A Multivariate Regression Analysis of Panniculectomy Outcomes: Does Plastic Surgery Training Matter?

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Background: Panniculectomy can improve quality of life in morbidly obese patients, but its functional benefits are counterbalanced by relatively high complication rates. The authors endeavored to determine the impact of plastic surgery training on panniculectomy outcomes.

Methods: A retrospective review was performed of the prospectively maintained American College of Surgeons National Surgical Quality Improvement Program database for all patients undergoing panniculectomy from 2006 to 2010. Patient demographic details, surgeon specialty training, and 30-day outcomes were assessed.

Results: A total of 954 panniculectomies meeting inclusion criteria were identified. Plastic surgeons performed 694 (72.7 percent) of the procedures, and 260 (27.3 percent) were performed by nonplastic surgeons. Nonplastic surgeons had significantly higher rates of overall complications (23.08 percent versus 8.65 percent; $p < 0.001$) and wound infections (12.69 percent versus 5.33 percent; $p < 0.001$) than plastic surgeons. Average operative time for plastic surgeons was significantly longer than that for nonplastic surgeons (3.00 ± 1.48 hours versus 1.88 ± 0.93 hours; $p < 0.001$). Risk-adjusted multivariate regression showed that undergoing a panniculectomy by a nonplastic surgeon was a significant predictor of overall postoperative complications (odds ratio, 2.09; 95 percent CI, 1.35 to 3.23) and wound infection (odds ratio, 1.73; 95 percent CI, 1.004 to 2.98). Subgroup analysis of propensity-matched samples supported this finding.

Conclusion: Multivariate regression analysis of National Surgical Quality Improvement Program data showed that panniculectomy performed by plastic surgeons results in lower rates of overall postoperative complications compared with that performed by nonplastic surgeons. (*Plast. Reconstr. Surg.* 131: 604e, 2013.)

CLINICAL QUESTION/LEVEL OF EVIDENCE: Risk, II.

First reported in 1899 by Kelly, the panniculectomy procedure has enjoyed growing popularity in the United States, with a steady increase in the number of operations performed over the past decade.[1–3] While it remains unclear what exactly has driven this increase, the concomitant rise in bariatric procedures is likely a major contributor.[3–9] Although only 1 percent of the surgically eligible population receives bariatric surgery annually, as obesity rates climb to a projected 42 percent of the U.S. population by 2030, the number of obese patients seeking weight loss surgery and, subsequently, body contouring procedures is expected to grow.[10,11]

By virtue of the soft-tissue redundancy and contour effects, the pannus can lead to both functional and hygiene problems, including difficulty

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Received for publication September 7, 2012; accepted October 15, 2012.
Disclaimer: The American College of Surgeons National Surgical Quality Improvement Program and the hospitals participating in the program are the source of the data used herein; they have not verified and are not responsible for the statistical validity of the data analysis or the conclusions derived by the authors.

DOI: 10.1097/PRS.0b013e3182818f1f

Disclosure: *The authors have no financial disclosures relevant to this article.*

ambulating and wearing clothes, skin rashes, infections, ulcerations, and necrosis.[12–14] Excision of this soft-tissue excess through the panniculectomy procedure has been shown to reduce the risk of skin-related problems and improve the patient's quality of life, while also enhancing the appearance of the abdomen and subsequently boosting self-image.[15,16] In one study of 92 patients, 2-year follow-up data reported that 80 percent of patients felt better about their overall health, 86 percent had improved personal hygiene, and 81 percent were satisfied with the outcome.[17]

Despite the reported benefits to the patient's physical and mental health, the panniculectomy is not an entirely benign procedure, with reported complication rates ranging from 37 percent to 56 percent.[14,18–23] The most common complications include wound infection and dehiscence, seroma formation, postoperative bleeding, and venous thromboembolic disease. In some series, the wound complication rates have been as high as 20 percent.[14,20,21] Although these numbers are well represented in the literature, interpretation of these results is challenging, as panniculectomy is a procedure that is performed by various surgical specialties, including obstetrics and gynecology, general surgery, urology, and plastic surgery. It remains unclear whether surgical specialty training impacts panniculectomy outcomes.

