

A Prospective Study of Functional Outcome of Arthroscopic Labral Repair in Adults for Traumatic Shoulder Instability

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ABSTRACT

Introduction: The shoulder joint allows more wide spread range of motion than any other joint in the body, requiring a complex interplay between passive and active stabilizers in order to provide balanced, synchronous motion. However, this extensive range of motion results in a propensity for decreased stability. Recurrent anterior shoulder instability as a result of force to the externally rotated and abducted arm is a common pathology to the glenohumeral joint with consequent treatment options and outcomes reported in the orthopedic literature dating back to the early twentieth century. Clinical instability can result from injury to the glenoid labrum. It provides passive stability to the humeral head by increasing the depth of the shallow glenoid fossa and serves as a primary attachment site for the glenohumeral ligaments, joint capsule, and long head of the biceps tendon.

Materials and methods: Collection of data as per the proforma with consent from the patients admitted in orthopedic wards, S.V Medical College, Tirupathi. It is a prospective study including 50 cases and conducted from June 2023 to May 2024. Inclusion criteria were Symptomatic labral tear, Complete tear with Apprehension test positive, Labral tear confirmed by MRI, Recurrent shoulder dislocation and Patients who failed to improve on conservative management like ultrasonic therapy or steroid injection. Exclusion criteria were; neurological problems that affects upper limb, shoulder muscle atrophy or dystrophy, associated bony injuries around shoulder except Hill Sachs's lesion and glenoid bone loss >20.

Results: In the series, 28 cases (56%) were in between the age group of 18-30 years, 16 cases (32%) were in between 31-40 years, 2 case (4%) in between 41-50 years and 4 cases (8%) in between 51-60 years. Recurrent shoulder dislocation is inversely proportional to age of the patients. As age increases chances of recurrent dislocation decreases. In the prospective research study, 46 cases (92%) were male and 4 cases (8%) were female. So Recurrent shoulder dislocation is more common in male as compared to female in my study.

Conclusion: Arthroscopic bankarts repair is gold standard for labral tear due to recurrent shoulder dislocation. Short surgery time, less intra operative and post operative complications are advantages. Associated Hill sach's Lesion is seen in majority patients of labral tear which should be repaired for better functional outcome. Arthroscopic bankart repair led to significantly increased shoulder function among patients.

Key words: Glenoid Labrum, Gleno humeral Ligaments, Joint Capsule, Hill Sach's Lesion.

INTRODUCTION

The shoulder joint allows more wide spread range of motion than any other joint in the body, requiring a complex inter play between passive and active stabilizers in order to provide balanced, synchronous motion. However, this extensive range of motion results in a propensity for decreased stability.¹ Recurrent anterior shoulder instability as a result of force to the externally rotated and

abducted arm is a common pathology to the glenohumeral joint with consequent treatment options and outcomes reported in the orthopedic literature dating back to the early twentieth century. Clinical instability can result from injury to the glenoid labrum.²It provides passive stability to the humeral head by increasing the depth of the shallow glenoid fossa and serves as a primary attachment site for the glenohumeral ligaments, joint capsule,

and long head of the biceps tendon. The labrum also functions to provide nutrition to the glenoid cavity and helps maintain joint lubrication. Injuries to the glenoid labrum commonly occur due to acute trauma such as falling on a flexed abducted arm or overuse injuries such as repetitive overhead and throwing activities, frequently seen in athletes. During shoulder dislocations, the humeral head is usually forced anteriorly out of the glenoid fossa leading to detaching fibrocartilaginous labrum from the anterior rim of the glenoid fossa. This detachment of the glenoid labrum is named Bankart's lesion.³ Bankart's lesion is the commonest lesion that needs treatment for anterior shoulder instability. Treatment is by operating technique by reattachment of labroligamentous structure to the glenoid as the glenoid labrum results in maintaining good stability of the glenohumeral joint. Anterior shoulder instability is often treated either by open procedure or arthroscopic method.⁴ There has been growing interest with in the arthroscopic management of anterior glenohumeral instability due to the benefits like less morbidity, improved range of motion, shorter time of surgery, improved cosmesis, and minimum post operative pain. There has been concern about recurrent instability in patients treated with arthroscopic technique due to various techniques used for stabilization, like stabilization with Staple Capsulorrhaphy, Bioabsorbable Tacks, and Suture Anchor, but all having their own merits and demerits.⁵ Better implants and refined techniques of arthroscopic stabilization with suture anchors resulted in patients with decreased perioperative morbidity, increased external rotation, and an increased return to throwing sports. Hence, we conducted the present study is to assess the functional outcome of the patients with recurrent dislocation of shoulder with Bankart lesion, treated with arthroscopic stabilization.

Aim and Objectives

Aim and objectives of current study were to evaluate shoulder function with labral tear and after repair of labral tear, to study epidemiology of labral tear and to study epidemiology of associated lesions.

MATERIALS AND METHODS

Data Collection and Methods: Collection of data as per the proforma with consent from the patients admitted in orthopedic wards, S.V Medical College, Tirupathi.

Study Design, Duration and Sample Size: It is a prospective study including 50 cases and conducted from June 2023 to May 2024.

Inclusion Criteria: Inclusion criteria were Symptomatic labral tear, Complete tear with Apprehension test positive, Labral tear confirmed by MRI, Recurrent shoulder dislocation and Patients who failed to improve on conservative management like ultrasonic therapy or steroid injection.

Exclusion Criteria: Exclusion criteria were; neurological problems that affects upper limb, shoulder muscle atrophy or dystrophy, associated bony injuries around shoulder except Hill Sachs's lesion and glenoid bone loss >20.

