

**OUTCOME OF LатарJET PROCEDURE FOR RECURRENT ANTERIOR  
INSTABILITY OF SHOULDER****Muhammad Arozullah<sup>1\*</sup>, Md. Matiul Islam<sup>2</sup>, Md. Ahasan Habib<sup>3</sup> and Khan Ashabul Hoque<sup>4</sup>**<sup>1</sup>Registrar (Spine Surgery), Department of Orthopedics, Rajshahi Medical College Hospital, Rajshahi, Bangladesh.<sup>2</sup>Assistant Professor, Department of Orthopedics, Rajshahi Medical College Hospital, Rajshahi, Bangladesh.<sup>3</sup>Assistant Professor, Department of Orthopedics, Kushtia Medical College Hospital, Kushtia, Bangladesh.<sup>4</sup>Registrar, National Institute of Traumatology and Orthopedic Rehabilitation, Dhaka, Bangladesh.**\*Corresponding Author: Dr. Muhammad Arozullah**

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**ABSTRACT**

**Background:** Recurrent anterior shoulder instability is the commonest of all instabilities in human body. Different surgical procedure have been described for treating recurrent anterior instability of shoulder. The Latarjet procedure is the gold standard technique which addresses these patients to minimize the risk of recurrence in this subset of patients in both athletes and non-athletes alike. Augmentation of the anteroinferior glenoid increases or restores the glenoid diameter to provide stability through a “bone blocking effect”. The “sling effect”, a dynamic effect created by the transfer of the conjoint tendon, provides stabilization in abducted and externally rotated arm positions particularly at mid and end ranges of motion. The conjoined tendon, in its new position, acts to reinforce the inferior subscapularis and anterior inferior capsule. **Objective:** The purpose of this study was to evaluate the outcome of Latarjet procedure for the treatment of recurrent anterior instability of shoulder. **Methods:** The study included twenty (20) patients with recurrent anterior instability of shoulder who were enrolled from November 2016 to April 2018 through non randomized purposive sampling. They were surgically treated by Latarjet procedure and were analyzed prospectively. The average follow-up time was 12 months, range 5–18 months; The age range was 15–45 years with a mean of 29.05; regarding sex, 17 (85%) patients were male and 3 (15%) were female. The dominant side was affected in 14 (70%) shoulders. Regarding the etiology, 6 (30%) reported road traffic accident, 6 (30%) reported sports injury, fall from height 7 (35%) and heavy weight lifting 1 (5%). Pain, shoulder function, instability (dislocations/subluxation), and Constant-Murley shoulder scores were documented. **Results:** The average forward flexion, external rotation, internal rotation and abduction of the operated shoulder were 172°, 70°, 70° and 170° respectively with statistical significance for increased range of motion in all planes, compared to previous status. The mean score of Constant-Murley was 87 in the postoperative period. **Conclusion:** It is concluded that the Latarjet procedure for recurrent anterior instability of shoulder leads to good and excellent results in 95% of cases. Complications are related to errors in technique.

**KEYWORDS:** Bone blocking effect, Shoulder function, Dislocations, Latarjet procedure.**INTRODUCTION**

Different surgical procedures have been described for treating recurrent anterior shoulder instability. The capsulolabral repair described by Bankart (Bankart, 1938) and modified by Rowe (Rowe, Patel and Southmayd, 1978) is one of the main techniques used to treat this condition and it can be done arthroscopically or as an open procedure, with good results from most patients.<sup>[1,2]</sup>

The cases in which the dislocation occurs in more than one direction and/or there is an increase in capsule volume, capsuloplasty can be chosen (Bankart, 1938).<sup>[1]</sup> This technique was described by Neer and Foster (Neer and Foster, 1980) and was subsequently revised by Bigliani (Bigliani, 1989).<sup>[3,4]</sup> However, soft-tissue repair

alone does not seem to be an effective procedure in all case.

Application of a bone graft to such defects increases the stability of the joint (Itoi et al. 2000).<sup>[5]</sup> Balg and Boileau created an instability Severity index score (ISIS) for determining the preoperative risk factors among patients with recurrent instability, with the aim of assisting surgeons in indicating arthroscopic or open surgery.<sup>[6]</sup>

According to these authors, for patients with high risk of recurrent dislocation, transposition of the coracoids process to the anteroinferior border of the glenoid cavity is an effective option. This procedure was first described by Latarjet in 1954 (Latarjet, 1954) and by Helfet in

1958 (Helfet, 1958).<sup>[7,8]</sup> Helfet named the technique the Bristow procedure.

