

No Difference In Mechanical Damage Between Compressed and Non-Compressed Free Proximal Biceps Tendon Autograft

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INTRODUCTION: Rotator cuff augmentation is one strategy to limit the rate of re-tear after rotator cuff repair. Although several augmentation grafts have been reported, the long head of the biceps tendon autograft is an appealing and cost-effective option. However, in its native form the biceps tendon is often too thin to span the repair site. Previous preparation techniques have allowed for larger biceps graft, but at the expense of tenocyte viability. A compression plate has recently been reported as a point of care processor for adapting the long head of the biceps into a larger autograft patch. The biologic availability of the biceps graft after this compression preparation technique remains known. The purpose of this study was to evaluate the effects of this graft preparation technique on histological evidence of tenocyte mechanical damage.

METHODS:

A consecutive series of patients undergoing biceps tenodesis for shoulder pathology were evaluated. After supra-pectoral tenodesis, 27 mm of the long head of the biceps was secured for compression into the patch. The remaining length of residual tendon was longitudinally split, resulting in two equal lengths of remnant tendon from the same zone. One sample was sent to pathology with no preparation, and the other was prepared as a compressed biceps autograft patch according to the manufacturer's recommendations. Both grafts were sent to pathology for evaluation of tenocyte damage. Records were reviewed to determine if biceps tendon samples were viable at the time of harvest, and whether the compression process creating the patch caused evidence of tenocyte necrosis or mechanical damage at the time of patch augmentation.

RESULTS: 55 shoulder procedures and 110 samples were sent for pathology analysis. 42 of the 55 (76%) specimens demonstrated completely viable tenocytes in both the compressed and non-compressed groups, and 7 (13%) cases showed evidence of tenocyte necrosis in both groups. The difference in tenocyte necrosis between the compressed group and the native group was not statistically significant ($p=0.625$).

DISCUSSION AND CONCLUSION: Autograft biceps compression into a point of care patch did not result in increased mechanical destruction at the time of insertion for augmentation of rotator cuff pathology. This technique may provide live tenocytes for the potential enhancement of rotator cuff pathology or after subscapularis repair in the setting of anatomic total shoulder arthroplasty.

