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Case Series

Arthroscopic remplissage: a valuable adjunct to arthroscopic Bankart's repair in shoulder instability

Gunjan Upadhyay*, Gaurav Gupta

Department of Orthopedics, Consultant Orthopedic Surgeon, Calcutta Medical Research Institute, Kolkata, West Bengal, India

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***Correspondence:**
Dr. Gunjan Upadhyay,
E-mail: gunjan453@gmail.com

ABSTRACT

Current study present results of arthroscopic shoulder stabilisation surgery. 46 consecutive patients with recurrent anterior shoulder dislocations and less than 25% Glenoid bone loss were treated with arthroscopic surgery in 2017-2020. Arthroscopic repair of Bankart's lesion with capsular shift was performed in each. In 8 patients, where the Hill sach's lesion was "off track" or "engaging", arthroscopic remplissage was performed along with arthroscopic Bankart's repair. There was no recurrence of shoulder instability after a mean follow up of 1 year. This included the non-engaging Hill sach's group (treated with Bankart's repair) as well as the engaging or off track Hill sach's group (treated with Bankart's repair and remplissage). All patients went on to obtain full forward flexion, full abduction and internal rotation. The Bankart's and remplissage group had a mean of 8 degrees restriction of external rotation. SST scores and oxford scores had improved considerably on follow up in both groups Arthroscopic shoulder surgery provides a safe and reliable option in the management of recurrent shoulder dislocations. Arthroscopic remplissage is a useful adjunct to Bankart's repair when treating the difficult problem of a large engaging Hill Sachs lesion.

Keywords: Arthroscopic Remplissage, Bankart's lesion, Hill sach's lesion

INTRODUCTION

Hill-Sachs lesion was described first by Broca & Hartman in 1890. Hill-Sachs defect is a posterior-lateral compression fracture in the humeral head. In an anterior dislocation when the glenoid edge hits the humeral head this lesion appears. Hill and Sachs in 1940 classified the lesion into 3 types according to severity as, mild-moderate-severe, Hill-Sachs lesion were coined by Rowe et al.[1,2] Significant bone loss concept coined by Burkhart & De Beer, which also pointed towards failure of arthroscopic Bankart repair surgery.[3]

Yamamoto et al gave concept of "Glenoid track".[4] If Hill Sachs defect stays in glenoid track, no engagement in between Hill Sachs defect and glenoid occurs. However when extension of Hill Sachs defect is beyond the medial edge of glenoid track, engagement happens. Di Giacomo et al gave concept of on track & off track Hill-Sachs lesion (Figure 6-7). For shoulder stability it's mandatory to convert an offtrack to an ontrack lesion.[5] Purchase et al described "remplissage" in 2008 as an arthroscopic surgery with filling of Hill-Sachs defect with Infraspinatus tendon.[6] Arthroscopic shoulder surgery provides a safe and reliable option in the management of recurrent shoulder dislocations. Arthroscopic Remplissage is a useful adjunct to Bankart's repair when treating the difficult problem of a large engaging Hill-Sachs lesion. The Calcutta medical research institute, Kolkata was the site of study from 2017 to 2020.

CASE SERIES

46 consecutive patients with recurrent anterior shoulder dislocations and less than 25% Glenoid bone loss were treated with arthroscopic surgery in 2017-2020. Arthroscopic repair of Bankart's lesion with capsular shift was performed in each.[3] In 8 patients, where the Hill Sach's lesion was "off track" or "engaging", arthroscopic Remplissage was performed along with arthroscopic Bankart's repair.[6]

Patients were clinically examined (Figure 1), radiological evaluation done with X-ray & MRI and PAC obtained. Apprehension sign positive. Anterior labral tear withless than 25% Glenoid bone loss detected radio logically.

