

Arthroscopic Bankart Repair With Middle Glenohumeral Ligament Augmentation For The Treatment of Recurrent Anterior Shoulder Instabilities

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Research article

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Abstract

Background: In delayed Bankart lesion cases, the joint capsule and glenoid labrum are severely retracted in chronic cases with numerous recurrent dislocations, which results in insufficient viable soft tissue for capsular plication. We have proposed that labral repair with Middle Glenohumeral ligament (MGHL) augmentation could be done to reconstruct anterior stability. In this study, we report the clinical outcomes of patients who had undergone arthroscopic MGHL augmented repair for anterior stabilization for chronic anterior dislocations.

Methods: The study was designed as a retrospective study. Patients who had undergone arthroscopic MGHL augmented labral repair for recurrent anterior shoulder dislocation. Rowe and CONSTANT scores were used for the functional evaluation of the patients. Arthroscopic MGHL augmented labral repair is performed on each patients. The Kolmogorov–Smirnov test was used to determine whether the data related to variables included in the analysis followed a normal distribution pattern. The paired-Samples t-test was used to evaluate data with a normal distribution

Results: The mean pre-operative Rowe score was 11,19(\pm 9,19), and the mean pre-operative CONSTANT score was 41,7 (\pm 8,12) The data for post-operative functional assessment were recorded at the 24th month follow-up. The mean Rowe score was 92,43 (\pm 7,14), and the CONSTANT score was 82,60 (\pm 11,03). There was a significant improvement in CONSTANT and Rowe scores ($p < 0,005$). We had two cases of redislocations.

Conclusion: MGHL augmentation technique provided a low rate of redislocation and satisfactory functional outcomes. We recommend this technique to surgeons who perform arthroscopic shoulder instability surgeries in cases with degenerated joint capsule and labrum.

Introduction

The Bankart lesion, which is the avulsion of the anterior portion of the glenoid labrum and the inferior glenohumeral ligament complex, occurs during the anterior dislocation of the humeral head. The currently accepted treatment of the Bankart lesions is arthroscopic Bankart repair. In acute cases, the torn labrum can be fixed arthroscopically [1]. However, in delayed cases with repetitive dislocations, the anterior labrum is degenerated, which results in a lack of viable soft tissue to reconstruct the labral anatomy. In such cases, where labrum can't be repaired, the capsular plication is performed to restore stability [2].

The joint capsule and glenoid labrum are severely retracted in chronic cases with numerous recurrent dislocations, which results in insufficient viable soft tissue for capsular plication [2,3]. We have proposed that labral repair with Middle Glenohumeral ligament (MGHL) augmentation could be done to reconstruct anterior stability. In this study, we report the clinical outcomes of patients who had undergone arthroscopic MGHL augmented repair for anterior stabilization for chronic anterior dislocations.

Patients And Method

The study was designed as a retrospective study. Patients who had undergone arthroscopic MGHL augmented labral repair for recurrent anterior shoulder dislocation between October 2015 and January 2019 were retrieved from the archives. Out of 80 patients, 71 patients who had regularly attended the follow-ups were included in the study.

The same orthopedic surgeon experienced in arthroscopic shoulder surgery has performed all of the operations. Rowe[4] and CONSTANT [5] scores were used for the functional evaluation of the patients. Pre- and post-operative range of motions were noted.

Surgical Technique: Shoulder arthroscopy is performed via standard portals in the beach chair position. The retracted defective labrum is mobilized anteriorly with the help of an elevator. MGHL is mobilized for sufficient excursion. MGHL and capsular remnants are fixed to the anterior part of the glenoid with suture anchors in tension, providing satisfactory stability. (Figure 1)

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA). 17.0 software. The Kolmogorov–Smirnov test was used to determine whether the data related to variables included in the analysis followed a normal distribution pattern. The paired-Samples t-test was used to evaluate data with a normal distribution. The level of significance was set at $p < 0.05$.

