

Impact of liposuction on quality of life and body image

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Background: People seek to be physically attractive and the need to fit the beauty model. This urge to meet unrealistic ideals lead to discontent with an individual's body image. Liposuction is a procedure that helps in weight redistribution according to a patient's ideal. This study investigated the impact of liposuction on the quality of life of a patient and body image in a sample Kenyan population.

Methods: This was a prospective observational study that was conducted in the three centres. Patients were subjected to BODY-Q questionnaire, pre-operatively and 6 months post-operatively. Data collected included: patients' demographics, body semblance evaluation, health-associated life quality measures, complications postoperatively, and technique of surgery used. Differences between the pre-and post-op scores were assessed using a paired t-test or the repeated measure ANOVA. A p-value of <0.05 was considered statistically significant.

Results: The study included 50 patients, with a mean age of 35.4 years and a BMI of 28.0 kg/m². The factors that had an effect on certain domains of the quality-of-life included age (p-value = 0.019), BMI (p-value = 0.049), surgical procedure (p-value = 0.034), and postoperative complications (p-value = 0.049). The quality of life improved after surgery.

Conclusion: The findings emphasise the positive effect that liposuction has on patients.

Keywords: Liposuction, quality of life.

Aesthetic surgery such as liposuction is often considered a low-priority intervention, with frivolity and apparent lack of substantial benefit being the main criticisms against it (1,2). As such, a majority of healthcare insurance companies shy away from covering aesthetic procedures as they consider them trivial (3). Although the obvious objective is to make a part of the body more beautiful, the reasons for the patient to undergo expensive risky procedures despite the lack of any pathologic signs, are of a more complex nature (4).

The importance of health and fitness, as well as the ardency placed on beauty and youthfulness, have increased in the last 30 years (5). The need to be considered physically appealing as well as the urge to attain the conventional idyllic beauty is continually gaining importance in our modern society. This is further worsened by the unrealistic ideals that are depicted in the media which for most people, are unattainable in a natural way (6,7).

The ensuing dissatisfaction with their body image has led to low self-esteem, social isolation, sex life impairment, anxiety as well as feelings of rejection from their peers which negatively impacts their quality of life (4,5). As a result, liposuction is one of the

aesthetic procedures with the highest demand. However, differences in both body image satisfaction and quality of life perception exist across ethnic groups. As compared to Caucasians, Black women are less likely to idealize thinner frames and tend to prefer larger body sizes as these are seen to be more appealing (8). Further, within the African culture, larger body size was traditionally considered a sign of wealth and social status (9). In previous studies in Western and European populations, there were significant improvements following liposuction concerning life in general, health, body image and emotional stability with significant reduction in anxiety and psychological distress (6,10,11). In the 21st century, the degree of acculturation in Africa with Western customs is significantly increasing which could thus alter the image of the body and quality of life perception due to liposuction in unforeseen ways (12,13). However, there has been no local study that had assessed the aforementioned and there remained a paucity of data as best known to us. Thus, this study aimed to determine the impact of liposuction on patients' satisfaction on life quality as well as the image of the body in a sample Kenyan population.

Methods

We conducted a multicentre prospective observational study in the following collaborating institutions: Platinum Surgery Centre, Da Vinci Hospital, and Coptic Mission Hospital. All the participants in the study underwent liposuction, were above 18 years and comprised of both sexes.

Patients with overt body dysmorphic disorder, those undergoing liposuction for non-aesthetic indications, and those who were cigarette smokers were excluded from the study. Patients who had another aesthetic procedure within 6 months of liposuction that had the potential of affecting the quality of life, body image, and patient satisfaction were dropped from the study. Participants were selected through non-probability convenience sampling. Patients who presented to the clinics, wards, and theatres were recruited into the study by either the principal investigator or the presiding plastic surgeon. Written informed consent was sought from each patient. History taking and physical exams were performed for each patient and only those who met eligibility criteria were subjected to the BODY-Q tool pre-operatively and after 6 months post op.

The patient demographics that were collected included age, weight, height, body mass index (BMI), Educational level, and occupation. Body image evaluation was done using BODY-Q tool measuring the following related quality of life measures: physical function, psychological function, obesity symptoms, expectations from surgery, social function, and sexual function. The licence to use the BODY-Q questionnaire was obtained from Dr Andrea Pusic, a plastic surgeon and health services researcher at Memorial Sloan Kettering Cancer Center in New York City. The technique employed in liposuction, the amount of lipoaspirate, and its effect on the quality of life was also recorded.

