

# Comparative Study on Clinical Outcomes of Arthroscopic Bankarts Repair with versus Without Remplissage in Recurrent Anterior Shoulder Instability with Hill Sachs Lesion

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## Abstract

**Background:** Anterior shoulder instability is a common orthopedic issue that is often linked to Hill-Sachs lesions, especially in young, athletic people. This study compared clinical outcomes in patients with anterior shoulder instability and engaging Hill-Sachs lesions treated with arthroscopic Bankart repair, with or without the addition of remplissage. **Material and Methods:** This prospective cohort study was conducted between May 2022 and November 2023 at the Department of Orthopedics, Institute of Medical Sciences and SUM Hospital, Bhubaneswar. Sixty patients were enrolled and divided into two groups: Bankart repair alone (n = 30) and Bankart repair with remplissage (n = 30). Clinical outcomes assessed included recurrent instability, range of motion (ROM), Western Ontario Shoulder Instability Index (WOSI), American Shoulder and Elbow Surgeons (ASES) scores, return to work or sports, and complications. Evaluations were performed at 2 weeks, 6 weeks, 6 months, 12 months, and 18 months postoperatively. **Results:** Both groups demonstrated significant postoperative improvement in ROM, WOSI, and ASES scores. Recurrent instability occurred in one patient (3.3%) in the Bankart-only group and in none of the patients in the remplissage group (p = 0.3132). Two patients (6.7%) in the remplissage group had mild external rotation restriction, although this difference was not statistically significant (p = 0.1503). Rates of return to work and sports were comparable between the two groups, with no significant differences. No major complications were noted. **Conclusion:** Arthroscopic Bankart repair, with or without remplissage, provides comparable clinical outcomes in patients with anterior shoulder instability and engaging Hill-Sachs lesions. The addition of remplissage does not significantly compromise shoulder ROM or return to sports and may help reduce the risk of recurrent instability.

**Keywords:** Arthroscopic Bankart Repair, Remplissage Procedure, Recurrent Anterior Shoulder Instability, Hill-Sachs Lesion, Shoulder Dislocation, Glenohumeral Joint, Clinical Outcomes.

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## INTRODUCTION

Anterior shoulder dislocations, the most common joint dislocation, account for 45% of all dislocations and 95% of shoulder dislocations. Often caused by falls or direct impacts, they lead to soft-tissue and bony injuries, particularly in young athletes and the elderly. In young athletes, repetitive micro-trauma weakens the rotator cuff, while aging causes degeneration of the labrum, capsule, and tendons, increasing tear risk. Acute dislocations frequently cause a Bankart lesion (capsulolabral tear) or a Hill-Sachs lesion (humeral head compression fracture). Hill-Sachs lesions occur in up to 88% of primary and nearly all recurrent dislocations. Their severity depends on size and location relative to the glenoid track. An “engaging” Hill-Sachs lesion dislocates over the glenoid rim during shoulder movement, causing recurrent instability. Bipolar bone loss, affecting both the humeral head and glenoid, narrows the glenoid track, further increasing the risk of engagement and recurrent dislocations. Approximately 95% of first-time shoulder dislocations are traumatic, commonly caused by sports injuries. Anterior dislocations constitute 98% of cases, whereas posterior and

inferior dislocations are rare, comprising less than 2% and 1%, respectively. Males under 30 face the highest risk due to high-impact activities, while elderly women have a notable incidence due to falls and age-related degeneration. For acute traumatic dislocations, immediate reduction under adequate analgesia and muscle relaxation is essential, followed by short-term immobilization and gradual physiotherapy. Recurrent dislocations can enlarge Hill-Sachs or osseous Bankart lesions, worsening instability and complicating treatment. For patients with shoulder instability and glenoid bone loss under 20%, surgical options include arthroscopic Bankart repair alone or combined with the remplissage procedure. Remplissage, derived

