

Satisfaction and Quality-of-Life Issues in Body Contouring Surgery Patients: a Qualitative Study

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Abstract

Background Body contouring, which encompasses a range of surgical procedures on different areas of the body, is one of the most rapidly growing areas of plastic surgery. Little is known about outcomes from the perspective of post-weight loss body contouring patients. The aim of our qualitative study was to identify the health and aesthetic concerns of such patients through in-depth patient interviews.

Methods Forty-three bariatric surgery post-weight loss body contouring patients were recruited between September 2009 and January 2011 from the offices of five plastic surgeons

located in the USA and Canada. Interviews were used to explore the impact that obesity, weight loss, and body contouring surgery had on all aspects of the patient's life. Interviews were transcribed and data analysis involved coding and the use of the constant comparison method to develop categories and themes. Interviewing continued until no new themes emerged.

Results Patients described a range of important health and aesthetic concerns related to body contouring surgery following massive weight loss, including the following: appearance-related concerns, physical health concerns, sexual health concerns, psychological health concerns, and social health concerns. Body contouring surgery played an instrumental role in the completion of the entire weight loss process for patients.

Conclusions The removal of excess skin leads to improvements in a patient's appearance and enhanced physical, psychological, and social health and well-being. In order to appropriately measure the impact of body contouring procedures from the patient's perspective, a well-developed psychometrically sound patient-reported outcome instrument is needed.

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Introduction

Body contouring, which encompasses a range of surgical procedures on different areas of the body, is one of the most rapidly growing areas of plastic surgery. For example, according to 2010 American Society of Plastic Surgery statistics, abdominoplasty procedures have increased to 86 % since 2000 with a

total of 116,352 procedures performed in 2010 (<http://www.plasticsurgery.org/Documents/news-resources/statistics/2010-statistics/Overall-Trends/2010-cosmetic-plastic-surgery-minimally-invasive-statistics.pdf>). The growth in body contouring is, in part, due to the increasing number of patients who achieve massive weight loss following bariatric surgery. In addition to lowering body weight, bariatric surgery can improve or resolve a range of obesity-related health conditions (http://www.asbs.org/Newsite07/media/asbms_fs_surgery.pdf) and has proven to be the most effective therapy available for the morbidly obese population. About 220,000 people with morbid obesity in the USA had bariatric surgery in 2008 and this number is anticipated to continue to increase in the future (http://www.asbs.org/Newsite07/media/asbms_fs_surgery.pdf).

Given the significant amount of weight loss that can be achieved, many bariatric patients are left with unsightly excesses of skin [1–4]. Approximately one quarter of bariatric surgery patients elect to undergo body contouring surgery [4]. Body contouring procedures, in combination with bariatric surgery, have the potential to improve or restore a patient's body image and quality of life (QOL). As part of the traditional outcomes discussion, research has demonstrated that, with increased experience, complication rates have dropped and aesthetic outcomes have improved [5–11]. However, ratings of aesthetic outcomes in research to date are often limited to objective ratings by surgeons. While such data play an important role in the measurement of outcomes, they are by no means sufficient on their own. A complete assessment of surgical outcomes for body contouring patients requires the integration of the patient's perspective in addition to complications data and surgeon assessment.

In order to appropriately measure the impact of body contouring procedures from the patient's perspective, well-developed psychometrically sound patient-reported outcome (PRO) instruments (also known as PRO measures) are needed [12]. PRO instruments are any report of the status of a patient's condition that comes directly from the patient without interpretation by a surgeon or anyone else [13]. Such instruments are typically made up of multiple scales that reflect the key aspects of a conceptual framework. The conceptual framework defines the concepts to be measured by the PRO instrument and is often represented as a diagram that maps out the relationship between concepts that are measured by scales and items [13].

