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Body Image & Quality of Life

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Journal

Annals of Plastic Surgery, 76(&NA;)

ISSN

0148-7043

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Publication Date

2016-05-01

DOI

10.1097/sap.0000000000000788

Peer reviewed

Body Image & Quality of Life

Changes With Gastric Bypass and Body Contouring

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(*Ann Plast Surg* 2016;76: S216–S221)

Introduction: Bariatric surgery has emerged as an effective method of combating the morbid obesity epidemic. However, the massive weight loss that follows may result in contour changes that can affect body image and quality of life. Our study examines the effects and consequences of bariatric surgery and subsequent body contouring on body image and quality of life.

Methods: Patients were prospectively followed up through their experience with bariatric surgery and subsequent body contouring surgery. Using 2 validated survey instruments, the Multidimensional Body-Self Relations Questionnaire and the Short Form 36 (SF-36), patients completed questionnaires preoperatively and at 6, 12, and 24 months postoperatively. Mean scores were determined by repeated measures analyses of variance *F* tests.

Results: One hundred seventy-five patients were surveyed before bariatric surgery, with noted declines in survey completion at 6, 12, and 24 months. Appearance Evaluation scores improved significantly at all intervals ($P = 0.0033$), as did Body Area Satisfaction Scale and Appearance Orientation scores ($P = 0.0079$ and $P = 0.044$, respectively). While Overweight Preoccupation and Self-Classified Weight scores decreased over time, only the latter was significant ($P < 0.0001$). The composite SF-36 score for patients awaiting bariatric surgery (54.1%) with postoperative scores at 6 (67.6%), 12 (at 74.0%), and 24 (76.7%) months being significantly higher ($P < 0.0001$).

The body contouring group consisted of 41 patients who primarily had lower body procedures, with 31 patients surveyed at 6 months and 27 patients at 12 months. For this cohort, Appearance Evaluation and Body Area Satisfaction Scale scores both improved significantly ($P = 0.0001$ and $P = 0.0005$, respectively) whereas Appearance Orientation scores declined significantly ($P = 0.0055$). Both Overweight Preoccupation and Self-Classified Weight scores decreased with only the latter being statistically significant ($P = 0.0286$). Postoperative SF-36 scores at 6 (72.9%) and 12 (64.5%) months were no different than patients awaiting body contouring (71.3%).

Conclusions: Using 2 validated survey instruments, we show that patients undergoing bariatric surgery have improvements in body image and quality of life. Subsequent postbariatric body contouring surgery results in further improvements in body image. Our findings provide measurable evidence for the value of body contouring after significant weight loss, which may favor greater insurance coverage for this patient population.

Key Words: bariatric surgery, body contouring, body image, health survey, massive weight loss, MBSRQ, morbid obesity, quality of life, SF-36

Received July 1, 2015, and accepted for publication, after revision January 30, 2016. From the Division of Plastic Surgery, University of California, Davis, Sacramento, CA. Conflicts of interest and sources of funding: C.-S.L. and Y.L. are currently supported by the National Center for Advancing Translational Sciences (NCATS), National Institutes of Health (NIH) grant (UL1 TR000002). For the remaining authors, none were declared.

Reprints: Michael S. Wong, MD, University of California Davis Medical Center, 2221 Stockton Blvd, Room 2123, Sacramento, CA 95817. E-mail: mswong@ucdavis.edu. Presented at the 2015 Annual Meeting of the American Society of Plastic Surgeons, Boston, MA, on October 17, 2015.

Presented at the 65th Annual Meeting of the California Society of Plastic Surgeons, Monterey, CA, on May 24, 2015.

Presented at the 60th Annual Meeting of the Plastic Surgery Research Council, Seattle WA, on May 15th, 2015.

