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Original Research Article

# Assessment of Arthroscopic Bankart Repair for Repeated Dislocations of the Shoulder

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**Abstract:**

**Background:** Recurrent anterior shoulder dislocation is often associated with detachment of the anterior labrum from the glenoid, known as a Bankart lesion, leading to instability that particularly impacts young, active individuals.

**Methods:** This was a descriptive, prospective study conducted at MKCG Medical College and Hospital after obtaining ethical clearance from the institution's Ethical Review Board. The study took place between September 2023 and October 2024. The patients selected for this study were predominantly males aged 18-35 years who had undergone arthroscopic Bankart repair using suture anchors. The diagnostic process involved radiographic imaging and MRI. Patients underwent arthroscopic reattachment of the labrum using suture anchors, and postoperative outcomes were assessed over a one-year period.

**Results:** In this cohort of 20, 85% had a full range of external rotation to 90° abduction at one year, and 60% reported relief from discomfort. Terminal restrictions in external rotation were reported by only 10% of the patients. The patients with three suture anchors had high joint stability, and the recurrence of dislocation was minimal, allowing most patients to return to high-demand activities.

**Conclusion:** Arthroscopic Bankart repair with suture anchors achieves shoulder stability and improves function, with marked gains in range of motion while minimizing the risk for recurrence. Given its advantages in terms of cosmesis and recovery, this is a viable option for young patients with recurrent anterior shoulder dislocation.

**Keywords:** Bankart lesion, shoulder instability, arthroscopic repair, suture anchors, recurrent dislocation, shoulder stability.



## Introduction

The characteristic mobility and complexity of the shoulder joint make it an important structure for a variety of movements of the upper limb in three-dimensional space. Mobility is provided primarily by the glenohumeral joint, where the spherical head of the humerus articulates with the shallow glenoid cavity of the scapula. However, this extensive range of motion comes at a cost to stability, making the shoulder one of the most commonly dislocated joints in the human body [1].

Shoulder dislocations account for over 50% of all joint dislocations, with young adults between the ages of 20 and 40 particularly vulnerable. The key complication of shoulder instability is recurrent instability, which occurs roughly in 70-90 percent after a first-time dislocation and often in the setting of ineffective treatment [2]. The most common secondary consequence is separation of the fibrocartilaginous labrum from the anterior rim of the glenoid cavity: a Bankart lesion. Bankart lesions occur in 85% of patients with shoulder dislocations. Anatomically, Bankart lesions tend to occur at the two to six o'clock position in the right shoulder and at the six to ten o'clock position in the left shoulder.

The glenoid labrum is considered an integral anatomical structure of shoulder stability-the deepening of the glenoid cavity and a secure anchor for the shoulder ligament. After the labrum is detached, instability is chronic and structural integrity of the glenohumeral joint is lost; hence, the probability of recurrent dislocation is even higher [3-6]. Historically, the management of Bankart lesions and anterior shoulder instability has

evolved from an open surgical repair to arthroscopic techniques. Although open repair has traditionally been successful in the treatment of anterior shoulder instability, arthroscopic procedures have gained substantial interest due to their minimally invasive nature. The benefits of arthroscopic Bankart repair include low surgical morbidity, less operative time, improved cosmetic outcome, increased arc of motion, and less postoperative pain. However, within the last few years, a growing controversy has arisen regarding long-term stability and functional outcomes of arthroscopic repairs, especially with the multitude of methods and implants used within these procedures [7-8].

Some of the techniques include staple capsulorrhaphy, bioabsorbable tacks, and suture anchors in arthroscopic shoulder surgery. Each technique has its merits and drawbacks. It is the arthroscopic technology improvements, mostly the availability of suture anchor fixation, that have provided significantly improved surgical results in patients with recurrent anterior shoulder instability. The secure fixation of labral tissue once detached is achieved by using suture anchors to the glenoid rim, effectively restoring shoulder stability with minimal perioperative morbidity. All these maneuvers have also been correlated with better postoperative external rotation and better return to athletic activity, especially in throwing athletes. The present study aimed at evaluating the functional outcomes of patients suffering from recurrent shoulder dislocation due to Bankart lesions with arthroscopic stabilization using suture anchors. In this process, we could deliver a comprehensive understanding regarding efficacy, safety, and impact of arthroscopic Bankart repair on shoulder stability and functional recovery in individuals affected by anterior shoulder instability [9-10].

## Methods

**Study Design:** This descriptive, prospective study aimed to evaluate the surgical and functional outcomes following arthroscopic Bankart repair of the shoulder using suture anchors. The objective was to assess postoperative stability and functional recovery in patients with recurrent shoulder dislocations and Bankart lesions.