Our team conducted a systematic review to identify PRO instruments for body contouring patients [14]. Five PRO instruments were identified, including a liposuction questionnaire (Freiburg Questionnaire on Aesthetic Dermatology and Cosmetic Surgery [15]), a general plastic surgery questionnaire (Derriford Appearance Scale [16–18]), and three breast reduction measures as follows: Breast Reduction

Assessed Severity Scale Questionnaire [19], Breast-Related Symptoms questionnaire [20], and BREAST-Q© [21, 22]. A detailed examination revealed that only two of the breast reduction questionnaires [21, 22] have adequate psychometric properties and can be recommended for use [14]. Our team concluded that, to demonstrate the unique outcomes of body contouring surgery, the development of a scientifically sound and clinically meaningful set of PRO scales to measure the unique concerns of body contouring surgery patients is needed.

Developing a PRO instrument typically involves a review of the literature, qualitative patient interviews, and expert opinion [13, 23]. These three sources of information can provide a comprehensive understanding of the important issues for patients and can inform the development of the scales and items needed to measure patients' concerns. In this paper, we present findings from our team's in-depth qualitative interviewing with 43 people who underwent body contouring surgery following weight loss. Our aim was to identify the health and aesthetic concerns from the patient's perspective. A qualitative approach using in-depth interviews with patients is well suited to understanding QOL issues from the patient's perspective and to developing a conceptual framework that could be used in the development of a PRO instrument [24].

Methods

Participants

A purposive sample of 43 bariatric weight loss post-body contouring patients was recruited between September 2009 and January 2011 from the offices of five plastic surgeons located in the USA and Canada. We interviewed patients who met the following inclusion criteria: aged 18 or older, could participate in an interview conducted in English, had undergone some form of body contouring surgery following massive weight loss, and were not more than 7 years post body-contouring. Table 1 shows the sample characteristics, including the type of body contouring procedures that patients underwent.

Procedure

Research ethics board approval was obtained prior to interviewing any patients. Patients were recruited in person or by phone by a member of the plastic surgeon's office staff. Patients that agreed to an interview were followed up by telephone by a research team member to set a time and location for an interview. Patients that completed an interview were provided with a \$50 gift card to thank them for their time.

Table 1 Sample characteristics

Variables	Number of patients, <i>N</i> =43
Age in years	
Mean (SD)	47 (12)
Range	23–71
Gender	
Female	40 (93 %)
Male	3 (7 %)
Marital status	
Married/common law	22 (51 %)
Other	21 (49 %)
Highest level of education	
High school	15 (35 %)
University diploma	23 (54 %)
Not reported	5 (12 %)
Employment status	
Employed	27 (63 %)
Other	14 (33 %)
Not reported	2 (4 %)
Household income	
<40 K	8 (18 %)
40–100 K	20 (47 %)
>100,000	7 (16 %)
Not reported	8 (18 %)
Ethnicity	
Caucasian	34 (79 %)
Other	7 (16 %)
Not reported	2 (5 %)
Considered surgery before talking to surgeon	
Less than 1 year	10 (23 %)
1–5 years	21 (49 %)
6–10 years	4 (9 %)
Not reported	8 (18 %)
BMI before bariatric surgery	
30–34	1 (2 %)
35–39	4 (9 %)
>40	29 (67 %)
Not reported	9 (21 %)
BMI after body contouring surgery	
<29	15 (35 %)
30–34	14 (33 %)
35–39	5 (12 %)
>40	2 (5 %)
Preoperative patient	7 (16 %)
Body contouring surgery procedures	
Abdominoplasty	31 (72 %)
Liposuction	18 (42 %)
Upper arm lift	14 (33 %)
Breast lift	10 (23 %)
Thigh lift	9 (21 %)
Buttock lift	6 (14 %)

Table 1 (continued)

Variables	Number of patients, <i>N</i> =43
Breast reduction	5 (12 %)
Lower body lift	5 (12 %)
Facelift	2 (5 %)

Data Collection and Analysis

Interviews were conducted at the surgeon's office or a preferred location as requested by the participant. Before conducting the interview, informed consent was obtained by the interviewer. Interviews began by having the patient tell the story of their weight loss journey and how that led to body contouring surgery (Table 2). Probes were used to find out about the impact that obesity, weight loss, and body contouring surgery had on all aspects of the patient's QOL. Participants were encouraged to explain in detail the ways in which their physical appearance and their QOL were different and the ways in which they were the same following both bariatric and body contouring surgery.