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ISSN: 0148-7043/16/7605–S216

DOI: 10.1097/SAP.0000000000000788

More than one third of all adults in the United States are obese, with the Centers for Disease Control and Prevention projecting this rate will only increase over the next two decades.¹ This growing epidemic weighs heavily on our health system and poses a serious health risk to future generations. Bariatric surgery has come to the forefront as a highly effective method of combating morbid obesity and its often-associated medical comorbidities, such as diabetes mellitus, hypertension, gastroesophageal reflux disease, obstructive sleep apnea, and hyperlipidemia.² The popularity of massive weight loss surgery is evident by the rise in bariatric surgery (Table 1) and body contouring.³ The growing trend is unprecedented, because recent advancements in the fields of minimally invasive and plastic surgery have made these options more attractive with improving safety profiles and decreasing complication rates.²

Although patients are getting healthier after the significant weight loss that accompanies bariatric surgery, there is a resultant new group of patients presenting with contour changes related to massive weight loss that may be unanticipated, thus adversely affecting postoperative expectations.^{4–6} Patients may not fully comprehend the extent to which their body appearance may change and the impact this may have on their lives. Among the most undesirable changes are the lax excess skin that develops at multiple anatomic sites, spanning the torso and extremities.^{7,8} In response to these anatomic changes, body contouring surgeries are thus becoming more common, with recent American Society of Plastic Surgeons data showing that procedures specifically associated with massive weight loss are growing at their fastest rate in 4 years (Table 2). At some level, patients who proceed with these types of elective body contouring surgeries conclude that the benefits that they will derive outweigh the surgical risks. These benefits may include expected improvements in body image, self-esteem, and quality of life.

Studies evaluating the subjective psychological well-being of patients choosing to undergo massive weight loss surgery are well established in the literature.^{6,9,10} However, prospective studies that evaluate patients' subjective improvements as they undergo bariatric surgery and subsequent body contouring using well-validated, self-reported inventories are lacking.¹¹ With an ever-growing patient population choosing body contouring surgery after massive weight loss, it is increasingly important to understand and better characterize these subjective changes to optimize preoperative informed consent and prepare patients to anticipate postoperative outcomes.^{12–14} Thus, we sought to examine effects of bariatric surgery and subsequent body contouring surgery on patients' body image and quality of life, as well as the durability of those effects after body contouring, using two validated survey instruments. We hypothesized that body image and quality of life would improve with bariatric surgery and improve further after body contouring.

METHODS

A prospective, 2-year experience followed up patients who underwent bariatric surgery and body contouring. Bariatric patients were given questionnaires preoperatively and at 6, 12, and 24 months postoperatively while body contouring patients were administered these

TABLE 1. American Society of Metabolic and Bariatric Surgery Total Bariatric Procedure Numbers From 2011, 2012 and 2013 Based on the Best Estimation From Available Data (BOLD, ASC/MBSAQIP, National Inpatient Sample Data and Outpatient Estimations)

Estimate of Bariatric Surgery Numbers

Published March 2014

	2011	2012	2013
Total	158,000	173,000	179,000
RNY	36.7%	37.5%	34.2%
Band	35.4%	20.2%	14%
Sleeve	17.8%	33%	42.1%
BPD/DS	0.9%	1%	1%
Revisions	6%	6%	6%
Other	3.2%	2.3%	2.7%

ASC/MBSAQIP, Ambulatory Surgery Center/ Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program; BOLD, Bariatric Outcomes Longitudinal Database.

surveys preoperatively as well as 6 and 12 months postoperatively. We used 2 validated survey instruments: the Multidimensional Body-Self Relations Questionnaire (MBSRQ) and the Research and Development Corporation's Short Form 36 (SF-36).

The MBSRQ is a 34-item inventory of body image divided into subscores that include Appearance Evaluation (AE), Appearance Orientation (AO), Body Area Satisfaction Scale (BASS), Overweight Pre-occupation (OP), and Self-Classified Weight (SW). High scores for AE and BASS indicated satisfaction with one's appearance. Higher scorers in AO placed more importance on their appearance. High scores for OP reflected greater anxiety and attention to their weight. A high SW reflected greater perception and self-labeling as overweight.¹⁰ To assess quality of life, we used the SF-36 with higher scores demonstrating an improved quality of life.¹⁵

Repeated measures analyses of variance *F* tests were used to evaluate mean SF-36 score, AO, AE, BASS, OP, and SW over time. All analyses were completed with Statistical Analysis Software version 9.4 (Cary, NC). A *P* value less than 0.05 was considered statistically significant.

