INDIAN JOURNAL OF
APPLIED BASIC
MEDICAL SCIENCES

IJABMS
Peer Reviewed Journal
E-ISSN: 2249-7935
ISSN: 0975-8917

OUTCOME ANALYSIS OF 5 PATIENTS WITH RECURRENT ANTERO-INFERIOR SHOULDER DISLOCATION TREATED WITH OPEN LATARJET PROCEDURE

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Abstract

Topic: Outcome analysis of 5 patients with recurrent antero-inferior shoulder dislocation and glenoid bone loss treated with open Latarjet procedure. Introduction: With the extreme range of movements, the shoulder joint is prone for dislocations. Selecting an optimal and efficient surgical procedure for patients with anterior glenohumeral instability and associated glenoid bone loss is a complex problem. Among the coracoid transfer procedures, open latarjet procedure offers good clinical outcomes even with glenoid bone loss. The purpose is to study the clinical outcome of Open Latarjet procedure in anterior glenohumeral instability using Carter Rowe scoring system. **Aims & objectives:** To evaluate the functional outcomes of 5 patinets with recurrent antero-inferior shoulder dislocation corrected by open Laterjet procedure using Carter Rowe Scoring system. Methodology: 5 patients with recurrent antero-inferior shoulder dislocation were operated by open latarjet procedure. All patients were screened clinically and confirmed on CT scan. Patients were followed up and reviewed at a mean time interval of 6 months and evaluated using Carter Rowe Score. **Results:** We have obtained complete bone union at 6 months in all patients with excellent to good results as scored by Carter Rowe scoring scale. In Range of motion, there was restriction in External Rotation. Patients were able to restore their daily activities by 6 months. No episode of dislocation, despite one epileptic patient having convulsed after 1 month of surgery. **Conclusion:** Open latarjet procedure offers a reliable surgical method of management of recurrent anterior shoulder dislocation with significant bone loss and our study showed good functional outcome as measured by Carter Rowe score.

Keywords: Outcome, Recurrent Antero-Inferior Shoulder Dislocation, Treated with Open Latarjet Procedure

INTRODUCTION

The shoulder joint allows extreme range of motion in the human body. This wide range of motion has developed through the interplay of bony and soft tissue anatomy providing for increased kinematics and thus resulting in increased chances of instability[1]. When the dislocation occurs more than once, it is termed as recurrent dislocation. In such patients the frequency of dislocations keeps increasing with time and overhead activity. This is because the capsulolabral injury is not healed. With repeated dislocations the capsule gets deformed, the capacity becomes voluminous and causes enough

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damage to the posteromedial aspect of the head of humerus resulting in Hill Sach's lesion or to the anterior inferior part of the glenoid (the glenoid shape changes from pear shaped to inverted pear shaped)[2] along with associated bone loss.

Anatomical repairs aim at attaching the torn glenoid labrum to its original position thereby achieving the proper tension in the shoulder complex. E.g: Bankart repair – Montgomery & Jobe, Inferior capsular shift procedure-Neer. When there is substantial loss of Glenoid width isolated soft tissue repairs have exhibited failure rates as high as 57% to 67% [3]. Balg & Boileau et al. [4] in their study found that the outcome of Bankart repair were affected by Instability Severity Index Score with recurrence rate of 5% for patients with score 3 or less, 10% for patients with score 6 or less and 70% for patients with score more than six and advised open glenoid bone graft procedure for score more than 6. Burkhart & Debeer et al., [5] in 190 patients with arthroscopic procedures found a recurrence rate of 6.5% to 89% in patients involved in contact sports, glenoid defect more than 25% or an engaging hill sach lesion.

The Non-anatomical repair aims at stabilizing the shoulder girdle by compensating for the capsular and labral tears with or without bony injury, with bony/soft tissue structures which prevents the excessive anterior displacement of humeral head thereby stabilizing the joint. e.g.: Bristow and Latarjet, Magnuson-Stack - De- Palma and Putti-Platt.

Coracoid transfer procedures [6], have shown promising results with intact coraco-acromial ligament and good union rates with positioning below the level of equator in 3 to 5 o'clock position.

The purpose of this study is to analyse the stabilization effects of Latarjet Procedure in anterior glenohumeral instability associated with antero-inferior glenoid bone loss and analyse outcomes based on the Carter Rowe Scoring system.

MATERIALS & METHODS

This was a prospective study conducted between June 2018 to April 2019.

Patients with recurrent Antero-inferior shoulder dislocation were included and excluded in the study based on the inclusion and exclusion criteria after getting a formal consent from the patient. The study was conducted at GCS Medical College, Hospital & Research Centre, Ahmedabad.

Inclusion Criteria:

1. Recurrent Anterior shoulder dislocation
2. Bankart lesion (upto 40%)
3. Hill sach's lesion (<40% loss) Exclusion Criteria:

1. Multidirectional instability 2. Fracture dislocations

3. Congenital ligament laxity
4. Hill sach lesion (>40% loss)

Patients with Recurrent anterior shoulder dislocation are selected for clinical study as per aforementioned criteria. A detailed history regarding name, age, sex, date of first episode of dislocation, age at
the time of first episode, mechanism of injury, number of dislocations, residential address, and occupational status was recorded.