The first Brazilian authors to publish their experience of treating recurrent anterior shoulder dislocation using the technique of bone grafting from the coracoid in association with ligament stabilization were Godinho and Monteiro in 1993.<sup>[9]</sup> These authors did not have any cases of recurrence of the dislocation, and 90% of the patients returned to their previous sports activities.<sup>[9]</sup>

In anterior shoulder instability with anterior capsular redundancy Latarjet procedure associated with an anteroinferior capsulorrhaphy is effective alternative to arthroscopic or open capsular shift and should help in reducing post-operative apprehension.<sup>[10]</sup>

The American Orthopaedic Society for Sports Medicine Journal perform a study, Using the modified Bristow Procedure for anterior shoulder instability based on Rowe Score, Single Assessment Numeric Evaluation Score and The Western Ontario shoulder Instability Index. This Study represent the longest follow up and the authors have shown nearly 70% of patients achieved an excellent or good results. Others have reported low recurrence rates using different variations of open instability procedure.

## OBJECTIVES

### General objectives

To evaluate the outcome of Latarjet procedure for the treatment of recurrent anterior instability of shoulder.

### Specific objectives

1. To evaluate clinical improvement regarding anterior instability of shoulder.
2. To see the functional outcome.
3. To observe the complications of the procedure.

## MATERIALS AND METHODS

**Study design:** Quasi-experimental study (Prospective study)

**Study period:** From July 2016 to June 2018.

**Enrolment period:** November 2016 to April 2018.

**Place of study:** National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Sher-E-Bangla Nagar, Dhaka.

**Study population:** A group of clinically diagnosed recurrent anterior instability shoulder of both sexes admitted in the National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Sher-E-Bangla Nagar, Dhaka.

**Sample size:** Total number of patients which will undergo for Latarjet Procedure during the study period. The sample size is 33 but due to time and economic constraints the sample size of this study might vary.

**Sampling technique:** Purposive sampling (nonrandomized) according to availability of the patients and strictly considering the inclusion and exclusion

criteria.

### Inclusion criteria

- Clinically diagnosed Recurrent Anterior Dislocation or Subluxation of shoulder joint.
- Age: between 15 to 45 years.
- Sex: Any sex.

### Exclusion criteria

- Voluntary anterior instability.
- Recurrent dislocation with Osteoarthritis.
- Recurrent dislocation with Rotator cuff tear.
- Age before 15 and after 45 years.

### Data collection procedure

Cases were selected for study from emergency or OPD after x-ray examination, then admitted to hospital. After counselling for surgical technique then taking consent for thesis enrolment, preoperative data were collected. After discussing the technique with the surgical team, operation done methodically, per-operative and postoperative data were recorded. Each patient were followed up for at least 12 weeks, clinical and functional scoring done and recorded for final outcome evaluation.

### Data analysis

Analysis was done by SPSS 22.0 for windows software. The data were tabulated and quantitative parameters such as age of patients will be summarized in terms of mean and median. Standard deviation was computed to understand the variation present in data. Percentage expression for positivity of scoring was estimated along with 95% confidence interval. The significance of the results as determined in 95% confidence interval.

## RESULTS

This prospective quasi experimental study was conducted in the department of Orthopaedics & Traumatology, National Institute of Traumatology and Orthopedic Rehabilitation, Dhaka from November 2016 to April 2018 for the duration of 18 months. Diagnosis of Recurrent anterior Instability of Shoulder was made by history, clinical examination and radiology and imaging evidence. Patients were treated with open Latarjet procedure. Patients were followed up regularly for at least 12 weeks. The results were assessed on the basis of Constant– Murley Shoulder scoring criteria.

The lesion according to the description of Hill and Sachs consists of flattening or depression of the particular surface of the head of the humerus usually involving its posterolateral aspect. It is shown radio-graphically only by taking an antero-posterior film with the arm in internal rotation from 30 - 60° or by taking an appropriate tangential projection. In such a film it has the appearance of a groove or depression at the upper and outer margin of the shadow of the humeral head. Furthermore, a sharp dense line of condensation is seen

extending downwards from the top of the humeral head and parallel to the axis of the shaft.