Data were represented with box plots, with each box plot displaying the inner 2 quartiles of survey responses, the band within each box plot representing the median, and the connecting lines representing the mean for each metric.

TABLE 2. 2013ASPS Plastic Surgery Statistics Report on Body Contouring After Massive Weight Loss

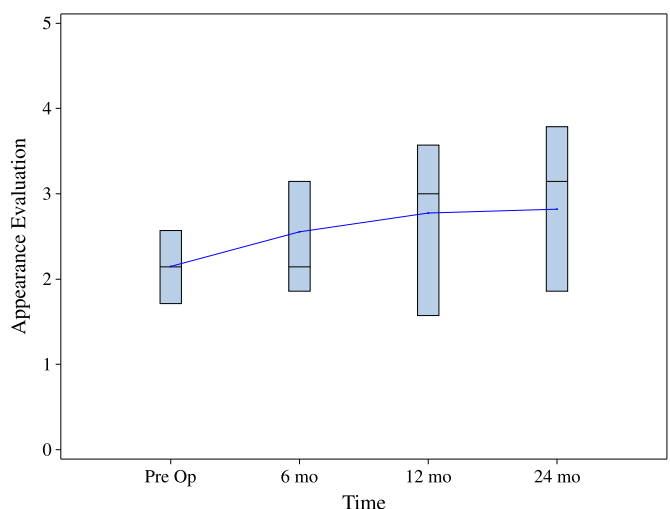
Body Contouring After Massive Weight Loss Procedures	2014	2013	% Change 2014 vs 2013
Breast lift (mastopexy) after massive weight loss	12 048	10 914	10%
Lower body lift after massive weight loss	4629	4391	5%
Thigh lift after massive weight loss	4885	4492	9%
Tummy tuck (abdominoplasty) after massive weight loss	17 261	16 602	4%
Upper arm lift after massive weight loss	6112	5599	9%
Total body contouring after massive weight loss procedures	44 935	41 998	7%

RESULTS

Bariatric Surgery Patients

A total of 175 patients were surveyed before bariatric surgery, with 16 patients surveyed at their 6th month follow-up, 19 patients at 12 months, and 4 patients at 24 months. In the MBSRQ data, mean AE scores measured 2.15 preoperatively, improving to 2.55, 2.77, and 2.82 at 6, 12, and 24 months, respectively ($P = 0.0033$) (Fig. 1). Mean BASS scores demonstrated significant improvements, from 2.42 to 2.96, 2.65, and 2.75 ($P = 0.0079$) (Fig. 2). Furthermore, mean AO scores increased from 3.40 preoperatively to 3.47, 3.87, and 4.04 postoperatively ($P = 0.044$) (Fig. 3). The decrease in mean OP scores from 3.27 to 3.09, 3.25, and 3.00 did not achieve statistical significance ($P = 0.549$) (Fig. 4). However, mean SW scores decreased significantly, from 4.65 preoperatively to 4.00, 3.89, and 3.63 postoperatively ($P < 0.0001$) (Fig. 5).

The mean SF-36 score for patients awaiting bariatric surgery was 54.1%. By comparison, postoperative scores at 6, 12, and 24 months