All interviews were transcribed verbatim with all identifiable information excluded from the transcripts. The analysis was inductive and involved line-by-line coding, with codes and categories emerging from participants' stories. Constant comparison was used to examine relationships within and across codes and categories. Comparing each patient statement with the rest of the data to create categories and then grouping categories together made it possible to identify core themes. A code book was developed to organize codes and categories. Interviewing continued until no new codes or categories were developed. NVivo 8 software was used to manage the data [25].

Results

Data analysis revealed a range of important health and aesthetic concerns that can be explained in terms of the following five core themes:

- Appearance-related concerns
- Physical health concerns
- Sexual health concerns
- Psychological health concerns
- Social health concerns

Appearance-Related Concerns

The appearance of hanging skin was of utmost concern for patients requesting body contouring surgery and was often the primary motivation behind their decision to have

Table 2 Example questions from the interview guide

Interview questions

-
- Why did you decide to have body contouring surgery?
- Tell me about the body contouring procedures you had or are planning to have.
- Describe any physical problems caused by excess skin and any changes following surgery.
- Describe any activity limitations caused by excess skin and any changes following surgery.
- Describe how excess skin affected your emotional health and any changes following surgery.
- Describe how excess skin affected your sexual life and any changes following surgery.
- Describe how excess skin affected social relationships and any changes following surgery.
- Describe how excess skin interfered with your usual social roles and any changes following surgery (e.g., work, family life, friends).
- How has body contouring surgery changed the way you look?
- How satisfied are you with how your body looks following body contouring surgery?
-

surgery. The possibility of having loose, baggy skin after weight loss was such a concern for some patients that they stated that they would not have had the bariatric surgery in the first place if the removal of excess skin by body contouring surgery was not going to be possible. A number of participants said that they actually preferred the appearance of their body before weight loss when “at least the skin was smoothed out by fat”. Participants described the loose skin using many different terms including “wrinkly”, “saggy”, “hanging”, or “loose” and described the appearance as being “ugly”, “disgusting”, and “unsightly”. Others talked about having a “spare tire” or looking “five months pregnant”. Many participants talked about how their loose skin made them look older than prior to weight loss, which was very upsetting:

“My hanging skin made me look like I had an old person’s body.” (53-year-old female; abdominoplasty, liposuction, thigh lift, upper arm lift)

Many participants were particularly concerned about the appearance of the excess skin on the abdomen and arms. The skin on the arms was described by a number of people as looking like “bat wings”. Participants talked in detail about their lack of satisfaction with how they looked in clothing because of their excess skin. Prior to body contouring surgery, patients chose clothing that would conceal their excess skin. Some chose to not wear certain types of clothing, particularly bathing suits, short-sleeve shirts, and shorts, because it was difficult to hide the excess skin in such clothes. Finding comfortable and appropriate clothing was especially problematic for participants during the summer months. Participants described that it was often very difficult to fit the excess skin inside their clothing:

“I had a lot of loose skin. Very difficult to manage; you kind of have to tuck—this may be too graphic—tuck it into your underwear, your clothes, and a lot of loose skin under here.” (51-year-old female; abdominoplasty, upper arm lift)

After body contouring surgery, patients expressed appreciation and satisfaction with how they looked and how they felt (e.g., more comfortable). Participants were able to buy and wear more fashionable clothing and clothing that fit properly. They were also able to shop for such clothes in regular (as opposed to plus-sized) stores. Participants’ overall satisfaction with appearance following body contouring was often related to the extent to which the surgeon achieved a look with contour and firmness as well as symmetry. Patients describe their appearance following surgery using terms such as ‘smooth’, ‘contoured’, ‘shapely’, ‘flat’, and ‘tight’. Female participants often stated a preference for having some degree of curvature to their body to achieving a “womanly or feminine” figure.