The BODY-Q questionnaire, is a validated tool designed by Memorial Sloan Kettering Cancer Center in New York City, to measure Patient-Related Outcomes (PRO) among patients undergoing loss of weight and body contouring procedures like liposuction. This questionnaire comprised three main domains namely: semblance, health-associated life quality as well as the patient's experience with care. Each domain had sub-themes that were measured with independently functioning scales. The appearance domain was used to assess the patient's satisfaction with the appearance of various body parts like the buttocks, abdomen, thighs, hips, and upper arms. The health-associated life quality domain was used to assess the image of the body, symptoms of obesity, psychosocial stress related to appearance as well as physical, psychological, social and sexual function. The experience of care domain was left out in this

study as it did not affect patient life quality as well as body semblance following liposuction. Since the questionnaire was lengthy and tedious, the Principal Investigator guided the participants in filling the questionnaire highlighting the areas of the questionnaire that were relevant to the patient's particular procedure. All scales were changed into scores that ranged from zero to a hundred with a greater score implying a better outcome. Collected data were assigned codes and inputted into SPSS (IBM version 25). Scores on life quality, body semblance as well as patient contentment were calculated. Statistically significant differences between pre-and post-op scores were established using a paired t-test or the repeated measure ANOVA when testing associations for selected characteristics of the patients. A p-value of <0.05 for all the statistical tests was considered statistically significant.

Results

Characteristics of the patients

The mean age of the patients was 35.4 (SD 6.8) years, where the lowest age was 22.0 years, and the highest was 51.0 years. Most patients recruited for the study were females (98%). The mean BMI of the patients was 28.0 (SD 4.1) kg/m². Most patients had post-secondary education (88.0%), were business people (54.0%), and were from Da Vinci Hospital (60%). [Table 1].

Intraoperative

From table 2, the mean volume suctioned was 4744.4 (SD 1606.1), while the median volume suctioned was 4534 with an IQR of 3800.0 – 5700.0. The mean duration of the surgeries was 3.8 hours (SD 0.7), while the median duration of the surgeries was 4 hours with an IQR of 3.0 -4.0 hours. Thirty out of the fifty procedures carried out were VASER; which was 60% of all the procedures. Power assisted liposuction took 28%, while SAL took 12%.

Postoperative complications

There were no postoperative complications on 35 out of the 50 patients (70%). Most of the 15 who experienced postoperative complications had a seroma (33.3%). Anaemia and infections were the second most common complication, representing 20% of the complications each. Other complications included keloids (6.7%), left abdominal abscess (6.7%), lipoma (6.7%), and skin necrosis (6.7%).

Impact of patient demography on satisfaction and quality of life pre and post liposuction.

A repeated measures mixed ANOVA (Analysis of Variance) was performed to determine the impact of age on satisfaction and quality of life pre and post liposuction. The results on Table 5 indicate that age had no effect on all domains of the BODY-Q with the exception of social function (p value = 0.019) and appraisal of excess skin (p value = 0.041). No effect implies the difference in the score for the before and after for the age groups were comparable i.e. no age group exhibited a high difference than the other. For social function, patients aged 30 and below had higher scores for before and after in comparison to the other age groups, and the before and after difference of 16.8 was not comparable to the 33.2 and 30.1 for age group 31-40 and more than 40 years old. This was the case for appraisal for excess skin which also had the highest scores for the before and after, where the difference for the before and after for the 30 and below age group of 6.2 was not comparable to the 29.8 and 37.8 for the age groups of 31-40 and more than 40 years old.

The results on Table 6 indicate that BMI had no effect on all domains of the BODY-Q except for satisfaction with back (p-value = 0.049). The satisfaction with back scores for before were decreasing as BMI increases, while the after scores were comparable, and this would have implication on their differences where the difference for the before and after for those whose BMI is normal would be smaller than the other BMI groups. The results on Table 7 indicate that patients' surgical procedure had no effect on all domains of the BODY-Q apart from physical function (p-value = 0.034), and satisfaction with abdomen (p-value = 0.008). On physical function, those that had undergone the SAL procedure had a poor score for before procedure (Mean 63 SD8.2) when compared to the others. The after scores for the procedures were comparable with the SAL procedure having the highest score (Mean 100 SD0.0).

Liposuction complications and their effects on quality of life and patient satisfaction

The results in Table 8 indicate that patients' post-op complications had no effect on all domains of the BODY-Q with the exception of expectations (p-value = 0.049), satisfaction with the abdomen (p-value = 0.004), satisfaction with the chest (p-value = 0.041), and satisfaction with upper arms (p-value < 0.001). Patient expectations scores for before and after for those with complications were lower when compared to those patients without complications, and the differences between the scores for the two groups were borderline significant (p-value = 0.049). For satisfaction with the abdomen, the scores were lower for both before and after for the patients that experienced complications when compared to those

patients without complications, though the differences in the scores for before and after for the two groups were comparable (p-value = 0.004). On satisfaction with chest, the differences in the before and after for the patients with complications, and the differences for the before and after for those without complications were statistically significant (p-value = 0.041). For satisfaction with upper arms, the differences in the before and after for the patients with complications, and the differences for the before and after for those without complications were statistically significant (p-value < 0.001).

