Subacromial Decompression is Associated with Reduced Risk of Revision Rotator Cuff Repair: A Large Matched Cohort Insurance Database Analysis

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INTRODUCTION: Subacromial decompression (SAD) during arthroscopic rotator cuff repair (ARCR) has traditionally been performed to relieve impingement of the rotator cuff tendons as they pass through the subacromial space. The purpose of this study is to quantify the reduced risk of revision rotator cuff surgery conferred by performing SAD with ARCR.

METHODS: A national insurance administrative claims database was queried for patients who underwent ARCR between 2015-2020 with a minimum follow up of 2 years. The study population was stratified by whether concurrent SAD was performed at the time of the index ARCR. Groups were matched on age, gender, Charlson Comorbidity Index (CCI), complete versus partial tear, and comorbidities previously correlated with RCR healing. The primary outcome was requiring a revision rotator cuff repair.

RESULTS: The final analysis included 30,407 patients per group, with a mean age of 60 years (SD=7) and 45.3% women. Baseline demographics were similar between groups after matching. A total of 551 (1.8%) patients without SAD vs. 437 patients with SAD (1.4%) underwent a revision rotator cuff repair, corresponding to a number needed to treat (NNT) of 3.8 (unadj-OR=0.79. 95% CI 0.70-0.90, P<0.001). In a multivariable model, factors associated with revision rotator cuff repair included subacromial decompression (adj-OR=0.79, 95%CI 0.70-0.90, P<0.001), male gender (adj-OR 0.97, 95% CI 0.97-0.98, P=0.017), older age (adj-OR=0.97, 95% CI 0.97-0.98, P<0.001), complete tear (adj-OR=3.62, 95% CI 2.87-4.57, P<0.001), tobacco use (adj-OR 1.33, 95% CI 1.12-1.52, P<0.001), and CCI (adj-OR 1.05, 95% CI 1.01-1.09, P=0.027).

DISCUSSION AND CONCLUSION: In a large cohort of over 60,000 patients with partial or complete rotator cuff tears, performing concurrent SAD conferred a 26% relative risk reduction for revision rotator cuff repair when compared to ARCR alone. These findings suggest that SAD may reduce the risk of revision rotator cuff surgery.

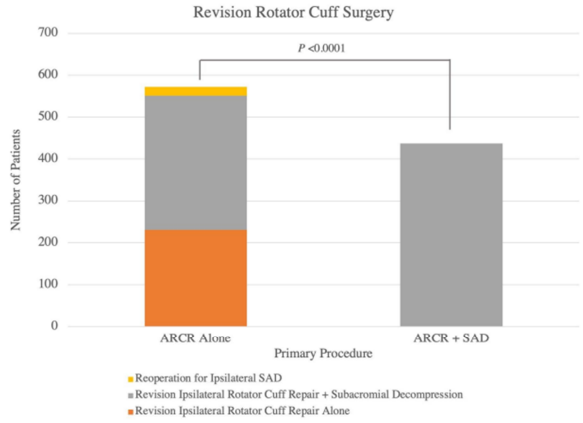

Figure 1: Rate of Revision Rotator Cuff Surgery for Matched Patients with ARCR Alone versus ARCR+SAD

Table 1. Comparison of complication rates in patients with ARCR alone or ARCR with SAD

Variable, N (%)	ARCR Alone (N=30,407)	%	ARCR + SAD (N=30,407)	%	*P*-value
Adhesive Capsulitis	537	1.8	496	1.6	0.209
Manipulation Under Anesthesia	78	0.3	76	0.2	0.936
ED visit	1,356	4.5	1,260	4.1	0.058
Readmission	314	1.0	309	1.0	0.872
Medical Complications					
AKI	109	0.4	113	0.4	0.840
DVT	153	0.5	122	0.4	0.070
Wound Disruption	21	0.1	13	0.0	0.230
Hematoma	18	0.1	19	0.1	1.000
Joint Infection	0	0.0	0	0.0	1.000
Nerve Injury	4	0.0	4	0.0	1.000
Pneumonia	167	0.5	180	0.6	0.518
PE	**12**	0.0	**3**	0.0	**0.039**
Sepsis	0	0.0	0	0.0	1.000
SSI	38	0.1	30	0.1	0.396
Transfusion	10	0.0	14	0.0	0.540
UTI	388	1.3	344	1.1	0.110
Any medical complication	839	2.8	786	2.6	0.191

Table 3. Risk Factors for Revision ARCR

Risk factor	OR	(95% CI)		*P*-value
Subacromial decompression	**0.79**	**0.70**	**0.90**	**<0.001**
Charlson Comorbidity Index	**1.05**	**1.01**	**1.09**	**0.027**
Age	**0.97**	**0.97**	**0.98**	**<0.001**
Male gender	**0.85**	**0.74**	**0.97**	**0.017**
Diabetes	0.99	0.85	1.15	0.868
Hyperlipidemia	0.95	0.80	1.12	0.529
Hypertension	1.14	0.96	1.36	0.132
Obesity	1.04	0.91	1.20	0.570
Osteoporosis	1.05	0.81	1.35	0.733
Tobacco Use	**1.33**	**1.17**	**1.52**	**<0.001**
Complete Tear	**3.62**	**2.87**	**4.57**	**<0.001**