

# Bankart Repair Versus Bristow-Latarjet Procedure in Treating Anterior Shoulder Dislocation: A Systematic Review

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## ABSTRACT

**Introduction:** Anterior shoulder dislocation affects an estimated 11/100,000 individuals annually, primarily involving the inferior glenohumeral ligament and causing recurrent instability. Surgical approaches like anatomical labral repair and the Bristow-Latarjet procedure are common for managing these issues. This systematic review aimed to compare the clinical and functional outcomes of Bankart repair and the Bristow-Latarjet procedure in treating anterior shoulder dislocation.

**Methods:** Following PRISMA guidelines, a comprehensive search was conducted across PubMed, Google Scholar, Science Direct, and the Cochrane Library, resulting in 154 studies. From these, 4 studies were selected: two retrospective cohorts, one prospective cohort, and one case-control, encompassing 414 patients. Among them, 257 patients underwent the Bristow-Latarjet procedure, while 157 received Bankart repair. Inclusion criteria covered English-language studies evaluating clinical outcomes such as SSV, WOSI, Rowe scores, movement loss, and arthropathy rates, with no demographic restrictions, while non-English studies were excluded. Quality evaluation employed classifications by the Oxford Center for Evidence-based Medicine, GRADE criteria, and AHRQ for assessing evidence strength, bias, and quality.

**Results:** The systematic review selected 4 studies from the 154 identified, incorporating a total of 414 patients. Of these, 257 underwent

the Bristow-Latarjet procedure, and 157 received Bankart repair. The studies comprised two retrospective cohorts, one prospective cohort, and one case-control study.

**Conclusion:** The review revealed no significant difference in functional outcomes between Bankart repair and the Bristow-Latarjet procedure for anterior shoulder dislocation. The choice between these methods depends largely on surgeon preference and technological accessibility. However, more comprehensive, high-quality studies are needed to better guide the selection between these procedures.

**Keywords:** Anterior shoulder dislocation; Glenohumeral ligament; Bankart repair; Bristow-Latarjet procedure.

## INTRODUCTION

Approximately 95% of all shoulder dislocation is anterior rather than posterior dislocation and it might be associated with pathological changes within associated structures around the shoulder <sup>1</sup>. It is estimated that the annual incidence of anterior shoulder dislocation is approximately 11/100,000, while the incidence of recurrent shoulder instability varies, ranging from 17 to 100% following primary stabilization <sup>2</sup>. Essential pathological findings of anterior shoulder dislocation might include insufficiency of the inferior glenohumeral ligament, either

on the glenoid side as Bankart lesion, on the humeral side, in the midsubstance of the ligament or as combination of the forementioned lesions.<sup>3</sup>

Depending on the type of underlying lesion, there are several surgical approaches available for treating an anterior shoulder dislocation. Anatomical labral repair of a Bankart defect is usually sufficient in most cases, however, non-anatomical surgical approach might be necessary in the presence of a glenoid defect, failed previous soft-tissue stabilization or when soft tissue

damage is determined to be irreparable<sup>2</sup>. The Bristow-Latarjet procedure is the most commonly considered procedure to treat such conditions. Numerous adaptations on the original technique have since then been described.<sup>4</sup>

This systematic review aims to thoroughly evaluate and review Bankart repair and Bristow-Latarjet procedure in treating anterior shoulder dislocation. We focus on comparing the outcomes of these procedures, namely clinical and functional outcome following each procedure.

