

Is It Safe to Combine Abdominoplasty with Elective Breast Surgery? A Review of 151 Consecutive Cases

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Background: This study was designed to evaluate and compare the complication rates of patients having abdominoplasty without breast surgery with the rates of those having abdominoplasty with various types of elective breast surgery, including breast augmentation, breast reduction, mastopexy, and mastopexy combined with simultaneous augmentation.

Methods: The data collected represent a retrospective chart review of consecutive abdominoplasty procedures performed at a single outpatient facility by the senior surgeon (W.G.S.) over a 15-year period (1989 to 2004). Two groups were compared: patients who underwent abdominoplasty without breast surgery and those who had abdominoplasty with breast surgery. The second group was subdivided by the various types of breast procedures noted above. The minor complications assessed included seromas, hematomas, infections, and small (<5 cm) wound breakdowns. Major complications evaluated included large (>5 cm) flap necrosis, need for blood transfusion, deep vein thrombosis, pulmonary embolus, myocardial infarction, and death. Additional data compiled included age, sex, tobacco use, body mass index, past medical history, American Society of Anesthesiologists physical status level, and operative times.

Results: Of the 415 abdominoplasty procedures, 264 (group 1) did not include simultaneous breast surgery. One hundred fifty-one procedures (group 2) involved simultaneous breast surgery, representing 36 percent of the total. Group 2 was further subdivided into those who had breast augmentation surgery (group 2A, $n = 50$), those who had breast reduction surgery (group 2B, $n = 31$), those who had mastopexy surgery (group 2C, $n = 28$), and those who had simultaneous mastopexy and breast augmentation surgery (group 2D, $n = 42$). Removal and replacement of implants and capsulectomy/capsulotomy procedures were included in the augmentation group (group 2A). There were no major complications, including flap necrosis (open wound >5 cm), blood transfusions, deep vein thrombosis, pulmonary embolus, myocardial infarction, or death. No patients required hospitalization. No statistically significant associations with complications were noted between groups 1 and 2 (chi-square, 0.0045; $p > 0.95$, not significant). Furthermore, when subdivided by type of breast surgery, no statistically significant associations were noted among subgroups: group 1 versus 2A (chi-square, 0.96; $p > 0.05$, not significant), group 1 versus 2B (chi-square, 0.032; $p > 0.9$, not significant), group 1 versus 2C (chi-square, 0.003; $p > 0.975$, not significant), and group 1 versus 2D (chi-square, 0.83; $p > 0.5$, not significant).

Conclusion: The results of this retrospective review indicate that combining elective breast surgery with abdominoplasty does not appear to significantly increase the number of major or minor complications. (*Plast. Reconstr. Surg.* 118: 207, 2006.)

The popularity of aesthetic plastic surgery has increased dramatically in recent years with rising patient awareness of available procedures. Abdominoplasty remains one of the most requested aesthetic procedures because of the immediate improvement it can produce in a patient's body contour. Frequently, female pa-

tients who are unhappy with the appearance of their abdomen are also displeased with the shape or size of their breasts. As a result, the request for simultaneous surgery on the abdomen and breasts is often encountered by plastic surgeons.

Although it is a common practice to combine elective breast surgery with abdominoplasty, there is a surprising paucity of current published information on this topic. When asked by patients about the safety and efficacy of combining elective breast and abdominal surgery, plastic surgeons must, to a large extent, base their answers on personal experience and anecdotal in-

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formation. There is clearly a significant body of literature regarding simultaneous breast and abdominal surgery for reconstruction (i.e., transverse rectus abdominis musculocutaneous flaps). However, due to the presence of malignancy, these patients are physiologically distinct from healthy patients who elect to undergo combined breast surgery and abdominoplasty.

