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Biceps Rerouting Outperforms Conventional Repair for Large to Massive Rotator Cuff Tear at Mid-Term Follow-Up: A Propensity Score–Matched Cohort Study

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Introduction and Background

Biceps rerouting (BR) rotator cuff repair has emerged as a promising treatment option for large rotator cuff tears. This study aimed to compare clinical and imaging outcomes between BR and conventional rotator cuff repair using propensity score matching (PSM).

Material and Method

A retrospective cohort study of patients who underwent BR (n=132) or conventional rotator cuff repair (n=644) was conducted, and 1:1 propensity score matching was performed, yielding 84 matched pairs. After matching, demographic characteristics, tear dimensions, and baseline functional scores were comparable between groups. Clinical outcomes, including American Shoulder and Elbow Surgeons (ASES) score, Constant score, Visual Analog Scale (VAS) for pain, and range of motion (ROM) were assessed at 12 months and at final follow-up. Retear was evaluated using magnetic resonance imaging (MRI). Within-group pre- to postoperative changes were also examined to assess longitudinal improvement.

Results

Baseline characteristics were well balanced after PSM. Mean follow-up durations were 33.4 months for the BR group and 32.6 months for the conventional group, and matched tear sizes were similar (retraction: 2.5 ± 0.6 cm vs 2.5 ± 0.8 cm). At 12 months, the BR group demonstrated significantly higher ASES scores (78.7 ± 13.3 vs 71.1 ± 14.9 , $p=0.033$) and lower VAS scores (2.1 ± 1.7 vs 3.0 ± 2.0 , $p=0.045$). At final follow-up, the BR group continued to show lower VAS scores (3.0 ± 1.7 vs 3.3 ± 1.9 , $p=0.027$) and superior Constant scores (81.4 ± 9.5 vs 78.1 ± 12.3 , $p=0.049$). Retear rates were significantly lower in the BR group at both 12 months (10.6% vs 19.1%, $p=0.041$) and final follow-up (12.9% vs 22.6%, $p=0.039$). Both groups exhibited significant within-group improvements across all measures.

Conclusions

Biceps rerouting resulted in significantly lower retear rates, superior early functional outcomes, and sustained superiority in pain reduction and functional recovery compared with conventional rotator cuff repair at mid-term follow-up.