## MATERIALS & METHODS

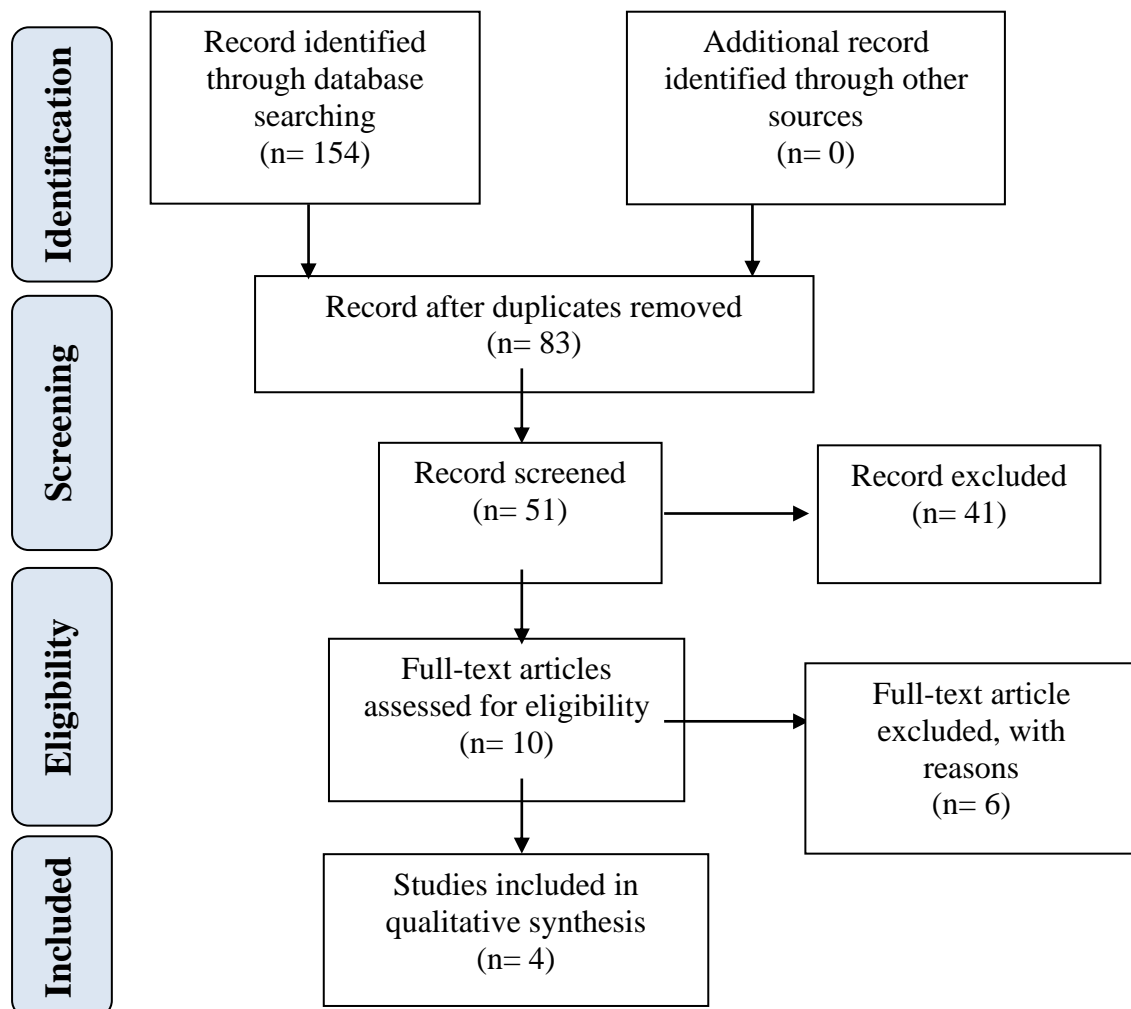


Figure 1. Flow diagram based on PRISMA Guideline describing the strategy for conducting this study.

### Search Strategy

Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were utilized to conduct a systematic review<sup>5</sup>. Literature search was

performed comprehensively to gather a full-length, peer-reviewed paper in English on evaluation of Bankart repair versus Bristow-Latarjet procedure as treatment for anterior shoulder dislocation. Literature was

searched through PubMed, Google Scholar, Science Direct and Cochrane Library using Boolean operators with the following keywords: “anterior shoulder dislocation”, “Bankart repair” and “Bristow-Latarjet”.

### Inclusion Criteria

Method of PICO was used to describe inclusion and exclusion criteria of this study. Any studies evaluating Bankart repair versus Bristow-Latarjet procedure for treating anterior shoulder dislocation published in English were included in this review. The outcomes assessed included clinical and functional outcome, namely Subjective Shoulder Score (SSV), Western Ontario Shoulder Instability (WOSI), Rowe scores, degree of loss of movement, and rate of arthropathy. Due to limited number of research comparing both procedures, there was no limitation in patient demographics. Any study that was not in English were excluded.

### Quality Evaluation

The class of evidence of each study was categorized into class I, II, III and IV, each for good quality RCT, moderate to poor quality RCT and cohort study, moderate to poor quality cohorts and case-control studies and case series, respectively. Assessment of study quality and risk of bias assessed using criteria developed by the

Oxford Center for Evidence-based Medicine, perspicacity defined by the Grades of Recommendation Assessment, Development and Evaluation (GRADE) Working Group, and sanction made by the Agency for Healthcare Research and Quality (AHRQ).

### RESULT

Literature search resulted in a total of 154 studies obtained upon executing the search strategy. Precisely 71 studies were not included due to study duplication and 32 studies were further excluded based on title screening. Following abstract reading, 41 articles were consequently excluded. Upon full-text review, 6 articles were excluded. Upon final reviewing process, 4 studies were included in this systematic review.

Key characteristics of the included studies and their level of evidence are depicted in Table 1 and 2. Among these four studies, two are retrospective cohort studies, one is prospective cohort study and one case-control study. A total of 414 patients from four studies were included, with 257 patients undergoing Bristow-Latarjet procedure and the rest 157 patients had Bankart repair, as shown in Table 3. The summary of outcomes assessed and the outcomes in each study are presented in Table 3 and 4, respectively.