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from the French word for "fill-in," is a minimally invasive technique addressing engaging Hill-Sachs lesions. It involves tenodesis of the infraspinatus tendon into the Hill-Sachs defect, converting it into a non-engaging lesion. This prevents the humeral head from dislocating over the glenoid rim during motion, reducing recurrent instability. Typically performed arthroscopically, the procedure is less invasive than open surgery, offering shorter recovery times and lower complication rates. During remplissage, the surgeon identifies the Hill-Sachs lesion, debrides loose tissue, and anchors the infraspinatus tendon into the lesion using suture anchors. This creates a soft-tissue barrier, preventing engagement. When combined with arthroscopic Bankart repair, which addresses labral tears and capsular injuries, these procedures provide a comprehensive solution for shoulder instability, particularly in cases with significant Hill-Sachs lesions. Studies indicate that remplissage, when combined with Bankart repair, significantly reduces recurrence rates of shoulder dislocations, particularly in patients with engaging Hill-Sachs lesions. The procedure preserves shoulder function while enhancing stability, making it a valuable option for young, active individuals and those with recurrent instability. However, careful patient selection is essential, as remplissage may slightly limit external rotation in some cases. The remplissage procedure, combined with arthroscopic Bankart repair, effectively addresses engaging Hill-Sachs lesions and restores shoulder stability. By filling the defect and preventing engagement, remplissage reduces recurrent dislocation risk, making it a valuable tool in managing shoulder instability.

outcome data was collected on a prospective basis. Every patient between the ages of 18 and 60 with anterior shoulder instability with engaging Hill-Sachs lesion were included. While exclusion criteria were those Hill Sachs lesions not meeting Rowe's criteria and those that included greater than 20% glenoid bone loss.

Pre-operative variables included age, sex, Past trauma, frequency of dislocations or any other past surgical interventions. For diagnostic imaging, standard AP radiographs, CT and MRI was used. In CT and MRI, depth(mm)measured from perimeter of a best fit circle to deepest part of lesion, width (mm) measured through widest part of lesion, humeral head diameter measured across best fit circle.

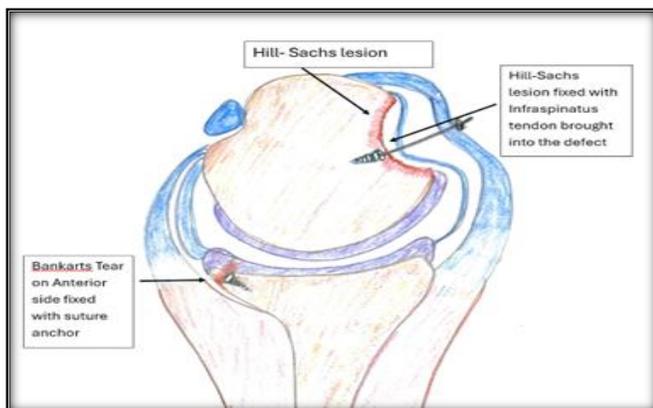


Pre-operatively patient questionnaires which included WOSI, DASH and ASES scores were used. Sixty patients were in total, thirty had undergone Bankarts repair and the rest thirty had undergone Bankarts repair with Remplissage, in the study period.

**Surgical Procedure and Intra-operative evaluation**  
**All procedures were done under General anesthesia**

Patients were placed in lateral decubitus position with operative shoulder in longitudinal 10-15 pounds traction with 20° forward flexion and 30-45° abduction aided with placement of a sterile bolster under axilla for further gleno-humeral distraction.

A standard posterior portal, an antero-inferior portal and an antero-supero-lateral portal were established. Intra-articular viewing of gleno-humeral joint is done, viewing through posterior portal. With the arm in abduction and external rotation, specific position at which the Hill-Sachs lesion engages with the glenoid is seen.



A) Patient positioned in lateral decubitus position with longitudinal traction B) Portals were marked for surgery: Standard Posterior portal, Anterior inferior portal, Antero-supero-lateral portal

Using the posterior portal ant the antero-supero-lateral portal for viewing and the antero-inferior portal as working portal, we first go for the anterior labral repair. For this, with a liberator, rasp, shaver or a RFA probe, the anterior labrum and capsule are released from the anterior glenoid neck. The anterior glenoid is

This study is aimed to compare the postoperative clinical outcomes of patients with anterior shoulder instability with Hill Sachs lesion who underwent Bankarts repair with or without concomitant Remplissage.