Results

The patient population consisted of 61 males and 9 females. The mean age was 24.2 (17–37). The mean duration of surgery was 44,6(32–68) minutes. An average of 3,2(2–4) suture anchors was used for each patient. The mean pre-operative Rowe score was 11,19(\pm 9,19), and the mean pre-operative CONSTANT score was 41,7 (\pm 8,12)

The data for post-operative functional assessment were recorded at the 24th month follow-up. The mean Rowe score was 92,43 (\pm 7,14), and the CONSTANT score was 82,60 (\pm 11,03). There was a significant improvement in CONSTANT and Rowe scores ($p < 0,005$). (Table 1)(Fig. 4)

Table 1
Comparison of the preoperative and postoperative Rowe and CONSTANT scores

	N	Preoperative	Postoperative	p
Rowe	71	11,19 (\pm 9,19)	92,43 (\pm 7,14)	< 0.005
Constant	71	41,72(\pm 8,12)	82,60(\pm 11,03)	< 0.005

We had only 2 cases with redislocation, which were caused by epileptic seizures. Those cases underwent open procedures.

Discussion

Arthroscopic primary repair is the most frequently used method in Bankart lesions [1]. However, in advanced chronic cases, there may be no labral tissue to be repaired by primary labral repair. In such cases, rotator interval closure and capsular plication can be performed [6, 7]. Recurrent dislocations and absence of treatment results in significant degeneration of the joint capsule in certain cases. In these cases, we have performed middle glenohumeral ligament augmentation for Bankart repair and evaluating the outcomes of this study, we have yielded satisfactory results.

Mologne et al. have used arthroscopic capsular plication for both posterior and anterior shoulder recurrent instability and have reported that capsular plication provided satisfactory results in anterior shoulder instability[8]. In a study conducted by Shafer et al., in Bankart lesions, both the labrum was sewn arthroscopically and capsular plication were used and the results reported were successful [6].In capsular plication technique, the quality and the flexibility of the capsule tissue are important. In a biomechanical study by Sodi et al. on 6 human cadavers, capsular plication and rotator closure were applied but considering the rate of recurrent dislocation, the results were not found to be significant [7]. Sisto et al. report in their study that the looseness in capsular plication should be at a minimum level and the capsule should be of adequate quality. If the capsule is loosely plicated, the probability of dislocation recurrence may be high and when it is tightly plicated, there may be limited motion [9]. We think that in chronic Bankart lesions caused by recurrent dislocation, the capsule becomes much more degenerated, flail, and loose than the normal so that plication would provide unsatisfactory stability alone. MGHL augmentation technique provided satisfactory stability and clinical outcomes with low rate of redislocations.

Bacilla et al. reported 9% recurrence rate in arthroscopic interventions in shoulder instability and Kim et al. reported 4.2% recurrence rate [10, 11].We had 2 cases of redislocations due to epileptic seizures which can be evaluated as satisfactory outcomes in comparison with the literature.

Limitation of our study was a relatively short period of follow-up and retrospective design of the study.

Conclusion

MGHL augmentation technique provided a low rate of redislocation and satisfactory functional outcomes. We recommend this technique to surgeons who perform arthroscopic shoulder instability surgeries in cases with degenerated joint capsule and labrum.

List Of Abbreviations

Middle Glenohumeral ligament (MGHL)

Statistical Package for Social Sciences (SPSS)

Declarations

Ethics Committee Approval:

Ethical approval was obtained from the clinical ethical board of Aydın Adnan Menderes University and was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed consent:

Informed consent was obtained from all individual participants included in the study. Patients signed informed consents on the conduction of diagnostic procedures and medical interventions.

Conflict of Interest:

All of the authors declared no conflict of interest.

Financial Disclosure:

All of the authors declared that this study had received no financial support.

Author Contribution:

VY performing the operations, acquisition of data, preparation of the manuscript. constructing the idea

MT writing the manuscript, critical review of the manuscript, analysis of the data, literature review