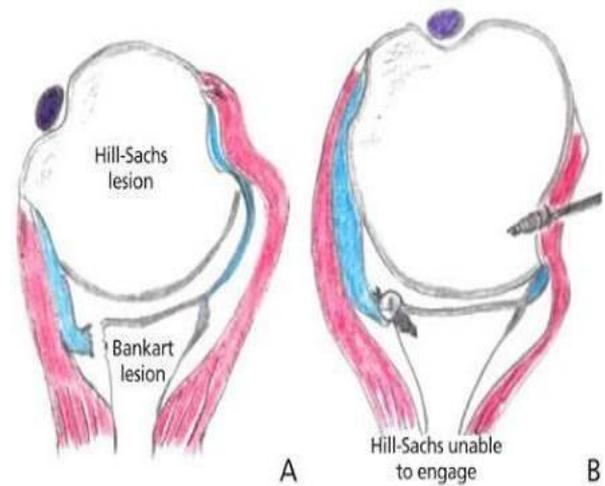


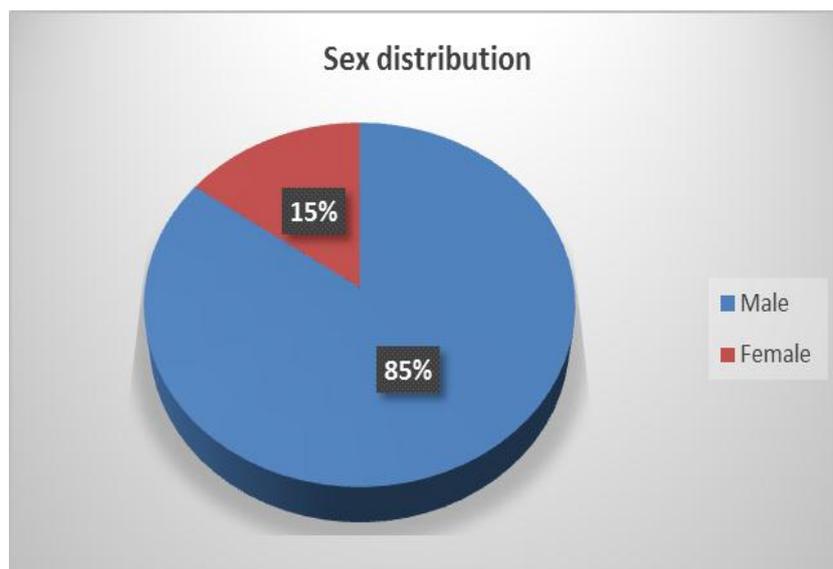
Fig. 1:Hill Sachs Lesion (Radiological findings) Fig. 2:Diagramatic figure showing Bankart and Hill Sachs lesion

**Demographic information**

**Table I: Age distribution of the participants.**

Age in year	No of Patient	Percentage (%)	Mean± SD
15-24	8	40.0	29.05±7.98 Years
25-34	5	25.0	
35-45	7	35.0	
Total	20	100.0	

The youngest patient in our series is 18 years old and the oldest is 45 years. Majority were in 15-24years. Among 20 patients mean age was 29.05 years with SD ± 7.98 years. (Range 15- 45 years old).



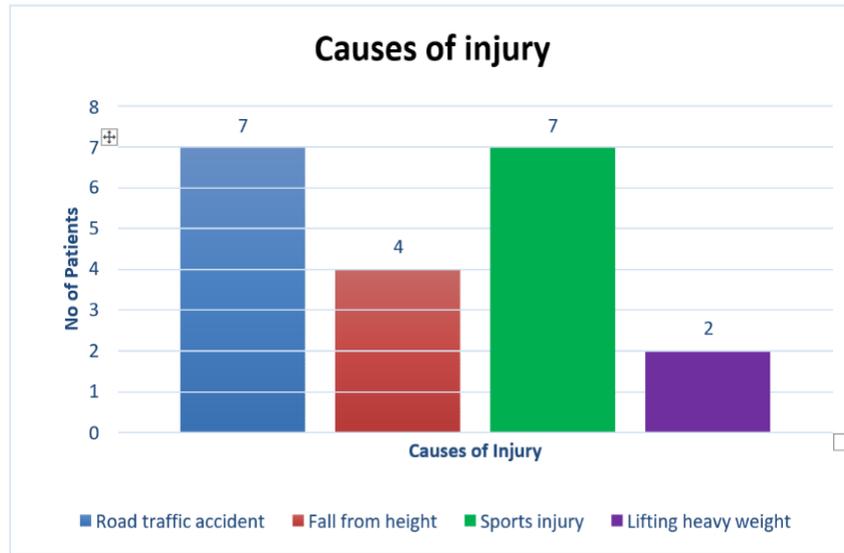
**Figure 3: Sex distribution of patients.**