Although there are currently studies in the literature analyzing the effects of specialty training on postoperative outcomes for other procedures, none of these studies have looked specifically at panniculectomy.[24] Certain risk factors are known to predispose patients to complications following a panniculectomy, including obesity and male sex,[19,23,25–27] yet the influence of surgical subspecialty training on postoperative outcomes is unknown at present time. Here, we set out to determine whether the outcomes of panniculectomy vary based on surgical specialty training. It might be reasonable to assume that plastic surgeons, with specific training in abdominal contouring procedures, such as abdominoplasty, and a heightened sensitivity to soft-tissue rearrangement or flap reconstruction from the abdomen, would have greater facility in addressing the soft-tissue problem of a pannus. To investigate the impact of plastic surgery training on outcomes following panniculectomy, we utilized the American College of Surgeons National Surgical Quality Improvement Program database. The database provides a critical objective platform with which to test our hypothesis; it includes data from more than 240 community and university-based institutions from across the United States, with over 3.6 million plastic surgery datapoints captured. The data are collected in an independent fashion and de-identified.[28,29]

De-identified patient information is freely available to all institutional members who comply with the database's Data Use Agreement. The agreement implements the protections afforded by the Health Insurance Portability and Accountability Act of 1996 and the American College of Surgeons National Surgical Quality Improvement Program Hospital Participation Agreement.

MATERIALS AND METHODS

Patient Population

The National Surgical Quality Improvement Program database was retrospectively reviewed from 2006 to 2010. Patients were identified by Current Procedural Terminology code, according to the most recent version of *CPT Handbook for Office-Based Coding*. A total of 954 adult patients undergoing panniculectomy (code 15830) were identified from a pool of more than 1.3 million surgical patients in this timeframe. Any patient undergoing a concomitant procedure (i.e., hysterectomy, breast augmentation, and so on) was excluded to eliminate confounding factors that might lead to postoperative complications (Fig. 1). The surgical specialty training of the attending surgeon, which is reported in the program's database, was also recorded.

Outcomes

The outcomes of interest in this study were the overall 30-day complication rate, wound infection rate, and reoperation rate. Overall complication was defined as having one or more of the following National Surgical Quality Improvement Program postoperative adverse events: superficial surgical-site infection, deep surgical-site infection, organ space surgical-site infection, wound disruption/dehiscence, pneumonia, unplanned intubation, pulmonary embolism, failure to wean from ventilator, renal insufficiency, progressive renal failure, urinary tract infection, stroke, coma, peripheral neurologic deficiency, cardiac arrest, myocardial infarction, bleeding requiring a transfusion, deep venous thrombosis, and sepsis/septic shock. Wound infection was defined as having one or more of the following: superficial surgical-site infection, deep surgical-site infection, and organ space surgical-site infection.

Risk Adjustment Factors

Patient demographics and medical comorbidities were tracked as potential confounders. De-

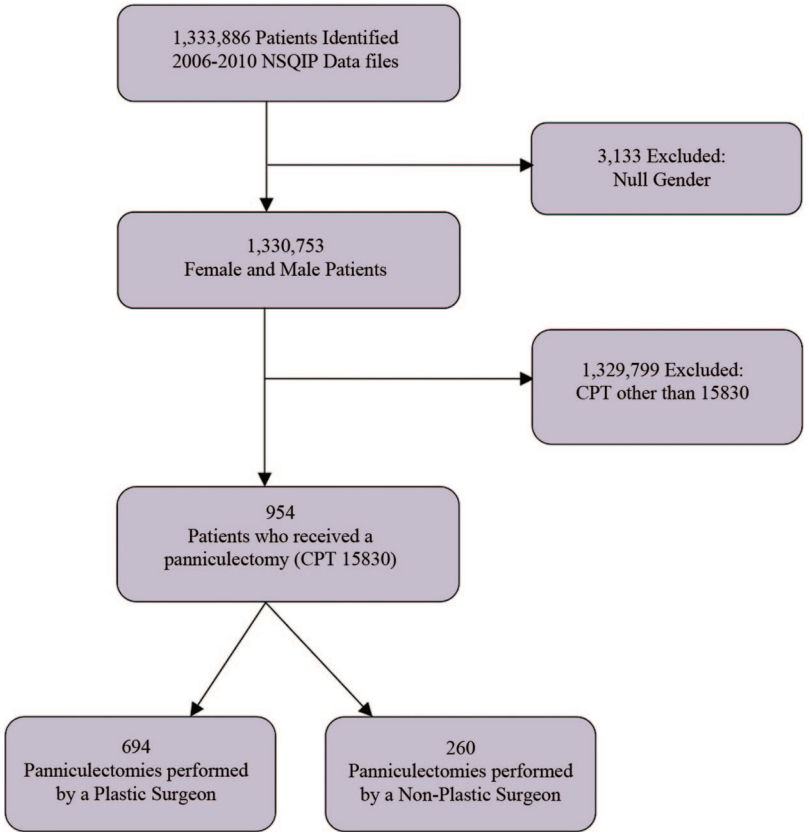

Fig. 1. Patient population attrition diagram. *NSQIP*, National Surgical Quality Improvement Program; *CPT*, Current Procedural Terminology.