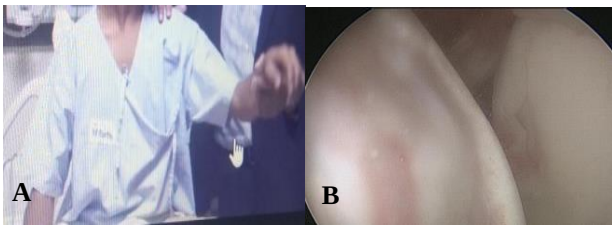

Figure 1: (A) Restricted range of motion, (B) Hill-Sachs.

Procedure

Anterior labral tear and posterior Hill-Sachs defect were seen through arthroscopy. For posterior defect, spinal needle localization was done via poster lateral portals. Defect was prepared using motorized shaver and burr. Bone anchor was inserted into medial edge of defect. Retrieval of suture heads of anchor was done through infraspinatus and posterior capsule using grasper. Sutures were left as it is and arthroscopy was directed anteriorly. Post operative physiotherapy and X-ray (Figure 2) was done.

Figure 2: Operative and post operative X-ray-Hill Sachs lesion and remplissage procedure done arthroscopically.

The follow-up period ranged for 1 year. The Rowe score improved significantly from a mean of 40.8 points preoperatively (ranging from 30 to 53 points) to a mean of 95.4 points postoperatively (ranging from 80 to 100 points) ($p<0.001$) (Figure 3). A total of 43 (96%) of 46 shoulders were considered by the patients to be better as a result of the operation (Figure 4). The mean score of function improved from 18.3 points (range: 12-25 points) preoperatively to 45.5 points (range: 41-50 points) postoperatively. The stability component of the score improved significantly from a mean of 10.3 points (range: 6-13 points) preoperatively to 26.4 points (range: 24-30 points) postoperatively (Figure 6). The pain improved from a mean of 5 points (range: 3-6 points) preoperatively to 8 points (range: 7-10 points) postoperatively. Similarly, the motion improved from a mean of 4 points (range: 2-6 points) preoperatively to 8 points (range: 7-10 points) postoperatively.

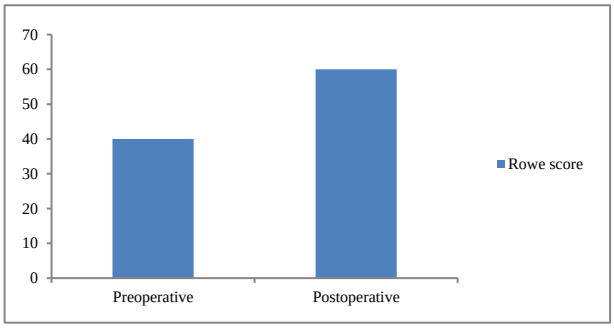

Figure 3: Rowe score at pre operative and postoperative status.

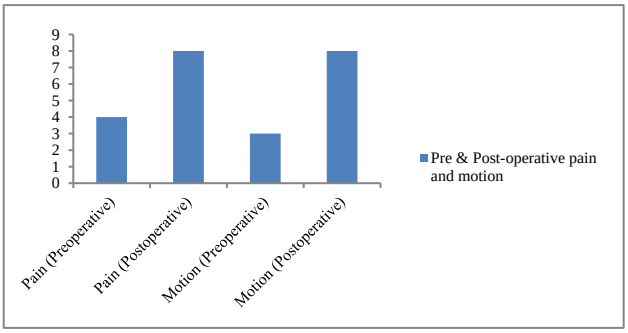

Figure 4: Pre and Post operative pain & motion.

No surgical-site infection was encountered in the study, and there were no complications associated with suture anchors. None of the patients included in this study reported complaints of decreased shoulder range of motion, and all showed excellent degrees of shoulder external rotation.