Table 1. List of included studies

No.	Reference	Journal	Study Design	Level of Evidence
1.	Blonna et al, 2016	The American Journal of Sports Medicine	Retrospective cohort	III
2.	Hovellius et al, 2001	Journal of Shoulder and Elbow Surgery	Retrospective cohort	III
3.	Hovellius et al, 2006	Journal of Shoulder and Elbow Surgery	Prospective cohort	II
4.	Hovellius et al, 2011	Journal of Shoulder and Elbow Surgery	Case-control	III

**Table 2. Characteristic of patients of included studies**

No.	Reference	Total Sample Size	Mean Age (Age range in year)	Male	Female	Study Comparison	Surgical Technique
1.	Blonna et al, 2016	60 Bankart = 30 Bristow-Latarjet = 30	Bankart = 31.5 Bristow-Latarjet = 31.5	52	8	Arthroscopic Bankart versus open Bristow-Lataejt procedure for posttraumatic recurrent anterior shoulder instability	Arthroscopic Bankart stabilization includes Bankart repair and retensioning of the anterior capsule Open Bristow-Latarjet procedure was performed using a single 4.5-mm malleolar screw without washer
2.	Hoveliuss et al, 2001	56 Bankart = 26 Bristow-Latarjet = 30	Bankart = 26.3 Bristow-Latarjet = 28.4	48	8	Bankart repair versus Bristow-Latarjet repair for recurrent anterior dislocation of the shoulder	Bankart repair Bristow-Latarjet repair included attachment of transplant to the glenoid neck using 4-4.55 mm malleolar screw
3.	Hoveliuss et al, 2006	113	29.25	95	23	Bristow-Latarjet repair for recurrent anterior dislocation	Bristow-Latarjet repair
4.	Hoveliuss et al, 2011	185 Bankart = 88 Bristow-Latarjet = 97	Bankart = 21.8 Bristow-Latarjet = 22.7	150	35	Bankart repair versus Bristow-Latarjet repair for traumatic anterior instability	Bankart repair Bristow-Latarjet repair

**Table 3. Summary of outcomes**

No.	Reference	Study Comparison	Follow up Duration (year)	Outcomes	Complications
1.	Blonna et al, 2016	Arthroscopic Bankart versus open Bristow-Lataejt procedure for posttraumatic recurrent anterior shoulder instability	5.3	Return to sport (SPORTS score), rate of recurrent instability, OSIS, SSV, WOSI, ROM	Bristow-Latarjet Arthroscopic hematoma = 2
2.	Hoveliuss et al, 2001	Bankart repair versus Bristow-Latarjet repair for recurrent anterior dislocation of the shoulder	15	ROWE score, recovery rate, satisfaction rate, loss of movement, sports performance, laxity, arthropathy	N/A
3.	Hoveliuss et al, 2006	Bristow-Latarjet repair for recurrent anterior dislocation	15	Radiographic outcome (arthropathy, healing of transplant, fibrous union), loss of external rotation in adduction, ROWE score	N/A
4.	Hoveliuss et al, 2011	Bankart repair versus Bristow-Latarjet repair for traumatic anterior instability	17	WOSI, DASH score, SSV, SASF, rate of revision surgery, failure rate	Bankart Infection = 1 Bristow-Latarjet Infection = 2 Hematoma = 1 Reoperation due to instrument failure = 1

**Table 4. Characteristics of outcome of studies (a-d)**

**a**

No	Reference	Outcome Measure					
		SPORTS score	Rate of recurrent instability	OSIS	SSV	WOSI	ROM (External rotation) (degree)
1.	Blonna et al, 2016	Bankart = 8 Bristow-Latarjet = 6	Bankart = 3 (10%) Bristow-Latarjet = 0 (0%)	Bankart = 40 Bristow-Latarjet = 41	Bankart = 86 Bristow-Latarjet = 75	Bankart = 84 Bristow-Latarjet = 82	Bankart = 86 Bristow-Latarjet = 79

**b**

No	Reference	Outcome Measure						
		Rowe score	Recovery rate (n)	Satisfaction rate	Loss of flexion	Sports performance	Laxity (points)	Arthropathy
2.	Hovellius et al, 2001	Bankart = 88 Bristow-Latarjet = 87.66	Bankart = 23 Bristow-Latarjet = 27	Very satisfied / satisfied / don't know / not satisfied Bankart = 17/7/0/1 Bristow-Latarjet = 24/5/0/0	Flexion / External rotation / Internal rotation in extension Bankart = 1 / 14.6 / 1.2 Bristow-Latarjet = 3 / 9.8 / 1.5	Unchanged / Lower / quit Bankart = 16/1/2 Bristow-Latarjet = 21/0/1	Bankart = 76 Bristow-Latarjet = 93	Mild / moderate / severe Bankart = 14/2/0 Bristow-Latarjet = 21/5/3/1

