The American Society for Aesthetic Plastic Surgery (ASAPS) reported that 2,099,173 surgical and non-surgical cosmetic procedures were performed in 1997.\(^1\) Almost 10 years later, that number soared dramatically to 11,456,768 procedures.\(^2\) This surge in the popularity of cosmetic surgery has aroused interest in the psychological aspects of cosmetic surgery among both plastic surgeons and mental health professionals.

As reviewed in detail elsewhere,\(^3\) a number of studies have investigated the psychosocial characteristics of individuals interested in aesthetic procedures. Most of these studies focused only on changes during the first posttreatment year.

**Background:** The number of cosmetic surgical and nonsurgical procedures performed in the United States has increased by 500% over the past 10 years. Most studies of psychosocial functioning following aesthetic procedures have reported high levels of patient satisfaction and improved functioning; however, nearly all these studies focused only on changes during the first posttreatment year.

**Objective:** This paper reports on the 2-year results of a prospective, multi-site investigation of postoperative satisfaction and changes in psychosocial status following cosmetic surgery.

**Methods:** One hundred patients from 8 surgical practices completed psychometric measures of body image, depressive symptoms, and self-esteem before surgery. Patients completed the same measures again at 3, 6, 12, and 24 months postoperatively. In addition, they reported their postoperative satisfaction as well as self-rated attractiveness at the 4 postoperative assessment points.

**Results:** Patients reported improvements in their overall appearance and body image, the appearance of and their degree of dissatisfaction with the feature altered by surgery, and the frequency of negative body image emotions in specific social situations through 24 months after surgery. These improvements were first evident at 3 months postoperatively and were maintained, without deterioration, through 2 years following surgery.

**Conclusions:** Patients reported high rates of satisfaction and improvements in body image within the first 2 postoperative years. (Aesthetic Surg J 2008;28:245–250.)

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Two-Year Results of a Prospective, Multi-Site Investigation of Patient Satisfaction and Psychosocial Status Following Cosmetic Surgery

**David B. Sarwer, PhD; Alison L. Infield; James L. Baker, MD; Laurie A. Casas, MD; Paul M. Glat, MD; Alan H. Gold, MD; Mark L. Jewell, MD; Don LaRossa, MD; Foad Nahai, MD; and V. Leroy Young, MD**

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As reviewed in detail elsewhere,\(^3\) a number of studies have investigated the psychosocial characteristics of individuals interested in aesthetic procedures. A smaller number of studies have investigated changes in psychological functioning postoperatively. Most of these studies have focused on patient satisfaction. Across a number of studies, the vast majority of patients have reported satisfaction with their postoperative outcomes.\(^7\)\(^-\)\(^11\) Other studies have reported improvements in psychosocial functioning, including body image, depressive symptoms, and quality of life following surgery. With few exceptions,\(^12\) these studies have focused on changes in functioning in the first postoperative year.\(^7\)\(^-\)\(^8\)

We previously reported on changes in psychological functioning 3, 6, and 12 months following cosmetic sur-
surgery. In that investigation, we found that patients who underwent a range of cosmetic procedures reported, in the first 3 months after surgery, improvements in their overall appearance and body image, the appearance of and their degree of dissatisfaction with the feature altered by surgery, and the frequency of negative body image emotions in specific social situations. All of these improvements were well maintained at postoperative month 12. In the present study, we have followed these individuals through the second postoperative year to investigate whether there were any further changes in these areas.

METHODS

The study methodology and demographic and descriptive characteristics of the participants were detailed in our previous report. In brief, the study recruited patients from the practices of 8 plastic surgeons: Drs. James Baker (FL), Laurie Casas (IL), Paul Clat (PA), Alan Gold (NY), Mark Jewell (OR), Don LaRossa (PA), Foad Nahai (GA), and V. Leroy Young (MO). Ninety-eight women and 2 men underwent at least 1 of 5 surgical procedures: breast augmentation/breast lift, lipoplasty, rhinoplasty, rhytidectomy, or blepharoplasty. Patients completed a number of valid and reliable psychometric measures, sent via regular mail, before surgery and again at 3, 6, 12, and 24 months postoperatively.