Patients are subjected to routine blood investigations like complete haemogram, renal function tests.

X rays of shoulder True anteroposterior view and Stryker notch view taken to demonstrate Glenoid defect and Hill sach lesions. CT scan is the investigation of choice as it assesses the extent and the size of the bony lesions, which were under appreciated previously in x-rays. MRI is useful to evaluate labral tears, SLAP tears, HAGL & ALPSA lesions.

Surgical method:

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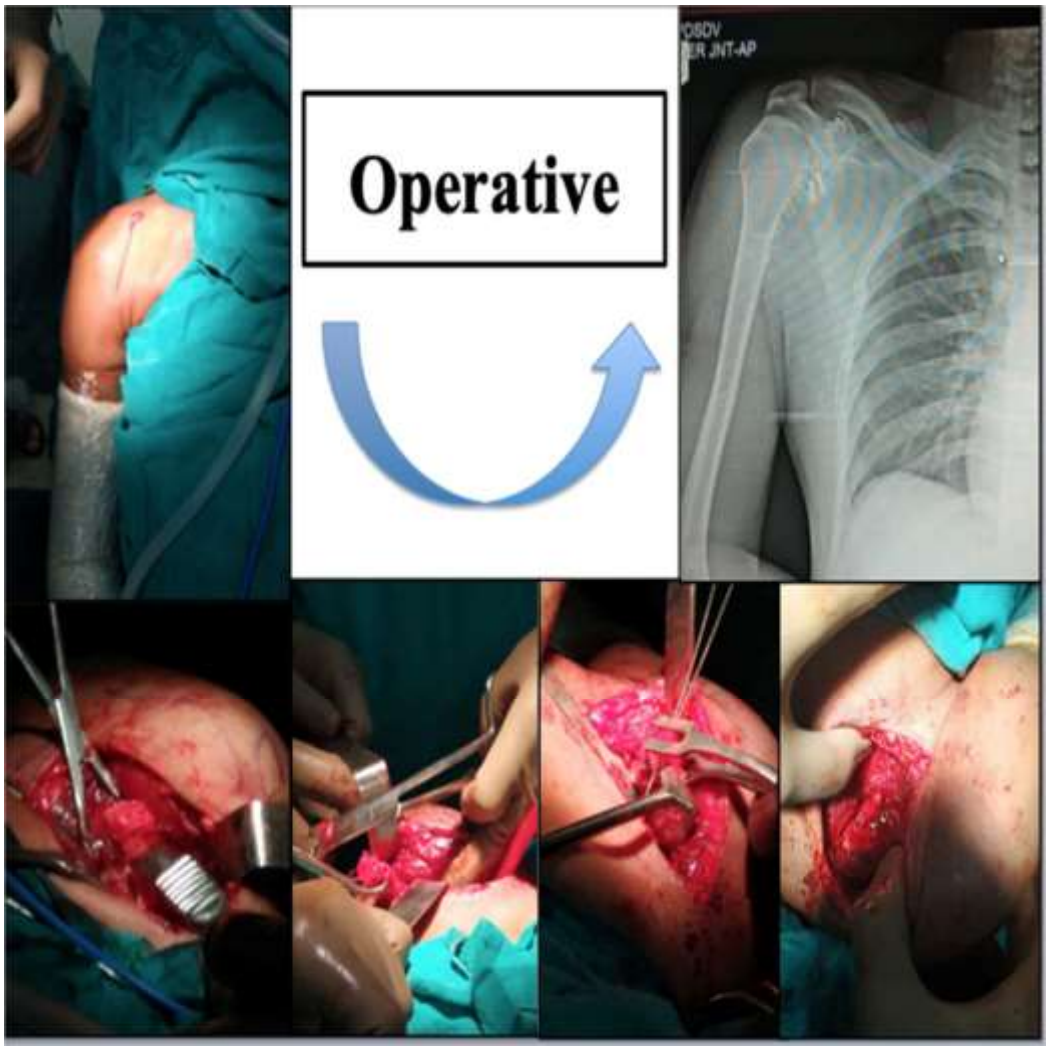
All 5 cases were done under General Anesthesia with patient in Beach Chair position. We used Delto-Pectoral Approach for all cases. Expose the conjoined tendon. In Latarjet technique, the coracoid is sectioned distal to the Coracoacromial ligament and osteotomized at its base. Insert the bone block through the split subscapularis and place it flush to antero-inferior margin of glenoid, below the level of equator (3 to 5 o'clock position) keeping the inferior surface of coracoid in contact. 2x 3.8 mm cannulated cancellous screws are passed under IITV guidance through guide pins. These screws are self-drilling and self tapping in nature. Capsule is closed.