mographic data collected included age, sex, and race. Medical comorbidities included obesity, diabetes, dyspnea, ascites, renal disease, chronic obstructive pulmonary disease, current pneumonia, ventilator dependence, chronic steroid use, bleeding disorders, heart failure, myocardial infarction within 6 months of operation, peripheral vascular disease, disseminated cancer, weight loss of more than 10 percent of body weight within 6 months of operation, current chemotherapy or radiotherapy, neurologic deficit, preoperative transfusion, and preoperative sepsis. Alcohol use, defined as more than two drinks per day, and smoking status were also tracked as behavioral risk factors.

Statistical Analysis

Patient demographics, risk factors, and postoperative outcomes were compared using chi-square or Fisher exact tests for categorical variables and independent t tests for continuous variables, with significance set at $p \leq 0.05$. To account for the nonrandomized assignment of surgeon specialty training, propensity scores were calculated using a multivariate logistic regression model that included patient demographics and comorbidities. The calculated propensity score represented the likelihood that a patient would receive a nonplastic surgeon attending rather than a plastic surgeon attending for the panniculectomy operation based on patient characteristics. The propensity score was incorporated into the final regression model to reduce selection bias when studying the impact of surgical specialty on postoperative outcomes.[30–33]

Multivariate logistic regression models were used to determine the effect of surgical specialty training on 30-day postoperative outcomes (overall complications, wound infection, and reoperation). Individual variables with 10 or more event occurrences across the specialties (plastic versus nonplastic) showing prediction of postoperative outcomes at a significant level of 0.20 or less in the bivariate analysis were included in the multivariable models. C-statistics for discrimination and Hosmer-Lemeshow tests for calibration were computed to assess the model's goodness of fit.

Subgroup Analysis

To further diminish the uneven distribution of preoperative risk factors between the two cohorts,

patients operated on by nonplastic surgeons (n = 243) were propensity-matched (1:1) to patients operated on by plastic surgeons (n = 243) using a caliper matching method.[34–36] Specifically, we imposed a 0.02 propensity score tolerance on the maximum propensity score distance (caliper) in our matching algorithm so that bad matches could be avoided. Covariate balance before and after propensity adjustment was checked using both density distribution of the propensity score and Wald chi-square statistics to assess the quality of the match. The 486 matched patients were analyzed for differences in overall complications, wound infection, and reoperation using logistic regression. All statistical analyses were conducted using SPSS version 20.0 (IBM Corp., Armonk, N.Y.).

RESULTS

Between 2006 and 2010, 954 patients meeting inclusion criteria underwent a panniculectomy (Fig. 1). A majority of these procedures were performed by surgeons specifically trained in plastic and reconstructive surgery (694 of 954, or 72.7 percent). Of the 27.3 percent of surgeons representing other specialties, general surgery was the most common training background, followed by obstetrics and gynecology and urology (Fig. 2). The plastic surgery–trained and nonplastic surgery–trained cohorts were similar in terms of sex distribution and smoking prevalence (Table 1). Patients receiving panniculectomies from nonplastic surgeons were significantly older (48.9 ± 12.8 years versus 46.25 ± 11.9 years; $p = 0.002$) and more likely to have hypertension, diabetes mellitus, dyspnea, and chronic obstructive pulmonary disease (Table 1). Average operative times for plastic surgeons were significantly longer than those for nonplastic surgeons (3.00 ± 1.48 hours versus 1.88 ± 0.93 hours; $p < 0.001$).

