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Complete versus Incomplete Footprint Coverage in Rotator Cuff Repairs

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Summary:
Age, tear size, fatty infiltration, and muscle atrophy seemed to affect the reparability of torn rotator cuff, although the clinical outcomes showed no difference between complete and incomplete footprint coverage group at mean 36 months of follow-up.

Abstract:
Introduction: While the purpose of rotator cuff repair is to cover the entire original footprint, sometimes it is impossible to achieve this. Complete or incomplete footprint coverage may lead to different re-tear rate and thus different clinical results. The aim of this study was first to see the differences in re-tear rate and clinical results between complete and incomplete footprint coverage in rotator cuff surgery. And second was to evaluate the variables affecting these repair coverage.
Methods: From 2007-2009, 107 consecutive medium-to-large rotator cuff tears were identified as having complete or incomplete coverage repair of original footprint. The repair was classified as complete (CG), when entire medial-lateral footprint was covered by repaired tendon, or conversely incomplete (IG), when medial-lateral contact surface of GT by the RC tendon was less than 50% of its footprint. After excluding 29 patients (no postoperative MRI, follow-up loss, and combined rheumatoid arthritis), 78 patients were retrospectively evaluated for re-tear rate and clinical outcomes. In addition, comparison of demographic data and MRI features between two groups were performed.
Results: 51 tears were repaired completely and 27 were incompletely. On postoperative MRI, CG showed 47.1% of intact tendon, 43.1% of delaminated partial re-tear, and 9.8% of full-thickness re-tear, and IG revealed 22.5% of intact tendon, and 55.6% of delaminated partial re-tear and 22.2% of full-thickness re-tear without statistical difference on postoperative MRI (p=0.148). However, when we divided the integrities into intact and re-tear (which included delaminated partial re-tear), re-tear rate showed difference between groups (52.9% in CG versus 77.8% in IG, p=0.032).
Range-of motion of forward elevation and internal rotation were statistically different between two groups as well (p=0.026 and 0.028, respectively). However, PVAS, ASES score, and Constant score showed no difference between two groups. Preoperatively, patients in incomplete repair group were older than complete group (p=0.014). Tear size in coronal oblique and sagittal oblique view and Goutallier fatty infiltration was larger in incomplete group. Other demographic value and preoperative clinical scores showed no differences.

Conclusion: Age, tear size, fatty infiltration, and muscle atrophy seemed to affect the reparability of torn rotator cuff. However, the clinical outcomes showed no difference between complete and incomplete footprint coverage group at mean 36 months of follow-up. The less footprint coverage led to higher re-tear rate.