**FIGURE 1.** Bariatric cohort MBSRQ Appearance Evaluation scores.

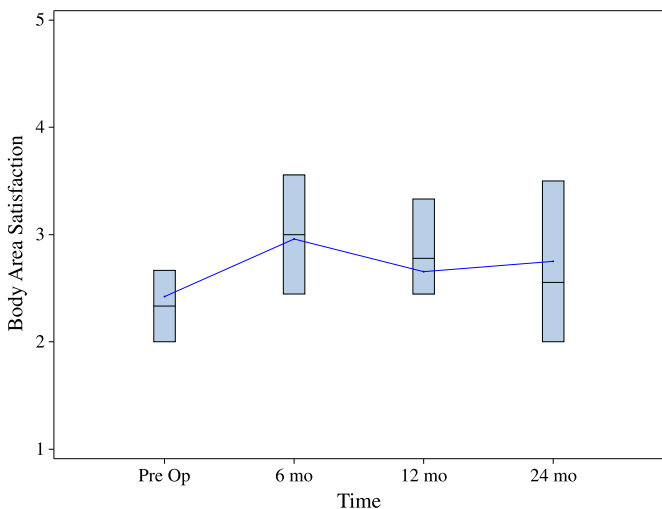


FIGURE 2. Bariatric cohort MBSRQ Body Area Satisfaction scores.

were significantly higher, measuring 67.6%, 74.0%, and 76.7% ($P < 0.0001$) (Fig. 6).

Body Contouring Patients

The body contouring group consists of 41 patients: 32 panniculectomies (78%), 3 belt lipectomies (7%), 2 lower body lifts (5%), 2 upper body lifts (5%), and 2 breast reductions (5%). Thirty-one patients were surveyed at 6 months and 27 patients at 12 months. Questionnaires were given preoperatively and at both specified intervals postoperatively. In the MBSRQ data, mean AE scores were 2.33 preoperatively, improving to 2.89 and 3.01 at 6 and 12 months, respectively ($P = 0.0001$) (Fig. 7). Mean BASS scores demonstrated significant improvements, from 2.71 preoperatively to 3.07 and 2.91 ($P = 0.0005$) (Fig. 8). Mean AO scores declined significantly from 3.98 pre-body contouring to 3.91 and 3.77 postoperatively ($P = 0.0055$) (Fig. 9). The decrease in mean OP scores from 3.35 to 3.25 and 3.24 did not achieve statistical significance ($P = 0.261$) (Fig. 10). However, mean SW scores did decrease significantly from 3.70 preoperatively to 3.52 and 3.37 postoperatively ($P = 0.0286$) (Fig. 11).

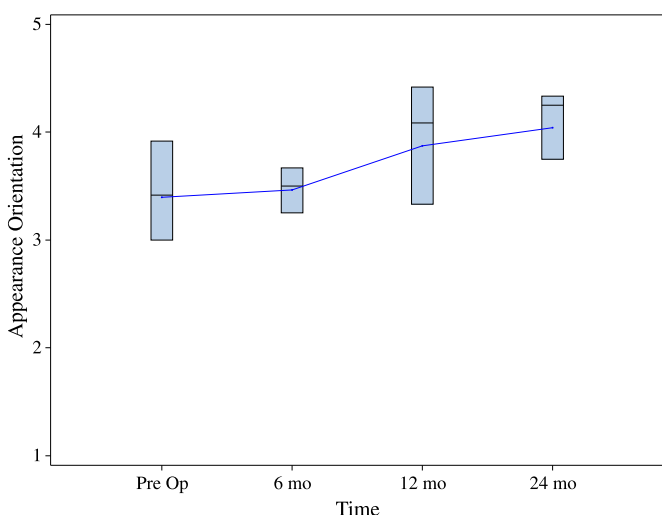


FIGURE 3. Bariatric cohort MBSRQ Appearance Orientation scores.

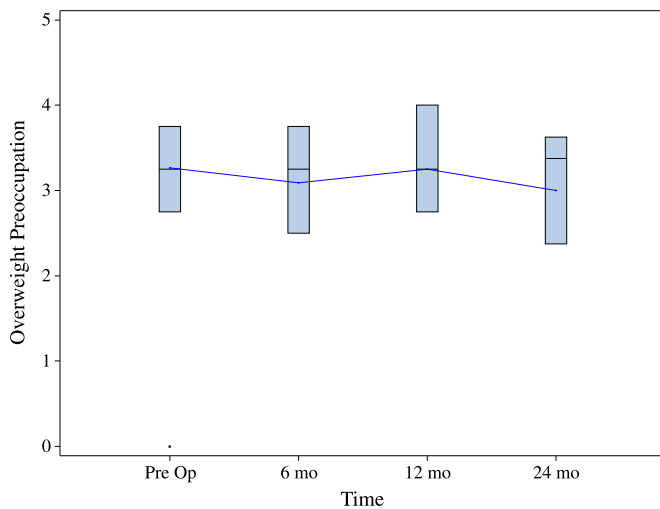


FIGURE 4. Bariatric cohort MBSRQ Overweight Preoccupation scores.

