

## Original Research Article

# Functional outcome of arthroscopic labral repair in adults for traumatic shoulder instability: a prospective study

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## ABSTRACT

**Background:** Anterior shoulder instability is often treated either by open procedure or arthroscopic method. present study to assess the functional outcome of the patients with recurrent dislocation of shoulder with Bankart lesion, treated with arthroscopic stabilization 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.

**Methods:** Prospective study in the 25 consented patients admitted in the orthopaedics department in new civil hospital Surat with different shoulder injury after IEC approval. Statistical analyses done in MS excel.

**Results:** Mean age at time of first dislocation was 30 year and most (50%) were of 20-30 years. Most patients were males (92%). 84% of the cases, the dominant side is involved, right shoulder. Number of episodes of recurrent dislocation prior to surgery averaged 5 times. most common mechanism was Accidental fall (48%) followed by sports (32%), RTA (20%). Association of Hill-Sachs lesions was 80% with labral-tear secured with extra suture anchor. Preoperative parameters; number of dislocations, chronicity, reduction method do not have any significance on outcome. Rowe-score improved from 40.2% Preoperatively to 89.8% postoperatively at 12 weeks. 80% of patients is having excellent outcome.

**Conclusions:** Arthroscopic Bankart's repair is gold standard for labral tear due to recurrent shoulder dislocation which led to short surgery time, less intraoperative and postoperative complications, increased shoulder function among patients. Associated Hill Sach's lesion should be repaired for better functional outcome.

**Keywords:** Hill Sachs lesion, Arthroscopic Bankarts repair, Shoulder injury

## 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 out comes reported in the orthopedic literature dating back to the early twentieth century.<sup>1</sup> 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. 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 fibro cartilaginous labrum from the anterior rim of the glenoid fossa. This detachment of the glenoid labrum is named Bankart's lesion.

Bankarts lesion is the commonest lesion that needs treatment for anterior shoulder instability. Treatment is by operating technique by reattachment of labro-ligamentous structure to the glenoid as the glenoid labrum results in maintaining good stability of the glenohumeral joint.<sup>2</sup> Anterior shoulder instability is often treated either by open procedure or arthroscopic method. There has been growing interest within 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 postoperative pain.<sup>3</sup> 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. 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.<sup>4</sup> 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.

**METHODS**

**Data collection and methods**

Collection of data as per the proforma with consent from the patients admitted in orthopedic wards, new civil hospital, government medical college, Surat.

**Study design, duration and sample size**

It is a prospective study including 25 cases and conducted from March 2022 to October 2022.

**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 ultrasonography 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 was made with help of needle and stab knife under direct visualization via posterior portal. One is anterosuperior and another anteroinferior viewing portal change to anterosuperior and with help of liberator or periosteal elevator capsulolabral tissue was mobilised. Anterior surface of glenoid 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.

| ROWE SCORE  |    |
|---|----|
| <b>FUNCTION (/50 points)</b>                        |    |
| No limitation in work and sports                    | 50 |
| No limitation in work, mild limitation in sports    | 35 |
| Mild limitation in work above head and sports       | 20 |
| Marked limitation and pain                          | 0  |
| <b>PAIN (/10 points)</b>                            |    |
| None  | 10 |
| Mild  | 5  |
| Severe  | 0  |
| <b>STABILITY (/30 points)</b>                       |    |
| No recurrence, subluxation, or apprehension         | 30 |
| Apprehension when placing arm in certain positions  | 15 |
| Subluxation (not requiring reduction)               | 10 |
| Apprehension test positive or notion of instability | 0  |
| <b>MOBILITY (/10 points)*</b>                       |    |
| Normal mobility                                     | 10 |
| <25% loss of normal ER, IR, and elevation           | 5  |
| >25% loss of normal ER, IR, and elevation           | 0  |
| <b>TOTAL (/100 points)</b>                          |    |
| Excellent: 90-100 pts                               |    |
| Good: 75-89 pts                                     |    |
| Average: 51-74 pts                                  |    |
| Bad: <50 pts  |    |

\*ER = external rotation, and IR = internal rotation.

**Figure 1: Rowe Score points.**

**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 (9-11weeks) peri scapular resistance band dynamic hug, wall push up-biceps curl 45 Strengthening post op (12-16 weeks) -internal & external rotation at 90\* -hand behind head Early return to sports (4-6months)-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 follow up to evaluate functional outcome.

**RESULTS**

**Age distribution**

In the series, 14 cases (56%) were in between the age group of 18-30 years, 8 cases (32%) were in between 31-40 years, 1 case (4%) in between 41-50 years and 2 cases (8%) in between 51-60years. Recurrent shoulder dislocation is inversely proportional to age of the patients. As age increases chances of recurrent dislocation decreases.

**Sex wise distribution**

In the prospective research study, 23 cases (92%) were male and 2 cases (8%) were female. So Recurrent shoulder dislocation is more common in male as compared to female in my study.

**Table 1: Age distribution.**

| Age distribution (years) | N  |
|--------------------------|----|
| 18-30                    | 14 |
| 31-40                    | 8  |
| 41-50                    | 1  |
| 51-60                    | 2  |

**Table 2: Sex distribution.**

| Sex wise distribution | N  |
|-----------------------|----|
| Male                  | 23 |
| Female                | 2  |

**Mode of injury**

History of accidental fall predominate in this study. A total of 12 patients (48%) were injured dueto accidental fall. 8 patients (32%) were injured their shoulder while playing sports. 5 of the patients (20%) alleged history of Road traffic accidents.

**Table 3: Mode of injury.**

| Mode of injury | N  |
|----------------|----|
| RTA            | 05 |
| Sports Injury  | 08 |
| Accidental     | 12 |
| Total          | 25 |

**Affected site**

Most commonly affected site was right shoulder which was dominant side. 21 patients (84%) were operated on dominant side and 4 patients (16%) were operated on non-dominant side.

**Associated bony lesions**

In this prospective study, 20 (80%) of cases having associated hill Sachs’s lesion and 5 cases (20%) of cases had no associated bony lesion.

**Functional outcome by Rowe’s score**

Rowe score (Objective outcome) was used to assess the overall stability and function of shoulder post-operatively. Pre-op Rowe score-40.2%, Post-op Rowe score, 4 weeks-61.8%, 6 weeks-73.8% and 12 weeks-89.8%.

**Table 4: Affected site.**

| Affected site | N  |
|---------------|----|
| Dominant      | 21 |
| Non dominant  | 4  |
| Total         | 25 |

**Table 5: Associated body lesions.**

| Associated bony lesions | N  |
|-------------------------|----|
| No                      | 05 |
| With Hill Sach’s lesion | 20 |
| Total                   | 25 |

**Table 6: Rowe score.**

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

**DISCUSSION**

Numerous 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.<sup>5-11</sup> 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.<sup>12-14</sup> 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.<sup>15</sup> 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.<sup>16</sup> Most of the affected patients were males (92%) which is well evidenced by above mentioned study; Timothy et al 74.3% male preponderance.<sup>17</sup> 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 (21 patients).<sup>18</sup> 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.<sup>19</sup> 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%).<sup>20</sup> 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 post operative functional outcome. For 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.<sup>21-24</sup> 80% of patients is having excellent outcome 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 repair for better functional outcome. Arthroscopic bankart repair led to significantly increased shoulder function among patients.

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