**c**

No	Reference	Outcome Measure						
		Rowe score	Satisfaction rate	Loss of movement	Arthropathy	Laxity (points)	Arthropathy	Healing
3.	Hovellius et al, 2006	Bristow-Latarjet = 89.5	Very satisfied / satisfied / don't know Bristow-Latarjet = 90/26/1	Flexion = 3.2 Outward rotation in adduction = 10.7 Outward rotation in abduction = 12.4 Internal rotation in extension = 2	Unchanged / Lower / quit Bankart = 16/1/2 Bristow-Latarjet = 21/0/1	Bankart = 76 Bristow-Latarjet = 93	Mild / moderate / severe = 39/5/2	Bony healing = 98 (85%)

**d**

No	Reference	Outcome Measure					
		WOSI	DASH	SSV	SASF	ROWE	Failure rate
4.	Hovellius et al, 2011	Bankart = 79.0 Bristow-Latarjet = 87.8	Bankart = 9.5 Bristow-Latarjet = 4.3	Bankart = 75.3 Bristow-Latarjet = 84.2	Bankart = 77.9 Bristow-Latarjet = 86.1	Bankart = 79.9 Bristow-Latarjet = 87.5	Bankart = 7/88 Bristow-Latarjet = 5/97

## DISCUSSION

Bankart lesion, an avulsion of the anterior glenoid rim accompanied by stretching of the anteroinferior capsule, accounts for the most essential pathological finding in anterior shoulder dislocation. This is a disabling condition, in which surgery has been widely performed but still remains challenging.<sup>6</sup>

There are several available options for surgical management of anterior shoulder dislocation, including the two most commonly performed procedures, namely open Bristow-Latarjet technique, in which the coracoid is transpositioned, and arthroscopic Bankart procedure involving repair of the labral lesion<sup>7</sup>. There are several aspects in need to be considered on which procedure to perform, including the most recent evidence-based data on which procedure is more superior than the others, the surgeon's preference and the availability of surgical advancement. There is still very limited studies on comparison between Bristow-Latarjet and Bankart repair procedures and therefore this systematic review evaluates both procedure regarding their functional outcome.

Subjective Shoulder score (SSV) was assessed in two studies by Blonna et al and Hovelius et al. In a study by Blonna et al, significantly higher mean SSV was observed in arthroscopic Bankart group compared to open Bristow-Latarjet group, with mean SSV score of 86 and 75, respectively ( $p=0.02$ )<sup>7</sup>. However, SSV score was found to be indifferent among the two groups in another study by Hovelius et al.<sup>8</sup>

The mean Western Ontario Shoulder Instability (WOSI) score was slightly higher in arthroscopic Bankart group (84 vs 82); however, this finding was not statistically significant according to Blonna et al<sup>7</sup>. Similar finding was also observed in the study by Hovelius et al, in which mean WOSI score for Bankart group was 82.8, compared to Bristow-Latarjet group with WOSI score of 78.5, nevertheless, this was also concluded to be not significant<sup>8</sup>. Mean

Rowe score was higher in Bankart group in a study by Hovelius et al, with a score of 88 vs 87.6. This was however not analyzed, resulting of conclusion whether the difference was statistically significant could not been made.<sup>9,10</sup>

In the Bankart group, mean loss of flexion was  $<1^{\circ}$ , while in the Bristow-Latarjet group it was  $3^{\circ}$ . However, loss of external rotation was more commonly observed in the Bankart group. Loss of internal rotation in extension was similar in both groups<sup>9</sup>. Arthropathy following surgical procedure was found to be less in Bristow-Latarjet group. Failure rate was similarly less in Bristow-Latarjet group.<sup>8</sup>

Only two studies reported the occurrence of complications following surgery. Blonna et al reported two cases of arthroscopic hematoma following Bristow-Latarjet procedure and no significant complication in Bankart group. Hovelius reported complications in both groups, namely infection, hematoma and instrument failure leading to reoperation.<sup>7,8</sup>

## CONCLUSION

Anterior shoulder dislocations are commonly surgically treated with Bankart repair or Bristow-Latarjet procedures, among other available surgical choices. There is no significant difference between the two groups in terms of their functional outcome. The choice of which procedure to perform therefore relies on the surgeon's preference and the availability of the surgical advancement. Further research on these procedure with larger study population and better study designs is necessary to provide more data on this matter.

### *Declaration by Authors*

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**Conflict of Interest:** The authors declare no conflict of interest.



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