Prior research articles have addressed the safety of combining abdominoplasty with other surgical procedures.¹⁻⁹ In one recent article, Stevens et al. retrospectively reviewed a large number of abdominoplasty patients and demonstrated that combining this procedure with facial and/or breast surgery did not result in a statistically significant increase in the incidence of major or minor complications.⁸ A broader study of abdominoplasty patients by Stevens et al. also demonstrated that simultaneous suction lipectomy in small, medium, and large volumes did not result in a statistically increase in the risk of complications.⁹

A large subgroup of the abdominoplasty patients reviewed in these prior studies was identified as having undergone various types of breast surgery, including breast augmentation, breast reduction, mastopexy, and mastopexy combined with simultaneous augmentation. Removal and replacement of implants and capsulectomy/capsulotomy procedures were included as a variation of breast augmentation. This current study was designed to evaluate and compare the complication rates of patients having abdominoplasty without breast surgery with the rates for patients having abdominoplasty with the various types of breast surgery noted above.

PATIENTS AND METHODS

The data collected represent a retrospective chart review of consecutive abdominoplasty procedures performed at a single outpatient facility by the senior surgeon (W.G.S.) over a 15-year period (1989 to 2004). Abdominoplasty procedures performed by the senior author at other facilities were excluded from this study.

Two groups were compared: patients who underwent abdominoplasty without breast surgery and those who had abdominoplasty with breast surgery. Many patients in both groups had simultaneous liposuction. As demonstrated by our prior study,⁹ suction lipectomy was not associated with a higher complication rate when combined with abdominoplasty, and was therefore not specifically addressed in this study. Likewise, simultaneous aesthetic facial surgery was not used to categorize

patients, since another prior study⁸ demonstrated that this, too, did not affect complications in a statistically significant manner.

Minor complications assessed included seromas, hematomas, infections, and small (<5 cm) wound breakdowns. Major complications evaluated included large (>5 cm) flap necrosis, need for blood transfusion, deep vein thrombosis, pulmonary embolus, myocardial infarction, and death. Additional data compiled included age, sex, tobacco use, body mass index, past medical history, American Society of Anesthesiologists physical status level,¹⁰ and operative times.

Hypertrophic or aesthetically suboptimal scar formation was not specifically included as a complication in this study. Although surgical technique affects the quality of the final scar, genetic predisposition toward hypertrophic scarring can represent a significant factor in healing as well. Complications such as dehiscence or infection may result in a hypertrophic scar, and in these instances the morbidity was defined by the inciting complication rather than the scar itself.

All patients received general anesthesia, lower extremity sequential compression devices (placed before induction), and perioperative antimicrobial coverage. When adjunctive liposuction was performed, aggressive treatment of the lower abdomen was avoided to minimize interference with the blood supply to the distal flap.¹¹ Closed suction drains were placed in all patients. No indwelling Foley catheters were utilized, and all patients ambulated within 1 hour of awakening from anesthesia. Patients were generally transferred to an after-care facility, ambulated intermittently, and maintained on oral pain medication.

RESULTS

Of the 415 abdominoplasty procedures, 264 (group 1) did not include simultaneous breast surgery. One hundred fifty-one procedures (group 2) involved simultaneous breast surgery, representing 36 percent of the total. Group 2 was further subdivided into those who had breast augmentation (group 2A), breast reduction (group 2B), mastopexy (group 2C), and simultaneous mastopexy and breast augmentation (group 2D). Removal and replacement of implants and capsulectomy/capsulotomy procedures were included in the augmentation group (group 2A) (Table 1).

The two primary groups and subgroups were compared with regard to average age, average body mass index, average physical status level, and average operative time to ensure consistency across groupings (Table 2). Not surprisingly, the

Table 1. Number of Patients per Group

	No. of Patients
Group 1: no breast surgery	264
Group 2A: breast augmentation	50
Group 2B: breast reduction	31
Group 2C: mastopexy	28
Group 2D: mastopexy with augmentation	42

average age of the breast augmentation group was slightly younger than that of the other groups and subgroups. Likewise, the average surgery time for groups that involved breast reduction (2B) and mastopexy (2C and 2D) was longer than that for the groups that had augmentation (2A) or no breast surgery.¹ Overall, the variables of age, body mass index, physical status level, and surgery time among groups were very consistent.

There were no major complications, including flap necrosis (open wound >5 cm), blood transfusions, deep vein thrombosis, pulmonary embolus, myocardial infarction, or death. No patients required hospitalization.

Minor complications were tabulated in terms of raw number (Table 3) and percentage of total cases (Fig. 1) for each group. To further clarify the data, group 2 was compared with group 1 in both its entirety and as subgroups.

