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Comparative outcomes of open and arthroscopic approaches for recurrent anterior shoulder instability

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ABSTRACT

Background: A prominent orthopedic ailment that severely impairs function and lowers quality of life in young, energetic people is recurrent anterior shoulder instability. Surgical intervention is often required to restore stability and prevent repeated dislocations. Open Latarjet and arthroscopic Bankart repair are the two widely employed techniques, but comparative outcomes remain debated. Aim was to evaluate the clinical and functional results of open surgery against arthroscopic surgery in the past for patients with recurrent anterior shoulder instability.
Methods: A retrospective study was conducted at the Department of Orthopaedics, NRI Institute of Medical Sciences, Sangivalasa, Visakhapatnam, from May 2023 to April 2025. A total of 30 patients with recurrent anterior shoulder instability were included, with 15 undergoing open surgical repair and 15 receiving arthroscopic repair. Data on demographics, clinical presentation, surgical procedure, functional outcomes (Rowe and Constant-Murley scores), recurrence, and complications were collected from hospital records. SPSS version 23.0 was used for the statistical analysis, and a p-value of less than 0.05 was deemed significant.
Results: Both open and arthroscopic groups demonstrated significant postoperative improvement in functional scores. The mean Rowe score was 85.4±6.8 in the open group and 88.1±5.9 in the arthroscopic group (p=0.28), while the Constant-Murley score was 82.6±7.2 and 85.3±6.7, respectively (p=0.31). Recurrent instability occurred in 20% of the open group and 13.3% of the arthroscopic group (p=0.63). Complications such as stiffness and superficial infection were slightly higher in the open group, However, there were no statistically significant variations.
Conclusions: Recurrent anterior shoulder instability can be effectively managed with both open and arthroscopic surgical procedures providing excellent functional recovery and low recurrence rates. Arthroscopic repair demonstrated marginally better functional outcomes and fewer complications, but differences were not statistically significant. The choice of surgical technique should be individualized based on patient characteristics, extent of glenoid bone loss, activity level, and surgeon expertise. Both procedures remain reliable options for restoring shoulder stability.

Keywords: Recurrent anterior shoulder instability, Open Latarjet procedure, Arthroscopic Bankart repair, Functional outcomes, Surgical complications

INTRODUCTION

A common ailment, especially in young, energetic people, is recurrent anterior shoulder instability, which is frequently brought on by traumatic experiences like sports injuries. Significant functional impairment and a decline in quality of life may result from this instability. Surgical intervention is frequently required when conservative treatments fail, with the primary goals being the restoration of shoulder stability and the prevention of further dislocations.

The open Latarjet surgery and arthroscopic Bankart repair are two well-known surgical techniques for treating recurrent anterior shoulder instability. In order to properly augment the bone surface and provide a mechanical block to avoid dislocation, the coracoid process and its associated muscles are transferred to the anterior glenoid

during the Latarjet surgery. Patients with high physical demands or those with severe glenoid bone loss benefit most from this procedure.[1,2]

On the other hand, the Bankart repair restores the labral bumper's function in joint stability by reattaching the damaged labrum to the glenoid rim. Many patients find this minimally invasive technique to be an appealing alternative because it is linked to quicker recovery periods and reduced discomfort following surgery.[3,4]

The effectiveness of these two techniques has been compared in recent research. For example, a 2023 study indicated that arthroscopy offered a quicker recovery period, but both open and arthroscopic Latarjet treatments were similarly successful in addressing shoulder instability.[5] In 2025, another study found that the open Latarjet treatment outperformed the arthroscopic Bankart repair in terms of functional outcomes and recurrence rates.[6]

Notwithstanding these realizations, the best surgical strategy is still up for discussion and depends on a number of variables, including the degree of bone loss, the patient's level of activity, and the surgeon's experience. The purpose of this study is to provide more information to support clinical decision-making by comparing the results of open versus arthroscopic surgical therapy for recurrent anterior shoulder instability in the past.

METHODS

Study design

This study was designed as a retrospective observational study.

