# Long Head of the Biceps Subpectoral Tenodesis Anatomic versus Traditional Tensioning Technique During Arthroscopic Rotator Cuff Repair: A Randomized Prospective Trial

Amir M. Boubekri[1], Krishin S Shivdasani, Michael Scheidt, Thomas Gabriel Stanila, Nickolas G Garbis, Dane H Salazar[2]
[1]Loyola University Medical Center, [2]Loyola University Stritch School of Medicine

INTRODUCTION:
This study aimed to compare the outcomes of two methods for tensioning the LHB tendon during surgery: one based on traditional landmarks and another utilizing a standardized anatomic tensioning approach. We sought to assess changes in the American Shoulder and Elbow Surgeon (ASES) scores post-surgery.
METHODS:
After power analysis (alpha = 0.05, power = 0.80), 167 patients were recruited and randomized to two treatment arms and underwent biceps tenodesis surgery via either a step-by-step protocol of anatomic tensioning (treatment group = 80) or via traditional tensioning technique utilizing the pectorals major tendon as a landmark (control group = 87). The anatomic tensioning technique has been previously published and is publicly available. Surgeries were performed from January 2020 to December 2021. Demographic data, visual analog scale pain, active external rotation, active forward flexion, and ASES scores were evaluated preoperatively, and postoperatively at 6 weeks, 3 months, 6 months, 12 months, and at most recent follow-up. A minimum of 12 months follow up was obtained in both groups.
RESULTS:
167 patients underwent biceps tenodesis surgery, and were randomly assigned into treatment (N = 80) and control groups (N = 87). The cohort was 44.3% female, 63.5% White, with a mean age of 55 (23-79), and mean body mass index (BMI) of 30.9 kg/$m^2$ (SD 6.14). Follow-up averaged 18.8 months, with no significant difference in demographic characteristics between groups. Linear mixed models showed no significant differences in active forward flexion, active external rotation, or pain scores at any time point postoperatively. Of note, ASES scores were significantly higher in the treatment arm at 6 weeks postoperatively, although no significant differences were discovered at most recent follow-up at 18 months.
DISCUSSION AND CONCLUSION:
This randomized prospective study revealed no significant difference in active forward flexion, active external rotation, or pain scores between patients treated with anatomic tensioning of the LHB tendon (treatment) and patients treated with standard biceps tenodesis technique (control). However, ASES scores were significantly higher in the treatment arm at 6 weeks postoperatively, although no significant differences were discovered at most recent follow-up at 18 months. These findings suggest that while anatomic tensioning may yield short-term benefits in functional outcomes, long-term results may vary. Further research could explore the underlying mechanisms driving these differences over time.