# Clinical Outcomes of Rotator Cuff Repair with Subacromial Bursa Re-Implantation: A Retrospective Cohort Study

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INTRODUCTION: The subacromial bursa has been found to be a rich, local, source of mesenchymal stem cells. We developed a technique to augment rotator cuff repair by reimplanting minced autologous subacromial bursa tissue. This study aims to evaluate clinical outcomes of this technique compared to traditional rotator cuff repair without subacromial bursa reimplantation.

METHODS:

Patients aged 37-77 with a full thickness or near full thickness (>85%) supraspinatus tears underwent arthroscopic transosseous-equivalent double row rotator cuff repair. In patients prior to July 2019, the subacromial bursa was resected for visualization, and discarded. In patients after July 2019, the subacromial bursa was collected using a filtration device connected to an arthroscopic shaver, and reapplied to the bursal surface of the tendon at the completion of the rotator cuff repair. Six months post-op MRIs were obtained on bursa patients, and minimum eighteen-month clinical outcomes (SANE, ASES, patient satisfaction) were compared to the cohort of non-bursa patients. A blinded musculoskeletal radiologist reviewed and graded pre-operative and post-operative MRIs.

RESULTS: A total of 136 patients were included in the study (Control n=110, Bursa n=26). Pre-operative demographics and tear characteristics were not different between groups (Table 1). Average follow-up was significantly longer in the control group (Control: 3.2 ± 0.7 yrs; Bursa: 1.8 ± 0.3 yrs; p<0.001). The control group showed a significantly higher SANE score (Control: 87.9 ± 15.8, Bursa: 83.6 ± 15.1, p=0.037) that did not meet minimum clinically important difference. ASES and patient satisfaction scores were similar between the groups. (Table 2). Symptomatic retears were not significantly different between groups (Control: 9.1%, Bursa 7.7%, p>0.05). Seven patients in the control group underwent re-operation (6.4%), compared to zero patients in the bursa group (0%, p>0.05). Six-month post-operative MRIs obtained on bursa patients demonstrated 85% rotator cuff continuity (n=17/20). Median postoperative Sugaya classification was 3 (range, 1-5) and was significantly positively correlated with pre-operative Goutallier grade (R=0.74, p<0.001).

DISCUSSION AND CONCLUSION: Clinical outcomes of rotator cuff repair with re-implantation of minced subacromial bursa tissue are non-inferior to traditional repair. Augmentation of rotator cuff repair with bursal tissue does not appear to have negative short-term effects, and further research is needed to evaluate potential for improved tendon healing or clinical outcomes.

**Table 1**

| | Control (n=110) | Bursa (n=26) | P-Value |
|---|---|---|---|
| Age | 59.8 ± 10.3 | 59.9 ± 9.3 | 0.83 |
| Side | | | 0.23 |
| Left | 32 | 11 | |
| Right | 78 | 14 | |
| Dominant Hand | | | 1 |
| Left | 7 | 2 | |
| Right | 75 | 23 | |
| | Control (n=88) | Bursa (n=26) | |
| Tear Width (cm) | 2.0 ± 1.1 | 1.8 ± 0.9 | 0.41 |
| Goutallier | | | 0.09 |
| 0 | 25 | 11 | |
| 1 | 23 | 11 | |
| 2 | 15 | 2 | |
| 3 | 8 | 2 | |
| 4 | 14 | 0 | |

**Table 2**

| | Control (n=110) | Bursa (n=26) | P-Value |
|---|---|---|---|
| Follow-up (years) | 3.2 ± 0.7 | 1.8 ± 0.3 | <0.001* |
| Satisfaction | 9.2 ± 1.8 | 9.2 ± 1.26 | 0.31 |
| SANE | 87.9 ± 15.8 | 83.6 ± 15.1 | 0.037* |
| ASES | 89.9 ± 16.6 | 84.8 ± 21.0 | 0.07 |
| Symptomatic Retear | 10 (9.1%) | 2 (7.7%) | 0.86 |
| Reoperations | | | 0.2 |
| Yes | 7 (6.4%) | 0 (0%) | |
| No | 103 | 26 | |