Two Anchors as Effective as Three When Using a Locking Mattress Suture Technique for Arthroscopic Anterior Stabilization

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INTRODUCTION: Patients with traumatic anterior shoulder instability are often treated with an arthroscopic stabilization procedure. Many risk factors for persistent instability and worse postoperative outcomes have been described, including the presence of bone loss, younger age, participation in contact sports, hyperlaxity, and insufficient anchor number. Previous authors have recommended at least three to four anchors to sufficiently repair the anterior capsulolabral tissues. It remains unclear if it is truly the number of anchors needed or rather the number of suture passes through the injured capsulolabral tissue that confers the “point of fixation” and surgical success. The purpose of this study was to compare a three-anchor traditional simple stitch repair (control group) to a two-anchor repair using a locking horizontal mattress stitch (experimental group) that uses more passes through the repaired tissue in patients with traumatic anterior shoulder instability without bone loss. Our hypothesis was that no differences in primary or secondary measures would be found between groups, since the reduction in anchor number in the experimental group is compensated by more suture passes.

METHODS: This is a single surgeon prospective randomized trial of patients who underwent primary arthroscopic stabilization after a traumatic anterior shoulder dislocation. Inclusion criteria included a documented anterior shoulder dislocation, MRI confirming isolated injury to the anterior capsulolabral complex, a preoperative CT confirming an on-track injury, and failed conservative care including physical therapy. Exclusion criteria included revision surgery, >10% glenoid bone loss based on CT, presence of an engaging Hill-Sachs lesion, and patients with hyperlaxity. Age, sex, and participation in sports were recorded. The primary outcome measure was the modified WOSI index with minimum two-year follow-up, and a power analysis was calculated for determining MCID. Recurrent instability events and reoperations were also analyzed.

RESULTS: Each group included thirty patients with a mean age of 25 years treated over a four-year period. There were no differences in baseline demographics (age, sex, laterality) between groups. There was an equal number of contact athletes in each group, although the type of contact sports differed. The mean follow-up was 26.6 months. General linear modeling was used to compare modified WOSI scores with follow-up as a control variable. There was a statistically significant difference in modified WOSI scores between groups ($p<0.01$) with the two-anchor group having a better mean modified WOSI score (92.1 vs 82.6). The differences between groups did not meet MCID. The control group had three recurrent dislocations and two reoperations; whereas, the experimental group had one recurrence and one reoperation. These differences also were not found to be significant.

DISCUSSION AND CONCLUSION: The main finding of this study was that two locking horizontal mattress stitches into two anchors did as well as a more traditional repair using three simple stitches into three anchors during arthroscopic anterior stabilization surgery. Both groups achieved satisfactory results, and no statistical differences were found in recurrence rates and reoperation rates. More patients are needed to determine if the differences would result in differences in recurrence, and the findings are limited to patients without bone loss and hyperlaxity. In conclusion, suture configurations to improve capture of the capsulolabral tissue and improve labral height may offer advantages of less anchor burden and reduce cost associated with arthroscopic stabilization surgery.