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An Alternative Outpatient Care Model: Postoperative Guest Suite–Based Care

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Abstract

Background: Patients recovering from outpatient surgery are responsible for managing their pain, managing ambulation, and even implementing thromboembolism prophylaxis after discharge. Because of the importance of postoperative care to prevent complications, a model of care that helps a patient transition to independent self-care could provide optimal results.

Objectives: The authors investigated the safety and morbidity rate for patients who underwent body contouring procedures and overnight care at an attached, nurse-staffed guest suite facility.

Methods: A retrospective review was conducted of 246 patients who underwent major body contouring and who stayed at least 1 night in the guest suite facility. Major complications included a return to the operating room within 48 hours, major wound infection, and unplanned hospitalization within 48 hours. Minor complications included any postsurgical effect necessitating unplanned physician intervention within the first 30 days. Univariate analyses correlating patient characteristics and complication rates were conducted, as well as comparison of complication rates among same procedures reported in the literature.

Results: The complication rate (major and minor complications) was 25.20%. Surgical site infection occurred in 8.13% of patients. The most common wound complication was erythema around the incision site (12.20%). Death, deep vein thrombosis, or pulmonary embolism did not occur. Comparison with relevant results reported in the literature indicated a significant reduction in the occurrence of postoperative venous thromboembolism.

Conclusions: Patient education after surgery is essential to healing and adequate care. The guest suite model provides improved care and education for the patient and family postsurgery by addressing some of the known risk factors of plastic surgery.

Level of Evidence: 4

Keywords

body contouring, patient safety, outpatient surgery, outpatient

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An increasing number of body contouring procedures are being performed by board-certified plastic surgeons in ambulatory surgery centers and office-based operating facilities in lieu of the inpatient setting.[1] From 1996 to 2006, the number of outpatient surgical visits increased from 20.8 million to 34.7 million per year.[2] Multiple, staged body contouring procedures are now routinely performed in an outpatient setting, with the most common procedures being liposuction and abdominoplasty.[3]

Although outpatient body contouring has become more common, its complexity has concurrently increased with the combination of liposuction, excisional procedures, and, occasionally, implantable devices in patients who are considered at high risk for complications.[3] Procedures that are more complex lead to longer operating times and

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increased risk for complications.[4] Although the American Society of Plastic Surgery mandate regarding outpatient surgical facility accreditation has increased patient safety, the determination of which procedures can be combined safely and the total operating time permitted is most often at the discretion of the surgeon, anesthesiologist, outpatient facility governing committee, and local standards.[5,6] There are some exceptions. Florida state law mandates that suction-assisted lipectomy be restricted to 4 L supernatant fat or 1 L with any combined procedure such as abdominoplasty,[7] and California regulations require postsurgical care if more than 5 L is removed.[8] Despite these safety measures, many doctors are reluctant to discharge patients on the same day of surgery because of concerns about appropriate patient care, especially when a combination of excisional procedures has been performed.

Patients who undergo body contouring procedures often must learn to manage dressings, medications, and drains while also taking responsibility for pain management, appropriate ambulation, and venous thromboembolism (VTE) prophylaxis.[9] Although most surgeons develop a postoperative regimen for proper healing and recovery, patient adherence to protocols that include self-care varies. Because of the importance of postoperative care to prevent complications, a model of care that helps a patient transition to independent self-care could provide optimal results.

Outpatient surgical facilities may not have the capacity for extended-stay patient care. When the opportunity for extended-stay care exists, it is often limited in both scope and duration of stay (eg, a 24-hour facility), typically as determined by the organization providing accreditation. These facilities have limited capacity to provide patient and family education.[10] Therefore, surgeons must create ideal postsurgical models that can be adapted to a range of circumstances to provide excellent patient care and education.

The guest suites model that is in place at the University of Texas Southwestern Medical Center in Dallas combines aspects of patient education, comfort, and proper postoperative care to achieve safe and improved outcomes in a hotel-like environment. The algorithm for patient selection and guidelines for care are defined herein and depicted in Figure 1. Many of these guidelines have been established by previous study, accepted practice, and clinical experience.[4,11-13] Patients who elect to undergo body contouring procedures are initially selected for outpatient or inpatient surgery, depending on patient risk factors, duration of surgery, and number of simultaneous procedures.[10-13] In our surgical practice, the surgeon may decide to keep the patient overnight postoperatively in an onsite, overnight facility that provides 24-hour nursing care if multiple body contouring procedures are planned, if the surgery will involve appreciable time under anesthesia, or if the patient has comorbidities known to be risk factors

