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Research Article

Anterior shoulder instability with engaging Hill Sachs lesion treated with isolated Bankart repair vs. Bankart repair and Remplissage technique

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Abstract

Introduction: Recurrent shoulder dislocation account for a common problem in young patients. Bankart lesion is described as injury to anterior (inferior) glenoid labrum due to anterior shoulder dislocation leading to formation of a pocket in front of glenoid that allows humeral head to dislocate into it. It is often accompanied with hill sach lesion which is compression fracture of the posterolateral humeral head due to its compression against the anteroinferior part of the glenoid.

Material and Methods: Around 20 cases of recurrent anterior shoulder dislocation treated isolated arthroscopic bankart repair or arthroscopic bankart and remplissage technique. 6 months follow up is done. Arthroscope was inserted via a routine posterior portal for evaluation of Bankart and Hill-Sachs lesions. Two standard anterior portals were also put. Through the anterior portal, Bankart repair was done after freshening and elevating the labrum, and then anchors of 2.8 mm were used to repair labrum to the glenoid. And for Hill Sachs lesion, posterior portal put 2.5 cm below the anterior portal. A bone shaver was used to debride the humeral defect, following which a double loaded 5 mm anchor was placed. Lastly, suture replacement was done to fix only the tendinous element of infraspinatus tendon to the defect. In post op physiotherapy is started after 3 weeks, as per pain tolerance by the patient.

Discussion: Bankart and remplissage associated with better outcome and lesser complications compared to isolated bankart repair. Average time for full range of motion of shoulder is 6 weeks.

Conclusion: Arthroscopic bankart repair and remplissage technique is better than isolated arthroscopic bankart repair.

Keywords: shoulder instability, hill sach lesion, dislocation, Bankart repair, Remplissage technique

INTRODUCTION

A common problem we see in orthopedics practice is recurrent dislocation of the shoulder. More prevalent in people with athletic backgrounds due to their young age and high activity levels usually involve the shoulder joint [1].

Since recurrent anterior shoulder dislocation is most commonly associated with bankart lesion and hill sach lesion [2], bankart repair is commonly done. Bankart lesion is an injury at the anterior (inferior) glenoid rim of scapula bone that occurs due to anterior shoulder dislocation [3]. Bankart lesion leads to the formation of a pocket in front of the glenoid that allows the humeral head to dislocate into it. Hill sachs lesion is posterolateral humeral head depression fracture, resulting from impaction with the anterior glenoid rim, indicating anterior glenohumeral dislocation [4]. Bankart lesion is most frequently associated with hill sach lesion [5]. Arthroscopic remplissage (fixation of the posterior aspect of capsule and infraspinatus tendon into posterosuperior humeral head impaction fracture) [6] of a hill sach lesion with bankart repair has been introduced as a surgical option to treat chronic anterior shoulder instability. The purpose of this study is to analyze comparing results of patients treated with isolated bankart repair *versus* bankart repair and remplissage in the treatment of anterior shoulder instability with engaging hill sach lesion.

MATERIALS AND METHODS

SUBJECT

The study involved patients diagnosed with traumatic recurrent (anterior) dislocation of the shoulder and was treated at our facility between June 2019 and December 2019. Patients were clinically examined and were found to have a positive apprehension test, release test, relocation test [7], and subsequently, MRI was done to confirm the diagnosis (Figures 1 and 2).

INCLUSION CRITERIA

- All patients, irrespective of gender in the age group of 18-45 years, were included in the study
- After an initial trauma, there is recurrent anterior shoulder dislocation of the shoulder joint

EXCLUSION CRITERIA

- Patients who had a history of previous shoulder surgeries, associated SLAP lesions, associated rotator cuff tears
- Posterior instability or multidirectional instability
- Age >45 years

- Septic or rheumatoid arthritis

Patients were followed up for six months and were assessed functionally using the latest Rowe Score [8]. The study was conducted with the approval of the ethics review board of our facility, and written consent was obtained from each patient before inclusion in the study (Table 1).

SURGICAL TECHNIQUE OF ARTHROSCOPIC REPAIR SHOULDER

Patient position: The procedure can be done in a beach chair or lateral decubitus position [9], depending on the surgeon's preference.