**MATERIALS AND METHODS**

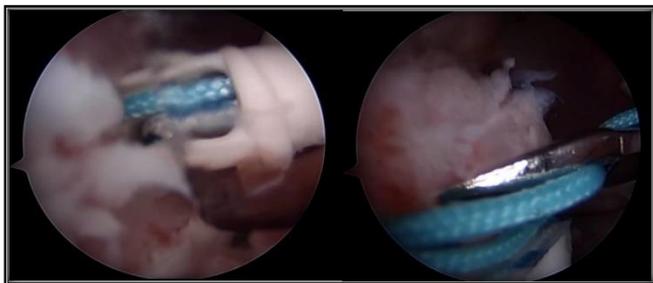
A single centre prospective cohort study was conducted from May 2022 to November 2023 at the Department of Orthopedics at the Institute of Medical Sciences and Sum Hospital, Bhubaneswar.

This study was approved by our Institutional Ethics Committee (IEC/IMS.SH/SOA/2024/681). Written informed consent was taken from all study participants, and clinical

prepared by debridement to healthy bleeding bone with rasp and shaver. Depending on the size of the labral tear, 3-4 single loaded suture anchors are taken to oppose the antero-inferior labrum to glenoid. Suture passed but knotting is reserved for later. Now for the Remplissage, Changing the camera to antero-superior portal, working through the posterior portal, Hill-Sachs defect is debrided of any soft tissue and the bed is prepared for placement of the anchor. 4.5mm double loaded anchor is placed in the defect area through a canula. 2 anchors are placed, directing towards the articular surface of humerus and in supero-inferior position. A spinal needle is passed percutaneously, in the postero-lateral portal position, through the Infrapinatus and sutures are passed through this and taken out from posterior portal. A canula is placed through. 3 mattress sutures are then shuttled through this canula and the posterior portal. Bites were taken through Bird beak suture passer. Sutures pulled appropriately and tensioning done to reduce the infrapinatus and posterior capsule to the defect. Coming back to the Bankarts repair, sutures of the Bankarts repair are knotted. Stability of Bankarts repair and remplissage procedure by dynamic movements of the shoulder.

(IBM Corp., Armonk, NY: IBM SPSS Statistics for Windows, Version 26.0, released in 2019) for analysis. An expert from the Department of Community Medicine, IMS & SUM Hospital, Bhubaneswar, Odisha, assisted with the data analysis. Descriptive statistics, including frequencies (percentages), means, medians, and standard deviations, were used to summarize the data. Where appropriate, Independent t-tests and Chi-square tests were conducted. A p-value of 0.05 or lower was deemed statistically significant. Follow up assessments were made at 2 weeks, 6 weeks, 6 months, 12 months and 18 months. The clinical outcomes encompassing Recurrent instability, Range of Motion, Post-op Outcomes scores (WOSI and ASES), return to work and sports and complications, were noted in each group at the follow-ups.

Recurrent Instability was seen in terms of subsequent dislocations, subluxations or positive apprehension tests after the repair was done. Post operatively the Western Ontario Shoulder Instability scores and the American Shoulder and Elbow Surgeons scores were taken at each follow-up from the patients, and they were compared to the respective pre-op scores. Hence, the post-op improvement in the scores were seen. Range of motion including flexion, extension, abduction, adduction, internal rotation and external rotation were noted for the patients at the follow-ups and noted. One crucial metric was return to work and sports, wherein the patients were questioned about their athletic performance in relation to their pre-injury level. And they were asked whether they could return to their work and performances in work wrt pre-injury level. Complications included Posterior shoulder pain, which might have been due to the impingement between the posterior labrum and new location of footprint of the posterior cuff. Any Incidences of injury, deep-vein thromboses, pulmonary embolism, nerve injury were supposed to be noted immediately.



A) Anchor through canula inserted through Hill- Sachs lesion. B) Bite taken with Bird-Beak suture passer



**Remplissage done**

**Data analysis**

The collected data were input into a Microsoft Excel spreadsheet (Microsoft Corporation, Redmond, WA, USA) and subsequently imported into SPSS Statistics version 26

**RESULTS**

Sixty patients were there in total. Thirty in Bankarts group, Thirty in Bankarts plus Remplissage group.

In Bankart repairs, 1 patient (3.3%) experienced recurrent instability. The association between recurrent instability and the procedure was not statistically significant (p=0.3132).

All patients (100%) in both Bankart and Bankart with Remplissage groups achieved full flexion, extension, abduction, adduction, and internal rotation. For external rotation, 100% of Bankart patients achieved full range, while 93.33% (28/30) of Bankart with Remplissage patients achieved full range, with 2 patients showing a 15-degree restriction. The association between external rotation restriction and the procedure was not statistically significant (p=0.150).