No statistically significant differences were noted between group 1 and group 2 (chi-square, 0.0045; $p > 0.95$, not significant). Furthermore, when group 2 was subdivided by type of breast surgery, no statistically significant differences were noted among the subgroups: group 1 versus 2A (chi-square, 0.96; $p > 0.05$, not significant), group 1 versus 2B (chi-square, 0.032; $p > 0.9$, not significant), group 1 versus 2C (chi-square, 0.003; $p > 0.975$, not significant), and group 1 versus 2D (chi-square, 0.83; $p > 0.5$, not significant).

The ages and operative times of all patients were compared with the ages and operative times of patients with complications to determine whether increased age or longer operating times

influenced our complication rates (Table 4). On average, the age of patients with complications was equivalent or lower than the age of the patient population as a whole. Likewise, the surgery times were, on average, lower for patients with complications. Group 2A was the exception to this, with an average surgery time that was only 9 minutes longer in the group with complications. Overall, age and surgery time did not appear to have an influence on complication rates.

As demonstrated above, there was no apparent association between complications and increased age. Similarly, the average operative times of patients in whom complications occurred were not higher. The average operative time of all cases was 2.2 hours, and no case lasted longer than 6 hours (Fig. 2).

Body mass indexes were calculated for all patients in the study, except for seven who were missing the necessary data. Most patients had body mass indexes less than 30. When these patients were divided into groups by body mass index (<25, 25 to 29, 30 to 34, and >34), no statistically significant difference existed among groups with a body mass index less than 30 versus those with an index value greater than 30 (chi-square, 0.96; $p > 0.05$, not significant) (Table 5)

DISCUSSION

This retrospective review of 151 consecutive procedures provides further evidence that combining aesthetic breast surgery with abdominoplasty should not have a statistically significant effect on morbidity. No statistically significant difference in complication rates was noted among the five groups of patients. The overall rate of morbidity was consistent with previous guidelines set by similar articles.¹²⁻¹⁴

With growing public awareness, larger numbers of patients with significant weight loss, and increased access to plastic surgeons, the demand for abdominoplasty will continue to rise. In many cases, aesthetic breast surgery is desired to maxi-

Table 2. Average (range) Age, Body Mass Index, Physical Status Level, and Surgery Time per Group

	Average Age	Average BMI	Average ASA Physical Status Level*	Average Surgery Time (min)
Group 1	46 (19-75)	25 (17-41)	1.4 (1-3)	120 (43-315)
Group 2A	37 (17-33)	23 (17-33)	1.3 (1-2)	134 (110-295)
Group 2B	47 (31-72)	26 (19-36)	1.5 (1-3)	171 (110-295)
Group 2C	47 (28-69)	26 (19-39)	1.4 (1-2)	161 (95-310)
Group 2D	42 (22-60)	24 (19-34)	1.3 (1-2)	170 (105-295)

BMI, body mass index; ASA, American Society of Anesthesiologists.

*An American Society of Anesthesiologists physical status level 1 patient is considered healthy, while a level 2 patient is considered to have mild systemic disease. Levels 3 and above represent worsening degrees of moderate to severe systemic disease.

Table 3. Number, Type, and Percentage of Total Complications per Group

Group	Seroma (n)	Hematoma (n)	Wound Dehiscence (<5 cm) (n)	Infection (n)	Dog-Ear (n)	Complications/Total Cases (n)	Total Complications (%)
1	19	7	13	1	4	44/264	17
2	9	0	8	4	3	24/151	16
2A	1	0	1	1	2	5/50	10
2B	1	0	3	1	0	5/31	16
2C	3	0	1	0	0	4/28	14
2D	4	0	3	2	1	10/42	23

mize the results of surgery. Few patients wish to undergo the cost, inconvenience, and potential medical consequences of multiple trips to the operating room.

Advances in surgical techniques, preoperative evaluations, and postoperative care continue to evolve, making the surgical experience for patients both safer and more pleasant. The practices of frequent transfusions,^{6,15} multi-day hospital stays,^{2,4,16} and prolonged bedrest¹² seen in previous studies have become obsolete in the senior author's practice. Improved hemostasis with tumescent solution and electrocautery, efficient operative times, evolving pain management strategies, and early ambulation have been keys to this success.