**Study Location and Duration:** The study was conducted at MKCG Medical College & Hospital, with ethical clearance obtained from the Ethical Review Board of the institution. It spanned from September 2023 to October 2024.

**Patient Selection and Inclusion Criteria:** A purposive sampling technique was employed to select 20 patients meeting specific criteria: they were at least 18 years old with recurrent shoulder dislocations and confirmed Bankart lesions. Exclusion criteria included patients with biceps ruptures, bony Bankart lesions, rotator cuff tears, large humeral head defects (over 30%), or those requiring complex surgeries such as bone grafts or proximal humerus osteotomies. Patients with multidirectional or posterior instability or shoulder arthritis were also excluded. The final cohort comprised 20 patients, predominantly male, with a mean age of 24 years, all within the 18–35 age range.

**Preoperative Evaluation and Diagnosis:** Full clinical and radiologic evaluation was done for all patients, which included anterior-posterior, axillary, and scapular Y views of the affected shoulder, with a chest radiograph. MRI of the shoulder was performed to ascertain the involvement of the rotator cuff and the confirmation of Bankart lesions. All patients received proper informed consent. They were diligently enlightened about the arthroscopic procedure, potential complications, and the demands of postoperative rehabilitation.

**Surgical Procedure:** A regional anesthesia interscalene block was added to general anesthesia to all patients. These patients were positioned in a lateral decubitus position with an abduction angle of 40º-50º and forward flexion of 10º-15º while their arms were suspended. For their stabilization, a sterile shoulder traction sleeve was used. The anteroinferior labrum and glenohumeral joint were arthroscopically examined for articular injury and any synchronous pathologies, such as biceps origin injuries and rotator cuff tears. In particular, attention was paid to the anteroinferior labrum to confirm a Bankart lesion.

The procedure for arthroscopy was begun by inserting a spinal needle 1 cm from the corner of the acromion into the joint, just anterior to the biceps tendon. A small skin incision was performed and a smooth-walled crystal cannula fitted with a taper-tip obturator inserted into the anterior mid-glenoid portal. The scope was passed through the anterior superior portal to allow access for the reconstruction in the anterior. It was possible to clean out frayed tissues, mobilize the labrum and capsule from the neck of the glenoid using a liberator knife and shaver. The anterior neck of the glenoid was lightly abraded to expose cancellous bone, providing the reattached labral tissues with a receptive bed.

After these preparatory steps, the pilot hole drilling was done using a 2 mm drill bit at 5 o'clock on the glenoid's articular cartilage and other sites located at the 4:30 and 3:30 times according to the magnitude of the labral detachment. Suture anchors were inserted and fully seated below the subchondral bone so as to have an excellent fixation without an opportunity to break. Having

used a crochet hook, it is now possible to retrieve a strand of suture from the posterior cannula while a 45-degree curved spectrum suture hook with a shuttle relay of 1 mm prolene was inserted through the anterior mid-glenoid portal. This then enabled the creation of a safe plication stitch 1-2 cm below the anchor, 1 cm lateral to the labral edge.

**Statistical Analysis**: All relevant data have been analyzed by using SPSS statistical software version 20.0 for frequencies and percentages. Fischer's exact test has been applied to assess statistical tests. The p-value less than 0.05 was considered statistically significant.

## Results

The study population consisted of 20 patients, predominantly male, with the majority in the age group of 20-24 years. Patients were distributed by age, sex, occupation, and involvement of shoulder side as detailed below. Additionally, data on symptoms, the frequency of preoperative dislocations, and the number of suture anchors used in the repair procedure were documented.

**Demographic and Clinical Characteristics of Patients:** Of the 20 patients studied, 90% (n=18) were male, and 10% (n=2) were female. The mean age of the participants was 24 years, with most falling within the 20-24 year age group (30%). A significant portion of the patients (60%) were engaged in occupations requiring overhead activities, such as fishing, agriculture, and sports activities (Table 1). Most patients (70%) presented with involvement of the right shoulder, while the remaining 30% had left shoulder involvement.