**Table 1: Functional Outcomes After Bankart Repair: With Versus Without Remplissage**

| Variables                    | Bankarts | With Remplissage | P value |
|------------------------------|----------|------------------|---------|
| Recurrent Instability        | 1        | 0                | 0.3132  |
| ROM- Flexion (Full)          | 30       | 30               | 0       |
| ROM- Extension(Full)         | 30       | 30               | 0       |
| ROM-Abduction(Full)          | 30       | 30               | 0       |
| ROM-Adduction(Full)          | 30       | 30               | 0       |
| ROM- Internal Rotation(Full) | 30       | 30               | 0       |
| Rom- External Rotation(Full) | 30       | 28               | 0.1503  |

**Table 2: Mean Shoulder Range of Motion at Preoperative and Postoperative Follow-up Intervals After Bankart Repair**

| Range of Motion: Bankarts (Mean range) |        |                   |                    |                  |
|--|--------|-------------------|--------------------|------------------|
| Movement                               | Pre-op | Post-op (6 weeks) | Post-op (6 months) | Post-op (1 year) |
| Flexion                                | 0-100° | 0-100°            | 0-120°             | 0-120°           |
| Extension                              | 0-40°  | 0-40°             | 0-50°              | 0-50°            |
| Abduction                              | 0-80°  | 0-90°             | 0-120°             | 0-130°           |
| Adduction                              | 0-30°  | 0-30°             | 0-30°              | 0-30°            |
| Internal Rotation                      | 0-85°  | 0-85°             | 0-85°              | 0-85°            |
| External Rotation                      | 0-70°  | 0-70°             | 0-85°              | 0-90°            |

**Table 3: Mean Shoulder Range of Motion at Preoperative and Postoperative Follow-up Intervals After Bankart Repair with Remplissage**

| Range of Motion: Bankarts with Remplissage (Mean range) |        |                   |                    |                  |
|---|--------|-------------------|--------------------|------------------|
| Movement  | Pre-op | Post-op (6 weeks) | Post-op (6 months) | Post-op (1 year) |
| Flexion   | 0-100° | 0-100°            | 0-120°             | 0-120°           |
| Extension   | 0-40°  | 0-40°             | 0-50°              | 0-50°            |
| Abduction   | 0-80°  | 0-90°             | 0-120°             | 0-130°           |
| Adduction   | 0-30°  | 0-30°             | 0-30°              | 0-30°            |
| Internal Rotation                                       | 0-85°  | 0-85°             | 0-85°              | 0-85°            |
| External Rotation                                       | 0-70°  | 0-70°             | 0-85°              | 0-89°            |

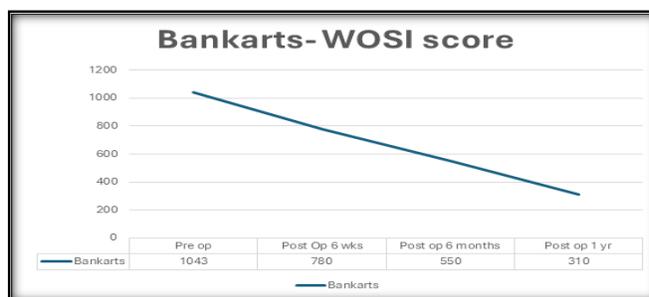
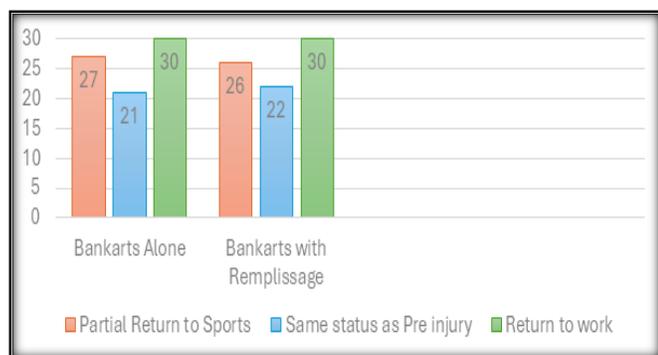
All 30 patients (100%) in the Bankart group and all 30 patients (100%) in the Bankart with Remplissage group successfully returned to work.