In the present series, maximum patients were male 17 (85%) and 3 (15%) patients were female. Male female ratio 5.66:1. Male patients were predominant in this study. The results are shown in figure 3.

**Table II: Side involved (n=20).**

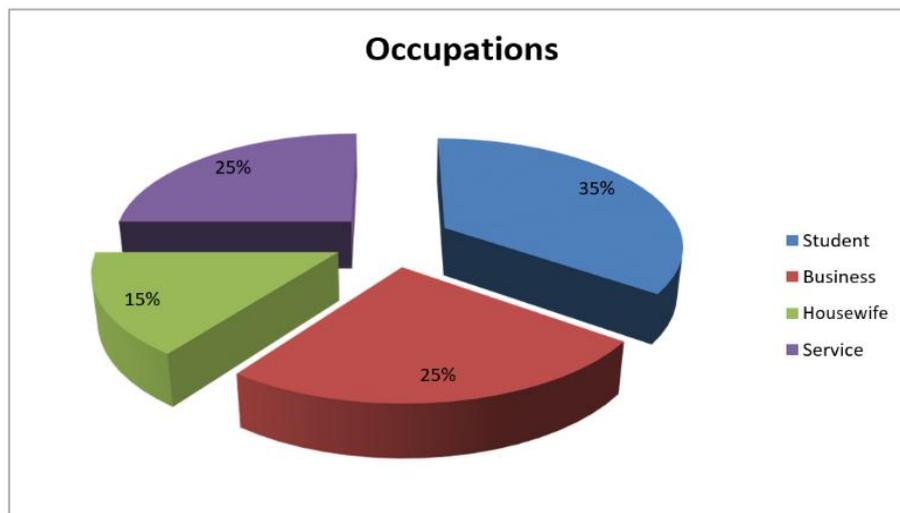
Side	Number of patient	Percentage (%)
Left	6	30.0
Right	14	70.0
Total	20	100.0

In the present series, 14 (70%) with right sided recurrent dislocation of shoulder and 6(30%) presented with left sided recurrent dislocation of shoulder. The results are shown in Table-II.



**Figure 4: Causes of injury.**

Out of 20 cases 7 (35%) cases gave history of road traffic accident, 7 (35%) cases gave history of Sports injury, 4 (20%) cases gave history of fall from height, 2(10%) cases gave history of lifting heavy weight. Results are shown in Fig-4.



**Figure 5: Occupation of patients.**

Among 20 patients 7(35%) are Students, 5 (25%) are businessman, 5 (25%) are Service holders and 3 (15%) are housewife. Figure 5.

**Table III: Distribution of the patients by length of immobilization after first dislocation (n=20).**

Length of immobilization after first dislocation (days)	Number of Patients	Percentage (%)	Mean ( $\pm$ SD)
0-4	3	15	7.15 $\pm$ 4.2
5-10	15	75	
11-14	1	5	
15-20	1	5	
<b>Total</b>	<b>20</b>	<b>100</b>	

Among 20 Patient, mean length of immobilization after first dislocation was 7.15  $\pm$  4.2.

**Table IV: Distribution of the patients by frequency of recurrence before surgery (n=20).**

Frequency	Number	Percentage (%)	Mean (±SD)
5-9	11	55.0	10.0 ± 4.21
10-14	3	15.0	
15-20	6	30.0	
Total	20	100	

Among 20 Patients, mean frequency of recurrence was  $10.0 \pm 4.21$ .

