Functional Outcomes after Double Row Versus Single Row Rotator Cuff Repair: A Prospective Randomized Trial

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Objectives: The effect of single row (SR) versus double row (DR) rotator cuff repair on functional outcomes was examined in a prospective randomized design.

Methods: Fifty patients were randomized to DR or SR repairs; 39 patients (13 women, 26 men, 23 SR, 16 DR, age 62±7 yr) were assessed at an average of 2.2±1.6 yr after surgery (range 1-7 yr; tear size 17 medium, 13 large, 9 massive). The following data were recorded prior to surgery and at follow-up: Penn, ASES and Simple Shoulder Test (SST) scores; range of motion (ROM) for shoulder flexion, external rotation (ER) at 0º and 90º abduction, and internal rotation (IR) at 90º abduction; shoulder strength (Lafayette Manual Muscle Tester) in empty and full can tests, abduction and ER at 0º abduction. Treatment (SR vs. DR) by Time (pre-op vs. post-op) mixed model analysis of variance was used to assess the effect of rotator cuff repair. It was estimated that with 20 patients per group a 10-point difference in improvement in ASES scores between SR and DR treatments could be detected at an alpha level of 0.05 with 80% power.

Results: Outcome Scores: RC repair markedly improved Penn, ASES and SST scores (P<0.001), with similar improvement between single versus double row repairs (Treatment by Time P=.49 to P=.67), and excellent scores at follow-up (Double Row vs. Single Row: Penn 91±11 vs. 91±12, P=.98; ASES 92±9 vs 87 ±15, P=.24; SST 11.2±1.2 vs. 11.4±1.0, P=.58). ROM: Patients with DR repairs lost ER ROM at 0º abduction (pre-op to final follow-up 7±10º loss, P=.013). ER ROM did not change with SR repair (3.9±15.6º gain, P=.24; Treatment by Time P=.017). This effect was not apparent for ER ROM at 90º abduction (Treatment by Time P=.26). IR ROM improved from pre-op to final follow-up (P<.01, SR 17±18º, DR 13±23º, Treatment by Time P=.31). Strength: RC repair markedly improved strength in Empty Can (51%), Full Can (54%), Abduction (45%) and ER (31 %) strength (all P<.001), with no difference between SR and DR repairs (P=.54 to P=.81). Outcomes were not adversely affected by RC tear size, retraction, gender, or BMI. Patients <60 yo had better ASES scores than older patients (96±9 vs. 87±13, P=.021) but an age effect was not apparent for Penn (P=.14) or SST (P=.17).

Conclusion: Patients had excellent outcomes regardless of whether they had a SR or DR repair. Rotator cuff repair, and subsequent rehabilitation, markedly improved shoulder strength. DR repair was associated with a loss of ER ROM but this loss did not impact other outcome measures.