliable and safe option for recurrent anterior shoulder dislocation as very good functional outcome was achieved in majority of our patients. Patient selection must be careful and surgical technique must be meticulous to ensure good functional outcome. We recommend this procedure in all patients with recurrent anterior shoulder dislocation with glenoid bone loss.

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