Portal placement: The first two portals that are placed are the ones that

Table 1. Rowe Score

ROWE SCORE	
FUNCTION(/50points)	
No limitation in work and sports	50
No limitation in work, mild limitation in sports	35
Mild limitation in work above head and sports	20
Markes limitation and pain	0
PAIN (/10 points)	
None	10
Mild	5
Severe	0
STABILITY (/30 points)	
No recurrence, subluxation, or apprehension	30
Apprehension when placing arm in certain positions	15
Subluxation (not requiring reduction)	10
Apprehension test positive or notion of instability	0
MOBILITY (/10 points)	
Normal mobility	10
<25% loss of normal ER, IR, and elevation	5
>25% loss of normal ER, IR, and elevation	0
TOTAL (/100 points)	
Excellent	90-100 pts
Good	75-89 pts
Average	51-74 pts
Bad	<50 pts

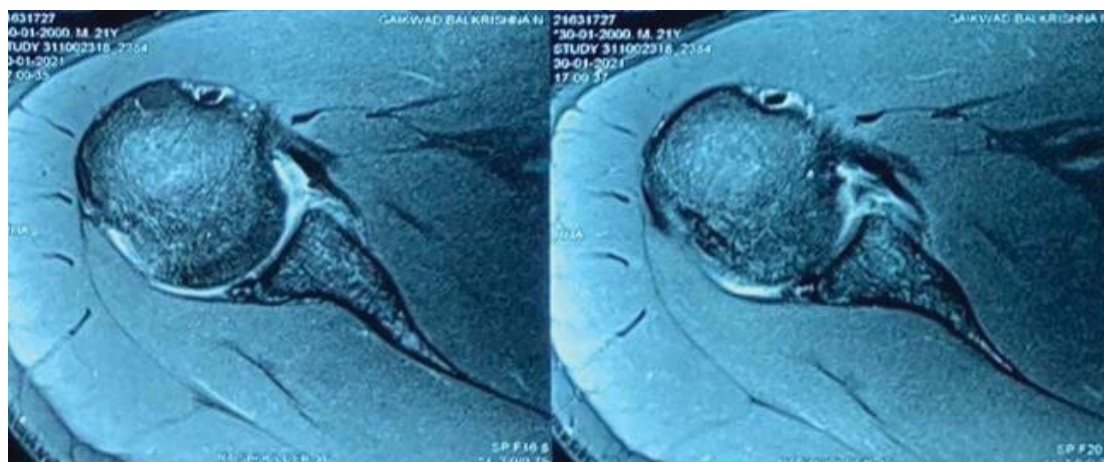


Fig. 1. Hill sach lesion on MRI

help in doing a diagnostic arthroscopy of the shoulder and need to be placed.

Anterosuperior: it is positioned at the anterolateral border of the acromion. This portal is the most important as it is the visualization portal in shoulder arthroscopy.

Posteriorly: the posterior portal is positioned at the lateral border of the acromion and 1 cm to 2 cm below the posterior border. It is essential to place this portal more laterally in the decubitus position than the beach chair position.

An anterior midglenoid portal is usually put after a diagnostic laparoscopy has been done and the bankarts lesion and hill sach lesion. To check for its placement, we pass an 18-gauge needle above the subscapularis to align to the 3'o clock glenoid.

The posterolateral portal is placed 4cm posterior and lateral to the acromion border and is primarily used for suture anchor placement.

After inserting the arthroscope through the anterosuperior portal, we place a hook through the mid glenoid portal to check soft tissue attachment to the glenoid.

A shaver is then inserted, and the labrum is prepared so that there is micro bleeding present which helps in healing due to fibrosis. A good labrum preparation is accepted when there is the visualization of the subscapularis muscle.

Then mobility of the labrum and that of the capsule is checked with a hook, and both should be freely mobile to proceed with suture anchor placement and repair.

Suture anchors are then placed, which should be perpendicular to the glenoid. The first suture anchor that needs to be placed is through the posterolateral portal and placed at the anterior glenoid rim below the 3'o clock position, followed by another 1-2 anchors placed 5 mm-7 mm apart from that. The suture anchors are then pulled to check for sufficient stabilization before passing the knots.

REMPLISSAGE TECHNIQUE

Through the posterior portal, a burr is introduced to decorticate the hill sach lesion. A triple- loaded large rotator cuff anchor is inserted into the hill sach defect through the posterior portal. Sutures are passed through the infraspinatus tendon and the posterior capsule, tied with

