



Does Liposuction Improve Body Image and Symptoms of Eating Disorders?

Kai M. M. Saarniemi, PhD,
MD*

Asko M. Salmi, PhD, MD†
Hilkka H. Peltoniemi, PhD,
MD†

Pia Charpentier, LP‡

Hannu O. M. Kuokkanen,
MD§

Background: Unpleasant attention to unfavorable fat may have harmful psychological effects in terms of body dissatisfaction. As a consequence, this may cause abnormal eating regulation. It has been noted that women interested in liposuction self-report more eating problems. As far as we know, there are no prospective studies with standardized instruments providing sufficient data regarding the effects of aesthetic liposuction on various aspects of quality of life. Nevertheless, publications on the effects of eating habits are lacking.

Methods: Sixty-one consecutive women underwent aesthetic liposuction. Three outcome measures were applied at baseline and at follow-up: the eating disorder inventory, Raitasalo's modification of the Beck depression inventory, and the 15-dimensional general quality of life questionnaire.

Results: The mean age at baseline was 44 years, and the mean body mass index was 26.0. Thirty-six (59%) women completed all outcome measures with a mean follow-up time of 7 months. A significant improvement from baseline to follow-up was noted in women's body satisfaction, and their overall risk for developing an eating disorder decreased significantly.

Conclusion: Aesthetic liposuction results in a significantly reduced overall risk for an eating disorder in combination with improved body satisfaction. (*Plast Reconstr Surg Glob Open* 2015;3:e461; doi: 10.1097/GOX.0000000000000440; Published online 21 July 2015.)

Unpleasant attention to unfavorable fat may have harmful psychological effects in terms of body dissatisfaction.¹ As a consequence, this may cause abnormal eating regulation.² It has been noted that women reporting eating problems

are significantly more interested in liposuction.³ In a population-based study of women 18–35 years of age, half of the women had an interest in liposuction, whereas 20% of the women self-reported on eating disorder symptoms.⁴ Studies reporting on psychosocial predictive factors among women interested in cosmetic surgery have included somewhat younger women.^{3–7} However, same risk factors for body dissatisfaction or disordered eating can be noted also among middle-aged women.⁸ As mental health problems predict interest for cosmetic surgery, and on the other hand, impairment in psychological symptoms has been noted after surgery,⁷ it is crucial to prospectively evaluate these patients. Other aesthetic procedures, such as breast augmentation and abdominoplasty, have shown to reduce the risk for an eating disorder in addition to improving body

From the *Department of Plastic and General Surgery, Vaasa Central Hospital, Hietalahdenkatu, Vaasa, Finland; †Plastic Surgery Hospital KL, Uudenmaankatu, Helsinki, Finland; ‡Center for Eating Disorders, Fredrikinkatu, Helsinki, Finland; and §Department of Plastic Surgery, Tampere University Hospital, Tampere, Finland.

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image, self-esteem, and quality of life.^{9–19} Unfortunately, publications on the effects of liposuction on eating habits are lacking. In addition, as far as we know, there are no prospective studies with standardized instruments providing sufficient data regarding the effects of aesthetic liposuction on various aspects of quality of life. Only some limited prospective data support positive psychological effects in terms of patient satisfaction after aesthetic liposuction, or improved body image, self-esteem, and psychological problems in heterogeneous patient populations.^{9,10,20} Therefore, we decided to assess the effects of liposuction on eating disorder symptoms, psychological distress, and quality of life.

METHODS

This study consists of 61 consecutive women who underwent aesthetic liposuction at the Plastic Surgery Hospital KL, Helsinki, Finland. The Surgical Ethics Research Committee of the Pirkanmaa Hospital District provided ethical approval (registration number R09166). All women who agreed to participate in the study were included. Participants signed an informed consent. Three outcome measures were applied at baseline and at follow-up: the eating disorder inventory, Raitasalo's modification of the Beck depression inventory (BDI), and the 15-dimensional (15D) general quality of life questionnaire. Questionnaires were given, filled, and collected independently from the actual clinical appointment to ensure privacy and confidence. Demographic data were obtained by an interview and a preliminary information form. Possible complications, such as hematoma, seroma, infection, or scar hypertrophy, were recorded at the follow-up.

Preoperative markings were made in the standing position. Patients were operated on by 2 plastic surgeons (H.H.P. and A.M.S). Patients underwent water jet–assisted liposuction with body jet (Human med AG, Schwerin, Germany). Liposuction was performed in the abdominal and/or the thigh area. Operations were done under epidural, spinal, or local anesthesia with sedation. A prophylactic antibiotic of 1.5g of cefuroxime intravenously was administered preoperatively. Patients wore compression garments for 4 weeks. Discharge was planned on the day of surgery.