**Table 1: Patient Demographics and Occupation**

| Characteristics | Categories | Number of Patients | Percentage (%) |
|---|---|---|---|
| **Age Group (Years)** | 15-20 | 5 | 25.0 |
| | 20-24 | 6 | 30.0 |
| | 25-29 | 5 | 25.0 |
| | 30-34 | 2 | 10.0 |
| | 35-40 | 2 | 10.0 |
| **Sex** | Male | 18 | 90.0 |
| | Female | 2 | 10.0 |
| **Occupation** | High Demand | 12 | 60.0 |
| | Low Demand | 8 | 40.0 |
| **Shoulder Involved** | Right | 14 | 70.0 |
| | Left | 6 | 30.0 |

**Symptom Distribution and Preoperative Dislocations:** Among the 20 patients, 60% (n=12) reported discomfort (D) as a primary symptom, 30% (n=6) were asymptomatic (NP), and 10% (n=2) experienced pain (P). In terms of dislocation episodes, 60% (n=12) of patients had experienced 5 to 9 episodes of dislocation prior to surgery, while 30% (n=6) had 1 to 4 episodes. Only 10% (n=2) of patients reported more than 10 dislocation episodes preoperatively (Table 2).

**Table 2: Symptom Distribution and Preoperative Dislocation Frequency**

| Variables | Categories | Number of Patients | Percentage (%) |
|---|---|---|---|
| **Symptoms** | Discomfort (D) | 12 | 60.0 |
| | No Pain (NP) | 6 | 30.0 |
| | Pain (P) | 2 | 10.0 |
| **Pre-op Dislocation** | 1-4 | 6 | 30.0 |
| | 5-9 | 12 | 60.0 |
| | >10 | 2 | 10.0 |

**Surgical Intervention and Use of Suture Anchors:** During the surgical repair, three suture anchors were used in the majority of cases (75%, n=15), whereas two anchors were utilized in 25% of cases (n=5). This approach facilitated secure stabilization of the Bankart lesion in most patients (Figure 1).

**Table 3: Number of Suture Anchors Used**

| Suture Anchors Used | Number of Patients | Percentage (%) |
|---|---|---|
| 3 Anchors | 15 | 75.0 |
| 2 Anchors | 5 | 25.0 |

**Range of Motion and Functional Outcome:** Preoperatively, 60% (n=12) of patients exhibited restricted external rotation in 90° abduction. Postoperative outcomes demonstrated significant improvement in shoulder range of motion. By the end of one year, 85% (n=17) of patients achieved a full range of external rotation in 90°

abduction. However, 10% (n=2) continued to experience mild terminal restriction in external rotation during adduction (ER1).

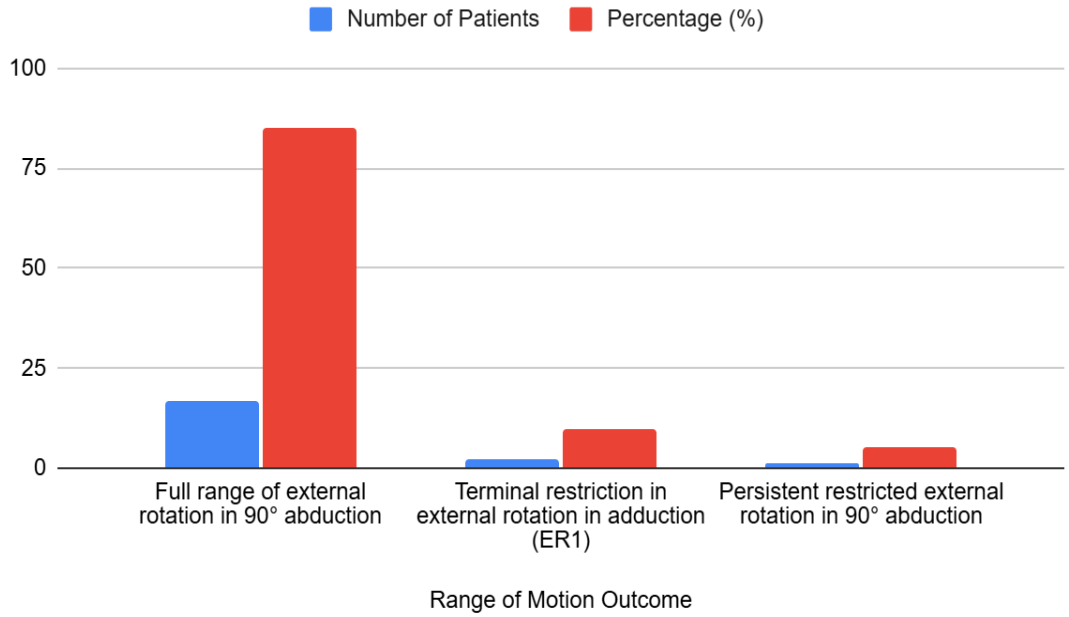


**Figure 1: Postoperative Range of Motion Outcomes**

These findings suggest that arthroscopic Bankart repair using suture anchors provided stable shoulder reconstruction and favourable functional recovery in the majority of cases, with high rates of improvement in external rotation and overall shoulder mobility. The approach effectively reduced perioperative complications and enabled patients to regain shoulder function suitable for high-demand occupational activities.