Operative Procedure

Via posterior portal diagnostic arthroscopy was done and Bankart (labral tear) lesion was confirmed. Another 2 anterior portals were made with help of needle and stab knife under direct visualization via posterior portal. One is antero superior and another antero inferior viewing portal change to antero superior and with help of liberator or periosteal elevator capsulolabral tissue was mobilized. Anterior surface of glenoid was abraded with help of rasp till bleeding comes. Associated Hill Sachs's lesion repaired with 5mm suture anchor via remplissage procedure. One 2.8mm suture anchor was placed at 5'O clock position and second

2.8 mm suture anchor is placed depends upon area of lesion. Third anchor superior to second anchor if needed is placed. Lastly capsulolabral tissue secured with sliding knot and checked for bumper effect of repaired labrum. Skin closure done with nylon 2-0.

Post Operative Protocol

Immediate post op (0-3 weeks) elbow, hand, wrist mobilisation-pendulum exercise-active assistive shoulder flexion-strengthening (week 2) Intermediate post op (4-6 weeks)-internal external rotation isometric rotator cuff strengthening exercise Intermediate post op (7-8 weeks)-active range of motion exercise resistance band shoulder extension and forward punch exercise. Transitional post op (9-11 weeks) peri scapular resistance band dynamic hug, wall push up biceps curl Strengthening post op (12-16 weeks)-internal & external rotation at 90*-hand behind head Early return to sports (4-6 months)-Maintain pain-free ROM, Continue strengthening and motor control exercises, Enhance functional use of upper extremity,

Gradual return to strenuous work/sport activity. Follow up plan: 4 weeks, 6 weeks and 12 weeks; calculate Rowe score at followup to evaluate functional outcome.

RESULTS

In the series, 28 cases (56%) were in between the age group of 18-30 years, 16 cases (32%) Were in between 31-40 years, 2 case (4%) in Between 41-50 years and 4 cases (8%) in

between 51-60 years. Recurrent shoulder dislocation is inversely proportional to age of the patients. As age increases chances of recurrent dislocation decreases.

In the prospective research study, 46 cases (92%) were male and 4 cases (8%) were female. So Recurrent shoulder dislocation is more common in male as compared to female in my study.

Age distribution (in years)	N
18-30	28
31-40	16
41-50	2
51-60	4

Table1: Age distribution

Gender	N
Male	46
Female	4

Table 2: Gender distribution

Mode of injury	N
RTA	10
Sports injury	16
Accidental	24
Total	50

Table3: Mode of injury

History of accidental fall predominate in this study. A total of 24 patients (48%) were injured due to accidental fall. 16 patients

(32%) were injured their shoulder while playing sports. 10 of the patients (20%) alleged history of Road traffic accidents.

Affected site	N
Dominant	42
Non Dominant	8
Total	50

Table 4: Affected site

Associated body lesions	N
No	10
With Hill Sach's lesion	40
Total	50

Table 5: Associated body lesions.

Rowe Score (%)	Poor	Fair	Good	Excellent
Pre-OP	100	-	-	-
4 weeks	4	96	-	-
6 weeks	8	24	72	-
8 weeks	-	4	16	80

Table 6: Rowe score.

DISCUSSION

Numerus surgeries have been used since ages for the management of recurrent shoulder

Dislocation of anterior type. Compared to other Surgeries with careful selection of the patients, arthroscopic bankart repair gives excellent

results. Bankart repair creates capsulolabral bump at anterior glenoid surface, thereby circumference of the humeral head doesn't come beyond the glenoid surface thereby preventing disruption of glenohumeral joint articulation when arm is abducted and rotated externally. Ahmed et al study seen recurrent anterior shoulder instability 13.2%, where there was no re dislocation in any patients following arthroscopic bankarts repair in my study. In Timothy et al study mean age of first shoulder dislocation was 35 year, as compared with my study mean age at time of first dislocation was 30 year in our study and most (50%) of them were in the age group of 20-30 years.⁶

Most of the affected patients were males (92%) which is well evidenced by above mentioned study; Timothy et al 74.3% male preponderance. Shoulder instability nearly equally split between dominant (56%) and non-dominant (44%) extremities in Skirev et al study while in my study 84% of the cases, the dominant side is involved, right shoulder (21patients). Number of episodes of recurrent dislocation prior to surgery averaged 5 times (4-7 times range in my study) while in Antues et al study saw averaged 2 to 5 times dislocation in majority of cases.⁷

In study by Bryan et al majority of patient (61%) had accidental fall followed by sports injury which was comparable with my study in which most common mechanism of shoulder dislocation was accidental fall (48%) followed by sports (32%) and RTA (20%).⁸

In study by Khorse et al association of Hill-Sachs lesions was found to be 84.00% with labral tear while In my study 80% association was there and for that we had used one extra suture anchor (every labral repair we had used 2 suture anchor). Pre operative parameters like number of dislocations, age of problem, reduction method and period of immobilization do not have any significance on postoperative functional outcome.⁹For my study to conclude the result one objective outcome (Rowe score) was used. Rowe score improved from 40.2% Pre operatively to 89.8% post operatively at 12 weeks. Which is almost similar to studies performed by Ayon et al, Kalkar et al, Jadhav et al in having Rowe score of 94.20 %, 95.5% and 95.6% post operatively respectively. 80% of patients is having excellent outcome in my study.¹⁰

CONCLUSION

Arthroscopic bankarts repair is gold standard for labral tear due to recurrent shoulder dislocation. Short surgery time, less intra operative and postoperative complications are advantages. Associated Hill sach's lesion is seen in majority patients of labral tear which should be repair for better functional outcome. Arthroscopic bankart repair led to significantly increased shoulder function among patients.

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