The body contouring scars, on the other hand, were an important concern for some participants. Participants talked about the appearance of scars in terms of their size, color, elevation, and visibility. While some participants felt the need to hide the scars after the body contouring surgery, most participants did not mind the scars and felt that they were to be expected, often in locations that could be hidden by clothing and overall definitely worth the outcome achieved:

“I didn’t care that they were there. I’d rather have the scars than the skin...” (23-year-old female; abdominoplasty, liposuction, breast lift)

Physical Health Concerns

Participants reported that their excess skin had an impact on physical health in a number of ways. Despite losing a massive amount of weight, participants were limited in their ability to engage in desired activities because of excess skin, which impeded movement or caused pain or discomfort. Participants described various functional and mobility problems related to carrying around pounds of excess skin (e.g.,

difficulty fitting into or sitting in chairs, problems with balance, difficulty bending over, and not being able to move around freely). Such problems were usually rectified through body contouring surgery:

“Before everything, every movement was, you know, you had to think about it because the legs were rubbing into each other, and so everything you did was, you know, you had to balance and it was a thought process just to walk.” (43-year-old female; abdominoplasty, liposuction, breast lift, lower body lift, thigh lift, buttock lift, calf lift)

In addition to being a deterrent from exercising, most participants talked about problems related to the excess skin itself. Loose skin would rub such that participants complained about experiencing recurrent rashes or chaffing that could be uncomfortable or painful. Participants also talked about how they would perspire, especially in the heat, and their concerns over body odor. Participants also described skin infections and needing to do a lot of skin care to deal with the rolls of skin:

“I would actually have to go in and wipe under my stomach because there would be that fleshy skin there, you know, when you perspire and things like that.” (59-year-old female; abdominoplasty, buttock lift)

Following body contouring surgery, patients reported that they were able to engage in physical activities that they could not do before, which they attributed to the removal of skin, which helped them achieve mobility and also led to an increase in energy. The ability to exercise after body contouring surgery was especially important as a means to maintaining their initial weight loss and adopting a healthier lifestyle. Eliminating extra skin contributed to an overall enhanced QOL. Not only were participants able to resume previously enjoyed activities, but some participants were actively seeking out new challenges that they would not have considered before. Participants felt that they were free to pursue these activities unhindered by the physical limitation imposed by excess skin.

Sexual Health Concerns

Participants talked about how excess skin had a negative impact on their intimate relationships. Some participants describe that engagement in sexual intercourse was physically inhibited by their loose, hanging skin that for some women hung below the level of the vagina:

“It was very horrifying because you would have to lift the belly up to even get to it [vagina], to find it, and it was just, it was horrifying.” (43-year-old female; abdominoplasty, liposuction, breast lift, lower body lift, thigh lift, buttock lift, calf lift)

Most participants were extremely self-conscious about their appearance and felt the need to conceal their excess skin (e.g., keep the lights off and/or wear clothes during sex), which was described as very unsightly.

Following body contouring surgery, some participants were self-conscious about the appearance of their scars. In addition, some participants described experiencing numbness around scar areas (especially the abdomen) and that this interfered with enjoyment of sexual activity:

“... if it's an external touch, unless it's in the areas that have not been cut, I can't feel.” (44-year-old female; abdominoplasty, liposuction, thigh lift, buttock lift)

Despite various concerns, overall most participants reported an important improvement in their sexual life following body contouring surgery. Participants generally felt more confident and less self-conscious in intimate relationships and reported experiencing more enjoyment in their sexual relationships.

Psychological Health Concerns

Participants described various ways in which being overweight and then losing weight but having excess skin affected their psychological health. Participants talked about how they worried about, and were constantly aware of, their excess skin. Many participants discussed experiencing low self-esteem and of being extremely self-conscious about their appearance. As one participant explained:

“Before I had the [body contouring] surgery and before I lost the weight, I didn't like me. I had very low self-esteem. I was depressed all the time. I didn't think that I had anything to offer anyone else.” (49-year-old female; abdominoplasty, liposuction)

While many participants spoke of having body image concerns because of their size prior to weight loss, there were participants who reported that their body image worsened during the period of time between weight loss and body contouring surgery. Such participants reported dissatisfaction with their appearance because of the excess skin and how embarrassing this was for them:

“I felt like there was ten pounds of extra skin hanging off each arm, so that was embarrassing.” (28-year-old female; upper arm lift)