In the present study, meticulous care was taken to ensure that all patients had placement of lower extremity sequential compression devices

before induction of anesthesia. Postoperatively, all patients followed a schedule of frequent ambulation. Furthermore, operative times were limited to less than 6 hours. Using these guidelines, no documented deep venous thrombosis or pulmonary embolus occurred in this series of abdominoplasty procedures.

Clearly, as with any retrospective clinical study, there are limitations regarding the applicability of this information to other surgeons' practices. By using a single surgeon and a single outpatient surgery facility, differences in surgical technique and location were removed as confounding factors in the data (a problem with multicenter retrospective studies). However, there are some caveats for those basing their surgical practice on this study.

Basic precautions against complications, such as proper monitoring, preoperative antibiotics, se-

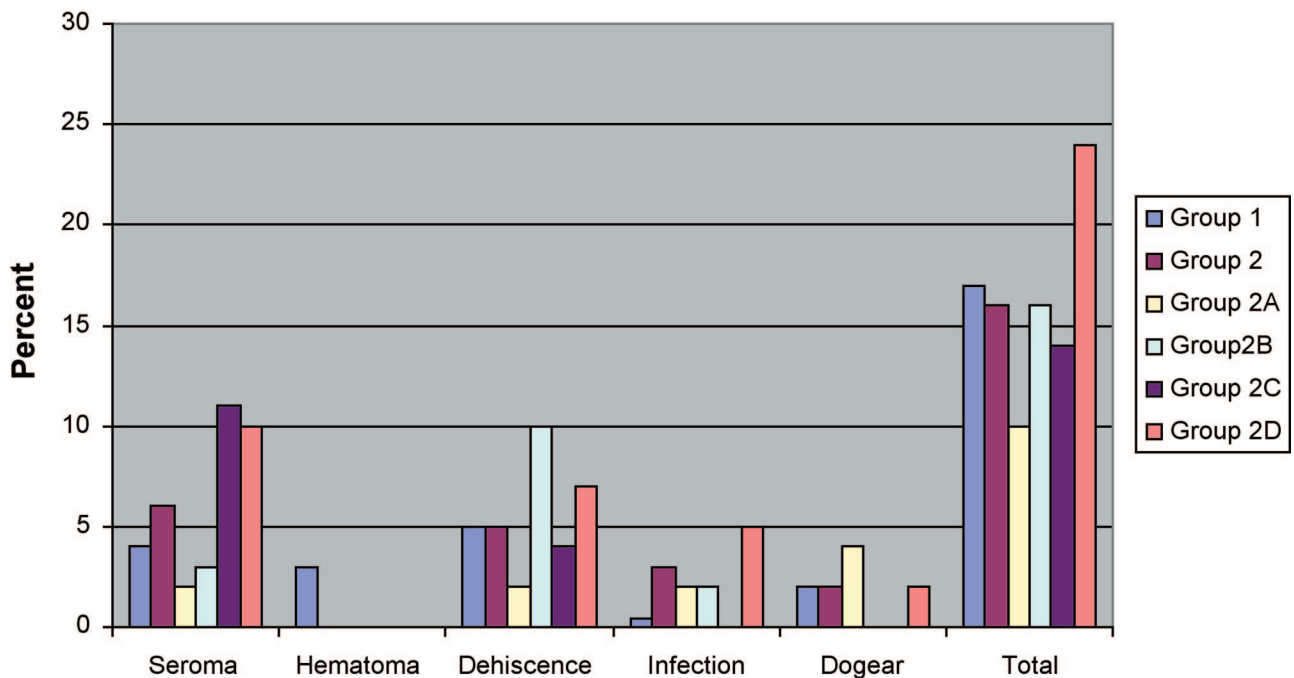


Fig. 1. Percentage of complications.