Postoperative complication data are presented in Table 2. Patients with panniculectomies performed by nonplastic surgeons were almost three times as likely to experience a postoperative complication compared with patients whose procedure was performed by plastic surgery–trained physicians (23.08 percent versus 8.65 percent; $p < 0.001$). In addition, patients with panniculectomies performed by nonplastic surgeons were significantly more likely to suffer a wound infection (12.69 percent versus 5.33 percent; $p < 0.001$), have a superficial surgical-site infection (9.23 percent versus 4.32 percent; $p = 0.003$), develop an organ space surgical-site infection (1.92 percent versus 0 percent; $p = 0.001$), and incur a medical complication (13.08 percent versus 3.31 percent; $p < 0.001$).

Table 3 summarizes the unadjusted and adjusted relative risk of overall complication, wound infection, and reoperation between plastic and nonplastic specialties. The odds of having a postoperative complication and wound infection for patients with panniculectomies performed by nonplastic surgeons were 3.17 (95 percent CI, 2.14 to 4.69) and 2.58 (95 percent CI, 1.58 to 4.23), respectively. After adjusting for patient risk factors and propensity scores, those odds remained statistically significant (overall complication: odds ratio, 2.09; 95 percent CI, 1.35 to 3.23; wound infection: odds ratio, 1.73; 95 percent CI, 1.004 to 2.98). There was no difference in reoperation between plastic and nonplastic specialty for both risk-unadjusted and -adjusted models. Other independent predictors of postoperative outcomes included outpatient status (odds ratio, 0.24; 95 percent CI, 0.12 to 0.46), obesity (odds ratio, 2.27; 95 percent CI, 1.37 to 3.77), and diabetes (odds ratio, 1.85; 95 percent CI, 1.06 to

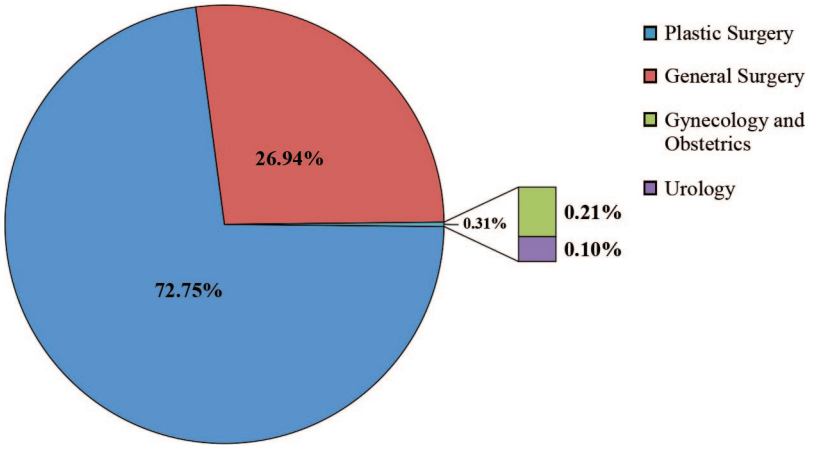

Fig. 2. Breakdown of panniculectomy procedures by surgical specialty.

Table 1. Patient Characteristics by Surgical Specialty

	Plastic Surgeon (n = 694)	Nonplastic Surgeon (n = 260)	p
Age, yr	46.25 ± 11.88	48.93 ± 12.84	0.002*
BMI,† kg/m^2	31.94 ± 9.38 (49.4%)	35.56 ± 10.95 (65.4%)	<0.001*
Operative time, hr	3.00 ± 1.48	1.88 ± 0.93	<0.001*
Race			
White	512 (73.8%)	221 (85%)	0.004*
Black	65 (9.1%)	14 (5.4%)	—
Asian	4 (0.6%)	1 (0.4%)	—
Other	115 (16.6%)	24 (9.2%)	0.004*
Male	81 (11.7%)	35 (13.5%)	0.451
Outpatient	389 (56.1%)	44 (16.9%)	<0.001*
Alcohol use	3 (0.4%)	1 (0.4%)	1
Diabetes	75 (10.8%)	47 (18.1%)	0.003*
Active smoker	82 (11.8%)	36 (13.8%)	0.396
History of COPD	10 (1.4%)	9 (3.5%)	0.047*
Dyspnea	27 (3.9%)	18 (6.9%)	0.049*
Hypertension	190 (27.4%)	105 (40.4%)	<0.001*
Steroid use	11 (1.6%)	4 (1.5%)	1
Bleeding disorder	8 (1.2%)	9 (3.5%)	0.016*
Prior sepsis	4 (0.6%)	12 (4.6%)	<0.001*
Prior operation	2 (0.3%)	5 (1.9%)	0.019*

BMI, body mass index; COPD, chronic obstructive pulmonary disease.
*Significant, $p < 0.05$.
†The percentage listed for the body mass index variable is the percentage of obese (body mass index ≥30) patients present in the cohort.