The mean SF-36 score for patients before body contouring was 71.3%. Postoperative scores at 6 and 12 months were not statistically different at 72.9% and 64.5% respectively ($P = 0.32$) (Fig. 12).

DISCUSSION

The effectiveness of bariatric surgery in treating obesity is well established in the literature.¹⁶ Bariatric surgery results in significant weight loss and helps prevent, improve, or resolve a majority of obesity-related diseases and conditions.¹⁶ However, the benefits of bariatric surgery and body contouring on patients' self-image and quality of life have, to date, been unclear. Our institutional data demonstrate that bariatric surgery and body contouring after significant weight loss both enhance patient body image and quality of life.

For the post-bariatric surgery cohort, the MBSRQ data revealed improvements among several components of the patient's body image evaluation. Appearance Evaluation as well as BASS scores revealed significant improvements at all time points postoperatively. Both of these scores reflect patients' improving satisfaction with their appearance after bariatric surgery. The improvement is also substantiated with

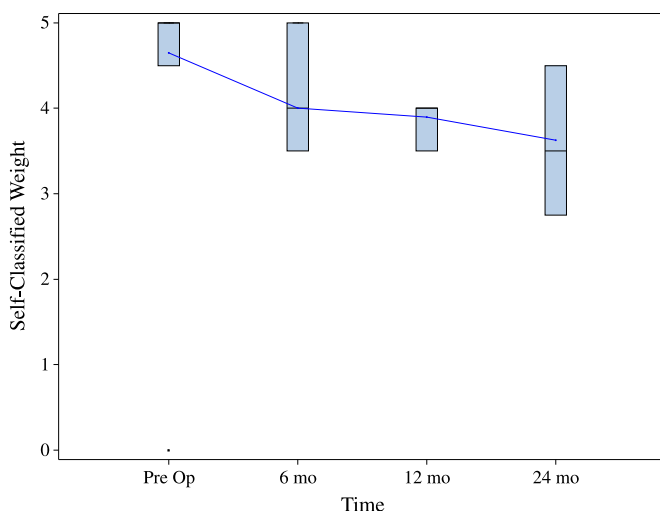


FIGURE 5. Bariatric cohort MBSRQ Self-classified Weight scores.

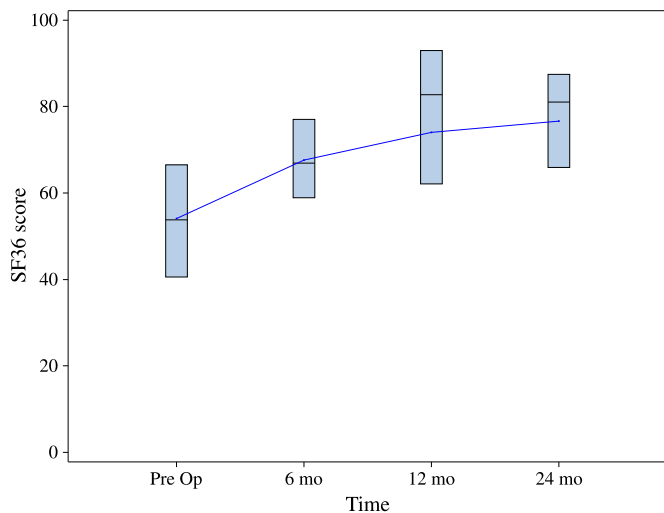


FIGURE 6. Bariatric cohort SF-36 scores.

decreased SW scores at all postoperative time points, reflecting a decrease in patients' perceptions of labeling themselves as overweight. Finally, Quality of Life based on SF-36 scores also showed significant and durable improvements at all time-points post-bariatric surgery.