Quality of Life after Liposuction

Except for expectations for the surgery (p-value = 0.578), satisfaction with the chest (p-value = 0.089), and appraisal of body contouring scars (p-value = 0.058), the quality of life of the patients improved after the surgery compared to before. The scores for expectation for the surgery increased marginally after the surgery; the results were not statistically significant. The satisfaction with the chest increased after the surgery substantially. However, these results were not statistically significant. The scores for appraisal for body contouring scars increased marginally. The results, too, were not statistically significant.

Discussion

Healthcare is increasingly becoming more patient centred. Psychosocial domains such as self-esteem and quality of life and body image are considered important when evaluating the benefits of medical intervention. The study sought to determine the effects of liposuction on patients' quality of life. Our patients' demographic data containing age and BMI, which was found to be normal on average, were in line with previous studies. In the current study there is consistency in all the age groups for the scores of the BODY-Q questionnaire before and after self-assessment except in two domains-social function and appraisal of excess skin. Patients aged less than thirty had higher scores post-liposuction compared to other age groups. Age was also noted to be a notable factor when appraising excess skin with significantly higher scores post liposuction (Table 5). This is in contrast to previous studies whereby age was not statistically significant in determining patient satisfaction (14) or was actually a predictor of poor outcomes post operatively (14).

In this study, patients with normal BMI were more likely to be satisfied with their back pre-operatively compared to patients with a high BMI. Post-operatively the scores were comparable except for those with a BMI>30 whose scores were

significantly lower. This is similar to a study conducted by Young et al. (15) on morbidly obese patients who were undergoing abdominal lipectomy whereby all patients were noted to obtain symptomatic respite. However, astonishingly majority had looked forward to being more attractive following surgery, denoting the significance of deliberating this facet preoperatively. In contrast, a study by Nyakiongora et al.(16) showed that patients with higher BMI prior to abdominoplasty were more satisfied with the procedure than those with lower preoperative BMI. This was demonstrated further by Hammond et al. who found high satisfaction rates in patients with high BMI (17). In this study 28% of the patients underwent Power Assisted Liposuction (PAL), 12% underwent SAL and in the remaining 60%, VASER was performed (Table 3). The ideal procedure for liposuction for many years has been the ‘Suction Assisted Liposuction’ also known as SAL. This was reproduced in our study whereby, patients who had undergone SAL in our study had significantly higher post-operative scores in the physical function domain compared to those who used the other two techniques. However, latest technologies have since emerged with variable assertions on skin retraction, complete and painless evacuation of fat as well as a quicker recuperation (18). Patients who underwent SAL in our study had more appearance-related psychosocial distress post operatively compared to those who underwent liposuction using other techniques. This could be attributed to the fact that VASER device’s 0-Low occurrence of complications, while mean complication occurrence with earlier devices is approximately 5 percent. Additionally, VASER not only aids in comprehensive fat removal in normal as well as challenging areas but also aids in achieving some extent of skin retraction (19). On the other hand, Power Assisted Liposuction (PAL) has several advantages as well: the micro cannulas are often employed in PAL thus resulting in smaller scars: PAL has no potential for burn injury and liposuction lasts a lot less making PAL safer for patients; and post-op pain is also decreased with PAL.

The severe complications rate post-liposuction is relatively low ranging from 0.7% to 1.4% as evidenced by current studies with the many patients exhibiting localised reversible complications (6). However, 30% of the patients in this study experienced at least one post-operative complication. The most common complication was the formation of a seroma (33.3%) followed by the occurrence of anaemia (20%) and infection (20%). Patients with complications had significantly lower expectations post operatively compared to those with no complications ($p=0.049$) ((Table 8). This is unlike patients with no complications post operatively who had higher scores reflecting more satisfaction with the

procedure and outcomes. Quality of life (QoL) is a key criterion in addition to the objective clinical outcome when evaluating treatment success. A person with a high QoL is characterized as having satisfactory relationships, active, self-confident, has a fundamental mood of joy, a feeling of well-being and a relief of mental distress (20). Attention should shift to the multidimensionality as well as the subjectiveness of QoL tools and measurements. Widely acceptable and standardized instruments of testing must be employed in the evaluation of the complex construct of QoL (6). The BODY-Q is a meticulously created Patient-Reported-Outcome (PRO) measure constructed to assess consequences for obese patients who achieve weight loss via exercise, diet and/or bariatric surgery/medicine, as well as body contouring patients (following enormous weight loss and for cosmetic reasons). The BODY-Q is composed of a sequence of independently functioning scales that measure three domains (appearance, HRQL, and experience of healthcare). In this study we focused on the first two domains. The study findings reiterated the positive effect aesthetic surgery such as liposuction has on QoL. Our findings showed significantly higher scores post operatively in most of the appearance and HRQL domains. Thus, liposuction was noted to significantly improve body image, social, physical, psychological and sexual function ($p<0.001$). Additionally, it also helped to significantly reduce appearance related psychosocial distress. This is similar to a prospective study carried out by Saarniemi et al (2015) where body satisfaction was improved post operatively and the risk for an eating disorder was reduced significantly.