Feeling self-consciousness in relation to the excess skin resulted in participants adapting their behavior in ways to hide their skin as much as possible. Participants talked about refraining from certain movements, such as raising their arms, so that no one would see their loose skin. Participants

did not like seeing their reflection in a mirror or have their photograph taken. Concealing or covering up the excess skin by layering or wearing only certain types of clothes was also very common. Participants talked about how the excess skin made them feel ugly or even like a freak:

“You feel abnormal, with all that skin, yes. How do you feel? Abnormal. You feel like a freak. I felt like a monster.” (48-year-old female; abdominoplasty, lower body lift, upper arm lift, neck lift)

Body contouring surgery made a huge difference in participants’ psychological health. However, the dramatic change in appearance that often follows weight loss and body contouring surgery created some dissonance, and it took time to adjust to the new appearance. A few participants mentioned that when they looked in the mirror, they felt like they were looking at someone else rather than themselves. Participants reported that they felt much more positive about their body following surgery and experienced an increase in self-confidence. It was also common to hear someone say they felt like a new person or that they felt like the person that they were meant to be or had been prior to gaining weight. Participants also described feeling “normal” or like everyone else following the removal of the excess skin.

Social Health Concerns

Prior to having body contouring surgery, many participants described how their appearance led them to avoid social events and activities, and it was not uncommon for them to be described as being socially isolated. For some, they felt ashamed of how they looked and therefore wanted to be alone:

“I didn’t go out as much as I did before. I didn’t want to socialize as much. You try to be invisible ‘cause you don’t want people to notice, you know?” (68-year-old male; abdominoplasty)

Social isolation that was not self-imposed was also described. Some participants described how family, friends, and/or the general public sometimes acted towards them in ways that were hurtful. Participants mentioned being purposely left out of social events, of people avoiding making eye contact with them, and of being the brunt of rude or inappropriate comments or questions.

Many participants reported feeling judged by other people who did not agree with their decision to have body contouring surgery or felt that elective plastic surgery is risky, unnecessary, and expensive. Some participants felt that their family and friends were not supportive of their efforts to lose weight and some felt that their family members were subtly encouraging them to return to their previous weight and abandon their efforts at improving their

appearance and health. As a result, there were participants who described being very selective about who they told of their decision to have body contouring surgery.

“I didn’t tell people—like even my daughter, I didn’t tell my daughter, because she would be the first one to say, “Oh, ma, why are you doing that, and what if something goes wrong. You don’t need that, you’re beautiful.” (54-year-old female; abdominoplasty, liposuction)

The post-surgical reaction of other people was also mixed. The majority of participants received very positive reactions to their post-body contouring appearance. There were a number of participants who experienced negative reactions, and most believed that these often stemmed from jealousy. Participants also described how social interactions with others changed. Many participants reported that they were more outgoing and less self-conscious and thus had an easier time interacting socially with people:

“Between losing weight and getting my arms done, I am definitely a more confident person than I ever was my whole entire life.” (28-year-old female; upper arm lift)

Some participants talked about ways in which their social role in the workplace improved following body contouring surgery. Participants who, prior to body contouring surgery, felt inhibited from voicing their opinions at work felt more confident and able to contribute. Participants also spoke of how body contouring surgery enhanced their ability to perform their usual social role, such as being a parent or grandparent. The ability to participate in activities with children or grandchildren was an important outcome of body contouring surgery.

Discussion

Healthcare payers are interested in funding bariatric surgery because it improves or resolves a range of costly obesity-related health problems [26]. After massive weight loss, many patients are left with so much excess skin that they require numerous procedures to restore body image, which can be exorbitantly expensive since most treatments are considered cosmetic. Given the out-of-pocket costs, many patients cannot afford treatment and have to live long term with the excess skin. Evidence about the risks and benefits of body contouring procedures from the patient perspective may help to inform a debate about whether or not such procedures should be covered by healthcare payers.

