Cosmetic

Secondary Abdominal Contour Surgery: A Review of Early and Late Reoperative Surgery

Alan Matarasso, M.D., Steven G. Wallach, M.D., Marlene Rankin, Ph.D., and Robert D. Galiano, M.D.

New York, N.Y., and New Brunswick, N.J.

A retrospective chart review of 400 abdominal contour operations produced a series of 24 patients who underwent both their primary and then their secondary abdominal contour surgeries with the senior author (Matarasso). The majority of patients were classified and treated according to the abdominoplasty classification system previously described; however, a subgroup could not be categorized according to this system. In this study, the authors identified the secondary abdominal contour surgical experience of one surgeon. A comparison was made between two groups of patients treated for both primary and secondary operations: group I, considered early, less than 18 months after the previous operation; and group II, considered late, 18 or more months after the previous operation. There was a significant difference between groups I and II ($\chi^2 = 4.12, p = 0.05$); most patients had their surgical procedures before 18 months. For patients who underwent either a miniabdominoplasty or a full primary abdominoplasty, there was a statistically significant difference between the number of patients treated in group I and the number in group II (Fisher's exact test, $D = 0, p = 0.05$). Next, the nature of the secondary procedure was determined to be either a revisional procedure or a completely new reoperative procedure. The majority of patients underwent revision or "touch-ups," accomplished with either liposuction alone or in combination with scar revision. There was no significant difference between types of primary and secondary procedures performed in group I or group II. Secondary abdominal contour surgery accounted for 6 percent (24 of 400) of all abdominal contour procedures performed by one surgeon. Complete secondary surgery, performing an additional open procedure, occurred in 21 percent of cases (five of 24). Revision surgery (scar revision or removal of dog-ears) was performed in 29 percent of all cases (seven of 24). There was a 4 percent (one of 24) complication rate requiring operative intervention. This rate is consistent with that reported in the literature for primary abdominal contour surgery. With the overall acceptance of aesthetic surgery increasing, the number of patients undergoing abdominoplasty increasing, an aging population, and the safety of secondary abdominal contour surgery suggested from this review, it is likely that plastic surgeons will see more patients requesting secondary abdominal contour surgery in the future. (Plast. Reconstr. Surg. 115: 627, 2005.)

The number of patients undergoing aesthetic surgery, and abdominoplasty, has increased substantially over the past 5 years. According to recent statistics, abdominoplasty had the most significant increase (17 percent) of the major
cosmetic surgery procedures for the previous year, and liposuction remained the most popular aesthetic surgery procedure in both genders. Abdominoplasty and liposuction surgery increased 144 percent and 111 percent, respectively, during that same 5-year time frame. Furthermore, patients aged 35 to 50 years constituted the majority of those undergoing these procedures. Consequently, it is likely that over time many of these patients will have additional abdominal contour surgery.

Patients request “secondary” or reoperative abdominal contour procedures for many reasons. Some patients are dissatisfied with their previous operation because they have persistent dog-ears or unfavorable scarring. Other patients opted for or requested a less invasive procedure and could have benefited from a more invasive procedure. Still, there exists another group of patients who were pleased with their previous operation and, because of age-associated changes that have developed over time, desire maintenance of their previously rejuvenated abdominal contour.

Patients undergoing secondary abdominal contour surgery are generally classified using the abdominoplasty classification system and treatment described for primary abdominal contour patients. Classification and treatment of patients are based on the soft-tissue layers: quality of the skin, subcutaneous fat component, and underlying musculoaponeurotic system laxity. In patients considering secondary “complete” abdominal contour procedures, this same classification can serve as a basic template. However, there is a subgroup of patients in the secondary group who require repeated surgery for revisions, such as patients desiring scar revision or dog-ear revision, and those patients requiring excision of a pseudobursa, or patients needing improvement of contour irregularities, that do not need a complete abdominal contour procedure as described using the abdominoplasty classification system.

As a result of these different indications and other factors, the timing of the secondary operation will vary. For instance, we hypothesized that many patients who undergo early reoperation (<18 months postoperatively) desire revision or touch-ups of scars, dog-ears, and limited liposuction for contour irregularities. Another group of patients undergoes later reoperation (>18 months postoperatively), and we presumed that this might be the result of age-associated changes leading to further skin laxity and significant musculoaponeurotic diastasis that may warrant more extensive surgery than previously performed.

There is a paucity of literature published on secondary abdominal contour surgery, the types necessary, its frequency, its timing, and its safety. In this report, we address these issues by means of a retrospective study of patients who underwent repeated abdominal contour surgery in the practice of the senior author (Matarasso).