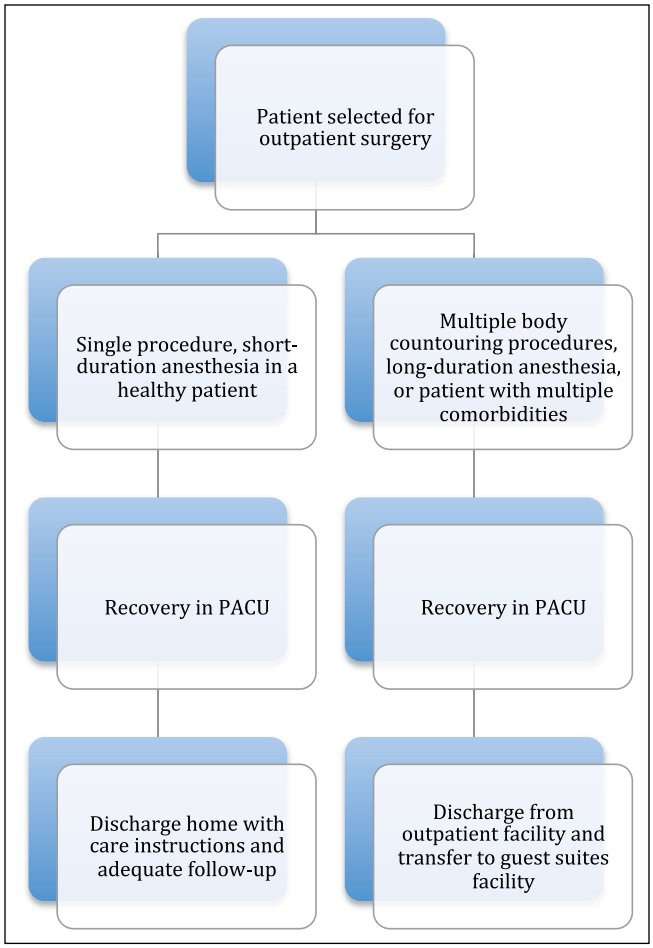

Figure 1. Physician algorithm of care for deciding whether a patient would benefit from a postoperative overnight stay at the guest suites facility. PACU, postanesthesia care unit.

for mortality or morbidity. Once the patient recovers in the postanesthesia care unit (PACU), he or she is discharged from the outpatient facility and transferred to a hotel-like environment. This model (the guest suites model) provides nursing supervision, pain control, VTE prophylaxis, patient education, and infection prevention in a comfortable environment. The nurse to patient ratio is higher, and nurses spend more time assisting patients with ambulation, education, and overall monitoring of patient status than would be possible in a traditional hospital setting. A family member must stay with the patient at all times in the unlikely event of an emergency. Some of the factors that distinguish our model from the standard model for overnight care facilities include attentive postoperative care without hospital admission, high nurse to patient ratio, personalized patient education, and decreased incidence of complications.

The objective of this retrospective review was to determine the safety and morbidity rates associated with caring for patients who underwent body contouring procedures

in the outpatient setting and then received overnight care in an attached nurse-staffed guest suite.

METHODS

A retrospective review was conducted of all cases involving patients who underwent body contouring procedures coupled with an overnight stay at the guest suites facility at the University of Texas Southwestern Medical Center from January 2009 to January 2012. Procedures were performed by 3 board-certified plastic surgeons at the University of Texas Southwestern Medical Center.

Inclusion criteria were that body contouring was performed by 1 of the 3 board-certified plastic surgeons and required at least 1 overnight stay. Body contouring was defined as excisional surgery excluding breast procedures and liposuction alone. All patients who underwent excisional contouring were strongly encouraged by their physicians to stay overnight at the guest suites facility. Common procedures included suction-assisted lipectomy of various areas, abdominoplasty, thighplasty, and brachioplasty.

Patient age, sex, comorbidity status, body mass index (BMI), and history of surgery; information about additional procedures being performed; surgeon; duration of surgery; Caprini score; type of prophylaxis for VTE; and number of overnight stays were recorded from medical chart review. Major complications included return to the operating room within 48 hours, occurrence of surgical site infection necessitating hospitalization, unplanned hospitalization, or VTE. Minor complications included all other events that necessitated unplanned physician intervention within the first 30 days after surgery. Cases with complications were then reviewed for morbidity and mortality. Mean follow-up time for each patient was 6 months.