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Figures

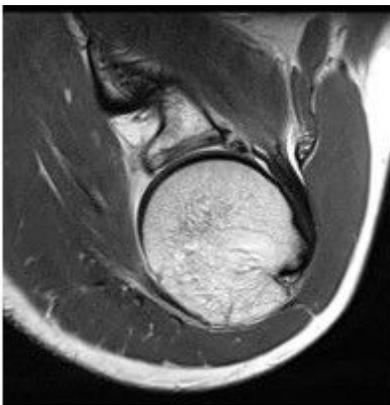


Figure 1

Bankart lesion on MRI

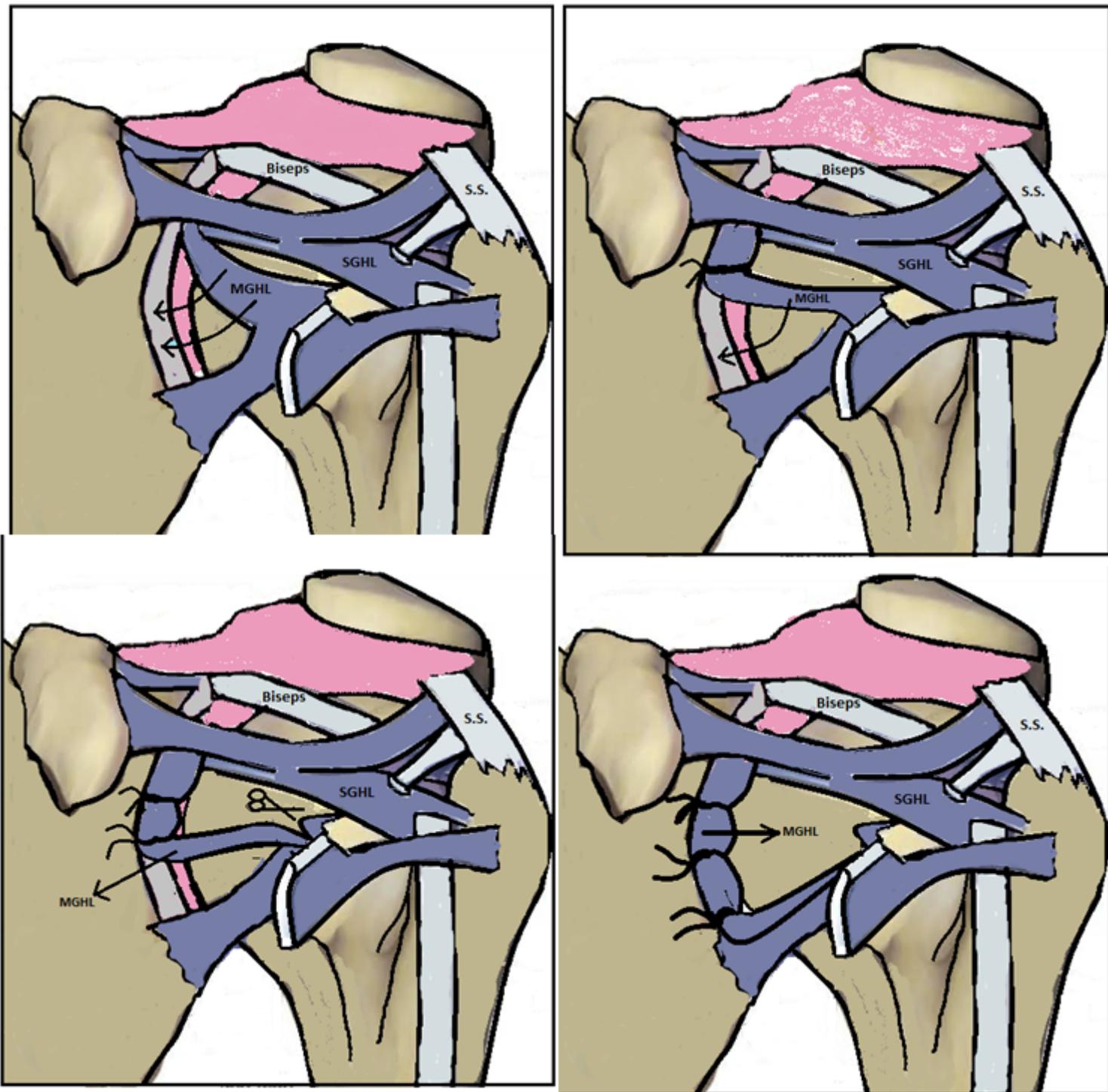


Figure 2

Chronic shoulder instability