**Table V: Distribution of the patients by Range of motion after Latarjet procedure (n=20).**

Shoulder movements	Mean Range of motions (degree)		SD	
	Operated shoulder	Contralateral shoulder	Operated shoulder	Contralateral shoulder
Forward Flexion	172	180	6.15	5.5
Abduction	165	170	7.12	5.23
External rotation	80	90	6.23	5.12
<b>Internal rotation</b>	<b>70</b>	<b>70</b>	<b>7.23</b>	<b>5.0</b>

Mean of range of motions among 20 patients after Latarjet procedure were as follows: Forward Flexion  $172^\circ \pm 6.15$ , Abduction  $165^\circ \pm 7.12$ , External rotation  $80^\circ \pm 6.23$  and internal rotation  $70^\circ \pm 7.23$

**Table VI: Constant-Murley Scores and subjective shoulder value before and after Latarjet procedure (n=20).**

Points	Preoperative	After Latarjet procedure	P value
Consant-Murley Score (Mean)	76	87	0.001
Pain (point)	10	13	0.002
Activity level(point)	16	18	0.001
Forward Flexion (point)	10	10	0.002
Abduction (point)	6	10	0.001
External rotation (point)	4	6	0.003
Internal rotation (point)	10	10	0.001
Power (point)	20	20	0.005

Mean Constant-Murley Score and subjective shoulder value before operation is 76 and after latarjet procedure is 87 (p value= 0.001).

**Table VII: Final result.**

Outcome	Number of Patient	Percentage (%)
Excellent	14	70
Good	5	25
Fair	1	5
Poor	0	0
Total	20	100

Among 20 Patients, 14(70%) patients shows excellent outcome, 5(25%) patients shows good result, 1(5%) patient shows fair outcome and 0(0%) patients shows poor outcome.

## DISCUSSION

Recurrent dislocation is the most common complication of traumatic anterior instability of shoulder joint. The incidence of the recurrence rate in most reported literature was high in the young age groups. It was up to 80% reported by C.Chotigavenich and A.unnanantana reported in his series average age was 23.8 years.<sup>[11]</sup> Lombardo and associates reported average age was 24 years. In my series average age is 29.05 years, and 65% dislocations occurred in between ages 15-34 years.

Recurrence was more in man than women. In my series only three woman in 20 case. Shoulder involved on the right side was in 14 (70%) cases and on the left side in 6 (30%) cases. All the left shoulder involved patients were non-dominant and right sided patients were dominant. Why incidence was higher in dominant in this series, I do not know but suppositions are that, direction of violence, and lack of coordination may play a part in the etiology. In my series, most of the dislocations occurred in sports injury and road traffic accident which has shown in table

no. 3. In 14 cases out of 20 cases, anterior dislocation occurred by these two types of injury.

All cases were immobilized post operatively for 3 weeks and soon after removal of sling, patients were encouraged for full range of movement. So we advised for post-operative immobilization up to 3 weeks though most literatures suggested for 2 weeks (Helfet, Virgil may)<sup>8</sup>. Frequency of dislocations before surgery ranged from 5 to 20 times. In one case (case no -6) it was noted about 20 times during 5 years, per operative finding was Hill-Sachs's as well as capsular laxity. Those who had higher frequency usually came late for treatment.

Table no 8 shows excellent result in 14 (70%) cases, good results were obtained in 5 (25%) cases (case no. 4,6,8, 14, 17), fair results were obtained in 1 (case no.9) and poor result was in 0 cases has already been illustrated in complication session. Most of the patients obtained good or excellent result were below 35 years of age, very active and particular to their physiotherapy sessions. My impression is that good physiotherapy from the very beginning is one of the pre-requisite for excellent and good results.

More-over Latarjet procedure has a good background check in mechanism in preventing recurrence. The transferred coracoid process along with conjoint tendon provides a dynamic sling to reinforce the anterior aspect of the shoulder while the shoulder is abducted and externally rotated. In the series 95% patients were happy with the procedure, because they had no recurrence and with mild pain or limitation of external rotation they could do most of their normal activities.

So it is a matter of discussion and cannot be concluded that there is a single pathology for recurrence. There are many procedures to prevent and treat this condition and most of them are claimed to have good success, with the exception of Latarjet procedures the most acceptable procedures are, Bankart and Putti Platt.<sup>[12]</sup>

## CONCLUSION

Study of the functional results of 20 Latarjet reconstruction procedures has shown that, this procedure can be effective in the treatment of recurrent anterior instability of shoulder regardless of the etiology or the pathological changes and concludes that this is one of the best procedures.

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