DISCUSSION

The Remplissage is an arthroscopic technique used to treat anterior shoulder instability in patients with large Hills-Sachs lesions.[1]

Current indications for the procedure focus on patients with recurrent instability with an engaging Hill-Sachs lesion and minimal anterior glenoid deficiency, with intraoperative findings consistent with this diagnosis.[3]

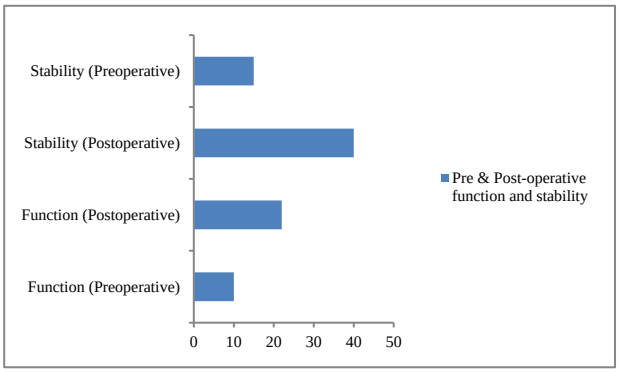

Figure 5: Pre and post operative function & stability.

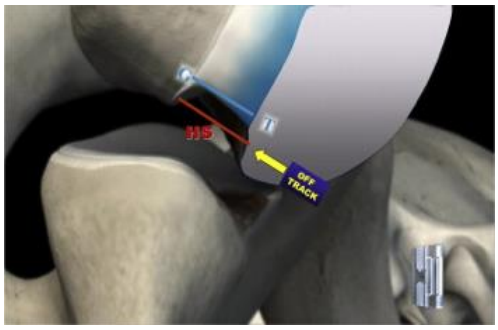

Figure 6: Off track lesion.

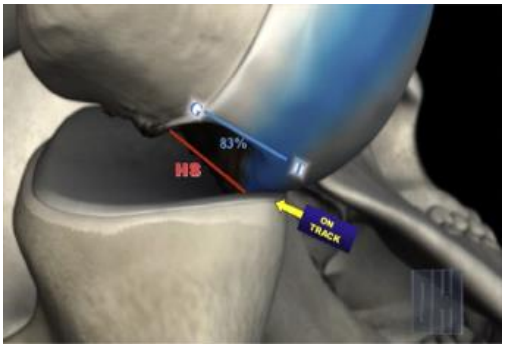

Figure 7: On track lesion.

The technique involves the use of arthroscopic tools to incorporate the tendon of infraspinatus and capsule within the humeral lesion to prevent continued engagement on the anterior glenoid and subsequent shoulder instability; in essence taking an intra-articular defect and turning it into an extra-articular defect. While the technical aspects of the technique can be modified, the procedure always involves the use of two anchors to fixate the tendon within defect. Different techniques can be utilized for efficiency or for patients with coexisting bony defects in addition to the humeral defect. Outcomes for this procedure have been favorable. For patients with large engaging Hill-Sachs lesions, remplissage has been proven to be superior to Bankart repair alone.[5] Most patients have excellent outcome scores with minimal recurrent anterior shoulder instability reported. Furthermore, range of motion does not seem to be significantly decreased in most patients. The complications include minimal deficits in range of motion, namely a decrease in external rotation.

Gaps in knowledge concerning this technique remain, with some controversy regarding cut-off size of Hill-Sachs lesion for which the remplissage technique is most effective. Furthermore, while there is concern for postoperative deficits in range of motion, this has not been shown to be statistically significant, and only clearly demonstrated in cadaveric studies. Prospective randomized cohort studies could further elucidate the impact on patient range of motion, pain, and shoulder outcome scores. Lastly, while this procedure seems to have gained widespread acceptance among the shoulder surgeon community, there have been no studies looking at the trends of the remplissage procedure within the United States in treating anterior shoulder instability. Nonetheless, remplissage is a successful arthroscopic procedure for anterior shoulder instability. Future research should be directed to better refine the indications, further describe potential complications, and supplement an understanding of its utilization in the population of patients with anterior shoulder instability.

CONCLUSION

Arthroscopic remplissage is a useful adjunct to Bankart's repair when treating the difficult problem of a large engaging Hill-Sachs lesion. Hence, through our study we want to bring the insight of post operative better results in terms of better motion, more stability and pain free movements of the shoulder after the successful operation.

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Ethical approval: Not required

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