After surgery, patients were sent to the PACU where they received medication information. They were then discharged from the surgical facility and checked into a guest suite facility. Patients wore sequential compression devices continuously during surgery and their stay at the guest suite facility, where they were also instructed to practice leg flexion exercises. All patients began ambulation at least once on the first night after surgery. Patients with nausea or dizziness prior to ambulation were instructed to sit in a chair and then begin ambulation. Staff at the guest suite facility encouraged patients to ambulate 4 to 6 times on the first day after surgery. Facility nurses provided anticoagulation therapy if deemed necessary by the surgeon who operated. Strategies for patient comfort at the facility included administration of pain medication, positioning, elevation of limbs on pillows, and providing neck rolls. Patients were routinely educated at each nurse visit about proper care and medication.

Follow-up, including physical examination, was initially at 5 to 7 days postsurgery and then at approximately 2 weeks postsurgery. Patient visits varied according to procedures and complications encountered. Total duration of follow-up for all patients was a minimum of 30 days postsurgery and, for many patients, 6 months postsurgery. Among the outcome end points, surgical site problems were defined as any complication, major or minor, involving the incision. Patients with surgical site infection included those treated with antibiotics for cellulitis. Erythema was defined as erythema that was superficial, that resolved without antibiotics, and for which a wound culture was negative. All seroma complications were addressed in office without surgical intervention. Major hematomas were surgically corrected. Wound dehiscence, defined as a separation of the wound incision, was usually treated by additional wound closure. Wound necrosis included tissue death around the site of the incision. Treatment included local wound care and support. Delayed healing correlated with wound necrosis and was identified by superficial wound breakdown, sometimes caused by the suture or vascular complications. In these cases, patients required prolonged intervention or more frequent office visits after surgery.

All patients who were eligible to stay at the guest suites elected to do so; therefore, outcomes were compared with relevant data in the literature found through PubMed searches for *outpatient abdominoplasty* and *outpatient lower body lift*. The studies selected were similar in design and data end points and, therefore, suitable for comparison. Statistical methods included univariate analysis by χ^2 analysis and Fisher exact test. Patient demographics were analyzed for any correlation to complication rates. Statistical significance was defined as $P \leq .05$. All data analysis was conducted and figures were generated using Stata/SE version 12.0 (StataCorp, Inc, College Station, Texas) and GraphPad Prism version 6.00 for Mac (GraphPad Software, La Jolla, California) statistical software.[14]

RESULTS

A total of 9670 outpatient procedures were performed at University of Texas Southwestern Medical Center Outpatient Surgery Clinic (OSC) from January 2009 to January 2012. Of these procedures, 246 patient cases involved body contouring procedures in which patients stayed at least 1 night at the guest suites at the University of Texas Southwestern.

Of the 246 patient cases reviewed, 226 (91.87%) were women and 20 (8.13%) were men. The mean age was 47 years, and the mean BMI of the cohort was 26.00 (kg/m^2). A total of 741 procedures were performed, with a mean of 3 procedures per patient and mean operating time of 3 hours 49 minutes. Patients stayed overnight at the guest suites a minimum of 1 night and a mean of 1.77 nights (Table 1). Patient demographics included age; sex; smoking history; diabetes; BMI over 25 kg/m^2; hypertension; American Society of Anesthesiologists (ASA) physical

Table 1. Patient Data

Characteristic	Value
No. of patients	246
Age, mean ± SEM (range), y	47.46 ± 12.16 (21-79)
BMI, mean ± SEM (range), kg/m^2	26.00 ± 4.12 (18.35-39.70)
Operating time, mean ± SEM (range), min	229 ± 106 (59-716)
Total no. of procedures	741
No. of procedures/patient, mean ± SEM	3.01 ± 1.51
No. of overnight stays/patient, mean ± SEM	1.77 ± 3.02

Abbreviation: BMI, body mass index.

