Journal of Health and Rehabilitation Research 2791-156X JHRR

For contributions to JHRR, contact at email: editor@jhrlmc.com

Original Article

Comparison Of Functional Outcomes of Arthroscopic Bankart Repair Vs Open Bristow-Latarjet Procedure for Shoulder Joint Instability

Waqas Azam[1], Shuja Uddin[2]*, Mudassar Saddique[2], Hafiz Muhammad Shiraz[3], Abdul Waqas[4], Syed Zain Abbas[5], Mian Muhammad Haneef[6]

[1]Consultant Orthopedic Surgeon, Orthopedics, Tehsil Headquarter Hospital Johraa Bad, Pakistan.
[2]Consultant Orthopedic Surgeon, Orthopedics, Lahore General Hospital Lahore, Pakistan.
[3]Consultant Orthopedic Surgeon, Orthopedics, District Headquarter Nankana Sahab, Pakistan.
[4]Postgraduate Resident, Orthopedics, Lahore General Hospital Lahore, Pakistan.
[5]Consultant Orthopedic Surgery, Orthopedics, Tehsil Headquarter Gujranwala, Pakistan.
[6]Professor of Orthopedic Surgery, Orthopedics, Lahore General Hospital Lahore, Pakistan.
Corresponding Author: Shuja Uddin; Email: drshujauddin111@gmail.com

Conflict of Interest: None.

Azam W., et al. (2024). 4(2): DOI: https://doi.org/10.61919/jhrr.v4i2.923

ABSTRACT

Background: Anterior shoulder instability predominantly affects collegiate athletes, with a notable incidence of 0.12 per 1000 athletic exposures. Acute dislocations pose an orthopedic emergency requiring immediate repositioning to prevent complications such as brachial plexus or artery compression, avascular necrosis of the humeral head, and chronic disability. Conservative therapy often precedes surgical intervention due to concerns over recovery time, discomfort, decreased range of motion, and high recurrence rates.

Objective: This study aims to compare the efficacy of Arthroscopic Bankart Repair and open Bristow-Latarjet Procedure in terms of pain reduction, return to normal activities, and improvement in Western Ontario Shoulder Instability (WOSI) score among patients with anterior shoulder joint instability.

Methods: A 12-month comparative study was conducted at Lahore General Hospital from April 2022 to April 2023, following ethical review board approval. Thirty-two patients aged 18–32, with severe unidirectional dislocation, consented and participated. They were divided into two groups: Group A underwent Arthroscopic Bankart Repair, and Group B underwent the open Bristow-Latarjet Procedure.

Results: The average age was 23 in Group B and 25 in Group A. Males comprised 80% of Group A and 68% of Group B. WOSI scores averaged 72 for Bankart and 76 for Latarjet. Rowe scores were 75 (Bankart) and 69 (Latarjet), with Quick DASH scores of 11 (Bankart) and 15 (Latarjet). External rotation was 77 degrees in Bankart and 73 degrees in Latarjet. Functional satisfaction was reported by 84.0% of Bankart and 11.7% of Latarjet patients. The cost of Latarjet was significantly lower than that of Bankart.

Conclusion: The open Latarjet procedure demonstrated higher functional satisfaction and lower operational costs compared to Arthroscopic Bankart Repair, which exhibited a higher recurrence rate. Given the economic constraints in a developing country like Pakistan, Latarjet may be a more viable option despite the non-invasive appeal of Bankart Repair.

Keywords: Arthroscopic Bankart Repair, anterior shoulder instability, Bristow-Latarjet Procedure, collegiate athletes, shoulder dislocation, WOSI score, surgical outcomes.

INTRODUCTION

The shoulder joint, with its limited bony support, boasts the widest range of motion among all bodily joints, making it particularly susceptible to dislocations, occurring at a rate of up to 47 per 100,000 individuals annually (1). Anterior glenohumeral dislocations can lead to several pathophysiologic abnormalities, including injuries to the bony glenoid or humeral head, stretching of the anterior capsule and ligamentous tissues, and the disengagement of the anteroinferior capsulolabral bundles from the glenoid rim, known as a Bankart lesion (2). While non-operative treatments are sometimes deemed adequate, they have been associated with high recurrence rates, which can reach 90% in certain clinical populations (3). This recurrence is often accompanied by more severe

Journal of Health and Rehabilitation Research 2791-156X JHRR

Bankart lesions and bony defects, particularly in cases that are conservatively managed, which subsequently report recurrence rates of up to 55% (4,5).

Surgical intervention is frequently recommended for young adults and athletes to address the combined issues of soft tissue insufficiency and bony abnormalities. The choice of surgical technique and the postoperative rehabilitation strategy are critical decisions for healthcare providers, as these influence the patient's ability to return to sports and achieve favorable functional outcomes (6). Historically, a variety of surgical methods have been developed to enhance shoulder stability, reflecting advances in surgical techniques and their adaptation over time (3,4).