PATIENTS AND METHODS

Definition of Secondary Abdominal Contour Surgery

For the purpose of this study, secondary surgery encompasses any type of contour surgery of the abdomen in a patient who has previously had some type of abdominal contour surgery. This includes scar revisions, removal of a pseudobursa, skin excision, repair of abdominal wall musculature diastasis, wound margin revisions (i.e., dog-ears), correction of contour irregularities, and repeated abdominal contour procedures (e.g., liposuction, abdominoplasty).

A retrospective chart review of 400 abdominal contour operations identified 24 patients who underwent both their primary and then their secondary abdominal contour operations by the senior author (Matarasso). We did not include secondary cases where the original surgeon was not the senior author (Table I). There were 19 women and five men, with an average age at the time of secondary surgery of 43 years. Follow-up ranged from 2 months to 12 years, with an average of 4 years.

We stratified patients according to two issues. First, we compared two groups of patients based on the time at which they underwent secondary abdominal contour surgery. Group I patients are those that underwent early secondary surgery (<18 months postoperatively) after their primary procedure, and group II patients are those that underwent late secondary surgery (>18 months postoperatively) after their primary procedure. Second, we reviewed the type of redo surgery performed; that is, either a revisional procedure or a completely new secondary abdominal contour procedure.

RESULTS

Twenty-four patients underwent secondary abdominal contour surgery (Figs. 1 and 2). In addition, of these 24 patients, seven underwent tertiary procedures and two underwent quaternary proce-
TABLE I

Comparison of Primary and Secondary Procedures between Group I (<18 mo) and Group II (≥18 mo) (n = 24 patients)

<table>
<thead>
<tr>
<th>No. of Patients</th>
<th>Primary Procedure</th>
<th>Secondary Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Liposuction</td>
<td>Group I</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>6 liposuction (NS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 type IV (NS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 type III (NS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 liposuction (NS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 liposuction and scar revision (NS)</td>
</tr>
<tr>
<td>4</td>
<td>Miniabdominoplasty</td>
<td>1 scar revision and pseudobursa (NS)</td>
</tr>
<tr>
<td>2</td>
<td>Modified abdominoplasty</td>
<td>1 reverse (NS)</td>
</tr>
<tr>
<td>5</td>
<td>Full abdominoplasty with or without SAL</td>
<td>1 scar revision (NS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 liposuctions and scar revisions (NS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 scar revision (NS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17† (p = 0.05)</td>
</tr>
</tbody>
</table>

Type II, miniabdominoplasty; type III, modified abdominoplasty; type IV, full abdominoplasty; SAL, suction-assisted lipectomy; reverse, reverse abdominoplasty; NS, not significant.

* Level of significance (Fisher’s exact probability, D = 0, p = 0.05).
† Level of significance (χ² = 4.12, p = 0.05).

Tired procedures. The distribution of secondary abdominal contour procedures is illustrated in Table II.

Timing of Secondary Procedures

Seventeen procedures were performed on group I (<18 months postoperatively) and seven were performed on group II (≥18 months postoperatively). Group I patients primarily underwent liposuction or scar revision, often in combination with liposuction. The majority of group II patients had suction-assisted lipectomy (Table I).

Interestingly, the majority of patients who underwent liposuction alone as their first abdominal operation did not undergo a more extensive secondary procedure either early or late. For those patients who had a full abdominoplasty as their primary procedure, 100 percent (five of five) of the secondary procedures performed on these patients were for scar revision with or without liposuction.

There was one complication in 24 patients requiring a return to the operating room. This occurred in a patient who required excision of a pseudobursa after a previous miniabdominoplasty. The total complication rate is 4 percent (one of 24).

Nature of Secondary Procedures

Liposuction accounted for 71 percent (17 of 24) of the secondary abdominal operations performed. The second most common procedure was scar revision either alone or in combination with other procedures.

The main reasons for additional surgery included patient dissatisfaction with their results and the patient’s desire to maintain a rejuvenated abdominal appearance. Revision surgery, either scar revision or removal of dogears, was performed in 29 percent (seven of 24) of all cases; there were five patients who had previously undergone a full abdominoplasty, two who had previously undergone a modified abdominoplasty, and four who had previously undergone a miniabdominoplasty (Figs. 1 and 2). Complete secondary surgery, with an additional open procedure (i.e., miniabdominoplasty, modified abdominoplasty, or full abdominoplasty), was performed in 21 percent (five of 24) of all cases. The majority of patients who had their primary operation performed by the senior author went on to have suction-assisted lipectomy or scar revision, and these were more often performed early (<18 months postoperatively).