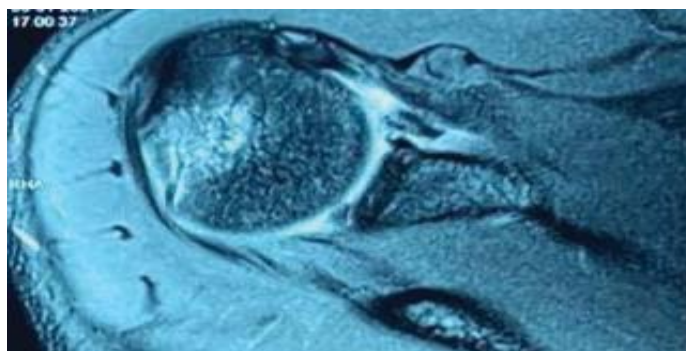


Fig. 2. Bankart lesion on MRI



Fig. 3. Beach chair position and Lateral decubitus position

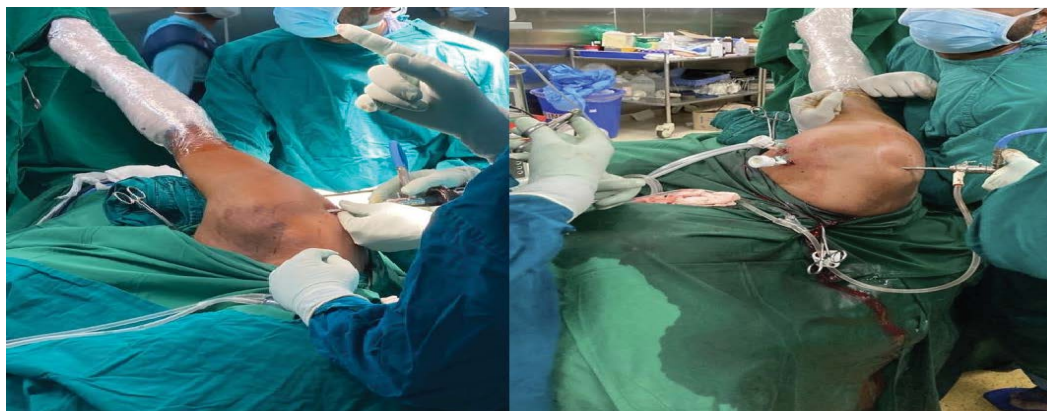


Fig. 4. Portal placement

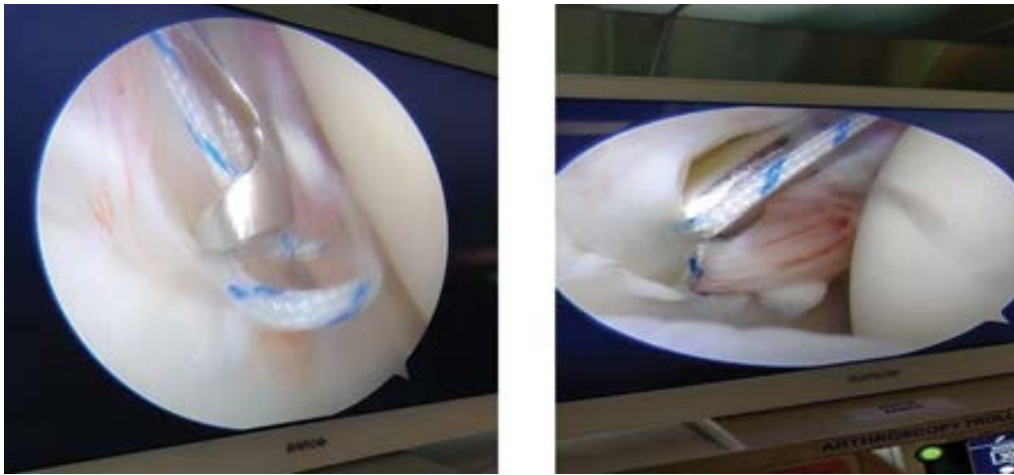


Fig. 5. Suture anchor view in arthroscope



Fig. 6. Postoperative X-ray

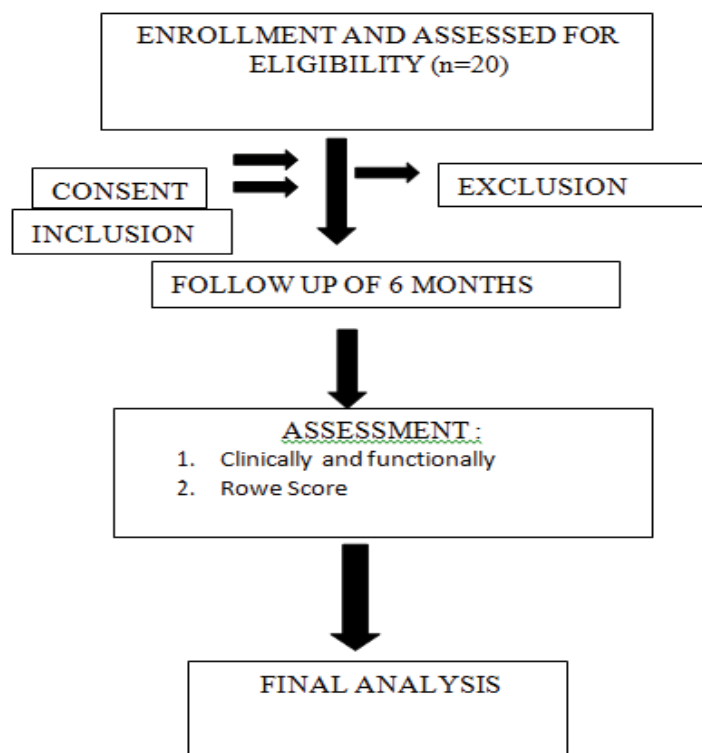


Fig. 7. Enrolment and assessed for eligibility

Table 2. Data obtained from the study of 20 patients

Lesion	Surgery	No. of subjects	No. of anchors
Anterior shoulder instability and hill sach lesion	Bankart repair	9	2
Anterior shoulder instability and hill sachs lesion	Bankart repair and Remplissage	11	3

Table 3. Scores, preoperative and postoperative studies

Scores	Preoperative	Postoperative
ROWE	35.6 (range 15-50)	80 (range 50-100) in isolated Bankart repair and 95 in Bankart repair with Remplissage Technique

a parachute technique, filling the defect on the humeral head [10] (Figures 3-5).

Postoperative protocol: The postoperative care protocol was identical in all the patients, irrespective of whether remplissage was done or not.

- Upto three weeks postoperatively, the patient is given a shoulder arm immobilizer and is advised standard pendulum exercises, elbow forearm and wrist ROM, wrist isotonic, and grip exercises
- After three weeks, the shoulder arm pouch is discontinued, and the patient is advised to do flexion up to 160 degrees, with restricted external rotation up to 30 degrees and internal rotation up to 45 degrees for the next three weeks
- After six weeks, all range of motion is started with resistance training in the form of 2 kgs weights, and resistance tubing is to achieve full range of motion by eight weeks
- At three months, full weight training was allowed, and those not having throwing activity in sports were allowed to return to sports training, and those athletes with throwing sports were allowed to return to sports by six months [11]

All patients were followed up at an interval of 3 weeks for the first six months, followed by every three months for the next 4 follow up and then every six months for a minimum time of 2 years in total (Figures 6 and 7).

At each visit of the patient, we evaluated the patient by

- Evaluating a range of motion
- Rowe score was assessed
- Patient was clinically assessed by doing the drawer test and the apprehension test