Outcome Measures

The eating disorder inventory is a diagnostic tool designed for use in a clinical setting to assess the presence of an eating disorder.²¹ This self-report

questionnaire comprises 64 questions divided into 8 subscales (drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, and maturity fears). An overall risk score for an eating disorder is also calculated. Threshold values are used when assessing clinical relevancy (Charpentier P, Finnish version of the Eating Disorder Inventory, unpublished data, 2001).

The Raitasalo's modification of the BDI mood questionnaire²² is Raitasalo's modification of the short form of the BDI,^{23,24} and it has been validated and used in Finland for nearly 30 years. It has 13 questions for depression and 1 question for anxiety. Evaluation of self-esteem is included in all 14 questions. Depression score ranges from 0 to 39 points. Five to seven points refer to mild depression, 8–15 points to moderate depression, and over 16 points to severe depression. Anxiety has 4 categories (0 = none, 1 = mild, 2 = moderate, and 3 = severe anxiety). Self-esteem score ranges from 0 to 14 points. Extremely high scores of self-esteem may refer to a manic condition.

General health-related quality of life was measured by the 15D. It is a generic, 15D, standardized, self-administered health-related quality of life instrument that can be used both as a profile and as a single index score measure.²⁵ It consists of 15 dimensions: breathing, mental function, speech (communication), vision, mobility, usual activities, vitality, hearing, eating, elimination, sleeping, distress, discomfort and symptoms, sexual activity, and depression. The maximum single index score is 1 (no problems on any dimension) and minimum score 0 (equal to being dead). The minimal clinically important difference in the 15D score is considered 0.03.

Statistical Analysis

The data were analyzed with the aid of the PASW Statistics 18.0 for Macintosh (SPSS Inc., Chicago, Ill.). The algorithm for the basic scoring of 15D ran on PASW was obtained from the developer of the instrument. Data are expressed as mean (standard deviation, SD) or frequency (percentage). From baseline to follow-up, normally distributed data were compared with the paired *t* test, and the Wilcoxon signed rank test was applied for skewed or categorical data. The anxiety and depression categories were dichotomized into “symptomatic” and “nonsymptomatic,” and changes from baseline to follow-up were tested with the McNemar test. Comparisons between follow-ups and dropouts were done with the Mann–Whitney test (continuous data) and χ^2 test (categorical data). Probabilities of less than 0.05 were considered significant.

RESULTS

The mean age at baseline was 44 years (SD, 10.0). Mean height and weight were 166 cm (SD, 5.7) and 72 kg (SD, 10.1), respectively. The mean body mass index was 26.0 (SD, 3.2). Twelve (20%) women reported having comorbidities (6 with hypertension, 3 with asthma, 2 with depression, and 1 with diabetes). Five (8%) women were smokers.

Mean liposuction volume was 2486 mL (SD 1535). All patients were discharged on the day of the operation. One (2%) woman had a postoperative hematoma that resolved with conservative measures. All women had at least 1 postoperative visit with a mean follow-up time of 7 months (SD, 5.8). Thirty-six (59%) women completed all 3 outcome measures both at baseline and at follow-up. Women who did not fill out the questionnaires did not differ in their baseline characteristics when compared with those who did (Table 1).

At follow-up, body satisfaction was improved, and the overall risk for an eating disorder was reduced significantly (Table 2). Of those women who returned all questionnaires, a significant proportion had preoperatively abnormal drive for thinness (19 women, 53%) and dissatisfaction with their bodies (20 women, 56%). At follow-up, significantly fewer (7 women, 19%) were dissatisfied with their body ($P < 0.001$, McNemar test).

DISCUSSION

In our prospective study, we found that aesthetic liposuction significantly improves body satisfaction and reduces the overall risk for an eating disorder. Although similar effects regarding patient satisfaction, body satisfaction, self-esteem, and psychological

Table 1. Descriptive Characteristics of Women Who Underwent Aesthetic Liposuction (N = 61)

	Follow-Up Questionnaire Data		P Value
	Yes (N = 36)	No (N = 25)	
Age (y)	45 (10.2)	44 (9.8)	0.519
Height (cm)	166 (5.7)	166 (5.8)	0.793
Weight (kg)	71 (10.2)	72 (10.0)	0.708
BMI	26.1 (3.3)	25.8 (3.1)	0.667
Comorbidities			0.902
None	28 (78)	21 (84)	
Hypertension	4 (11)	2 (8)	
Asthma	2 (6)	1 (4)	
Diabetes	1 (3)	0 (0)	
Depression	1 (3)	1 (4)	
Smoking			0.963
No	33 (92)	23 (92)	
Yes	3 (8)	2 (8)	
Liposuction (mL)	2369 (1470)	2654 (1639)	0.415

Values are mean (SD) or frequency (%).