The measures were described in detail in our previous paper. In brief, the Multidimensional Body-Self Relations Questionnaire–Appearance Scales (MBSRQ-AS) consist of 4 subscales which assess body image dissatisfaction: Appearance Evaluation, which measures overall feelings of attractiveness or unattractiveness; Appearance Orientation, which assesses investment in, and importance of, appearance; Body Areas Satisfaction, which measures dissatisfaction with certain body areas and attributes; and Overweight Preoccupation, which assesses weight vigilance and eating restraint. Higher scores reflect greater satisfaction with the specific domain. The Body Dysmorphic Disorder Examination Self-Report (BDDE-SR) is a measure of body image dissatisfaction focused on a specific physical feature. For the purposes of the present study, participants were asked to think about the primary physical feature to be altered by surgery. The Situational Inventory of Body Image Orientation (SIBID-O) assesses the frequency of negative body image emotions about physical appearance in a variety of situations. Higher scores reflect a greater frequency of negative body image emotion.

The Body Image Quality of Life Inventory (BIQLI) assesses the effect of body image on more general quality of life. Higher scores on the measure reflect a more positive body image quality of life. The Beck Depression Inventory II (BDI-II) is a widely used measure of depressive symptoms. Higher scores reflecting more severe depressive symptoms. The Rosenberg Self-Esteem Scale (RSE) is a widely used measure of global self-esteem on which lower scores reflect greater self-esteem.

In addition, participants were asked to rate their overall appearance, the appearance of the primary feature on which surgery was performed, their satisfaction with their surgical result, and the degree to which any areas in their lives have changed since surgery. The level of satisfaction was measured using a 5-point scale ranging from 1 (“extremely dissatisfied”) to 5 (“extremely satisfied”). Finally, participants were asked whether they would have surgery again and whether they would recommend their procedures to others.

All study participants provided informed consent. The study was approved by the Institutional Review Board of the University of Pennsylvania.

Statistical Methods

From the initial sample of 100 participants, 72 completed the 3-month postoperative assessment, 67 completed the 6-month assessment, 64 completed the 12-month assessment, and 65 completed the 24-month assessment. All patients were provided with $20 for completing each questionnaire packet. In an effort to maximize study retention at postoperative month 24, participants who did not return their questionnaire packet were mailed a second questionnaire packet followed by reminder phone calls. This improved the response rate at the 24-month assessment from 57 to 65 patients. The average number of months from surgery to the completion of the final packet was 26.43 ± 3.93 months.

All statistical tests assessing changes between the pre- and postoperative assessments were conducted using the sample of 72 patients who completed the 3-month assessment. Of these patients, 72.2% (n = 52) underwent one surgical procedure. Nineteen patients (26.4%) underwent two procedures, and 1 patient (1.4%) underwent 3 procedures. The most common procedure was breast augmentation (n = 28), followed by blepharoplasty (n = 23), lipoplasty (n = 16), rhytidectomy (n = 17), and rhinoplasty (n = 9). A last observation carried forward analysis, which uses the last available data point as the value for subsequent missing data, was used from this point forward to account for participants who did not complete the subsequent follow-up assessments. A general linear model, repeated measures analysis of variance, was used to investigate changes from baseline to the four postoperative assessment points. Subsequent comparisons between specific assessment points were done using the Bonferroni correction (P < .01), which corrects for multiple testing.

RESULTS

Postoperative Satisfaction

As in our previous report, we found that participants reported high rates of satisfaction with their postoperative outcomes. At 3, 6, 12, and 24 months postsurgery, at least 89% of patients reported being either “somewhat satisfied” or “extremely satisfied” with their results. Seventy percent of participants at 12 months and
78% of participants at 24 months reported being “extremely satisfied.” The percentage of “extremely satisfied” patients increased from 12 months to 24 months; however, this change was not statistically significant.