Table 2. Summary of 30-Day Postoperative Outcomes by Attending Surgeon Specialty

	Plastic Surgeon (n = 694)		Nonplastic Surgeon (n = 260)		
Postoperative Outcome	**No.**	**%**	**No.**	**%**	p
Overall complications	60	8.65%	60	23.08%	<0.001*
Surgical complications	42	6.05%	37	10.28%	<0.001*
Wound infection	37	5.33%	33	12.69%	<0.001*
Superficial SSI	30	4.32%	24	9.23%	0.003*
Deep SSI	8	1.15%	4	1.54%	0.744
Organ space SSI	0	0.00%	5	1.92%	0.001*
Graft/flap failure	0	0.00%	0	0.00%	—
Wound disruption	5	0.72%	4	1.54%	0.266
Medical complications†	23	3.31%	34	13.08%	<0.001*
Reoperation	20	2.88%	13	5.00%	0.111

SSI, surgical-site infection.
*Significant, $p < 0.05$.
†Medical complications included pneumonia, unplanned intubation, pulmonary embolism, failure to wean off ventilator more than 48 hours postoperatively, renal insufficiency, renal failure, urinary tract infection, coma, stroke, peripheral neurologic deficit, cardiac arrest, myocardial infarction, blood transfusion, deep venous thrombosis, and sepsis/septic shock.

3.23) for overall complications, and outpatient status (odds ratio, 0.34; 95 percent CI, 0.15 to 0.75) and obesity (odds ratio, 2.77; 95 percent CI, 1.42 to 5.40) for wound infection. No variables were found to be predictive of reoperation.

Table 4 lists the patient characteristics of the propensity-matched sample. As shown in Table 4, the plastic surgeon and nonplastic surgeon patients were well matched, with very similar demographic and clinical characteristics. Within this matched sample, the plastic surgeon patient population had lower rates of overall complications and wound infection compared with the nonplastic surgeon population (14.81 percent versus 22.63 percent for complications; 8.23 percent versus 12.25 percent for wound infection). In addition, the plastic surgeon cohort retained a significantly longer operative time than the nonplastic surgeon cohort (3.12 ± 1.47 hours versus 1.87 ± 0.93 hours; $p < 0.001$). After controlling the operative time, the nonplastic surgeon cohort exhibited a two-fold risk of having a postoperative complication (odds ratio, 1.99; 95 percent CI, 1.17 to 3.38) but not reoperation. This group also trended toward an increased risk for wound infection, with an odds ratio of 1.59 (Table 5).

Table 3. Unadjusted and Adjusted Odds Ratios and 95 Percent Confidence Intervals for Overall Complications, Wound Infection, and Reoperation

Variable	Overall Complications						Wound Infection						Reoperation					
	Unadjusted (Bivariate Analysis)*			Risk Adjusted (Multivariate Analysis)			Unadjusted (Bivariate Analysis)*			Risk Adjusted (Multivariate Analysis)			Unadjusted (Bivariate Analysis)*			Risk Adjusted (Multivariate Analysis)		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Male sex	1.767†	1.061	2.942	1.478	0.85	2.57	1.729	0.915	3.268	1.359	0.694	2.659	—	—	—	—	—	—
Outpatient status	0.178†	0.106	0.299	0.236†	0.121	0.459	0.252†	0.136	0.467	0.335†	0.149	0.751	—	—	—	—	—	—
Age > 50 years	1.549†	1.055	2.276	1.223	0.782	1.914	—	—	—	—	—	—	—	—	—	—	—	—
Obesity (BMI ≥ 30)	3.495†	2.217	5.51	2.272†	1.369	3.77	4.019†	2.169	7.448	2.771†	1.422	5.4	1.684	0.845	3.396	1.21	0.572	2.561
Diabetes	2.844†	1.79	4.519	1.845†	1.055	3.227	2.38†	1.328	4.263	1.501	0.762	2.955	2.709†	1.209	6.069	1.373	0.557	3.386
Dyspnea	2.375†	1.169	4.823	1.125	0.505	2.506	—	—	—	—	—	—	3.141†	1.457	6.771	1.61	0.659	3.93
Hypertension	1.65†	1.113	2.444	0.835	0.503	1.385	1.643	1	2.701	0.959	0.534	1.722	—	—	—	—	—	—
Current wound infection	3.697†	2.034	6.719	1.85	0.833	4.11	3.95†	1.978	7.887	2.225	0.891	5.555	—	—	—	—	—	—
Nonplastic specialty	3.17†	2.143	4.689	2.089†	1.352	3.229	2.581†	1.577	4.226	1.73†	1.004	2.98	1.774	0.869	3.62	0.838	0.361	1.943
Propensity‡	—	—	—	0.418	0.078	2.24	—	—	—	0.416	0.053	3.254	—	—	—	19.618†	3.451	111.52
HL test§					0.285						0.156						0.09	
C-statistic§					0.765						0.742						0.717	