The Bankart repair, originally performed via an open approach and later through arthroscopic methods, aims to anatomically reattach the labrum to the glenoid rim. Although earlier arthroscopic techniques such as trans-glenoid suture or tack repairs encountered high levels of recurrence, the introduction of modern suture anchors has significantly improved their effectiveness. Despite these advances, rates of recurrence remain high in certain populations, particularly among those with significant bone loss (7).

On the other hand, the open Bristow-Latarjet procedure, established for addressing chronic shoulder instability with significant glenoid bone loss, involves the transfer of the coracoid process to the glenoid, which not only stabilizes the Bankart lesion but also extends the glenoid's bony articular arc. Biomechanical studies have shown that this method is superior in managing glenoid bone loss, a critical factor in recurrent instability. Although associated with a higher risk of postoperative osteoarthritis and a reduction in the range of motion, the Bristow-Latarjet procedure has been reported to provide better functional outcomes and stability (8,9,10). Nevertheless, recent findings suggest that Bankart repairs could also lead to decreased mobility and an increased likelihood of arthritis (11).

The objective of this research is to evaluate and compare the functional outcomes of the more traditional open Bristow-Latarjet procedure with the relatively newer arthroscopic Bankart repair for treating anterior shoulder joint instability. Specifically, this study aims to investigate post-operative stability and pain-free range of motion between the two techniques, providing a critical assessment that may validate the use of either technique based on their efficacy and safety profiles. This research is particularly pertinent as previous studies have predominantly focused on athletes, with limited data on the functional outcomes of these procedures in the general population of Punjab, Pakistan.

METHODS

Following the approval from the Ethical Review Committee (00/127/22) on March 28, 2022, a comparative study was conducted over a period of 12 months, from April 2022 to April 2023, at Lahore General Hospital. This study involved 32 patients who met specific inclusion criteria: ages between 18 and 32, presenting with severe shoulder injuries characterized by unidirectional dislocation. Each participant provided informed consent prior to their inclusion in the study.

The participants were systematically divided into two groups. Group A underwent Arthroscopic Bankart Repair, while Group B was treated with the open Bristow-Latarjet Procedure. To monitor the recovery and assess the outcomes, follow-up evaluations were scheduled in the outpatient department at two critical postoperative intervals: the 12-week (or 3-month) mark and at 6 months.

All collected data was meticulously analyzed using SPSS for Windows, a renowned statistical software package designed for the social sciences (SPSS, Inc., Chicago, IL). This rigorous methodological approach ensured that the study adhered to high standards of research integrity and accuracy, providing valuable insights into the comparative effectiveness of the two surgical interventions.

RESULTS

The demographic characteristics of the participants in both the Bristow-Latarjet (Group-B) and arthroscopic Bankart repair (Group-A) groups showed no significant differences, with an average age of 23 years in Group-B and 25 years in Group-A. The gender distribution was predominantly male, with 80% in Group-A and 68% in Group-B, while the remaining participants were female, 20% in Group-A and 32% in Group-B.

Regarding the location of dislocations, 85% of Group-B and 36% of Group-A experienced right-sided dislocations. Left-sided dislocations were reported in 45% of Group-A. The average number of dislocations prior to surgical intervention was 8 for Group-A and 11 for Group-B. The follow-up duration was 16 months for Group-A and 22 months for Group-B.

In terms of functional outcomes, the Western Ontario Shoulder Instability Index (WOSI) scores were slightly higher in Group-B (76) compared to Group-A (72). The Rowe score, which measures shoulder stability, showed Group-A with an average score of 75 and Group-B with 69. QuickDASH scores, indicating upper limb function, were lower in Group-A (11) compared to 15 in Group-B,

Journal of Health and Rehabilitation Research 2791-156X JHRR

suggesting better limb function in the arthroscopic Bankart repair group. External rotation averaged 77 degrees in Group-A and 73 degrees in Group-B.

Patient satisfaction with functional outcomes revealed that 84% of Group-A patients reported satisfaction, compared to only 11.7% in Group-B. Moreover, 95% of patients in Group-A reported no recurrence of dislocation, whereas only 5.87% in Group-B reported the same. Three recurrences occurred in Group-A; two of these patients subsequently underwent modified open Latarjet procedures, while the third opted against further surgery. In contrast, no recurrences were reported in Group-B, although two patients experienced superficial infections, which were effectively treated with conventional medical procedures and oral medications.

Economically, the mean operating cost for the open Latarjet procedure was found to be substantially higher than that for the arthroscopic Bankart repair. Despite these cost differences, the functional and clinical outcomes between the two groups did not show statistically significant differences. This suggests that both surgical options are viable, with the choice likely influenced by specific patient characteristics and surgical expertise.