Using qualitative methods has made it possible for us to collect a level of rich descriptive detail from participants about their satisfaction with appearance and QOL before and after body contouring surgery. Massive weight loss following bariatric surgery left many patients unhappy with the appearance

of excess, loose skin, which created a range of physical, sexual, psychological, and social health concerns for patients. Patients spent time and energy trying to conceal their excess skin and were highly motivated towards surgery as a solution to remove the skin and improve their appearance. Their loose, baggy skin affected their self-esteem and mood, making them feel depressed and extremely self-conscious about their appearance. Participants described feeling socially isolated and felt abnormal and “like a freak” and were limited in performing their usual social roles as employees and parents or grandparents. Many participants felt even worse about their appearance before body contouring surgery than when they were overweight. Body contouring surgery played an instrumental role in the completion of the entire weight loss process for patients in this study. The removal of excess skin improved participant’s appearance and led to enhanced psychological and social health and well-being.

QOL research with body contouring surgery patients is limited. However, our findings are in agreement with research by Song et al. [3] and van der Beek et al. [27]. Song et al. [3] studied 18 post-bariatric surgery patients before and after body contouring surgery and reported that QOL improved after obesity surgery and was significantly enhanced after body contouring. They also found improvements in body image following surgery. Similarly, van der Beek et al. studied 61 body contouring surgery patients and reported significant improvements in QOL [27]. A literature review published in 2010 identified that there are now 11 obesity-specific QOL questionnaires [28]. While there is a large and growing literature using these and generic measure of QOL to study patients before and weight loss, little is known about how formerly obese patients experience living life with excess skin and about the QOL impact of body contouring surgery. What is lacking in the literature is research that follows patients through the entire trajectory, starting with bariatric surgery and finishing with body contouring surgery. Such research would help us to understand better the true impact of weight loss on patient QOL.

To properly measure the QOL impact of the entire weight loss experience, there needs to be a PRO instrument with scales and items that capture patient’s experience at different stages in their weight loss journey. Our team’s previously published literature review identified the need for a comprehensive PRO instrument developed specifically to measure the health and aesthetic concerns of body contouring patients [14]. Our team’s qualitative findings are now being used in research to guide and inform the development of items and scales for such an instrument [29]. Our plan is to develop a set of scales that can be used to measure changes in appearance and QOL starting at obesity and ending after body contouring surgery [29].

An important strength of our study is that our interviewer is an experienced qualitative researcher with a graduate

degree who was able to establish a strong rapport with patients. Participants seemed to value the opportunity to reflect on their overall experience and share their stories, and we believe that this allowed us to gather rich descriptive qualitative data. At the same time, our study had some limitations. Our interviews were conducted with patients in Canada and the USA, which limits generalizability to other countries. Our sample included only a small number of ethnic minority members. Finally, while we interviewed only three men, this number does reflect the proportion of men that undergo body contouring procedures in the USA (<http://www.plasticsurgery.org/Documents/news-resources/statistics/2010-statisticss/Male-vs-Female/2010-men-cosmetic-surgery-minimally-invasive-statistics.pdf>).

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References

- Heddens CJ. Body contouring after massive weight loss. *Plast Surg Nurs*. 2004;24:107–15.
- Pecori L, Serra Cervetti GG, Marinari GM, et al. Attitudes of morbidly obese patients to weight loss and body image following bariatric surgery and body contouring. *Obes Surg*. 2007;17:68–73.
- Song AY, Rubin JP, Thomas V, et al. Body image and quality of life in post massive weight loss body contouring patients. *Obesity (Silver Spring)*. 2006;14:1626–36.
- Sarwer DB, Fabricatore AN. Psychiatric Considerations of the Massive Weight Loss Patient. *Clin Plast Surg*. 2008;35:10.
- Hensel JM, Lehman Jr JA, Tantri MP, et al. An outcomes analysis and satisfaction survey of 199 consecutive abdominoplasties. *Ann Plast Surg*. 2001;46:357–63.
- Hurwitz DJ, Agha-Mohammadi S. Postbariatric surgery breast reshaping: the spiral flap. *Ann Plast Surg*. 2006;56:481–6.
- Hurwitz DJ, Holland SW. The L brachioplasty: An innovative approach to correct excess tissue of the upper arm, axilla, and lateral chest. *Plast Reconstr Surg*. 2006;117:403–11.
- Migliori F, Rosati C, D'Alessandro G, et al. Body contouring after biliopancreatic diversion. *Obes Surg*. 2006;16:1638–44.
- van Huizum MA, Roche NA, Hofer SO. Circular belt lipectomy: a retrospective follow-up study on perioperative complications and cosmetic outcome. *Ann Plast Surg*. 2005;54:459–64.
- Young SC, Freiberg A. A critical look at abdominal lipectomy following morbid obesity surgery. *Aesthetic Plast Surg*. 1991;15:81–4.
- Yousif NJ, Lifchez SD, Nguyen HH. Transverse rectus sheath plication in abdominoplasty. *Plast Reconstr Surg*. 2004;114:778–84.
- Cano S, Klassen A, Pusic A. The science behind quality-of-life measurement: a primer for plastic surgeons. *Plast Reconstr Surg*. 2009;123:98e–106e.
- U.S. Food and Drug Administration. Patient reported outcome measures: Use in medical product development to support labeling claims. 2009. Available at: www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/ucm071975.pdf.
- Reavey P, Klassen AF, Cano SJ, et al. Measuring quality of life and patient satisfaction after body contouring: a systematic review of patient-reported outcome measures. *Aesthet Surg J*. 2011;7:807–13.