Liposuction improved the general perception of personal appearance with patients in this study being noted to have increased satisfaction post operatively with their back, abdomen, buttocks, upper arms, hips and outer thighs. These findings differ from what Nyakiongora et al. found in their study. They noted that the use of liposuction was not found to have an effect on patient satisfaction.

Some of the limitation in the study included the loss of follow-up of some patients and the length of the questionnaire was off-putting to the participants. However, this was mitigated by ensuring the principal investigator guided the participants in filling in the questionnaires. Ten percent more participants were included in the study to cater for the loss of follow up.

Conclusion

The findings in this study serve to emphasize the positive effect that liposuction has on patients’ quality of life, self-esteem, body image, and satisfaction with their body. Thus, this study has provided local data that will aid healthcare

providers during the provision of liposuction. Further, it shall help improve public awareness of the benefits of liposuction apart from aesthetic concerns.

Conflicts of interests

No conflicts of interest relevant to this article.

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Table 1 Patients' characteristics

	Frequency (<i>n=50</i>)	Percent
Age in years		
≤30	13	26.0
31 – 40	23	46.0
>40	14	28.0
Gender		
Male	1	2.0
Female	49	98.0
BMI		
18.5 – 24.9	10	20.0
25.0 – 29.9	26	52.0
≥30.0	14	28.0
Education		
Secondary	6	12.0
Tertiary	44	88.0
Occupation		
Business	27	54.0
Employed	22	44.0
Housewife	1	2.0
Study site		
Coptic	6	12.0
DVC	30	60.0
PSC	14	28.0

Table 2: Technique of liposuction

	Frequency (<i>n=50</i>)	Percent
<i>Power assisted</i>	14	28.0
<i>SAL</i>	6	12.0
<i>VASER</i>	30	60.0

Table 3: Patient age on satisfaction and quality of life

	Appearance related psychosocial distress			p-value
	≤30	31-40	>40	
Before	56.3 ± 21.9	54.3 ± 12.0	49.6 ± 18.4	0.302
After	15.4 ± 37.6	2.8 ± 7.8	2.9 ± 9.3	
Expectations				
Before	95.9 ± 10.1	94.9 ± 11.2	93.6 ± 12.7	0.422
After	100.0 ± 0.0	93.2 ± 13.4	96.2 ± 7.0	
Body image				

Before	49.4 ± 32.2	35.3 ± 25.4	30.8 ± 20.5	0.251
After	90.9 ± 18.2	95.9 ± 11.3	90.0 ± 16.6	
Social function				
Before	83.2 ± 22.2	63.8 ± 15.7	65.3 ± 22.9	0.019
After	100.0 ± 0.0	97.0 ± 9.0	95.4 ± 10.6	
Psychological function				
Before	81.0 ± 25.4	66.6 ± 13.4	69.7 ± 29.5	0.163
After	100.0 ± 0.0	98.4 ± 5.5	95.8 ± 11.5	
Physical function				
Before	87.1 ± 15.5	80.4 ± 22.6	73.4 ± 22.1	0.291
After	100.0 ± 0.0	96.4 ± 8.2	97.1 ± 11.0	
Sexual function				
Before	50.2 ± 31.0	52.0 ± 20.9	45.5 ± 27.8	0.446
After	90.7 ± 17.7	95.6 ± 10.4	86.7 ± 22.4	
Satisfaction with abdomen				
Before	32.3 ± 33.2	22.8 ± 17.0	19.5 ± 20.5	0.329
After	93.2 ± 13.5	91.2 ± 13.7	87.5 ± 17.4	
Satisfaction with back				
Before	45.9 ± 32.0	30.1 ± 17.0	28.0 ± 19.8	0.283
After	92.8 ± 12.8	95.4 ± 10.8	92.7 ± 14.5	
Satisfaction with body				
Before	41.5 ± 22.2	36.3 ± 15.8	43.7 ± 17.4	0.578
After	92.3 ± 15.2	91.5 ± 16.4	93.7 ± 11.7	
Satisfaction with buttocks				
Before	48.2 ± 40.0	65.9 ± 41.4	57.4 ± 32.5	0.420
After	87.7 ± 13.9	97.4 ± 9.9	95.4 ± 13.1	
Satisfaction with chest				
Before		50.3 ± 9.4	50.9 ± 13.9	0.882
After		74.8 ± 30.6	70.8 ± 19.5	
Satisfaction with nipples				
Before		100.0		-
After		100.0		
Satisfaction with upper arms				
Before	14.0 ± 19.2	25.8 ± 29.8	27.3 ± 43.8	0.636
After	67.6 ± 40.8	72.9 ± 31.5	82.0 ± 16.1	
Satisfaction with inner thighs				
Before	0.0 ± 0.0	66.0 ± 0.0	52.8 ± 36.3	0.423
After	100.0 ± 0.0	66.0 ± 0.0	77.2 ± 13.9	
Satisfaction with hips and outer thighs				
Before	54.6 ± 25.5	32.6 ± 32.5	43.1 ± 36.2	0.140
After	91.3 ± 16.2	75.0 ± 17.1	82.5 ± 18.7	
Appraisal of excess skin				