**Table 4: Comparison of Return to Work and Sports Outcomes Between Bankart Repair with and Without Remplissage**

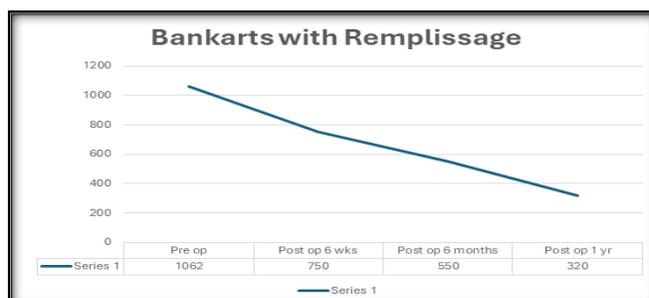
|                           | Bankarts | Bankarts with Remplissage | Mean  | S.D    | P Value |
|---------------------------|----------|---------------------------|-------|--------|---------|
| Return to Work            | 30       | 30                        | 30    | 0      | 0       |
| Partial Return to Sports  | 26       | 25                        | 0.133 | 0.3399 | 0.716   |
| Complete Return to Sports | 4        | 5                         | 0.166 | 0.3726 | 0.7189  |

**Table 5: Comparison of WOSI Scores (Pre-op & Post-op at 1 Year)**

| Group                 | N  | Mean ± SD       | Min.    | Max.    | Median  | p-value |
|-----------------------|----|-----------------|---------|---------|---------|---------|
| Pre-op WOSI           |    |                 |         |         |         |         |
| Bankart               | 30 | 1043.00 ± 34.26 | 980.00  | 1090.00 | 1050.00 | 0.0231  |
| Bankart + Remplissage | 30 | 1062.17 ± 29.18 | 1010.00 | 1110.00 | 1070.00 |         |
| Post-op WOSI (1 Year) |    |                 |         |         |         |         |
| Bankart               | 30 | 308.50 ± 16.80  | 270.00  | 337.00  | 307.50  | 0.3867  |
| Bankart + Remplissage | 30 | 311.90 ± 13.18  | 285.00  | 336.00  | 310.00  |         |



Improvement of mean WOSI score in Bankarts repair with Remplissage



The mean pre-op WOSI score was 1043.00 ± 34.26 for Bankart patients and 1062.17 ± 29.18 for Bankart with Remplissage patients. The distribution of pre-op WOSI scores between procedures was not statistically significant (p=0.0231).

Distribution of mean post operative WOSI score with Procedure was not statistically significant (p=0.3867). Improvement of mean WOSI score in Bankarts repair There was improvement in mean WOSI score in Bankarts group gradually progressing from a Pre-op score of 1043 to the post-op score at 1 year followup at 310.

Both groups showed significant improvement in mean WOSI scores over time. In the Bankart group, scores improved progressively from a pre-op value of 1043 to 310 at the 1-year follow-up. Similarly, the Bankart with Remplissage

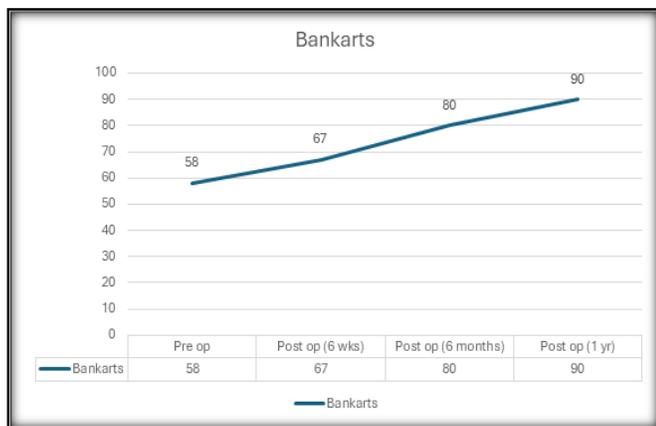
group demonstrated improvement, with scores increasing from 1062 pre-op to 320 at 1 year. The extent of improvement was comparable between the two groups, indicating similar efficacy in outcomes.