15. Augustin M, Zschocke I, Sommer B, et al. Sociodemographic profile and satisfaction with treatment of patients undergoing liposuction in tumescent anesthesia. *Dermatol Surg.* 1999;25:4.
16. Harris DL, Carr AT. The Derriford Appearance Scale (DAS59): a new psychometric scale for the evaluation of patients with disfigurements and aesthetic problems of appearance. *Br J Plast Surg.* 2001;54:216–22.
17. Carr T, Harris D, James C. The Derriford Appearance Scale (DAS-59): A new scale to measure individual responses to living with problems of appearance. *Br J Health Psychol.* 2000;5:201–15.
18. Carr T, Moss T, Harris D. The DAS 24: A short form of the Derriford Appearance Scale DAS59 to measure individual responses to living with problems of appearance. *Br J Health Psychol.* 2005;10:14.
19. Sigurdson L, Kirkland SA, Mykhalovskiy E. Validation of a questionnaire for measuring morbidity in breast hypertrophy. *Plast Reconstr Surg.* 2007;120:1108–14.
20. Kerrigan CL, Collins ED, Striplin D, et al. The health burden of breast hypertrophy. *Plast Reconstr Surg.* 2001;108:1591–9.
21. Pusic AL, Klassen AF, Scott AM, et al. Development of a new patient-reported outcome measure for breast surgery: The BREAST-Q. *Plast Reconstr Surg.* 2009;124:345–53.
22. Cano SJ, Klassen AF, Scott AM, et al. The BREAST-Q: Further validation in independent clinical samples. *Plast Reconstr Surg.* 2012;129:293–302.
23. Scientific Advisory Committee of the Medical Outcomes Trust. Assessing health status and quality of life instruments: Attributes and review criteria. *Qual Life Res.* 2002;11:193–205.
24. Lasch KE, Marquis P, Vigneuz M, et al. PRO development: rigorous qualitative research as crucial foundation. *Qual Life Res.* 2010;19:1087–96.
25. Qualitative Solutions Research International. NVivo 8 [Software]. Australia: QSR International; 2008.
26. Picot J, Jones J, Colquitt JL et al. The clinical effectiveness and cost-effectiveness of bariatric (weight loss) surgery for obesity: a systematic review and economic evaluation. *Health Technol Assess.* 2009;13:1–190, 215–357, iii-iv. Review.
27. van der Beek ESJ, te Riele W, Specken TF, et al. The impact of reconstructive procedures following bariatric surgery on patient well-being and quality of life. *Obes Surg.* 2010;20:36–41.
28. Duval K, Marceau P, Perusse L, et al. An overview of obesity-specific quality of life questionnaires. *Obes Rev.* 2006;7:347–60.
29. Scott AM, Pusic AL, Cano SJ, et al. The BODY-Q: A new patient-reported outcome (PRO) measure for body contouring patients. *Qual Life Res.* 2012;20:74–75.