Physiotherapy protocol:

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Days/Weeks	Physiotherapy
Day 1 to 2 weeks	Sling and shoulder immobilisation, ball squeeze excercise
2 to 6 weeks	Active assisted Forward flexion, Codman pendulum exercises, abduction range of motion exercises
6 to 8 weeks	Start external rotation exercises
8 to 12 weeks	start Isometric shoulder strengthening exercises
>12 weeks (3 months)	Return to activity, non-contact sports

Postoperatively patients were immobilized in shoulder immobilizer, with the arm against the body. Intravenous antibiotics were given for 3 days. Periodic radiographs were requested to evaluate the union, screw position and arthritic changes at glenohumeral joint using true Antero-posterior and Grashey's view. CT scan has been taken to find out union and all patients have achieved it. None had been lost to followup. The functional outcome was measured using Carter Rowe score. Minimum follow up period – 3 months. Maximum follow up period – 9 months. The mean follow up was 6 months.

Table 2 – Carter-Rowe score.

Criteria		Restriction	
Stability	No subluxation or catching		50
		Catching in certain positions	30
		Subluxation (not requiring reduction)	10
		Recurrent dislocation	0
Movement	100%: anterior elevation (AE), internal rotation (IR), external rotation (ER)		20
		75%: ER, AE 100%: IR	15
		50%: ER 75%: IR, AE	5
		50%: ER, AE, IR	0
Function	Without limitation regarding work or sports		30
	Minimal Limitation with discomfort		25
	Moderate limitation and discomfort		10
	Marked limitation and pain		0
Total	Points possible		100

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Scores

Sr. no.	Score	Results
1	90	Excellent
2	70	Good
3	95	Excellent
4	90	Excellent
5	90	Excellent

Epileptic patient

The Rowe Score for Instability is

Interpreting the Rowe Score for Instability

100 - 90 Excellent 89 - 75 Good 74 - 51 Fair 50 or less Poor

In our series, 1 case (20%) was in 20-35 yrs, 4 cases (80%) were in 35-45yrs. Recurrence rate is inversely proportional to the age at the time of initial dislocation and the severity of the injury. Majority of patients in our study fall in the age group between 35 to 45 yrs with mean age of 35 years. In our series all 5 cases presented more than one year after first dislocation, with mean duration of 2.5 years. In our series, RTA - 3 cases (60%) and fall -1 case (20%) and epilepsy 1 case (20%). Mean duration of surgery for Latarjet = 94 mins. Mean glenoid loss = 18.6%.

RESULTS

All 5 patients had solid bone union. 80% of the patients had excellent outcomes. 20% of these patients had good outcomes. During the first 5 months, there is significant loss of external rotation. But during 5-6 months period, there is significant improvement in the range of external rotation. None of the patients developed dislocation or positive apprehension. One epileptic patient had a convulsion after 1 month, still no dislocation. All patients have resorted back to routine work after 6 months period.

DISCUSSION

The outcome following Latarjet surgery for recurrent anterior shoulder dislocation depends on the pre evaluation, number of previous dislocations, age, sex, associated injuries and finally the experience of the operating surgeon[8].

Mean age of patients was 35 years in our study. In 100% of the cases, the dominant side is involved, which in our study was right shoulder (5 patients). Mean number of episodes of recurrent dislocation prior to surgery were 16.2 times (range 15 -60). Mean duration of illness 2.5 years. And the most common mechanism of violence was due to motor vehicle accident (80%) and epileptic fits (20%). Mean glenoid bone loss in our series is 18.6. Hill sach's lesion is seen in majority (80%) of case. Patients in our series had no recurrence, despite convulsion in an epileptic patient.

Latarjet restored the joint stiffness that was measured in intact state in 91% cases. They had dislocation rate 0 % dislocations with Latarjet. In patients with engaging Hill sach lesions, Latarjet gives better results than Modified Bristow. Once the follow up is more than a year, the functional outcome significantly improves showing similar results with both the techniques. Post operatively three (20%) Modified Bristow cases continued to have positive apprehension test which is significantly higher than Latarjet (0%).

CT scan was done postoperatively and all 5 patients had bony union (100%) and screw

positioning was assessed. There is no lateral overhang or too medial positioning of coracoid in our series. Outcome in our series is based on the Carter Rowe score and is found to be excellent in 80%, Good outcome is seen in 20%. In our study the following three factors were taken into account to obtain good results postoperatively;

1. Screw should be placed ideally below the equator at antero-inferior aspect of glenoid and it should be within 5-10 mm from the rim (joint space) of glenoid after freshening the ends.
2. Adequate postoperative immobilization - period of 2 weeks to promote healing.
3. 3.8 mm cannulated cancellous screws which are self tapping and self drilling, of sizes 35 to 40mm were used in our study to get Bicortical purchase

CONCLUSION

Our study results provide evidence that Latarjet procedure effectively restore joint stability in anterior Glenohumeral instability patients with Glenoid deficiency. Selection of the patients with proper history, physical examination, radiographs, computed tomograms and MRI is mandatory, with significant importance to the size and site of the bone defect. Surgeons should be aware that these procedures are technically demanding and we recommend experienced orthopaedic surgeons familiar with normal and abnormal anatomy of shoulder.

Therefore, in terms of efficacy, open Latarjet will be a preferable and a reliable procedure in coracoid transfer surgeries for Anterior Glenohumeral instability with significant Glenoid bone loss.

ACKNOWLEDGEMENTS: None

CONFLICTS OF INTEREST: None

FUNDING: Nil

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