Furthermore, the body contouring cohort revealed similar findings of improved body image. Mean AE scores demonstrated significant improvements at 6 and 12 months compared with preoperatively. Mean BASS scores also showed statistically significant improvements. The postoperative declines in OP and SW did not reach statistical significance. With continued enrollment and improving study power, we anticipate detectable improvements in these metrics.

As most changes observed in the body contouring group mirrored those seen in the bariatric group, one unexpected observation is the paradoxical increase in AO scores after bariatric surgery, with scores decreasing after body contouring. Appearance Orientation scores reflect the importance patients place on their appearances, with higher scores signifying greater preoccupation with their personal appearances. The initial increase in AO scores after bariatric surgery can be explained by the patients' increasing preoccupations with the physical changes that follow their massive weight loss. That is,

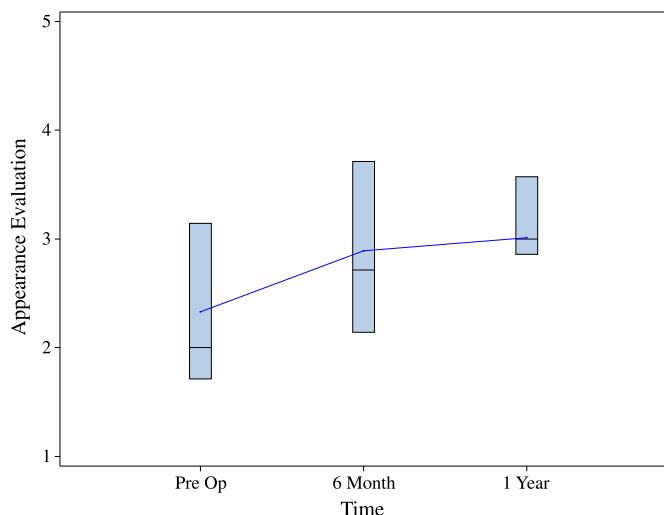


FIGURE 7. Body contouring cohort MBSRQ Appearance Evaluation scores.

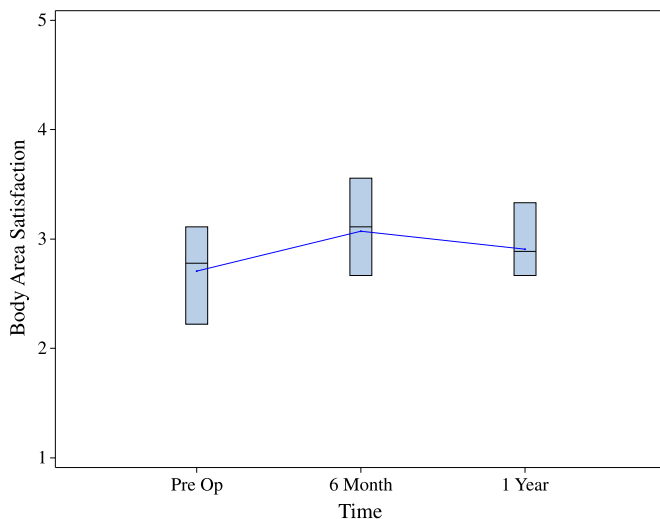


FIGURE 8. Body contouring cohort MBSRQ Body Area Satisfaction scores.

patients may perceive newfound attractiveness after losing substantial amounts of weight. In addition, patients may begin to focus on the excess skin and panniculus that often develop, further increasing the patients' preoccupations with their appearances, which again manifests in increased AO scores. Subsequent body contouring mitigates or drastically reduces the undesirable excess skin areas, which serves to reduce the patients' heightened preoccupations over their appearances, with AO scores consequently decreasing. Our finding highlights the importance of body contouring in the progression of massive weight loss surgery and its value in optimizing postbariatric surgical results.