OR, odds ratio; CI, confidence interval; BMI, body mass index; HL, Hosmer-Lemeshow.
*Only variables with $p < 0.20$ in the bivariate analysis were listed and included in the multivariate analysis.
†Significant, $p < 0.05$.
‡Propensity score was only adjusted for the multivariate analysis.
§Hosmer-Lemeshow test and C-statistics were only computed for multivariate regression models.

Table 4. Characteristics and Comorbidities of Propensity-Matched Patients for Overall Complications by Surgical Specialty

	Plastic Surgeon (n = 243)	Nonplastic Surgeon (n = 243)	p
Age, yr	48.70 ± 12.03	48.66 ± 12.72	0.977
BMI, kg/m^2	34.75 ± 10.72	34.98 ± 10.72	0.812
Operative time, hr	3.12 ± 1.47	1.87 ± 0.93	<0.001*
Race			0.839
White	201 (82.72%)	205 (84.36%)	
Black	15 (6.17%)	14 (5.76%)	
Asian	2 (0.82%)	1 (0.41%)	
Other	25 (10.39%)	23 (9.47%)	
Male	32 (13.17%)	32 (13.17%)	1.000
Outpatient	44 (18.11%)	44 (18.11%)	1.000
Alcohol use	0 (0.00%)	1 (0.41%)	1.000
Diabetes	34 (13.99%)	38 (15.64%)	0.610
Active smoker	26 (10.70%)	33 (13.58%)	0.331
History of COPD	5 (2.06%)	6 (2.47%)	0.760
Dyspnea	13 (5.35%)	16 (6.58%)	0.566
Hypertension	91 (37.45%)	90 (37.04%)	0.925
Steroid use	4 (1.65%)	4 (1.65%)	1.000
Bleeding disorder	6 (2.47%)	3 (1.23%)	0.504
Prior sepsis	4 (1.65%)	4 (1.65%)	1.000
Prior operation	2 (0.82%)	2 (0.82%)	1.000

BMI, body mass index; COPD, chronic obstructive pulmonary disease.
*Significant, $p < 0.05$.

DISCUSSION

Panniculectomy has been shown to not only improve abdominal contour but also enhance overall quality of life.[14–17] However, these functional benefits are juxtaposed with relatively high complication rates.[19–23] While there are preoperative factors that place patients at risk for postoperative complications following panniculectomy, the putative impact of surgeon training and specialty has not been fully investigated.[19,23,25–27] Because many diverse surgical specialties perform panniculectomies, it is reasonable to assume that differences in surgical approach and methodology may influence outcomes. By analyzing data from the validated American College of Surgeons National Surgical Quality Improvement Program database, we were able to gather standardized, multi-institutional data from more than 240 participating institutions from across the United States, including community and university-based hospital systems. This statistical platform can thereby test our core hypothesis: surgical specialty affects outcomes in panniculectomy.

Our regression model revealed that specialty training does in fact influence outcomes. Panniculectomies performed by nonplastic surgeons had significantly higher overall complication rates than those performed by plastic surgeons (23.1 percent versus 8.7 percent; $p < 0.001$). Why might this be the case? One may postulate that patient

Table 5. Odds Ratios and 95 Percent Confidence Intervals for Overall Complications, Wound Infection, and Reoperation for Propensity-Matched Sample

	Overall Complications			Wound Infection			Reoperation		
	OR	95% CI		OR	95% CI		OR	95% CI	
Nonplastic specialty	1.99*	1.17	3.38	1.59	0.81	3.12	0.99	0.36	2.75
Operative time	0.88	0.73	1.06	0.99	0.77	1.27	0.86	0.62	1.18