Table 2. Patient Characteristics and Outcomes Assessment

Patient Characteristic	No. (%) of Patients	*P* Value[a]
Sex		.43
Male	20 (8.13)	
Female	226 (91.87)	
Age >65 y	62 (25.2)	.1
BMI, mg/kg^2		.03[b]
<25	108 (43.9)	
25-30	94 (38.21)	
30-35	37 (15.04)	
35-40	7 (2.85)	
ASA physical status		.21
ASA 1	110 (44.72)	
ASA 2	124 (50.51)	
ASA 3	12 (4.89)	
Diabetes mellitus	12 (4.89)	.51
History of smoking	62 (25.2)	.9
Hypertension	61 (24.80)	.12
Coronary artery disease	1 (0.41)	.18
History of myocardial infarction	1 (0.41)	.99
Other cardiovascular disease	38 (15.45)	.52
Chronic obstructive pulmonary disease	1 (0.41)	.18
Other pulmonary disease	19 (7.72)	.91
Renal disease	8 (3.25)	.82
History of cancer	7 (2.84)	.84
History of deep vein thrombosis	2 (0.81)	.58

Abbreviations: ASA, American Society of Anesthesiologists; BMI, body mass index.
[a]Univariate analysis of significance between characteristics and wound complication rates.
[b]Only BMI was significantly associated with wound problems.

status classification; history of coronary artery disease, cancer, VTE, or myocardial infarction; and current chronic obstructive pulmonary disease, other heart disease, or renal disease. Univariate analysis did not show statistical significance between these characteristics and complication rates, except for BMI (Table 2).

Cases were categorized by type of procedure (Table 3). Most cases were a combination of separate operations (eg, abdominoplasty and mastopexy; abdominoplasty and liposuction). Most operations were excisional procedures (64.10%), and the frequency of an excisional procedure combined with a breast procedure included 34.9% of patients. Liposuction was the most commonly performed procedure, included in 31.44% of procedures performed. Abdominoplasty was performed in 17.27% of patients, usually in combination with liposuction.

Among the 246 cases reviewed, no death or VTE occurred. Overall patient complication rate was 25.20% (62 patients; Table 4). Erythema, or redness around the incision site, was the most common complication at 12.20% (30 patients); seroma was the second most common complication at 8.54% (21 patients.) Patients with erythema did not require additional physician intervention.

One major wound complication was reported. This patient returned to the operating room 13 days after surgery for surgical debridement due to major wound dehiscence after abdominoplasty.

Compared with a study of outpatient lower body lift procedures (n = 19), this patient series had a statistically significant lower rate of infection (P = .005); however, the seroma rate was not significantly different.[15] In comparison with a series of abdominoplasty cases in a community hospital setting with 1008 abdominoplasty cases, there was no statistically significant difference in seroma rate, but the 29.9% complication rate in abdominoplasty in our study was lower than the 32.6% overall complication rate reported in Neaman et al.[16] Comparison with results of a study of 173 consecutive lipoabdominoplasty cases with similar outcome end points revealed significantly less postoperative VTE for patients in our series (P = .0223).[17]

DISCUSSION

Patient selection is an important initial determinant of potential perioperative and postoperative complications. Mathis et al[13] identified several independent risk factors for perioperative morbidity and mortality, including being overweight and obesity, chronic obstructive pulmonary disease, history of transient ischemic attack or stroke, hypertension, previous cardiac surgical intervention, and prolonged

Table 3. Procedure Breakdown by *Current Procedural Terminology* Code

Procedure	No. (%) of Procedures
Abdominoplasty	128 (17.27)
Liposuction	233 (31.44)
Brachioplasty	37 (4.99)
Thighplasty	25 (3.37)
Lower body lift	14 (1.89)
Upper body lift	6 (0.81)
Circumferential lift	1 (0.13)
Posterior body lift	2 (0.27)
Flank excision revision	15 (2.02)
Other excisional procedures	14 (1.89)
Total breast procedures	117 (15.79)
Mastopexy	46 (6.21)
Breast augmentation	44 (5.94)
Other breast procedures	27 (3.64)
Facial procedures	97 (13.09)
Other procedures	52 (7.02)
Total excisional	475 (64.10)

Total number of procedures was 741.

Table 4. Complications

Complication	No. (%) of Patients
All wound problems	62 (25.20)
Surgical site infection	20 (8.13)
Mild wound dehiscence	14 (5.69)
Major wound dehiscence	1 (0.40)
Wound necrosis	11 (4.47)
Erythema	30 (12.20)
Seroma	21 (8.54)
Hematoma	4 (1.62)
Delayed wound healing	6 (2.43)
Rehospitalization within 48 hours	0
Deep vein thrombosis	0

cardiac intervention. Selection of patients for elective outpatient body contouring should consider these risks.