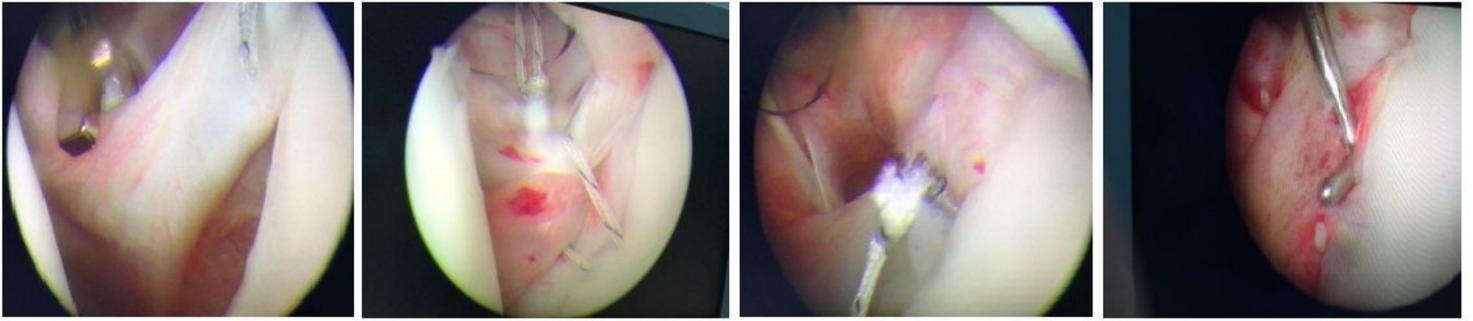


Figure 3

Arthroscopic view MGHL augmented labral repair

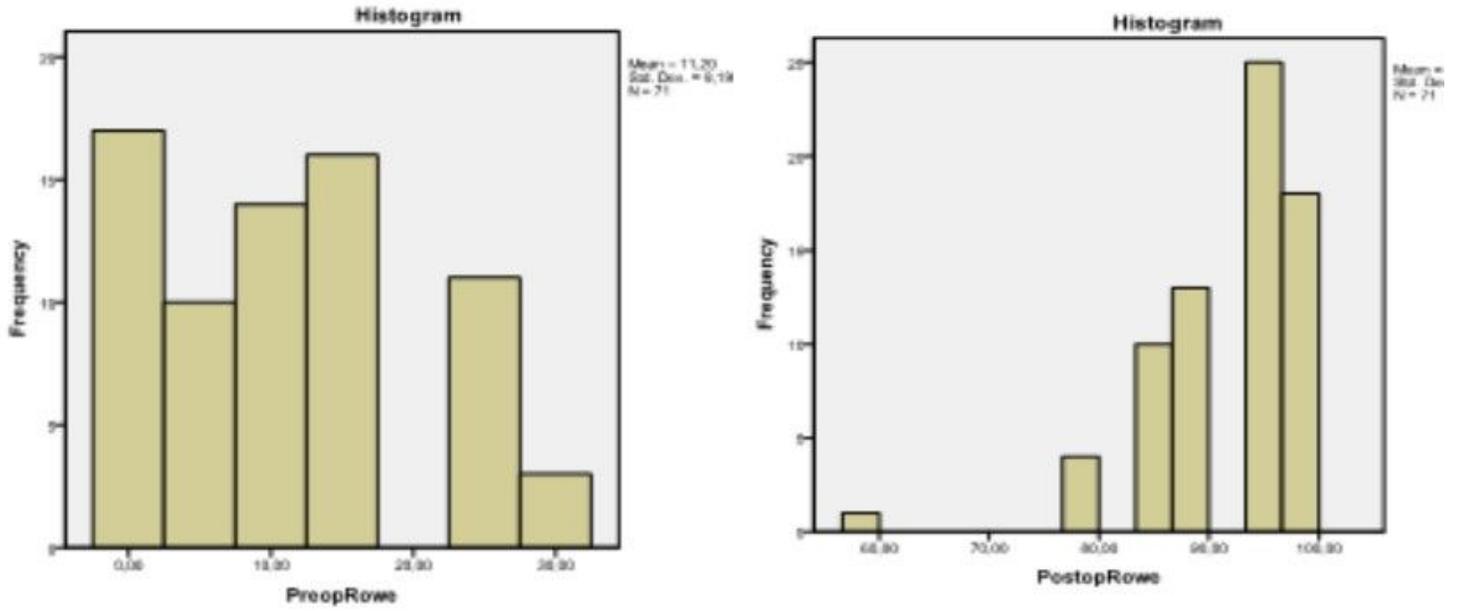


Figure 4

Schematic presentation of MGHL augmented labral repair