Statistical analysis was performed using the χ² and Fisher’s exact probability test. Most patients underwent secondary abdominal contour surgery less than 18 months after their primary operation (group I), and this was statistically significant (χ² = 4.12, p = 0.05). For those patients who underwent miniabdominoplasty and full abdominoplasty primary abdominoplasty surgery, there was a statistically significant difference between the number of patients in group I and group II (Fisher’s exact probability test, D = 0, p = 0.05). There was no statistically significant difference between the types of primary procedures or secondary procedures performed in group I or group II.
FIG. 1. A female patient who underwent liposuction of the abdomen at 39 years of age and then a full abdominoplasty at 44 years of age. (Above) Preoperative views (age 39). (Below) Five-year postoperative views after liposuction of the abdomen and before the full abdominoplasty procedure.

DISCUSSION

Our retrospective study indicates that repeated abdominal contour surgery is uncommon; only 6 percent (24 of 400) of all abdominal contour procedures were for secondary surgery. However, with the number of patients undergoing abdominal contour surgery on the increase, it is likely that for all categories, early versus late and revisional versus complete reoperative surgery, requesting or needing additional abdominal contour surgery may increase.1,2 It is feasible that the incidence of secondary abdominal contour surgery could be even higher, because patients who are dissatisfied may elect to have surgery by a different surgeon.

The time frame chosen to differentiate early from late reoperative abdominal contour surgery was 18 months. This time frame was chosen because, beyond 18 months, it was hypothesized that patients were less likely to undergo revision of prior surgery.

Liposuction with or without scar revision was the most common reoperative surgery in both
open and closed primary surgery patients. This was true for group I patients (<18 months postoperatively). Interestingly, in group II (≥18 months postoperatively), the most common procedure was also liposuction with or without scar revision. Not surprisingly, group I patients underwent touch-up of scar, dog-ears, and for the most part limited liposuction. We expected to see patients in group II who underwent later surgery to undergo more invasive procedures because of changes in skin laxity and muscular flaccidity, but to our surprise this was not the case. Correctly diagnosing, classifying, and treating the patient in the proper treatment category may help to minimize incorrectly treated patients; however, this cannot always be avoided. Occasionally, patients opt for treatment that potentially decreases prolonged anesthesia and is less invasive, and thus avoids more scarring and may shorten the period of recuperation. As a result, these patients may decide at a later time that a more invasive procedure than was originally recommended would have given them a better outcome and subsequently return for further surgery.

A limitation of retrospective analysis is that some patients or subjects may choose to have other surgeons perform secondary surgery. We cannot report objectively on these cases because they are unknown. However, there were an additional 24 patients who underwent secondary surgery by the senior author who did not have their primary operation performed by him. This increased the number of secondary abdominal contour procedures performed to 12 percent (48 of 400). We did not include these additional patients because this would have added too much variability to the study design. The relatively low rate of secondary surgery suggests that most patients are satisfied with their initial operation. There are some patients who may never be completely satisfied, and this may explain why some of the patients in this review actually went on to have tertiary and quaternary surgery. This accounted for an additional nine procedures for the original 24 patients operated on by the senior author.
It might be expected that because of scarred surgical planes, distorted anatomy, and so forth, that secondary surgery would be more hazardous. In addition, as in secondary face lifts, prior incisions may have been poorly designed, making future procedures more difficult to perform and limiting their success.\(^8\) Although this suggests that secondary abdominal contour surgery may be more complex, in this series, the complication rate for secondary surgery was 4 percent (one of 24). This rate is consistent with rates reported in the abdominal contour literature, suggesting that this is as safe as primary surgery.\(^1,7\)

Whether the earlier operation was a closed liposuction or an open procedure, or the late reoperation was revisional or a complete reoperation, secondary abdominal contour surgery was indeed not commonly required and the complication rate was found to be comparable to the rate found with primary surgery. This bodes well for patients considering abdominal contour surgery in the future.

**Conclusions**

We report on the reoperative abdominal contour surgery experience of one surgeon stratified according to two issues. First, we compared two groups of patients who underwent reoperative abdominal contour surgery based on timing: either early (<18 months after the previous operation) or late (≥ 18 months after the previous operation). Second, we reviewed the nature of the surgery as essentially revisional or as a complete reoperative procedure. The majority of early and late secondary operations were for liposuction. With a trend in recent years demonstrating an increase in aesthetic surgical procedures performed, especially abdominal contour surgery, we believe that the number of patients undergoing secondary abdominal contour surgery will increase as well. Our data support the conclusion that secondary abdominal contour surgery has a complication rate comparable to that of primary surgery, suggesting that secondary abdominal contour surgery is safe.

Steven G. Wallach, M.D.
1049 Fifth Avenue, Suite 2D
New York, N.Y. 10028
sgwallach@aol.com

**References**