**Table 6: Comparison of ASES Scores (Pre-op vs. Post-op at 1 Year)**

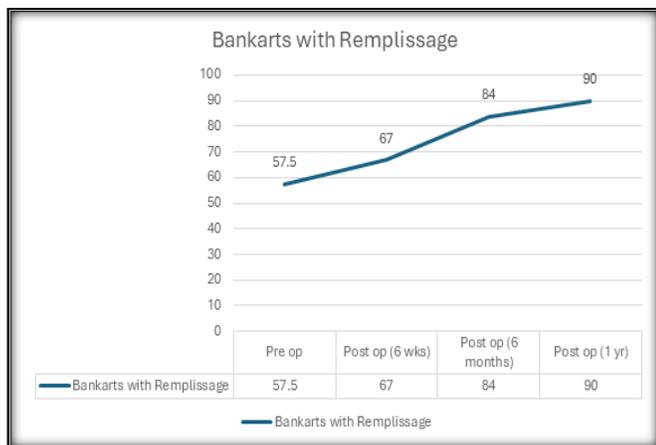
|                              | N  | Mean ± SD    | Min. | Max. | Median | p-value |
|------------------------------|----|--------------|------|------|--------|---------|
| <b>Pre-op ASES</b>           |    |              |      |      |        |         |
| Bankart Repair               | 30 | 58.2 ± 4.23  | 50   | 70   | 58.0   | 0.536   |
| Bankart + Remplissage        | 30 | 57.5 ± 4.49  | 52   | 73   | 57.0   |         |
| <b>Post-op ASES (1 Year)</b> |    |              |      |      |        |         |
| Bankart Repair               | 30 | 90.97 ± 2.61 | 86   | 95   | 91.5   | 0.5286  |
| Bankart + Remplissage        | 30 | 90.57 ± 2.27 | 85   | 94   | 91.0   |         |

Distribution of mean pre op and post op ASES score with Procedure was not statistically significant (p=0.5286).

**Improvement in post operative mean ASES score in Bankarts:**

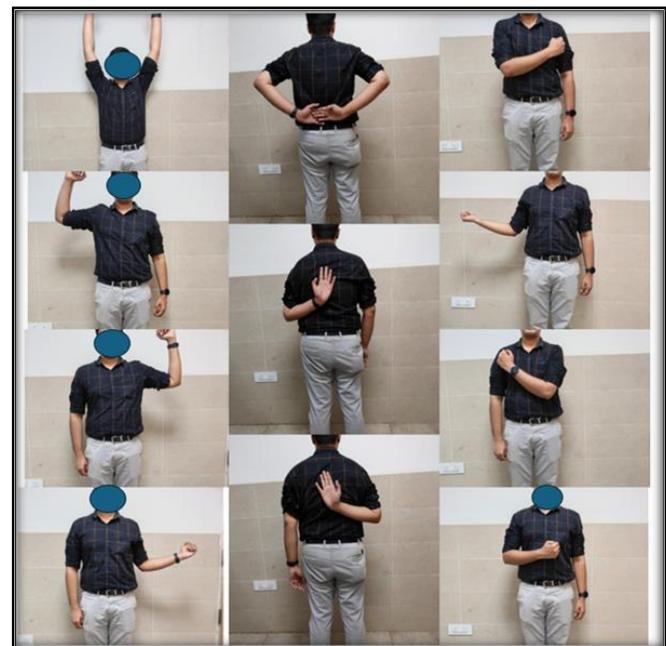


**Improvement in post operative mean ASES score in Bankarts with Remplissage:**



Both groups exhibited significant and comparable improvement in mean ASES scores over the 1-year follow-up period. In the Bankart group, scores increased progressively from a pre-op value of 58 to 90 post-op. Similarly, the Bankart with Remplissage group showed improvement, with scores rising from 57.5 pre-op to 90 at 1 year. The results indicate similar effectiveness in functional outcomes for both surgical approaches.