Before	87.7 ± 19.2	66.7 ± 31.7	53.6 ± 28.9	0.041
After	93.9 ± 15.0	96.5 ± 11.5	91.4 ± 17.0	
Appraisal of stretch marks				
Before	60.2 ± 28.5	70.2 ± 27.6	56.9 ± 26.4	0.278
After	66.8 ± 20.6	82.1 ± 25.9	79.5 ± 12.6	
Appraisal of body contouring scars				
Before	75.2 ± 24.7	85.7 ± 20.0	79.8 ± 27.7	0.476
After	78.3 ± 25.1	85.7 ± 20.0	88.6 ± 18.8	

Table 4: Patient BMI on satisfaction and quality of life

Appearance related psychosocial distress				
	18.5 – 24.9	25.0 – 29.9	≥30	p-value
Before	49.0 ± 27.3	52.3 ± 8.6	59.1 ± 16.7	0.088
After	0.0 ± 0.0	2.7 ± 7.3	16.8 ± 36.5	
Expectations				
Before	96.5 ± 11.1	92.4 ± 12.6	98.1 ± 7.2	0.075
After	98.0 ± 4.2	93.1 ± 13.1	99.3 ± 2.7	
Body image				
Before	45.8 ± 36.6	38.1 ± 26.8	31.1 ± 16.2	0.500
After	90.5 ± 20.4	94.6 ± 13.0	91.6 ± 14.1	
Social function				
Before	76.8 ± 22.2	67.4 ± 21.1	67.4 ± 20.3	0.328
After	100.0 ± 0.0	98.2 ± 7.9	93.9 ± 11.0	
Psychological function				
Before	78.4 ± 25.0	71.1 ± 21.1	66.4 ± 23.4	0.406
After	97.7 ± 7.3	99.5 ± 2.7	95.8 ± 11.5	
Physical function				
Before	89.0 ± 16.9	80.2 ± 21.0	73.9 ± 26.2	0.191
After	100.0 ± 0.0	98.2 ± 6.5	94.5 ± 12.1	
Sexual function				
Before	46.3 ± 26.7	50.0 ± 19.3	51.7 ± 34.7	0.888
After	90.7 ± 16.5	93.6 ± 15.4	89.4 ± 19.2	
Satisfaction with abdomen				
Before	32.4 ± 22.2	24.4 ± 24.3	18.5 ± 21.3	0.162
After				

<i>After</i>	93.9 ± 11.5	93.3 ± 14.1	83.6 ± 16.1	
<i>Satisfaction with back</i>				
<i>Before</i>	40.4 ± 24.8	35.1 ± 20.3	26.0 ± 26.7	0.049
<i>After</i>	96.6 ± 10.8	97.7 ± 7.4	85.1 ± 16.2	
<i>Satisfaction with body</i>				
<i>Before</i>	39.2 ± 27.2	42.8 ± 10.5	34.4 ± 21.2	0.174
<i>After</i>	95.3 ± 11.9	94.6 ± 11.9	86.1 ± 19.4	
<i>Satisfaction with buttocks</i>				
<i>Before</i>	30.0 ± 26.0	61.9 ± 40.2	69.1 ± 35.4	0.460
<i>After</i>	100.0 ± 0.0	95.1 ± 13.0	91.8 ± 16.3	
<i>Satisfaction with chest</i>				
<i>Before</i>	40.7 ± 19.1	57.0 ± 5.5		0.122
<i>After</i>	66.3 ± 31.3	76.6 ± 21.4		
<i>Satisfaction with nipples</i>				
<i>Before</i>		100.0		-
<i>After</i>		100.0		
<i>Satisfaction with upper arms</i>				
<i>Before</i>	16.0 ± 32.0	26.6 ± 35.0	23.3 ± 30.6	0.487
<i>After</i>	57.0 ± 38.9	80.9 ± 32.9	75.7 ± 16.7	
<i>Satisfaction with inner thighs</i>				
<i>Before</i>	66.0 ± 0.0	52.8 ± 36.3	39.6 ± 36.2	0.827
<i>After</i>	66.0 ± 0.0	77.2 ± 13.9	79.6 ± 18.6	
<i>Satisfaction with hips and outer thighs</i>				
<i>Before</i>	34.8 ± 26.6	39.8 ± 38.3	59.7 ± 13.0	0.812
<i>After</i>	100.0 ± 0.0	82.5 ± 18.3	70.8 ± 14.3	
<i>Appraisal of excess skin</i>				
<i>Before</i>	78.6 ± 28.2	67.7 ± 25.2	62.7 ± 40.0	0.558
<i>After</i>	92.0 ± 16.9	96.9 ± 10.9	91.4 ± 17.0	
<i>Appraisal of stretch marks</i>				
<i>Before</i>	55.5 ± 29.5	65.5 ± 22.9	66.9 ± 34.5	0.439
<i>After</i>	68.5 ± 32.9	$80.5 \pm$	$77.9 \pm$	