The follow-up encounters after bariatric surgery show mean quality of life scores between 74% and 76% at 12 and 24 months postbariatric surgery, whereas prebody contouring scores were lower at 71%. We can account for this decrease in quality of life scores by the fact that not all massive weight loss patients choose to undergo body contouring. Patients with higher self-reported quality of life scores most likely are satisfied with their initial progress. By contrast, patients who report lower quality of life scores choose to undergo body contouring in hopes of achieving further satisfaction from their weight loss surgery.

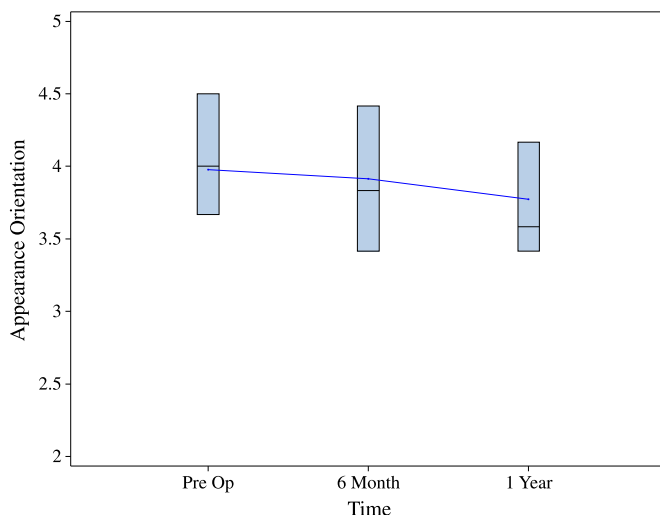


FIGURE 9. Body contouring cohort MBSRQ Appearance Orientation scores.

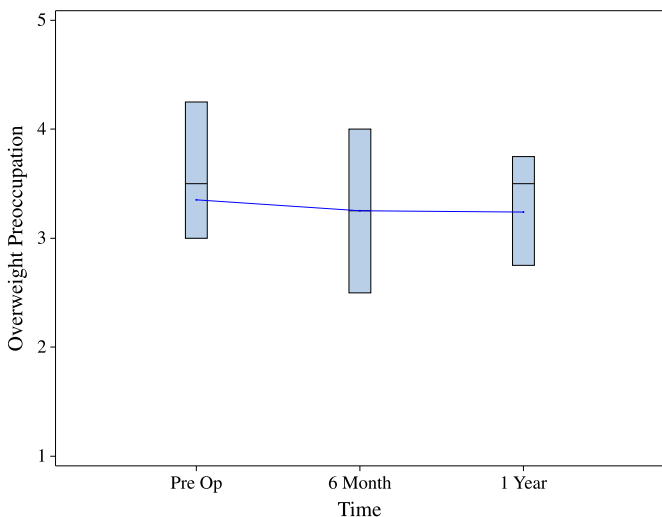


FIGURE 10. Body contouring cohort MBSRQ Overweight Preoccupation scores.

Significant improvements in several MBSRQ categories are noted at 6 and 12 months after body contouring, suggesting that these improvements are durable over time. By contrast, quality of life scores demonstrated no significant improvements, which we may attribute to increases in complications seen in postbariatric body contouring surgeries^{17,18} or as a reflection of our sample size. Gaining an understanding of body satisfaction over time as patients proceed from bariatric through body contouring surgery will assist clinicians in providing guidance, preoperative counseling, and informed consent. The improved discussion with patients may better align their preoperative expectations regarding changes in body image and quality of life with their postoperative outcomes.

