

The impact of subacromial bursa reimplantation on arthroscopic rotator cuff repair for small to large tears: a randomized controlled trial

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INTRODUCTION:

Subacromial bursa had reported a rich, local, source of mesenchymal stem cell, but is removed for visualization during rotator cuff repair. Recently, preparation technique for isolating subacromial bursa cells without collagenase, chopping technique, was reported. However, the clinical efficacy of subacromial bursa reimplantation using chopping technique was still unclear. The purpose is to evaluate the clinical efficacy of subacromial reimplantation with chopping technique for ARCR in patients with full-thickness rotator cuff tear (RCT).

METHODS:

A total of 64 patients with small to large RCTs were prospectively enrolled and randomized into 2 groups: subacromial reimplantation with chopping technique on repaired tendon after ARCR (SAB group: 32 shoulders) or ARCR alone (control group: 32 shoulders) (Table 1). ARCR was standardized to the double-row suture bridge technique to reduce the heterogeneity in different repair methods. The primary variable for evaluating the efficacy of subacromial reimplantation was the retear rate using magnetic resonance imaging at 6 and 24 months postoperatively. Secondary variables included range of motion (ROM), the University of California at Los Angeles Shoulder (UCLA) and Japanese orthopaedic association (JOA) scores at baseline and at 6 and 24 months postoperatively.

RESULTS:

There were no significant differences in all patient's characteristics (age, sex, and side) and preoperative clinical and MRI findings between SAB and control groups (Table 1 and 2). The retear rate of medium and larger RCTs was significantly lower in the SAB group (3.8% [1/26]) than in the control group (25.9% [7/27]) (P = .05, Table 3). The retear of small RCT did not occur in both SAB and control groups (Table 3). The UCLA and JOA scores showed significant improvement 6 and 24 months after surgery in both groups (Figure 1). Functional scores and shoulder ROMs did not significantly differ between the 2 groups at 6 and 24 months (Figure 1).

DISCUSSION AND CONCLUSION: Subacromial bursa reimplantation with chopping technique after ARCR significantly decreased the retear rate in patients with medium and larger RCTs. However, clinical outcomes showed no significant difference between the 2 groups at 6 and 24 months postoperatively.

Table 1. Number of patients by tear size and patient characteristics

Number of patients by tear size	SAB group	Control group	
large tear (> 5 cm)	N: 11	N: 12	
medium tear (4 to 3 cm)	N: 14	N: 14	
small tear (< 3 cm)	N: 7	N: 6	
total	N: 32	N: 32	

Preoperative Patients Characteristics	SAB group	Control group	p-value
Age, Y	63.6 ± 11.0	66.1 ± 10.7	0.36
Sex (male, %)	22 (66.7%)	18 (56.3%)	0.45
Side			
Right (%)	14 (42.4%)	19 (59.3)	0.22

Table 2. Preoperative clinical and MRI findings

Preoperative clinical findings	SAB group	Control group	p-value
Active ROMs			
Forward flexion (deg)	122.7 ± 35.0	132.6 ± 38.4	0.23
External rotation (deg)	40.3 ± 17.8	39.2 ± 16.6	0.36
Internal rotation (level)	11 (T10/S)	11 (T10/S)	0.33
UCLA score (point)	19.0 ± 3.4	18.5 ± 3.7	0.11
JOA score (point)	64.8 ± 11.2	65.8 ± 11.6	0.67

Preoperative MRI findings	SAB group	Control group	p-value
Tear size (axial, mm)	22.3 ± 11.4	22.4 ± 12.3	0.91
Tear size (coronal, mm)	19.5 ± 10.5	20.5 ± 7.3	0.74
Classification			
SAC	0.3 ± 0.8	0.4 ± 0.7	0.91
ISP	0.6 ± 0.7	0.5 ± 0.8	0.47
ISP	0.6 ± 0.7	0.4 ± 0.8	0.94
TM	0.1 ± 0.3	0.2 ± 0.7	0.69

Table 3. Re-tear rate at 6 and 24 months after surgery

Re-tear rate at 6 and 24 months after surgery	SAB group	Control group	
large tear (> 5 cm)	1/11 (9.1%)	5/12 (41.6%)	
medium tear (4 to 3 cm)	0/14 (0%)	2/14 (14.3%)	
small tear (< 3 cm)	0/7 (0%)	0/6 (0%)	

Re-tear rate at 6 and 24 months after surgery	SAB group	Control group	p-value
medium and large tear (> 3 cm)	1/26 (3.8%)	7/26 (25.9%)	0.05

Figure 1. Baseline and postoperative clinical scores and shoulder ROMs