## Discussion

The findings of the present study endorse arthroscopic Bankart repair with suture anchors as an effective procedure in the treatment of recurrent shoulder dislocations caused by Bankart lesions, providing excellent results in terms of functional recovery and range of motion. The population of the study consists mainly of young, energetic males engaged in jobs that involve overhead activity, thus constituting the perfect demographic subgroup which is highly susceptible to shoulder instability as the glenohumeral joint is placed under extremely high stress in such jobs [11].

The cohort is one who is on an average of 24 years of age and falls into the range which, from the studies, shows that younger patients, particularly those who engage themselves in more strenuous activities are at greater and higher risks of recurrent shoulder instability. The preponderance for the right shoulder in this study also conforms to reports elsewhere; the dominant side is, therefore, more prone to injury due to increased use in strenuous activities [12]. Most of the patients were found, at preoperative examination, significantly limited in external rotation, especially at 90° abduction, with repeated episodes of redislocation. Three suture anchors were used intra-operatively in most patients, which correlates with the established concept that solid anchor fixation confers stability through the establishment of the anterior labrum and its associated capsuloligamentous structures to the glenoid. Based on other published works, it has been established that the use of multiple anchors optimizes joint stability and minimizes susceptibility to recurrent dislocation [13] This has been realized in our patient population as 85% of the patients gained full external rotation of 90° of abduction one year after surgery, with a low rate of recurrence of instability. There has been the increasing popularity of suture anchors in arthroscopic stabilization of the shoulder because of the inherent low morbidity, the aesthetic results obtained, and the relatively short periods taken for recovery as compared to more traditional open repairs [14].

Functional outcomes after the surgery were very encouraging with most patients experiencing resolution of discomfort and only a very small proportion persisted with mild terminal restriction. Improvement in range of motion post-surgery was dramatic, especially with full restoration of external rotation at 90° abduction in most patients, hence great success with the arthroscopic technique. There have been several other reports of excellent return to premorbid levels of activity and range of motion after similar procedures. This suture anchor technique, improved significantly over the past few years, is adequate in giving enough support to the

labrum with a minimal rate of complication. Despite the fact that 10% of the patients complained of persistent mild restriction in terminal external rotation, this minor limitation did not significantly affect their functional ability or their satisfaction with the outcome of the procedure [15-17].

The perioperative complications decreased as compared to the previous publications due to arthroscopic repair techniques that were found to be less complicated than their open counterparts. All patients involved in the study had low morbidity and reached early recovery such that they were able to return to rigorous occupational demands within a relatively short period. This was principally due to the minimally invasive nature of the arthroscopic technique, thus providing a significant advantage over open procedures, which are typically followed by longer recovery periods due to greater disruption of soft tissues [18-19].

The high success rates of this study suggest that arthroscopic Bankart repair with the use of suture anchors will effectively restore stability and function to shoulders affected by recurrent dislocations, provided the patient has been appropriately selected and an appropriate surgical technique is adopted. The results also indicate a potential role of the number of suture anchors that might be used in achieving optimal stabilization, as suggested by high stability in the three anchors group. However, it is likely that well-designed, large sample size studies with longer follow-up periods could further elucidate the durability of the repair over time and facilitate refinement in both the anchor number and the placement strategies [20].

Arthroscopic Bankart repair with suture anchors is therefore a valid and effective treatment option for anterior shoulder instability associated with Bankart lesions. The results in terms of stability, range of motion, and recovery to functional activities were generally good; however, the procedure was seen to be most beneficial to young, active patients at high risk for recurrent dislocations. Such results increasingly make the body of evidence favor arthroscopic techniques in the management of shoulder instability and with the ideals of minimal invasiveness, rapid recovery, and excellent chances of functional success.

## Conclusion

In summary, this study has demonstrated this procedure to be an effective treatment for recurrent anterior shoulder dislocations associated with Bankart lesions in young, active patients engaged in high-demand activities. The stabilization and restoration of range of motion were exceptionally good, with most patients obtaining full external rotation and returning to normal function at one year postoperatively. Suture anchors allow for excellent stabilization with low morbidity; therefore, recovery and return to activity faster than in the case of traditional open procedures.

The results strengthen arthroscopic Bankart repair as a useful method in treatment of the anterior instability of the shoulder by its favourable functional and clinical results. Long Term studies may tell more in improving anchor application and increasing the durability of this procedure.

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