		20.0	23.7	
Appraisal of body contouring scars				
Before	79.5 ± 21.6	85.8 ± 19.9	74.3 ± 30.0	0.261
After	83.6 ± 21.2	89.0 ± 18.5	77.2 ± 24.5	

**Table 5: Patient surgical procedures done on satisfaction and quality of life
Appearance related psychosocial distress**

	Power	Sal	Vaser	p-value
Before	54.9 ± 6.0	62.7 ± 19.4	51.1 ± 19.1	0.156
After	3.4 ± 9.7	21.5 ± 39.8	4.3 ± 18.7	
Expectations				
Before	92.2 ± 12.4	90.3 ± 15.0	96.9 ± 9.5	0.058
After	92.4 ± 10.6	91.5 ± 16.4	98.3 ± 7.6	
Body image				
Before	23.9 ± 13.1	37.8 ± 32.1	44.1 ± 28.4	0.165
After	97.2 ± 10.4	81.8 ± 17.5	93.2 ± 15.3	
Social function				
Before	55.8 ± 9.9	65.3 ± 19.6	76.4 ± 22.1	0.062
After	98.4 ± 5.9	97.7 ± 5.7	96.8 ± 9.8	
Psychological function				
Before	59.9 ± 15.0	69.5 ± 26.6	71.2 ± 22.5	0.170
After	98.6 ± 5.1	100.0 ± 0.0	97.4 ± 8.6	
Physical function				
Before	73.1 ± 30.4	63.0 ± 8.2	87.0 ± 16.3	0.034
After	93.6 ± 13.2	100.0 ± 0.0	98.8 ± 4.6	
Sexual function				
Before	41.9 ± 18.3	37.0 ± 20.1	55.9 ± 27.6	0.382
After	95.6 ± 16.3	88.8 ± 18.1	90.7 ± 16.5	
Satisfaction with abdomen				
Before	32.5 ± 9.4	1.2 ± 2.9	25.2 ± 26.9	0.008
After	95.6 ± 10.0	79.5 ± 17.2	90.6 ± 15.1	
Satisfaction with back				

<i>Before</i>	33.0 ± 12.9	$22.0 \pm$	$36.2 \pm$	0.364
		17.0	23.2	
<i>After</i>	97.6 ± 9.1	$89.0 \pm$	$93.3 \pm$	
		13.9	13.1	
<i>Satisfaction with body</i>				
<i>Before</i>	39.9 ± 12.7	$31.0 \pm$	$41.3 \pm$	0.314
		18.6	19.9	
<i>After</i>	97.2 ± 10.4	$85.7 \pm$	$91.4 \pm$	
		19.4	15.1	
<i>Satisfaction with buttocks</i>				
<i>Before</i>	58.7 ± 43.7	$81.5 \pm$	$55.6 \pm$	0.638
		21.4	39.8	
<i>After</i>	100.0 ± 0.0	$90.8 \pm$	$94.7 \pm$	
		18.5	13.3	
<i>Satisfaction with chest</i>				
<i>Before</i>	51.0 ± 0.0	61.0	$48.8 \pm$	0.138
			17.5	
<i>After</i>	100.0 ± 0.0	61.0	$64.2 \pm$	
			22.3	
<i>Satisfaction with nipples</i>				
<i>Before</i>	100.0			-
<i>After</i>	100.0			
<i>Satisfaction with upper arms</i>				
<i>Before</i>	5.7 ± 9.8	$50.0 \pm$	$29.6 \pm$	0.506
		70.7	30.3	
<i>After</i>	84.6 ± 12.4	$84.5 \pm$	$65.9 \pm$	
		21.9	36.6	
<i>Satisfaction with inner thighs</i>				
<i>Before</i>	16.0 ± 0.0	$55.3 \pm$	$56.6 \pm$	0.152
		50.8	24.9	
<i>After</i>	77.0 ± 0.0	$88.7 \pm$	$70.9 \pm$	
		19.6	12.9	
<i>Satisfaction with hips and outer thighs</i>				
<i>Before</i>	12.5 ± 15.8	$66.0 \pm$	$45.0 \pm$	0.123
		40.8	24.9	
<i>After</i>	82.5 ± 20.2	$79.0 \pm$	$85.0 \pm$	
		19.2	18.0	
<i>Appraisal of excess skin</i>				
<i>Before</i>	54.6 ± 24.7	$56.7 \pm$	$77.3 \pm$	0.210
		32.0	30.2	
<i>After</i>	97.1 ± 10.7	$93.3 \pm$	$93.3 \pm$	
		16.3	15.2	
<i>Appraisal of stretch marks</i>				
<i>Before</i>	57.3 ± 21.7	$63.8 \pm$	$67.0 \pm$	0.981
		19.8	31.2	
<i>After</i>	85.1 ± 21.1	$74.0 \pm$	$74.5 \pm$	
		21.0	25.6	
<i>Appraisal of body contouring scars</i>				
<i>Before</i>	76.9 ± 27.5	$69.7 \pm$	$85.7 \pm$	0.223