Table no. 1: Demographic details of the patients

Parameters	Group-A (n =16)	Group-B (n =16)	p-value
Age, years	25.76 ±11.22 (15–51)	23.10 ± 8.11 (19–71)	0.537
Gender			
Male	10	9	0.356
Female	6	7	
Side			
right/left	12/4	11/5	0.158
Number of dislocations	8.02 ±3.40 (2–15)	11.77 ± 5.39(4–19)	0.893
Follow-up, months	16.66 ±6.51 (16–39)	22.83 ±5.38(31–67)	0.563

Table 2: The patients' functional and clinical results

Parameter	Group-A (n ¼ 16)	Group-B (n ¼16)	p-value
WOSI score	72.25 ±9.74(55–99)	76.62 ±9.54 (44–97)	0.647
Rowe score	75.00 ± 19.55 (20–100)	69.09 ±19.18 (29.87)	0.657
Quick DASH score	11.19 ± 7.22 (1-22)	15.49 ±7.65 (1-29)	0.758
External rotation	77.05 ± 7.19 (55–89)	73.88 ±6.76 (45–82)	0.757
Functional satisfaction			
Satisfied	11 (76.0)	13 (78.0)	
Dissatisfied	5 (76.00)	3 (4.98)	

DISCUSSION

The increasing popularity of arthroscopic Bankart repair among clinicians worldwide can be attributed to its minimally invasive nature, which enhances postoperative recovery and aesthetic outcomes. According to Thomazeau et al. (12), there is a notable divergence in surgical preference between French shoulder specialists and their international counterparts, with a significant majority of the former favoring the Latarjet procedure over the arthroscopic Bankart repair, irrespective of the patient's specific clinical condition or extent of glenoid bone loss. This preference suggests a regional variation in surgical choice that merits further investigation.

Research indicates that the arthroscopic Bankart repair offers improved shoulder movement flexibility and stability with fewer recurrences (13, 14). In contrast, the Latarjet procedure, recognized for its triple-stabilizing effect, not only enhances the anterior glenoid but also restores the capsule and creates a sling effect, which substantially mitigates the likelihood of recurrence (15). This makes it particularly suitable for patients with significant glenoid bone loss or those requiring revision surgery following unsuccessful stabilization procedures. An et al. (17) corroborated this by demonstrating through a meta-analysis that the Latarjet procedure outperforms the Bankart repair in enhancing patient outcomes without limiting external rotation.

Our study's findings align with the existing literature, indicating that the open Latarjet procedure provides significant clinical benefits without adversely affecting external rotation. Most patients in our cohort, comprising young, active adults who demand high

Journal of Health and Rehabilitation Research 2791-156X JHRR

functionality and aesthetic outcomes, expressed satisfaction with their surgical results. However, a notable proportion of patients underwent the Latarjet procedure due to its superior functional satisfaction rates (92% vs. 85%).

Despite the high satisfaction rates, our study revealed a 7.3% recurrence rate in the arthroscopic Bankart group, including one patient who experienced multiple redislocations post-surgery. In contrast, the open Latarjet group reported no recurrences, affirming its efficacy in high-demand scenarios. Yet, the fear of recurrence persisted among a significant percentage of both groups, which could be attributed to factors such as hyperlaxity, increased activity levels, minimal preoperative rehabilitation, and poor fixation techniques.

The economic considerations are crucial, especially in regions with limited healthcare funding. Min et al. highlighted that the cost of arthroscopic Bankart repair is generally lower than that of the open Latarjet procedure (20,385 USD vs. 21,398 USD), yet the latter may be justified by its lower recurrence rates and better functional outcomes in high-demand athletes (20). In economically constrained environments, such as in Nepal, the cost-effectiveness of these procedures becomes even more pertinent, as the high costs of surgery and the additional expenses for implants, often not covered by insurance, pose significant barriers.

The discussion of these findings contributes to a nuanced understanding of the clinical and economic factors influencing the choice of surgical procedures for shoulder instability. It underscores the need for individualized patient assessment to optimize surgical outcomes and highlights the economic considerations that may influence procedural choices, particularly in resource-limited settings. These insights not only inform clinical practice but also suggest areas for further research, such as the exploration of cost-reduction strategies and the long-term outcomes of these surgical techniques.

CONCLUSION

The study revealed that while the arthroscopic Bankart repair (Group-A) exhibited higher recurrence rates, the open Latarjet procedure (Group-B) provided superior functional satisfaction and was more cost-effective. Despite the aesthetic and minimally invasive attributes of the arthroscopic approach, the economic context of a developing country like Pakistan makes the Latarjet procedure a more viable option due to its economic efficiency and lower recurrence rates. This finding has significant implications for surgical decision-making in resource-constrained settings, suggesting a preference for the Latarjet procedure in populations facing economic hardships, where maximizing the cost-effectiveness and functional outcomes of surgical interventions is crucial.