**Post-op Range of Motion**



**DISCUSSION**

The results of this study add to the expanding body of research on the effectiveness of these surgical methods, especially when it comes to functional outcomes, return to sports or employment, range of motion (ROM), and recurrent instability. In this study, recurrent instability was observed in only one patient (3.3%) in the Bankart repair group, while no cases were reported in the remplissage group. Although this difference was not statistically significant (p=0.3132), it suggests a potential trend toward reduced recurrence with the addition of remplissage. This finding aligns with previous studies that have reported lower rates of recurrent instability in patients undergoing Bankart repair with remplissage compared to Bankart repair alone. For instance, a study by,<sup>[2]</sup> found that remplissage significantly reduced the recurrence rate in patients with engaging Hill-Sachs lesions, supporting the notion that remplissage may provide additional stability by preventing the engagement of the Hill-Sachs defect with the glenoid rim. The impact of remplissage on postoperative ROM, particularly external rotation, has been a topic of debate. In this study, all patients in both groups achieved full flexion,

extension, abduction, adduction, and internal rotation. However, two patients (6.7%) in the remplissage group exhibited a slight restriction in external rotation ( $10^{\circ}$ - $15^{\circ}$ ), compared to none in the Bankart repair group. This difference was not statistically significant ( $p=0.1503$ ), suggesting that remplissage does not significantly impair external rotation. This finding is consistent with other studies that have reported minimal to no significant loss of external rotation following remplissage. For example, a study by,<sup>[6]</sup> found that while remplissage may cause a slight restriction in external rotation, it does not significantly affect overall shoulder function or patient satisfaction. Functional outcomes, as measured by the Western Ontario Shoulder Instability Index (WOSI) and the American Shoulder and Elbow Surgeons (ASES) scores, showed significant improvement in both groups over the 18-month follow-up period. The mean WOSI scores improved from 1043 to 310 in the Bankart group and from 1062 to 320 in the remplissage group, indicating substantial functional recovery in both groups. Similarly, the mean ASES scores improved from 58.2 to 90.97 in the Bankart group and from 57.5 to 90.57 in the remplissage group. These results suggest that both surgical techniques are effective in restoring shoulder function and reducing disability associated with anterior shoulder instability. The comparable improvement in functional outcomes between the two groups is consistent with findings from other studies. For instance, a systematic review by,<sup>[8]</sup> concluded that both Bankart repair and Bankart repair with remplissage result in significant improvements in shoulder function, with no significant differences in outcomes between the two techniques. However, the review also noted that remplissage may be particularly beneficial in patients with larger Hill-Sachs lesions or those at higher risk of recurrent instability. Return to work and sports is a critical outcome measure, particularly for young athletes and physically active individuals. In this study, all patients in both groups successfully returned to work, with no significant differences between the groups. However, the return to sports was slightly higher in the Bankart group (86.7% partial return, 13.3% complete return) compared to the remplissage group (83.3% partial return, 16.7% complete return). These differences were not statistically significant ( $p=0.7176$ ), suggesting that remplissage does not significantly impact the ability to return to sports. This finding is consistent with previous studies that have reported high rates of return to sports following both Bankart repair and Bankart repair with remplissage. For example, a study by,<sup>[3]</sup> found that 90% of patients undergoing Bankart repair with remplissage were able to return to sports, with 70% returning to their pre-injury level of activity. In a similar vein, a research by,<sup>[4]</sup> found that 85% of patients who had Bankart repair with remplissage went back to playing sports, with no significant differences in return-to-sport rates compared to Bankart repair alone.

### Complications

The complication rates in this study were low, with no major complications reported in either group. Two patients in the remplissage group experienced a slight restriction in external rotation, but this did not significantly affect their overall

function or satisfaction. This finding is consistent with other studies that have reported low complication rates following remplissage. For instance, a study by,<sup>[5]</sup> found that remplissage was associated with a low risk of complications, with no significant differences in complication rates compared to Bankart repair alone.

### Limitations

Despite the promising findings, this study has several limitations. First, the sample size was relatively small ( $n=60$ ), which may limit the generalizability of the results. Larger, multicenter studies are needed to confirm these findings and provide more robust evidence on the efficacy of Bankart repair with and without remplissage. Second, Hospital bias may have been introduced because this investigation was only carried out at one tertiary care facility. At last, after eighteen months of monitoring, while sufficient to assess short- to medium-term outcomes, may not be long enough to capture late complications or recurrent instability.