The small number of patients seen in follow-up is an acknowledged weakness of this study. Despite the limited patient follow-up, we nonetheless find clear statistical significance in many measured metrics consistent with our initial hypothesis. Our data support bariatric surgery having a positive impact on patients' views of their body image after massive weight loss surgeries. Improvements in body image perceptions and quality of life are durable as evidenced by their stability

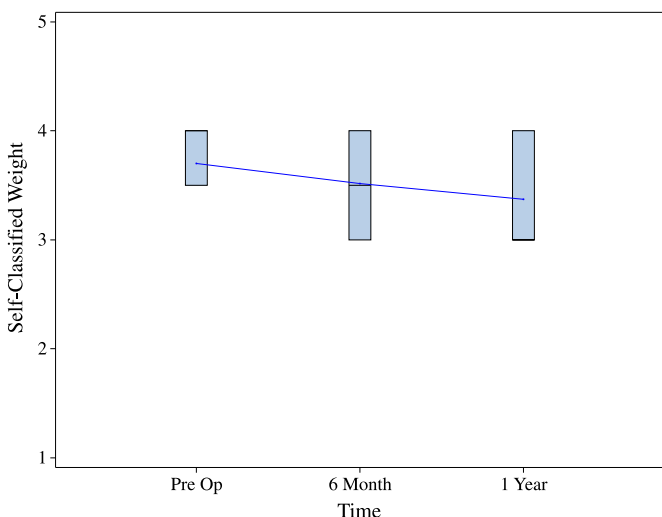


FIGURE 11. Body contouring cohort MBSRQ Self-classified Weight scores.

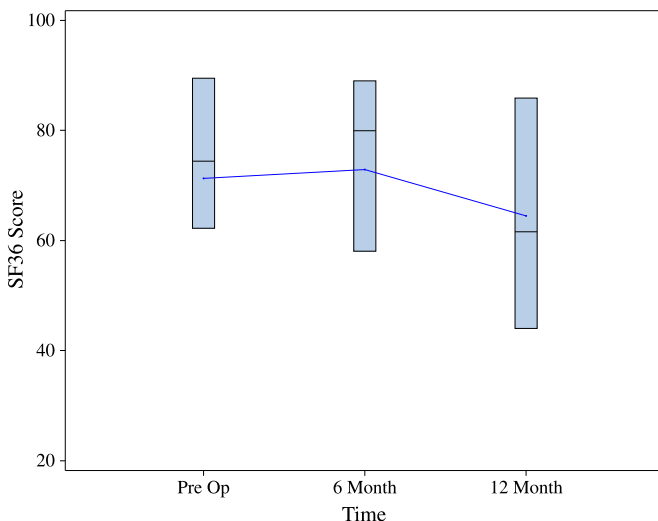


FIGURE 12. Body contouring cohort SF-36 scores.

up to 2 years postoperatively. In addition, massive weight loss patients who undergo subsequent body contouring surgery also show improvements in body image. Our current data suggest that bariatric surgeries followed by body contouring procedures help patients achieve optimal functional and aesthetic results as compared to bariatric surgeries alone.

In our present body contouring cohort, 90% have undergone panniculectomy procedures (ie, panniculectomies, belt lipectomies, and lower body lifts), with the remaining procedures divided evenly between upper body lifts and breast reductions. Future studies will focus on evaluating differences in patient quality of life and body image associated with specific contouring procedures, as well as the effect of surgical complications on quality of life.

Finally, as the US health care system increasingly demands demonstrated value associated with surgical interventions, we provide data for patients and health care providers to better advocate for increased insurance coverage for body contouring procedures after massive weight loss surgery. Our study demonstrates that massive weight loss surgery achieves its maximum value after body contouring, based on further incremental improvements in body image. Using 2 validated survey instruments, we have provided early evidence for insurers to recognize the importance that body contouring has after massive weight loss.

CONCLUSIONS

Through use of 2 validated survey instruments, we show that patients undergoing bariatric surgery demonstrate significant and durable body image and quality of life improvements. Our data also demonstrate that postbariatric body contouring also improves patients' body image, based on significant increases in the MBSRQ AE and BASS scores. The data may prove beneficial to patients in making informed decisions about whether to proceed with body contouring surgery after massive weight loss. Our study's results give health care providers supportive evidence for the value of body contouring after massive weight loss. We hope that this demonstration of value may afford an ever-growing patient population stronger advocacy in obtaining insurance coverage.

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