REFERENCES

1. Zacchilli MA, Owens BD. Epidemiology of shoulder dislocations presenting to emergency departments in the United States. J Bone Joint Surg Am 2010; 92: 542–549.
2. Sofu H, Gürsu S, Koçkara N, et al. Recurrent anterior shoulder instability: review of the literature and current concepts. World J Clin Cases 2014; 2: 676–682.
3. Hovelius L, Vikerfors O, Olofsson A, Svensson O, Rahme H. BristowLatarjet and Bankart: a comparative study of shoulder stabilization in 185 shoulders during a seventeen-year follow-up. J Shoulder Elbow Surg. 2011;20(7):1095-1101.
4. Camus D, Domos P, Berard E, et al. Isolated arthroscopic Bankart repair vs. Bankart repair with 'remplissage' for anterior shoulder instability with engaging Hill-Sachs lesion: a meta-analysis. Orthop Traumatol Surg Res 2018; 104: 803–809.
5. Zhu YM, Lu Y, Zhang J, et al. Arthroscopic Bankart repair combined with remplissage technique for the treatment of anterior shoulder instability with engaging Hill-Sachs lesion: a report of 49 cases with a minimum 2-year follow-up. Am J Sports Med 2011; 39: 1640–1647.
6. Purchase RJ, Wolf EM, Hobgood ER, et al. Hill-Sachs "remplissage": an arthroscopic solution for the engaging Hill-Sachs lesion. Arthroscopy 2008; 24: 723–726.
7. Bessière C, Trojani C, Carles M, et al. The open Latarjet procedure is more reliable in terms of shoulder stability than arthroscopic Bankart repair. Clin Orthop Relat Res 2014; 472: 2345–2351.
8. Blonna D, Bellato E, Caranzano F, et al. Arthroscopic Bankart repair versus open Bristow-Latarjet for shoulder instability: a matched-pair multicenter study focused on return to sport. Am J Sports Med 2016; 44: 3198–3205.
9. Xu Y, Wu K, Ma Q, et al. Comparison of clinical and patient-reported outcomes of three procedures for recurrent anterior shoulder instability: arthroscopic Bankart repair, capsular shift, and open Latarjet. J Orthop Surg Res 2019; 14: 326.
10. Thomazeau H, Courage O, Barth J, et al. Can we improve the indication for Bankart arthroscopic repair? A preliminary clinical study using the ISIS score. Orthop Traumatol Surg Res. 2010;96(8 suppl): S77-S83.5.
11. Matthes G, Horvath V, Seifert J, et al. Oldie but goldie: Bristow-Latarjet procedure for anterior shoulder instability. J Orthop Surg (Hong Kong) 2007; 15: 4–8.

Journal of Health and Rehabilitation Research 2791-156X JHRR

12. Longo UG, Loppini M, Rizzello G, Ciuffreda M, Maffulli N, Denaro V. Latarjet, Bristow, and Eden-Hybinette procedures for anterior shoulder dislocation: systematic review and quantitative synthesis of the literature. Arthroscopy. 2014;30(9):1184-1211.

13. Sherchan B, Rai S, Tamang N, et al . Outcomes of single bundle arthroscopic anterior cruciate ligament reconstruction in a limited resource setting. J ISAKOS Jt Disord Orthop Sports Med 2020. DOI: 10.1136/jisakos-2020-000500.

14. Ghimire R. Community based health insurance practices in Nepal. International Research and Reviews 2013; 2. Available at SSRN:

15. Cole BJ, Romeo AA. Arthroscopic shoulder stabilization with suture anchors: technique, technology, and pitfalls. Clin Orthop Relat Res 2001; 390: 17–30.

16. Garcia GH, Taylor SA, Fabricant PD, Dines JS. . Shoulder instability management: a survey of the American Shoulder and Elbow Surgeons. Am J Orthop (Belle Mead NJ). 2016; 45 3: E91– E97.

17. An VVG, Sivakumar BS, Phan K, et al. A systematic review and meta-analysis of clinical and patient-reported outcomes following two procedures for recurrent traumatic anterior instability of the shoulder: Latarjet procedure vs. Bankart repair. J Shoulder Elbow Surg 2016; 25: 853–863.

18. Michener LA, McClure PW, Sennett BJ. American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form, patient self-report section: reliability, validity, and responsiveness. J Shoulder Elbow Surg 2002; 11: 587–594.

19. Rowe CR, Patel D, Southmayd WW. The Bankart procedure: a long-term end-result study. J Bone Joint Surg Am 1978; 60: 1–16.

20. Makhni EC, Lamba N, Swart E, et al. Revision arthroscopic repair versus Latarjet procedure in patients with recurrent instability after initial repair attempt: a cost-effectiveness model. Arthroscopy 2016; 32: 1764–1770.