		24.5	20.8
After	79.8 ± 21.0	76.5 ± 26.6	88.5 ± 19.7

Table 6: Quality of life before and after

	Before	After	p-value
Appearance related psychosocial distress	53.5 ± 16.7	6.1 ± 20.6	<0.001
Expectations	94.8 ± 11.2	95.8 ± 10.1	0.578
Body image	37.7 ± 26.6	93.0 ± 14.8	<0.001
Social function	69.3 ± 21.0	97.3 ± 8.3	<0.001
Psychological function	71.2 ± 22.5	98.1 ± 7.1	<0.001
Physical function	80.2 ± 22.1	97.5 ± 8.0	<0.001
Sexual function	49.7 ± 25.3	91.8 ± 16.5	<0.001
Satisfaction with abdomen	24.3 ± 23.2	90.7 ± 14.6	<0.001
Satisfaction with back	33.6 ± 23.2	94.0 ± 12.2	<0.001
Satisfaction with body	39.7 ± 18.0	92.3 ± 14.7	<0.001
Satisfaction with buttocks	59.6 ± 38.0	94.7 ± 13.2	<0.001
Satisfaction with chest	50.9 ± 13.9	72.8 ± 23.9	0.089
Satisfaction with nipples			
Satisfaction with upper arms	23.3 ± 31.4	74.3 ± 29.5	<0.001
Satisfaction with inner thighs	49.5 ± 32.5	76.3 ± 14.9	0.046
Satisfaction with hips and outer thighs	43.9 ± 31.5	83.3 ± 17.9	<0.001
Appraisal of excess skin	68.5 ± 30.4	94.4 ± 14.0	<0.001
Appraisal of stretch marks	63.9 ± 27.6	77.4 ± 23.9	<0.001
Appraisal of body contouring scars	81.3 ± 23.5	84.6 ± 21.0	0.058

Table 7: Patient surgical procedures done on satisfaction and quality of life**Appearance related psychosocial distress**

	Power	Sal	Vaser	p-value
Before	54.9 ± 6.0	62.7 ± 19.4	51.1 ± 19.1	0.156
After	3.4 ± 9.7	21.5 ± 39.8	4.3 ± 18.7	
Expectations				
Before	92.2 ± 12.4	90.3 ± 15.0	96.9 ± 9.5	0.058
After	92.4 ± 10.6	91.5 ± 16.4	98.3 ± 7.6	
Body image				

Before	23.9 ± 13.1	37.8 ± 32.1	44.1 ± 28.4	0.165
After	97.2 ± 10.4	81.8 ± 17.5	93.2 ± 15.3	
Social function				
Before	55.8 ± 9.9	65.3 ± 19.6	76.4 ± 22.1	0.062
After	98.4 ± 5.9	97.7 ± 5.7	96.8 ± 9.8	
Psychological function				
Before	59.9 ± 15.0	69.5 ± 26.6	71.2 ± 22.5	0.170
After	98.6 ± 5.1	100.0 ± 0.0	97.4 ± 8.6	
Physical function				
Before	73.1 ± 30.4	63.0 ± 8.2	87.0 ± 16.3	0.034
After	93.6 ± 13.2	100.0 ± 0.0	98.8 ± 4.6	
Sexual function				
Before	41.9 ± 18.3	37.0 ± 20.1	55.9 ± 27.6	0.382
After	95.6 ± 16.3	88.8 ± 18.1	90.7 ± 16.5	
Satisfaction with abdomen				
Before	32.5 ± 9.4	1.2 ± 2.9	25.2 ± 26.9	0.008
After	95.6 ± 10.0	79.5 ± 17.2	90.6 ± 15.1	
Satisfaction with back				
Before	33.0 ± 12.9	22.0 ± 17.0	36.2 ± 23.2	0.364
After	97.6 ± 9.1	89.0 ± 13.9	93.3 ± 13.1	
Satisfaction with body				
Before	39.9 ± 12.7	31.0 ± 18.6	41.3 ± 19.9	0.314
After	97.2 ± 10.4	85.7 ± 19.4	91.4 ± 15.1	
Satisfaction with buttocks				
Before	58.7 ± 43.7	81.5 ± 21.4	55.6 ± 39.8	0.638
After	100.0 ± 0.0	90.8 ± 18.5	94.7 ± 13.3	
Satisfaction with chest				
Before	51.0 ± 0.0	61.0	48.8 ± 17.5	0.138
After	100.0 ± 0.0	61.0	64.2 ± 22.3	
Satisfaction with nipples				
Before	100.0			-
After	100.0			
Satisfaction with upper arms				
Before	5.7 ± 9.8	50.0 ± 70.7	29.6 ± 30.3	0.506
After	84.6 ± 12.4	84.5 ± 21.9	65.9 ± 36.6	
Satisfaction with inner thighs				
Before	16.0 ± 0.0	55.3 ± 50.8	56.6 ± 24.9	0.152