### CONCLUSION

This study compared the clinical outcomes of patients with anterior shoulder instability who had undergone Arthroscopic Bankarts repair and those who underwent Bankarts repair with Remplissage. In conclusion, this study demonstrates that arthroscopic Bankart repair with and without remplissage yields comparable clinical outcomes in patients with anterior shoulder instability and engaging Hill-Sachs lesions. Both techniques result in significant improvements in shoulder function, ROM, and return to work and sports, with low rates of recurrent instability and complications. While remplissage may offer a slight advantage in reducing the risk of recurrent instability, it does not significantly impact ROM or functional outcomes. These findings suggest that the choice of surgical technique should be individualized based on patient-specific factors, such as the size and location of the Hill-Sachs lesion, the degree of glenoid bone loss, and the patient's activity level and expectations. To validate these results and improve anterior shoulder instability therapy, more studies with bigger sample sizes and longer follow-up times are required.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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- **Summary**: This paper evaluates the anatomical and functional outcomes of remplissage in patients with Hill-Sachs lesions, emphasizing its role in preventing recurrent dislocations.
3. **Hill-Sachs Lesions and Glenoid Bone Loss** - **Citation**: Burkhart, S. S., & De Beer, J. F. (2000). Traumatic glenohumeral bone defects and their relationship to failure of arthroscopic Bankart repairs: significance of the inverted-pear glenoid and the humeral engaging Hill-Sachs lesion. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 16(7), 677-694. - **Summary**: This study highlights the importance of addressing both Hill-Sachs lesions and glenoid bone loss in the treatment of shoulder instability.
  4. **Functional Outcomes and Return to Sports** - **Citation**: Franceschi, F., Papalia, R., Rizzello, G., Franceschetti, E., Del Buono, A., Panasci, M., ... & Denaro, V. (2008). Remplissage repair—new frontiers in the prevention of recurrent shoulder instability: a 2-year follow-up comparative study. *The American Journal of Sports Medicine*, 36(7), 1187-1193. - **Summary**: This study compares the outcomes of Bankart repair with and without remplissage, focusing on return to sports and functional recovery.
  5. **Complications and ROM After Remplissage** - **Citation**: Zhu, Y. M., Lu, Y., Zhang, J., Shen, J. W., & Jiang, C. Y. (2011). 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. *The American Journal of Sports Medicine*, 39(8), 1640-1647. - **Summary**: This paper discusses the complications and range of motion outcomes after remplissage, emphasizing its safety and efficacy.
  6. **Systematic Review of Bankart Repair and Remplissage** - **Citation**: Nourissat, G., Kilinc, A. S., Werther, J. R., & Doursounian, L. (2015). A prospective, comparative, radiological, and clinical study of the influence of the "remplissage" procedure on shoulder range of motion after stabilization by arthroscopic Bankart repair. *The American Journal of Sports Medicine*, 43(9), 2144-2152. - **Summary**: This systematic review compares the outcomes of Bankart repair with and without remplissage, focusing on shoulder range of motion and functional recovery.
  7. **External Rotation After Remplissage** - **Citation**: Wolf, E. M., & Arianjam, A. (2014). Hill-Sachs remplissage, an arthroscopic solution for the engaging Hill-Sachs lesion: 2- to 10-year follow-up and incidence of recurrence. *Journal of Shoulder and Elbow Surgery*, 23(6), 814-820. - **Summary**: This study evaluates the long-term outcomes of remplissage, particularly its impact on external rotation and patient satisfaction.
  8. **Recurrent Instability and Surgical Outcomes** - **Citation**: Boileau, P., Villalba, M., Héry, J. Y., Balg, F., Ahrens, P., & Neyton, L. (2006). Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair. *Journal of Bone and Joint Surgery*, 88(8), 1755-1763. - **Summary**: This paper identifies risk factors for recurrent instability after Bankart repair, including the presence of Hill-Sachs lesions and glenoid bone loss.
  9. **Patient-Reported Outcomes After Shoulder Surgery** - **Citation**: Kirkley, A., Griffin, S., McLintock, H., & Ng, L. (1998). The development and evaluation of a disease-specific quality of life measurement tool for shoulder instability: The Western Ontario Shoulder Instability Index (WOSI). *The American Journal of Sports Medicine*, 26(6), 764-772. - **Summary**: This study introduces the WOSI score as a validated tool for assessing quality of life in patients with shoulder instability.
  10. **ASES Score and Shoulder Function** - **Citation**: Michener, L. A., McClure, P. W., & Sennett, B. J. (2002). American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form, patient self-report section: reliability, validity, and responsiveness. *Journal of Shoulder and Elbow Surgery*, 11(6), 587-594. - **Summary**: This paper validates the ASES score as a reliable tool for assessing shoulder function and patient-reported outcomes.
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