

Abdominoplasty: Independent Predictors of Readmission and Adverse Outcomes

Benjamin B. Massenburg, BA; Paymon Sanati-Mehrizy, BA; Eric M. Jablonka, MD; Peter J. Taub, MD

Purpose: In an era of outcomes-driven medicine, being able to benchmark complication rates of various procedures is of utmost importance. The rates of readmission, reoperation, and adverse outcomes in abdominoplasty have been previously reported, though risk factors for these adverse outcomes have not been thoroughly elucidated. This study aims to identify specific independent risk factors for readmission and other adverse outcomes of abdominoplasty.

Methods: This study retrospectively reviewed the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) and identified all abdominoplasties performed in 2011 and 2012. Univariate logistic regression analysis was used to identify significant associations between preoperative risk factors and adverse outcomes. Multivariate logistic regression analysis was then used to identify independent risk factors and causes of readmission and other adverse outcomes.

Results: Of the 2,946 abdominoplasties identified, there were 251 (8.5%) readmissions, 146 (5.0%) reoperations, and 574 (19.5%) patients who experienced a general complication. The most common adverse outcomes were wound complications in 281 patients (9.5%), pulmonary complications in 67 patients (2.3%) and thromboembolic complications in 34 patients (1.2%). Multivariate regression analysis demonstrated that ASA class above 3, preoperative cardiac comorbidities, pulmonary comorbidities, wounds or wound infections, postoperative thromboembolic complications, wound complications, and having returned to the operating room on the primary admission were independent risk factors for readmission.

Conclusions: This study provides the first critical analysis of risk factors for 30-day readmission in abdominoplasty. These risk factors can aid in patient selection, surgical planning, and post-operative allocation of resources for patients undergoing abdominoplasty.

Table 1. Univariate analysis on patient demographics and preoperative risk factors for readmission, general complications, and return to the operating room.

<i>Variables</i>	<i>Readmission</i>			<i>General Complications</i>		
	Readmission (n=251)	No Readmission (n=2,695)	p Value	Complication (n=574)	No Complication (n=2,372)	p Value
<i>Age, mean (SD)</i>	53.5 (11.6)	48.5 (12.3)	0.000	52.6 (12.0)	48.0 (12.2)	0.000
<i>Female, n (%)</i>	196 (78.1)	2359 (87.6)	0.000	458 (79.8)	2097 (88.5)	0.000
<i>Race, n (%)</i>			0.017			0.001
<i>White</i>	190 (75.7)	1889 (70.1)		120 (82.2)	1959 (70.0)	
<i>Black</i>	27 (10.8)	280 (10.4)		12 (8.2)	295 (10.5)	
<i>Hispanic</i>	15 (6.0)	183 (6.8)		4 (2.7)	194 (6.9)	
<i>Asian</i>	0 (0)	31 (1.2)		0 (0)	31 (1.1)	
<i>Other/Unknown</i>	19 (7.6)	312 (11.6)		10 (6.8)	321 (11.5)	
<i>BMI, mean (SD)</i>	39.7 (11.6)	32.6 (10.3)	0.000	39.4 (12.7)	31.7 (9.5)	0.000
<i>ASA ≥3, n (%)</i>	148 (59.0)	816 (30.3)	0.000	334 (58.2)	630 (26.6)	0.000
<i>Smoking, n (%)</i>	43 (17.1)	302 (11.2)	0.005	91 (15.9)	251 (10.7)	0.001
<i>Plastic Surgeons, n (%)</i>	88 (35.1)	1577 (58.5)	0.000	199 (34.7)	1466 (61.8)	0.000
<i>Inpatient Status, n (%)</i>	209 (83.3)	1546 (57.4)	0.000	486 (84.7)	1269 (53.5)	0.000
<i>Pre-Operative Comorbidities, n (%)</i>						
<i>Cardiac Comorbidity</i>	13 (12.4)	35 (3.5)	0.000	21 (9.3)	27 (3.1)	0.000
<i>Pulmonary Comorbidity</i>	9 (8.6)	25 (2.5)	0.001	13 (5.7)	21 (2.4)	0.010
<i>Diabetes</i>	78 (31.1)	347 (12.9)	0.000	147 (25.6)	278 (11.7)	0.000
<i>Hypertension</i>	142 (56.6)	896 (33.2)	0.000	299 (52.1)	739 (31.2)	0.000
<i>Wound/Wound Infection</i>	19 (7.6)	105 (3.9)	0.006	64 (11.1)	60 (2.5)	0.000
<i>Steroid Use</i>	5 (2.0)	50 (1.9)	0.878	14 (2.4)	41 (1.7)	0.259

<i>Bleeding Disorder</i>	7 (2.8)	53 (2.0)	0.378	24 (4.2)	36 (1.5)	0.000
<i>>10% Weight Loss</i>	2 (0.8)	17 (0.6)	0.753	7 (1.2)	12 (0.5)	0.055

Table 2. Multivariate regression analysis identifying independent risk factors for readmission, general complications, and reoperation.

<i>Variables</i>	<i>Readmissions</i>	<i>General Complications</i>	<i>Reoperation</i>
<i>Race</i>			1.184 (1.000-1.401)
<i>p Value</i>			0.050
<i>BMI</i>		1.026 (1.009-1.043)	1.021 (1.006-1.037)
<i>p Value</i>		0.003	0.006
<i>ASA over 3</i>	2.095 (1.033-4.247)		1.613 (1.031-2.525)
<i>p Value</i>	0.040		0.036
<i>Inpatient Status</i>		1.842 (1.114-3.048)	2.940 (1.729-4.999)
<i>p Value</i>		0.017	0.000
<i>Cardiac Comorbidity</i>	3.099 (1.164-8.248)	2.260 (1.149-4.444)	
<i>p Value</i>	0.024	0.018	
<i>Pulmonary Comorbidity</i>	5.098 (1.682-15.450)		
<i>p Value</i>	0.004		
<i>Wound/Wound Infection</i>	5.426 (1.574-18.704)		
<i>p Value</i>	0.007		
<i>Bleeding Disorder</i>			2.856 (1.352-6.030)
<i>p Value</i>			0.006
<i>Weight Loss</i>		5.185 (1.332-20.191)	
<i>p Value</i>		0.018	
<i>Thromboembolic Complication</i>	18.613 (4.847-71.476)		
<i>p Value</i>	0.000		
<i>Wound Complication</i>	11.897 (4.973-28.464)		
<i>p Value</i>	0.000		
<i>Reoperation</i>	12.481 (5.332-29.218)		
<i>p Value</i>	0.000		