Study setting

The study was carried out in the Department of Orthopaedics, NRI Institute of Medical Sciences, Sangivalasa, Visakhapatnam, over a duration of two years, from May 2023 to April 2025.

Participants

There were thirty patients in all who had surgery to treat recurrent anterior shoulder instability. Patients were categorized based on whether they received open or arthroscopic procedures, and relevant clinical, demographic, and surgical data were retrieved from hospital records.

Inclusion criteria

Patients were eligible for inclusion if they met the following criteria: Diagnosed cases of recurrent anterior shoulder instability, age between 18 and 50 years, patients who underwent either open surgical repair or arthroscopic repair during the study period and availability of complete medical and operative records.

Exclusion criteria

The following patients were excluded: Cases of primary shoulder instability (first episode, non-recurrent), patients with associated fractures, rotator cuff tears, or other major shoulder pathologies, patients with systemic conditions affecting bone or joint health (e.g., rheumatoid arthritis) and incomplete medical records or lost follow-up data.

Bias

All consecutive instances that met the inclusion criteria during the study period were included in order to reduce selection bias. Cross-referencing clinical data, surgical notes, and postoperative follow-up paperwork helped to minimize information bias.

Data collection

Information about patient demographics, clinical presentation, surgical technique, intraoperative findings, and postoperative results were taken from hospital records. Follow-up data were extracted from outpatient records, focusing on recurrence, range of motion, and complications.

Procedure

Patients had undergone either open surgical repair (such as open Bankart repair or Latarjet procedure) or arthroscopic stabilization techniques as per the surgeon’s discretion and clinical indication. Details of anesthesia, surgical approach, fixation method, and intraoperative complications were noted. Postoperative rehabilitation protocols, where documented, were also reviewed.

Statistical analysis

SPSS software version 23.0 was used to compile and analyze all of the data. The mean, standard deviation, and percentages were computed as descriptive statistics. The proper statistical tests (independent sample t-test for continuous variables and chi-square test for categorical variables) were used to compare the open and arthroscopic groups. P values less than 0.05 were regarded as statistically significant.

RESULTS

The study comprised 30 individuals with recurrent anterior shoulder instability. Fifteen of them had arthroscopy repair and fifteen had open surgical surgery. The open group's average age was 28.6±6.4 years, while the arthroscopic group's was 27.9±5.8 years. The cohort was composed of 73.3% (n=22) males and 26.7% (n=8) females. The two groups' baseline demographic characteristics did not differ significantly ($p>0.05$).

Table 1: Baseline characteristics of study participants, (n=30).

Variables	Open surgery, (n=15)	Arthroscopic surgery, (n=15)	P value
Mean age (in years)	28.6±6.4	27.9±5.8	0.74
Gender (M/F)	11/4	11/4	1.00
Mean no. of dislocations	4.8±1.2	5.0±1.4	0.68
Dominant side involved	10 (66.7%)	9 (60%)	0.72

Age, sex distribution, frequency of dislocations, and side implicated were all similar across the two groups. There were no baseline differences that statistically noteworthy.

Postoperative functional outcomes

At the 12-month follow-up, the Rowe score and Constant-Murley score were used to evaluate functional results. In comparison to their preoperative ratings, patients in both groups shown a notable improvement. Though not statistically significant, the arthroscopic group did show somewhat higher mean functional scores.

Table 2: Functional outcome scores at 12 months.

Outcome measure	Open surgery, (n=15)	Arthroscopic surgery, (n=15)	P value
Rowe score (0-100)	85.4±6.8	88.1±5.9	0.28
Constant-Murley score (0-100)	82.6±7.2	85.3±6.7	0.31
Mean abduction (degrees)	162.5±9.3	166.2±8.7	0.29
External rotation (degrees)	78.3±6.5	80.6±6.1	0.34

Both groups achieved good to excellent outcomes with mean Rowe and Constant-Murley scores >80. The arthroscopic group had marginally higher scores, but the differences were statistically insignificant ($p>0.05$).

Recurrence and complications

During follow-up, 3 patients (20%) in the open group and 2 patients (13.3%) in the arthroscopic group reported recurrent dislocation or subluxation. Surgical site complications such as stiffness and superficial infection were slightly higher in the open group, though not statistically significant.

