Addition of a Remplissage to Arthroscopic Bankart Repair Has a Protective Effect for Recurrent Instability for Shoulders with Critical Humeral Bone Loss

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INTRODUCTION: Recent literature has shown that inferior Hill-Sachs extension for on-track shoulders is predictive of recurrent instability following arthroscopic Bankart repair alone. Specifically, there is a high risk for recurrent instability when the lesion extends below the humeral equator on sagittal MRI. This worrisome inferior extension has been termed “critical humeral bone loss.” Remplissage has yet to be explored as a potential useful augmentation in patients with critical humeral bone loss. We hypothesized that the addition of remplissage would decrease recurrence rates for Hill-Sachs lesions with inferior extension or “critical humeral bone loss” compared to arthroscopic Bankart repair alone.

METHODS: We performed a retrospective analysis of patients with on-track Hill-Sachs lesions who underwent primary arthroscopic Bankart repair with or without the addition of remplissage from 2007 to 2021 with a minimum of 2 years follow-up. Off-track shoulders, revision stabilization, glenoid bone loss >20%, and those with follow-up <2 years or incomplete medical data were excluded. Patient demographics and preoperative characteristics were collected including contact athlete status and number of preoperative dislocations. The primary outcome was recurrent instability defined as either post operative dislocation or subluxation. The Hill-Sach's position was measured by the upper edge angle (UEA) and lower edge angle (LEA) of the Hill-Sachs lesion relative to the humeral axis on sagittal MRI as previously described. The preoperative MRI was used for measurements to calculate the glenoid track and Hill-Sachs interval. Univariate and multivariate logistic regression were implemented to determine the protective effect of remplissage.
RESULTS: Two hundred and twenty-two patients were included for analysis. The mean age of patients was 21.0 years (12.9-40.5) with average follow-up of 7.0 years (2-14.4), 44 patients (19.8%) underwent remplissage in addition to arthroscopic Bankart. On multivariate analysis, remplissage significantly reduced risk of postoperative dislocation (OR: 0.09, $p = 0.006$) while adjusting for age, preoperative dislocations, contact athlete status, glenoid bone loss, and critical humeral head bone loss. When stratified by critical humeral head bone loss, remplissage remained protective (OR: 0.015, $p = 0.009$) against recurrent dislocation. When looking at recurrent instability (dislocation or subluxation), remplissage decreased the risk of recurrent instability across the entire cohort (OR: 0.057, $p = 0.001$), however critical humeral bone loss was not a significant predictor of recurrent instability (OR: 2.28, $p = 0.10$).

DISCUSSION AND CONCLUSION: The addition of a remplissage for critical humeral bone loss in patients with subcritical glenoid bone loss and on-track Hill-Sachs lesions reduces the risk of dislocation in patients undergoing arthroscopic Bankart repair. Surgeons should consider adding a remplissage when there is significant inferior extension of the Hill-Sach's lesion below the humeral equator.