At 24 months postoperatively, 88% of patients reported that other individuals had commented on their appearance. This percentage decreased from the 12-month assessment point, when 95% of patients reported individuals making comments about their appearance. This change, however, was not statistically significant. No less than 94% of these comments were positive in nature across all 4 postoperative assessment points. Two years after surgery, 93% of patients reported that they would have surgery again. This represented a slight but not statistically significant increase from the 91% of patients who reported that they would have surgery again after the first postoperative year. Two years postoperatively, 95% of patients reported that they would recommend their procedures to others. The same percentage indicated that they would recommend surgery to others 1 year after surgery.

Attractiveness Ratings
As can be seen in Figure 1, patients reported significant improvements in their ratings of their overall appearance after surgery [F (4, 65) = 4.33; P < .004]. These improvements were evident 3 months after surgery (6.38 ± 1.06 vs. 6.96 ± 1.09; P < .002) and were maintained at months 6, 12, and 24 postoperatively. Patients similarly reported improvements in the self-rated attractiveness of the specific feature altered by surgery [F (4, 66) = 34.28; P < .001]. These rating improved significantly 3 months after surgery (4.04 ± 2.23 vs. 7.23 ± 1.48; P < .001) and were maintained at postoperative months 6 (P < .001), 12 (P < .001), and 24 (P < .001).

Body Image
Patients reported significant improvements in their body image through the second postoperative year, as assessed by the Appearance Evaluation [F (4, 68) = 4.46; P < .003] and Body Areas Satisfaction [F (4, 68) = 3.93; P < .006] subscales of the MBSRQ-AS. These improvements were first evident 3 months after surgery, as compared to baseline (Appearance Evaluation, P < .001; Body Areas Satisfaction, P < .004; Figure 2). They remained significantly different from baseline at postoperative months 6, 12, and 24. There were no significant changes in Appearance Evaluation and Body Areas Satisfaction scores from month 12 to month 24. Scores on the Appearance Orientation subscale did not change postoperatively, suggesting no difference in the degree of investment in appearance. Additionally, scores on the Overweight Preoccupation subscale were not significantly different at any postoperative time points, suggesting no differences in fat anxiety, weight vigilance, or dieting and eating restraint.

Patients reported significant reductions in the degree of dissatisfaction with the specific feature altered by surgery, as assessed by the BDDE-SR [F (4, 68) = 22.64; P < .001]. As with the more general improvements in body image, these changes were evident at 3 (P < .001), 6 (P < .001), 12 (P < .001), and 24 months (P < .001) after surgery, as compared to baseline (Figure 3). There were no significant changes in degree of dissatisfaction with the specific feature altered by surgery from 12 months to 24 months. Patients reported similar reduc-
tions in the frequency of negative emotions about their appearance (as assessed by the SIBID-S) at each postoperative assessment point \([F (4, 68) = 4.15; P = .005; \text{Figure 4}]\) with significant changes first occurring at 3 months postoperatively and maintained through 24 months postoperatively. Scores on the BIQLI, which assessed body image quality of life, improved after surgery but did not change significantly from baseline at any postoperative assessment point.

**Self-Esteem and Depressive Symptoms**

Patients reported improvements in self-esteem and a decrease in depressive symptoms following surgery. However, neither of these changes was statistically significant at any assessment point (Table 1).

**DISCUSSION**

The results of the present study suggest that patient satisfaction, self-ratings of attractiveness, and improvements in body image which occur in the first few months after surgery are well maintained throughout the second postoperative year. Two years after surgery, 95% of participants continued to report that they would recommend surgery to others, and 93% indicated that they would have surgery again. Patients’ rating of their overall appearance, as well as the appearance altered by sur-

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*Figure 2.* Multidimensional Body-Self Relations Questionnaire—Appearance Scales (MBSRQ-AS) subscale scores. Significant differences over time are indicated by superscript a and b \((P < .05)\).