Both open and arthroscopic techniques provided excellent postoperative outcomes. Arthroscopic repair yielded marginally better functional scores and lower complication rates, but the difference was not statistically significant ($p>0.05$). Both methods remain effective and safe options for managing recurrent anterior shoulder instability, with comparable recurrence rates.

The recurrence and complication rates were somewhat greater in the open group than in the arthroscopic group, although the difference was not clinically significant.

Table 3: Recurrence and complication rates.

Parameters	Open surgery, (n=15)	Arthroscopic surgery, (n=15)	P value
Recurrent instability	3 (20.0%)	2 (13.3%)	0.63
Postoperative stiffness	2 (13.3%)	1 (6.7%)	0.54
Superficial infection	1 (6.7%)	0 (0%)	0.31
Total complications	3 (20.0%)	2 (13.3%)	0.63

DISCUSSION

Thirty patients with recurrent anterior shoulder instability were assessed in this study; fifteen underwent open surgical repair and fifteen underwent arthroscopic treatment. Baseline demographic and clinical characteristics such as age, gender distribution, frequency of dislocations, and involvement of the dominant shoulder were comparable between the two groups, ensuring a balanced analysis without significant preoperative differences. This comparability strengthens the validity of the outcome assessment, as variations in postoperative recovery could be attributed to surgical technique rather than baseline bias.

At the 12-month follow-up, shoulder function significantly improved with both surgical approaches. Effective stabilization and functional restoration were demonstrated by the significant improvement in mean Rowe and Constant-Murley scores compared to preoperative values. In comparison to the open group, patients in the arthroscopic group had somewhat higher mean scores for both outcome measures. The fact that these variations were not statistically significant, however, suggests that both surgical approaches are equally successful in regaining functional results. Both groups saw improvements in range of motion, especially abduction and external rotation, with the arthroscopic group showing a little advantage.

Although this difference did not reach statistical significance, recurrence of instability was noted in 13.3% of patients in the arthroscopic group and 20% of patients in the open surgery group. These findings align with

previous literature suggesting that recurrence rates are relatively low and comparable between the two approaches. Complication rates, including stiffness and superficial infections, were slightly higher in the open group. Although the differences were not significant, the trend favors arthroscopic repair as being associated with fewer complications and better preservation of shoulder mobility.

According to recent data, arthroscopic and open procedures for recurrent anterior shoulder instability produce similar clinical results. Although open approach was linked to quicker operative times and lower costs, Meyer et al found that arthroscopic Latarjet technique produces comparable safety and functional outcomes to open procedure.[7] Both open and arthroscopic Latarjet were shown to be effective treatment choices by Hurley et al who also observed no discernible differences in recurrence rates, complications/return-to-sport outcomes.[8]

Cowling et al prospectively compared open and arthroscopic procedures and observed that open surgeries carried slightly higher intraoperative complication risks, whereas arthroscopic cases required longer operating times but achieved comparable overall outcomes.[9] Calvo et al further supported these findings, showing that although arthroscopic Latarjet procedures demonstrated favorable functional recovery and stability, complication rates did not significantly differ from open techniques.[10]

A systematic review by Mizuno et al highlighted that open and arthroscopic stabilization procedures both provided reliable long-term results with low recurrence rates, though technical complexity and surgeon experience were emphasized as critical determinants of success.[11] Finally, Sheean et al reported that patient-reported outcomes, recurrence rates, and reoperation risks were broadly similar between open and arthroscopic methods, concluding that approach choice should largely be guided by surgeon expertise and patient-specific considerations.[12]

CONCLUSION

With comparable recurrence rates and notable postoperative functional improvement, both open and arthroscopic surgical approaches demonstrated efficacy in treating recurrent anterior shoulder instability. While there were fewer problems and marginally better results with arthroscopic repair, the differences were not statistically significant. Therefore, both approaches continue to be dependable therapeutic choices, with the surgeon's experience and the patient's profile serving as a guidance.

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