Biceps Smash Augmentation in Full Thickness Rotator Cuff Repairs: Actual vs. Expected Retear Rates in a Consecutive Series

John M. Tokish MD[1], Casandra Smith, PA-C[1], M. Lane Moore, MD MBA[1], Sailesh V. Tummala, MD[1], Joseph C. Brinkman, MD[1]

[1]Department of Orthopedic Surgery, Mayo Clinic Arizona

ABSTRACT

Introduction: Augmentation of rotator cuff repair in patients at risk for retear has gained popularity. These techniques have generally consisted of allograft, xenograft, or synthetic patches. Recently, use of a compressed autograft biceps patch ("Biceps Smash") from the normally discarded portion after biceps tenodesis has been described as a potential patch for rotator cuff repair augmentation as a point of care technology.[1] As an autograft, it is low-cost and often readily available. The purpose of this study was to evaluate the healing rate of full thickness rotator cuff tears augmented with the biceps smash autograft patch, compared to the expected retear rate based on the modified rotator cuff healing index (RoHI) score.

Materials & Methods: 30 consecutive patients who underwent a rotator cuff repair and augmentation with a compressed biceps autograft patch were evaluated for rotator cuff integrity using postoperative MRI or ultrasound. Five patients were excluded from analysis, including 4 who were unable to obtain follow up imaging, and one patient who sustained a traumatic fall in the early postoperative period and was converted to RSA prior to MRI scanning. The remaining 25 patients were assessed for actual retear rate compared to their expected retear rate based on their individual modified Rotator Cuff Healing Index (RoHI) score. The postoperative radiologic studies were read by a radiologist who was independent of the surgical team.

Results: Twenty-four of the 25 patients had a healed rotator cuff (96%) at a minimum of 6 month radiologic follow-up (mean 10.0 months). One patient sustained a retear of the cuff in this series (4%). Based on modified RoHI calculations this group would have been expected to have an overall failure rate of 26%. In comparing patients with a "low-risk" RoHI score of <5, this low-risk group (17 patients) had an expected retear rate of 11%, and an actual rate of 0%. In those "high-risk" patients whose RoHI score was >4 (8 patients), the expected retear rate was 55%, and the actual retear rate was 4% ($p<0.005$).

Discussion: Augmentation of full thickness rotator cuff repair with a compressed autograft biceps smash patch significantly decreased the expected retear rate in low-risk and especially high-risk patients. Further study with a larger controlled study is desirable to define exact indications for this augmentation, but given its low cost, widespread availability, and significantly lower than expected retear rate its use may deserve consideration.

References:

1. Brinkman JC, Makovicka JL, Denard PJ, Colbath GP, Mercuri J, Tokish JM. Compression of an Autograft Biceps Into an Augmentation Patch Does Not Cause Mechanical Damage to the Tenocyte. Arthroscopy. 2024 Sep 26:S0749-8063(24)00745-X. doi: 10.1016/j.arthro.2024.09.029. Epub ahead of print. PMID: 39341262.