After	77.0 ± 0.0	88.7 ± 19.6	70.9 ± 12.9	
Satisfaction with hips and outer thighs				
Before	12.5 ± 15.8	66.0 ± 40.8	45.0 ± 24.9	0.123
After	82.5 ± 20.2	79.0 ± 19.2	85.0 ± 18.0	
Appraisal of excess skin				
Before	54.6 ± 24.7	56.7 ± 32.0	77.3 ± 30.2	0.210
After	97.1 ± 10.7	93.3 ± 16.3	93.3 ± 15.2	
Appraisal of stretch marks				
Before	57.3 ± 21.7	63.8 ± 19.8	67.0 ± 31.2	0.981
After	85.1 ± 21.1	74.0 ± 21.0	74.5 ± 25.6	
Appraisal of body contouring scars				
Before	76.9 ± 27.5	69.7 ± 24.5	85.7 ± 20.8	0.223
After	79.8 ± 21.0	76.5 ± 26.6	88.5 ± 19.7	

Table 8: Patient liposuction complication and their effect on satisfaction and quality of life
Appearance related psychosocial distress

	Yes	No	p-value
Before	53.2 ± 10.9	53.7 ± 18.8	0.974
After	6.2 ± 12.0	6.1 ± 23.6	
Expectations			
Before	90.9 ± 12.9	96.5 ± 10.1	0.049
After	92.5 ± 14.2	97.2 ± 7.5	
Body image			
Before	41.2 ± 33.8	36.2 ± 23.3	0.395
After	83.8 ± 20.3	96.9 ± 9.7	
Social function			
Before	67.9 ± 20.8	69.9 ± 21.3	0.498
After	94.9 ± 11.6	98.4 ± 6.4	
Psychological function			
Before	75.7 ± 22.5	69.3 ± 22.5	0.452
After	97.8 ± 5.9	98.2 ± 7.7	
Physical function			
Before	77.4 ± 23.6	81.4 ± 21.6	0.614
After	97.3 ± 10.6	97.6 ± 6.9	
Sexual function			
Before	45.3 ± 22.0	51.6 ± 26.7	0.102
After	83.7 ± 21.8	95.3 ± 12.5	
Satisfaction with abdomen			

Before	11.9 ± 15.8	29.7 ± 23.9	0.004
After	83.6 ± 16.8	93.7 ± 12.6	
Satisfaction with back			
Before	33.6 ± 27.5	33.6 ± 21.6	0.922
After	93.3 ± 12.5	94.2 ± 12.3	
Satisfaction with body			
Before	38.2 ± 12.5	40.3 ± 20.0	0.592
After	90.6 ± 12.7	93.1 ± 14.4	
Satisfaction with buttocks			
Before	76.6 ± 28.1	52.9 ± 39.9	0.075
After	100.0 ± 0.0	92.6 ± 15.2	
Satisfaction with chest			
Before	51.0 ± 0.0	50.8 ± 16.4	0.041
After	100.0 ± 0.0	63.7 ± 20.0	
Satisfaction with nipples			
Before	100.0	-	
After	100.0		
Satisfaction with upper arms			
Before	0.0 ± 0.0	27.4 ± 32.5	<0.001
After	21.3 ± 37.0	83.7 ± 15.5	
Satisfaction with inner thighs			
Before	66.0 ± 0.0	46.2 ± 34.9	0.759
After	66.0 ± 0.0	78.4 ± 15.5	
Satisfaction with hips and outer thighs			
Before	27.3 ± 24.5	49.8 ± 32.3	0.194
After	82.5 ± 19.2	83.5 ± 18.0	
Appraisal of excess skin			
Before	63.5 ± 33.3	70.6 ± 29.3	0.569
After	94.7 ± 14.1	94.3 ± 14.2	
Appraisal of stretch marks			
Before	59.8 ± 27.7	65.7 ± 27.7	0.851
After	79.5 ± 23.4	76.5 ± 24.3	
Appraisal of body contouring scars			
Before	83.1 ± 27.4	80.6 ± 22.0	0.712
After	86.3 ± 20.0	83.9 ± 21.7	