- A standard shoulder radiograph was taken

RESULTS

A total of 20 patients were a part of this study. The average age was 30 years, and the gender distribution was as follows-19 males and one female. Fifteen people had five or fewer dislocations, with the

remaining five had 5-10 episodes of recurrent dislocations. The right side was involved in 12 subjects, while 8 had dislocations on the left side (Table 2).

No complications occurred during these surgeries. Throughout follow-up of 6 months, there were higher episodes of redislocation and a high risk of recurrence post-surgery in isolated Bankart repair, and no dislocation and recurrence were observed in Bankart repair combined with remplissage technique. Postoperatively, there was an improvement in clinical scores as well [12].

Preoperatively, the mean rowe score was 35.6 (range 15-50), whereas, after a follow-up of 6 months, the postoperative mean score was 90.6 (range 50-100) (Table 3).

DISCUSSION

The present study aimed to evaluate the post arthroscopic repair of bankart with remplissage is superior and has better results than isolated bankart lesion in the management of anterior shoulder instability having Bankart associated with hill sach lesion. There was a significant improvement in the rowe score when bankart repair with remplissage technique is done.

There are fewer shreds of evidence of recurrent instability in a patient treated with Bankart repair and remplissage technique compared to bankart repair alone [13].

Postoperative, there is some degree of limitation of external rotation in patients treated with Bankart repair and remplissage technique than isolated Bankart repair, but it does not significantly affect return to sports, including those involving overhead activities [14].

Ninety-five percent of our subjects were males than 5 percent females, which highlights the fact that this entity is much more commonly seen in males. About 12 subjects (60%) were in the age group of 18-30 years, and about 40 percent were in the 31-45 years group, which demonstrated that the younger age group is a risk factor for recurrent dislocation.

CONCLUSION

In conclusion, this study shows that arthroscopic management by Bankart repair and remplissage technique is superior to isolated bankart repair and has a low rate of recurrent instability inactive patients.

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