OR, odds ratio; CI, confidence interval.
*Significant, $p < 0.05$.

selection plays a significant role.[37] Indeed, according to the National Surgical Quality Improvement Program database, the nonplastic surgeon cohort included patients who were significantly older (48.93 years versus 46.25 years; $p = 0.002$), more obese (average body mass index, 35.56 versus 31.94; $p < 0.001$), and suffering from more comorbidities. Thus, it is intuitive to assume that this patient population is at a higher baseline risk for postoperative complications. Although patient selection may be a major contributor to the discrepancy in medical complications between the two cohorts (13.08 percent for nonplastic surgeons versus 3.31 percent for plastic surgeons; $p < 0.001$), it is not likely to be the sole cause of complications overall. Given that the initial plastic surgeon and nonplastic surgeon cohorts had different preoperative risk variables, we endeavored to reduce selection bias by two distinct means. First, we controlled for demographic differences using a propensity score risk-adjusted multivariate model. This analysis revealed that patients receiving a panniculectomy from a nonplastic surgeon were at over a 100 percent increased risk for having a postoperative complication (odds ratio, 2.09) and a 73 percent increased risk for suffering a wound infection (odds ratio, 1.73). Next, we selected a subgroup of propensity-matched patients who were very well matched between the plastic surgeon and nonplastic surgeon cohorts. In these two similar patient populations, the postoperative complication rate remained significantly higher (22.6 percent versus 14.8 percent; $p < 0.05$) in the nonplastic surgeon cohort. This analysis still showed a two-fold increased risk of overall complications vis-à-vis the nonplastic surgeon group.

Interestingly, the nonplastic surgeon cohort performed their panniculectomy procedure in just under 2 hours and, on average, it was 1 hour shorter in duration than the procedure performed by plastic surgeons for both nonmatched and matched samples. The longer operative time seen in the plastic surgery cohort occurred despite plastic surgeons having lower body mass index patients (which presumably should have resulted in even shorter operative times). It may be that the extra operative time employed by the plastic surgeon cohort was utilized for technical refinements, such as dead space reduction, judicious undermining, tension reduction, and meticulous layered closure, to minimize complications. This hypothesis is supported, in part, by the fact that the plastic surgeon cohort had significantly fewer surgery-related complications (6.05 percent versus 10.28 percent) and wound infections (5.33 percent versus 12.69 percent) compared with the nonplastic surgery cohort. These figures remained higher in the nonplastic surgeon cohort (22.63 percent versus 14.81 percent for complications and 12.25 percent versus 8.23 percent for wound infections) in the propensity-matched sample.

One limitation of the National Surgical Quality Improvement Program database is that it does not provide any specific details of the operative techniques employed. Instead, all data are mapped to a Current Procedural Terminology code. As we know from virtually any other body-contouring, aesthetic, or reconstructive procedure, minute technical nuances or differences can certainly affect outcome. Moreover, as with any Current Procedural Terminology–based database, the integrity of the data is based on accurate coding. Likewise, the database does not track global seroma development; instead, it only records reoperations that may or may not be attributable to seromas. In addition, the database is designed only to collect 30-day outcomes; thus, long-term outcomes are not available. Although we have datapoints that map specialty training, to maintain anonymity, we have no way of tracking where specialty training was completed or when it was completed. These two factors might affect one surgeon's outcomes compared with the next, depending on their respective exposure to and experience with panniculectomy. Finally, the cohorts had acknowledged differences in patient demographics; although a propensity-matching

algorithm helps to assuage the impact of such differences in the regression model, randomized controlled trials would provide even more definitive outcomes data.[34]

CONCLUSIONS

Surgeon specialty is a significant predictor of 30-day complication rates in panniculectomy. Plastic surgeons had lower infection and overall complication rates than nonplastic surgeons, despite having longer operative times. Subgroup analysis of propensity-matched samples showed persistence of these outcomes, with a statistically significant difference in overall complications. While the cause of these disparities is undoubtedly multifactorial, discrepancies in patient selection and technical philosophy may be drivers of enhanced surgical outcomes.

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ACKNOWLEDGMENTS

This research received no specific grant from any funding agency in the public, private, or not-for-profit sectors. Lauren M. Mioton is funded by a research scholarship through Vanderbilt University School of Medicine from the National Institutes of Health (Clinical and Translational Science Award grant UL1RR024975).

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