There are many reports in the literature regarding risk factors and complications associated with excisional procedures. The excisional procedure associated with the greatest risk for both mortality and morbidity is abdominoplasty.[18] According to the American Association for Accreditation of Ambulatory Surgery Facilities (AAAASF) in 2008, abdominoplasty is associated more frequently with death than are other aesthetic procedures.[18] Results of studies with similarly defined criteria for complications indicated complication rates as high as 29.7% and 31.2% for outpatient and inpatient populations, respectively.[19] Neaman and Hansen[20] reported a complication rate of 37.4% out of a total of 209 procedures for abdominoplasty; 16.0% of the complications were major (surgical) complications in an academic hospital.

Although liposuction is typically considered a safe outpatient procedure, it is associated with increased risk when combined with other surgical or excisional procedures, especially abdominoplasty.[21] Risk factors for excisional body procedures include age, elevated BMI, coexisting medical conditions, or other personal factors such as lack of family support.[4,21] Elevated BMI was a significant risk factor for wound complications in our group of patients.

Another significant risk factor for morbidity and mortality in excisional procedures is undergoing multiple procedures, attributable to increased operating time and the additive effect of multiple procedures performed on the same day.[4,5,12] The death rate from liposuction alone is 1 death per 47 415 procedures; it increases to 1 per 3281 procedures when combined with abdominoplasty.[21]

Furthermore, operating time has always been regarded as an independent risk factor in plastic surgery. Previously, many surgeons designated an arbitrary cutoff of 6 hours of total operating time to avoid increased risk.[22] More recently, results of studies have confirmed independent increased risk for postoperative disease associated with increased time under anesthesia.[13,18,21] Hardy et al[23] concluded that plastic surgery procedures with a duration >3 hours were associated with more postoperative complications. The guest suites model for postsurgical care was developed to help mitigate some of the risks associated with longer operating time, particularly the risk of VTE.

Patient safety is always a priority over cost and convenience.[24] The decision to discharge a patient is ultimately the responsibility of the surgeon and anesthesiologist.[8] Patient satisfaction with quality of care and results is also important and should factor into the method of care if it does not compromise safety. Broughton et al[25] concluded that patient and family communication is extremely important for understanding patient needs and expectations. In the growing trend toward multiple procedures performed at the same time, the education component of postoperative care becomes vital. In addition, postoperative nausea and vomiting not only compromise patient comfort but can also result in forced dehiscence along incisions.[26]

The guest suites model of postoperative care attempts to address many of these patient safety concerns: onsite nurses

provide care for the patient and educate the patient and family regarding wound care and hygiene, ambulatory training, diet and nutrition, and medication dosages and administration. Instructions on incision care and medication regimens are clearly established and confirmed before discharge, thereby eliminating the need for patient experimentation.

Among the chief advantages of outpatient surgery discharging into a separate, supervised medical guest suite is the ability for the on-duty nurse to monitor and encourage patient ambulation for prophylaxis of VTE. The authors have anecdotally noted that patients can occasionally be conservative in returning to routine ambulation; therefore, guidance and education from the nursing staff provides reassurance to the patient during recovery. Although various factors contribute to deep vein thrombosis and pulmonary embolism, prophylaxis can have beneficial effects. The current analysis indicates significantly fewer incidences of postoperative VTE than reported in the literature. Lack of a control group within the study cohort limited the scope of this analysis because non–guest suite patients were not compared with guest suite patients. This analysis is also limited because of a lack of standardization and risk adjustment within the comparison patient populations in the literature.

To our knowledge, the literature does not provide examples of a patient care model that is similar to the guest suites model, which blends patient safety, education, and care into the outpatient surgery paradigm. There is no replacement for well-integrated, competent provision of postoperative care for the patient undergoing body contouring and multiple procedures. Governing regulatory bodies enforce strict limits in those facilities where postoperative care is under the management of the outpatient surgical facility. Many outpatient facilities' postoperative care is limited to a 23-hour stay PACU environment with unavailable or limited nursing staff overnight. This limits the physician's options to a shortened postoperative stay or limited staff available to care for the patient overnight in this type of environment. An independently managed model such as the guest suites model could bypass these limitations and potentially provide a higher standard of care for the ambulatory surgery patient. As the new health care era approaches, plastic surgeons must not only adapt to changing criteria but proactively exceed them with respect to outcomes, safety, and patient satisfaction. The guest suites model could be a step in this direction.

CONCLUSIONS

Outpatient surgery has become commonplace. Patients expect the highest quality of care and the convenience of an outpatient facility despite the increasing complexity of procedures being performed. The guest suites model integrates an outpatient setting with supervised nursing care that allows for patient comfort and education and mitigation of complications such as VTE.

Disclosures

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