*Figure 3.* Body Dysmorphic Disorder Examination Self-Report (BDDE-SR) scores. Significant differences over time are indicated by superscript a, b, and c \((P < .05)\).
Postsurgery Patient Satisfaction and Psychosocial Status

Postsurgery, remained at the improved levels initially seen 3 months postoperatively. Patients also reported significant reductions in frequency of negative emotions about their appearance in a number of situations. These improvements in body image were similarly well maintained through the second postoperative year.

Unexpectedly, patients did not report significant improvements in body image quality of life at any of the four postoperative assessment points. Previous studies of changes in quality of life after cosmetic surgery have been equivocal. \(^{19-20}\) Quality of life is a multidimensional construct. General quality of life is influenced by a number of factors and, as a result, may not be enhanced by a physical change in appearance. Given that previous studies have repeatedly shown that body image improves following surgery, we hypothesized that body image quality of life would also improve. Perhaps improvements in body image quality of life are more closely associated with certain cosmetic procedures and not others, and therefore improvements were not seen in our sample of patients who had undergone a variety of procedures. Unfortunately, the small sample size of some of our procedural groups made it impossible to further investigate this issue or to investigate if there were differences in satisfaction levels by procedure or by region of the country.

We found no significant changes in self-esteem or depressive symptoms at 2 years postsurgery. Previous studies of these psychological domains, like those that have investigated quality of life, have produced conflicting results. Like quality of life, self-esteem is a multifaceted construct that, in a more global sense, may not be responsive to the changes in physical appearance seen with cosmetic surgery. As noted in our report on the 1-year findings,\(^8\) participants in this study, on average, had BDI-II scores suggestive of minimal symptoms of depression. Although these scores decreased postoperatively, the change was not statistically significant, and therefore unlikely clinically significant.

Almost all of the participants who completed the 1-year postoperative assessment were retained in the study and completed the assessment at the end of the second postoperative year. Unfortunately, the attrition we experienced in the first year of the study represents a limita-

Table 1. Self-esteem and depressive symptoms scores preoperatively and 3, 6, 12, and 24 months postoperatively

<table>
<thead>
<tr>
<th>Postoperative month</th>
<th>Baseline</th>
<th>3</th>
<th>6</th>
<th>12</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSE scores</td>
<td>15.49 ± 4.35</td>
<td>14.45 ± 4.24</td>
<td>14.50 ± 4.31</td>
<td>14.33 ± 4.51</td>
<td>14.71 ± 4.21</td>
</tr>
<tr>
<td>BDI scores</td>
<td>5.84 ± 5.59</td>
<td>4.71 ± 7.15</td>
<td>4.81 ± 6.58</td>
<td>4.79 ± 7.05</td>
<td>4.42 ± 6.94</td>
</tr>
</tbody>
</table>

\(BDI\), Beck Depression Inventory II; \(RSE\), Rosenberg Self-Esteem Scale.
For the Rosenberg Self-Esteem Scale (RSE), lower scores reflect greater self-esteem. For the Beck Depression Inventory II (BDI), high scores reflect more severe depressive symptoms.
No significant differences across time points.

Figure 4. Body Image Quality of Life Inventory (BIQLI) and Situational Inventory of Body Image Dysphoria-Short Form (SIBID-S) scores. Significant differences over time are indicated by superscript a and b \((P < .05)\).
tion of this investigation. Despite our best efforts to enhance study retention by repeatedly contacting study participants and providing a modest honorarium for participation, we were able to obtain a final assessment on only 65 of the 100 patients assessed preoperatively. While it is possible that the individuals who did not remain in the study have had postoperative outcomes similar to those studied here, it is also possible that they have had a range of experiences, positive or negative, not captured in this investigation.

Nevertheless, the study provides additional information on the durability of improvements in body image 2 years following cosmetic surgery. Future studies in this area are encouraged to employ a range of strategies to improve study retention beyond what we obtained. Subsequent studies of these issues, with large sample sizes and minimal attrition, will allow us to conclude, with the highest degree of confidence, that cosmetic surgery leads to improvements in body image.

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DISCLOSURES

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REFERENCES


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