

Risk Factors for Surgical Site Infection Following Arthroscopic Rotator Cuff Repair

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INTRODUCTION: Surgical site infection (SSI) is a well-known complication following orthopedic procedures, leading to increased rates of reoperation, readmission, prolonged hospitalization, and mortality. Arthroscopic rotator cuff repair (ARCR) has become an increasingly popular procedure due to its minimally invasive nature and low complication rates. SSI remains one of the most common postoperative complications following ARCR. Despite its prevalence, there is a paucity of large database studies investigating risk factors for infection following ARCR. Additionally, these studies have only been conducted using a Medicare claims database which limits the external validity of the results. Therefore, the purpose of this study was to identify risk factors for developing surgical site infection following arthroscopic rotator cuff repair in the general population.

METHODS: The American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) database was queried for all patients undergoing arthroscopic rotator cuff repair from 2005-2019 using Current Procedural Terminology (CPT) code 29827. The NSQIP variables for deep, superficial, and organ space infection were utilized to generate the SSI group. Patients that did not meet this inclusion criteria served as the control group. Individuals with missing data were excluded from the study. Patient demographics and comorbidities were collected. Univariate analysis was performed to identify potential risk factors for SSI. Multivariate regression analysis was then used to calculate the odds of each demographic variable or comorbidity for the development of SSI within 30 days following arthroscopic rotator cuff repair.

RESULTS:

47,322 patients were identified as having undergone ARCR. 39,515 (83.5%) had no missing data or records and were included in the final analysis. Of these, 68 (0.17%) went on to develop SSI within 30 days of the index procedure. Univariate analysis identified female sex ($p < 0.001$), insulin-dependent diabetes mellitus ($p < 0.001$), history of severe chronic obstructive pulmonary disorder (COPD) ($p < 0.001$), current dialysis ($p < 0.001$), steroid use for a chronic condition ($p < 0.001$), bleeding disorders ($p < 0.001$), and smoking ($p < 0.001$) as significantly associated with the development of surgical site infection. Multivariate regression revealed female sex (OR=1.9, 95% CI: 1.1-3.3, $p=0.016$), history of COPD (OR=2.6, 95% CI: 1.03-6.4, $p=0.042$), and current dialysis (OR=11.1, 95% CI: 1.5-82.1, $p=0.018$) were associated with an increased risk of surgical site infection.

DISCUSSION AND CONCLUSION: Female sex, history of COPD and current dialysis were identified as associated with increased risk of postoperative surgical site infection following arthroscopic rotator cuff repair in the general population. These findings vary significantly from the current literature on risk factors for infection. Further studies should analyze the effects of preoperative optimization on the potential reduction of infections in patients undergoing ARCR.

	95% Confidence Interval		
	Odds Ratio (OR)	(CI)	p-value
<i>Sex</i>	1.9	1.1-3.3	0.016
<i>History of Severe COPD</i>	2.6	1.03-6.4	0.042
<i>Current Dialysis</i>	11.1	1.5-82.1	0.018

Table 1. Regression analysis of the impact of multiple variables on the risk of surgical site infection after arthroscopic rotator cuff repair. OR: Odds Ratio; CI: Confidence Interval; COPD: Chronic Obstructive Pulmonary Disease