Mann-Whitney test for means and χ^2 test for frequencies.

BMI, body mass index.

Table 2. Values for the Eating Disorder Inventory (EDI) for Women Who Underwent Aesthetic Liposuction (N = 36)

	Baseline Score	Follow-up Score	P Value
Drive for thinness	5.50 (4.62)	4.58 (4.52)	0.134
Bulimia	0.53 (1.72)	0.28 (0.78)	0.272
Body dissatisfaction	9.94 (5.47)	5.22 (4.61)	<0.001
Ineffectiveness	0.89 (2.16)	0.50 (1.03)	0.264
Perfectionism	3.06 (3.05)	3.03 (3.48)	0.991
Interpersonal distrust	1.25 (2.31)	1.00 (1.84)	0.315
Interceptive awareness	1.81 (2.85)	1.28 (2.09)	0.283
Maturity fears	2.26 (2.64)	2.42 (2.32)	0.282
EDI summary score	24.73 (15.92)	17.43 (12.17)	<0.001

Values are mean (SD). Wilcoxon signed rank test.

problems have been noted in previous studies,^{9,10,20} our study is the first to demonstrate this with validated questionnaires exclusively in a liposuction patient population. Nevertheless, as far as we know, our finding that fewer eating disorder symptoms are noted after aesthetic liposuction has not been presented before.

In their study, von Soest et al⁹ found that cosmetic surgery had positive effects on body image, self-esteem, and psychological problems. This remained unchanged after 5 years.¹⁰ However, most of the women who had liposuction had it in combination with abdominoplasty, and therefore, their results cannot be without doubt applied to liposuction patient populations. There were only 28 women in the combined liposuction-abdominoplasty group. In addition, main results were presented for the whole patient population. Their follow-up rate at 6 months was 79% and 65% at five years, reported for the whole patient population.

In a large prospective study of 219 liposuction patients (168 females and 51 males), high patient satisfaction and improved self-esteem were reported.²⁰ However, no validated measures were used. Only a semi-structured, independent interview was conducted in the physician's office by a nurse. Therefore, the results are prone to severe bias. The follow-up rate was 59% with a mean follow-up time of 4 months.

In our study, a significant proportion of all patients had preoperatively abnormal drive for thinness (48%) and dissatisfaction with their bodies (72%). Also cases for perfectionism (31%), bulimia (5%), and patients with an increased overall risk for an eating disorder (23%) were noted. However, questionnaire-derived information alone cannot be used to arrive at a diagnosis of psychopathology. Therefore, no final conclusions can be drawn from this study regarding the prevalence of eating disorders among

aesthetic liposuction patient populations. However, our findings reflect the core issues why patients request for liposuction and the eventual impact of surgery. Nevertheless, our results are in concordance with previous findings that up to half of the women interested in liposuction report abnormal levels of eating disorder symptoms.^{3,4}

Preoperatively, only 2 women self-reported a depressive disorder. However, according to the mood questionnaire, 7 women were found to be depressive and/or anxious. Excess psychological distress may affect outcome negatively.^{10,26} Therefore, our findings support routine, validated assessment of preoperative psychological distress, as self-reporting may not be sufficient.

Many patients who did not fill in the follow-up measures reported feeling offended by the questions regarding eating disorder symptoms. Self-reported questionnaires may be less intruding, but they require more efforts from the research staff to ensure engagement. Especially with the high prevalence of eating problems among liposuction patients, an independent data collector with psychological educational background is preferable.

The methodological strengths of our study are validated measures with an exclusive female liposuction patient population. However, our study has some limitations as well. First, the mean follow-up time was 7 months, but 5 (8%) women had a follow-up time of less than 3 months. However, previous studies have had even shorter follow-up times.²⁰ Nevertheless, the findings in our study may change over time. Therefore, a study with a longer follow-up is warranted, and this is our plan in the near future. Second, our follow-up rate (59%) was rather low. However, it is comparable to previous prospective studies,^{9,10,20} ranging from 57% to 79%, with the lowest rates noted in particular in liposuction patient populations. Finally, a larger patient population would have ensured and improved statistical power.

CONCLUSION

Aesthetic liposuction results in a significantly reduced overall risk for an eating disorder in combination with improved body satisfaction. However, to confirm our results, further studies with longer follow-up and larger patient populations are needed.

Kai Saariniemi

Department of Plastic and General Surgery
Vaasa Central Hospital
Hietalahdenkatu 2-4 65130 Vaasa, Finland
E-mail: kai.saariniemi@gmail.com

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