Table 4. Comparison of Average Age and Average Operative Time for All Patients versus Patients with Complications

	Group 1	Group 2A	Group 2B	Group 2C	Group 2D
Average patient age, years	46	37	47	47	42
Average patient age with complications, years	47	31	42	47	42
Average operative time, minutes	120	134	171	161	170
Average operative time with complications, minutes	112	145	168	144	168

quential compression devices, and early ambulation, should be reproducible by any surgeon. On the other hand, surgical technique and operative times can vary significantly from surgeon to surgeon. The senior surgeon in this study uses meticulous surgical techniques and emphasizes intraoperative efficiency to minimize bleeding and surgery time. Although surgery time did not appear to affect complication rates in our study, the majority of procedures lasted less than 3 hours, and no procedure lasted longer than 6 hours. The data from this study do not address longer cases (>6 hours), which could potentially be associated with higher complication rates.

Regarding possible selection bias, there is obviously a possibility for bias in any study that is not double-blinded and randomized. However, this type of study is nearly impossible to design for elective aesthetic surgery patients. In this particular case, the vast majority of procedures were performed long before the idea for the study even existed. The surgical decisions were therefore biased only by the senior surgeon’s experience and judgment in deciding how to best serve the patients’ needs.

In all cases, the senior surgeon prioritized patient safety first when considering whether to perform combined surgery. Once patient safety issues

were cleared, the decision to perform abdominoplasty alone versus in combination with breast surgery was based on patients’ wishes after having an informed discussion.

CONCLUSIONS

The results of this retrospective review indicate that aesthetic breast surgery combined with abdominoplasty does not appear to increase the number of major or minor complications. Furthermore, there did not seem to be a significant difference in complications when comparing the various breast surgery subgroups.

Patient safety is clearly the ultimate concern with any surgery, and from this perspective the general apprehension of medical boards, surgeons, and patients regarding combination surgery is understandable. Reducing cost and inconvenience by combining surgical procedures could never justify a significantly increased risk of medical complications.

However, as this study has demonstrated, with appropriate patient selection, meticulous perioperative care, and limited operating times, the safety of abdominoplasty with adjunctive breast surgery appears to be equivalent to that of abdominoplasty alone. As a result, it seems appropriate to offer abdominoplasty combined with

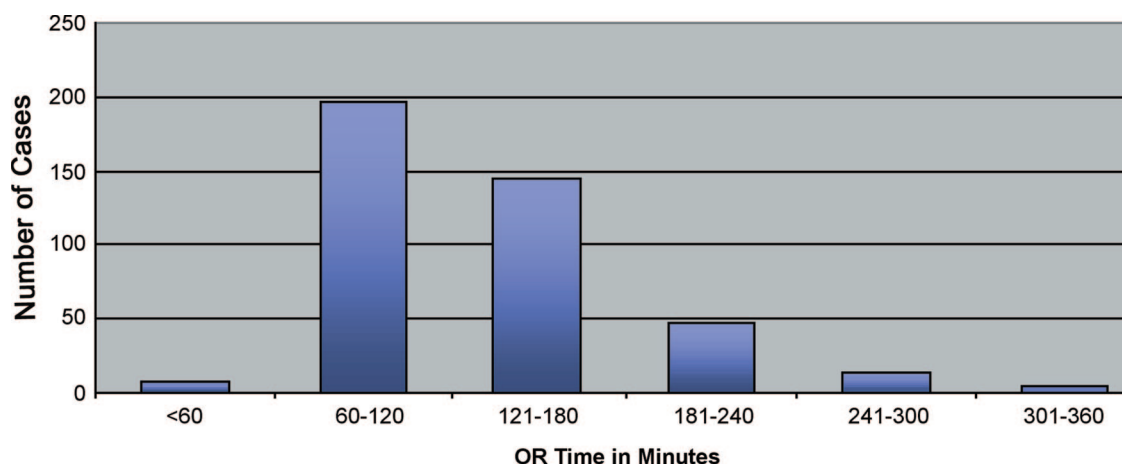


Fig. 2. Distribution of operating times (in minutes).

Table 5. Number and Percentage of Complications per Body Mass Index Group

BMI	Total No. of Patients	Total No. of Complications	Percentage of Complications
<25	225	28	12
25–29	127	20	16
30–34	46	9	20
>34	10	2	20

BMI, body mass index.

breast surgery to patients, while continuing to evaluate and improve the safety and efficacy of this practice.

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