



## Quality of Life after Postbariatric Abdominoplasty in Females: Interest of Age, Current Weight and Weight Loss

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### Abstract

**Background:** Aiming to analyze whether abdominoplasty might benefit quality of life of postbariatric females with redundant abdominal skin folds beyond the first year, a clinical investigation after 2-4 years was designed. Despite being a reputed and popular procedure after massive weight loss, results are still debated. It was hypothesized that sustained improvements in quality of life, independent of previous anti-obesity gastroplasty, would be demonstrated.

**Methods:** This was a prospective study in a female cohort. Patients (N=22) were submitted to abdominoplasty with the age of  $42.7 \pm 9.1$  years and body mass index/BMI of  $27.2 \pm 2.7$  kg/m<sup>2</sup>, about five years after bariatric Roux-en-Y gastric bypass. The interview occurred after an additional  $32.0 \pm 8.2$  months.

**Results:** All post abdominoplasty indices of quality of life were benefitted, with emphasis on body contour, sexual activity and dressing. Despite frequent surgical wound complications (40.9%), most were minor and patients had few complaints about their scars. More than 90% would undergo the operation again, or recommend it to a friend. Major weight loss, or low BMI at the time of abdominoplasty, signaled better sexual and dressing scores. Sexual score was more increased in younger participants.

**Conclusion:** This paper suggest that abdominoplasty in ex-obese patients increased quality of life, related to the following domains body contour, mobility, hygiene, dressing, and sexuality.

**Keywords:** Abdominoplasty; Roux-en-Y gastric bypass; Bariatric surgery; Weight loss; Quality of life

### Introduction

Abdominoplasty is the most performed plastic operation after successful bariatric surgery, and improvement in quality of life has been demonstrated [1]. Nevertheless, results are still questioned, given the absence of prospective, randomized trials [2].

The lack of validated questionnaires targeted for this population is a common criticism [3]. As a consequence, discrepancies between different protocols are not infrequent, some centers reporting lack of response in general psychosocial functioning, such as self-esteem, satisfaction with life, and social anxiety [4]. Timing of the investigation might also influence results. As with other aesthetic procedures [5,6], enthusiasm in the first 6 months might be sustainable or not several years afterwards.

Massive weight loss typical of bariatric populations is a rather unique phenomenon; therefore suitable controls are indeed a challenge. Standardized psycho-social questionnaires are also complex and time-consuming to develop and validate. Nevertheless, in daily practice, most complaints are quite objective and concern body contour, mobility, personal hygiene, sexual activity and satisfaction with dressing (choice of clothes) [1-6].

In such circumstances, a prospective study including retrospective information was conducted in a female cohort, aiming not only to

compare preoperative vs. postoperative findings, but also to search for variables related to the outcome. A relatively long time lapse was allowed (2-4 years), in order to reflect stable, mature results. The hypothesis was that lasting aesthetic advantages of the operation would be confirmed, reinforcing the intrinsic effects of abdominoplasty on quality of life, independently of the previous gastric bypass.

### Methods

#### Study design

This was a prospective cohort clinical study. This study followed the principles of Declaration of Helsinki. The inclusion criteria were: female patients, age older than 18 years, 2-4 years follow-up after post-bariatric abdominoplasty with abdominal skin excess. Exclusion criteria were discompensated systemic disease, pregnancy, lactation or menopause, use of corticosteroids, cancer chemotherapy or radiotherapy, and refusal to participate in the study. Retrospective information was included, concerning previous bariatric treatment as well as criteria of exclusion. These were questioned during the interview and confirmed by access to hospital files.

All patients gave written informed consent, and the protocol was approved by the Institutional Ethical Committee.

## Material and methods

In the pre-surgical interview the evaluator collected anthropometric measurements (weight, height). Then body mass index (BMI) was calculated by the formula:

$$\text{BMI} = \text{weight (Kg)} / \text{height (m)}^2$$

Additionally, the investigator applied pre and postoperative questionnaire due to satisfaction of body contour, mobility, personal hygiene, sexual activity, adequacy of dressing, and happiness with the surgical scar. The basic questionnaire consisted in the followed questions:

How do you feel about each previous statement about body and emotional aspects (body contour, mobility, personal hygiene, sexual activity, clothes and scar quality)?

The answer could be

1. I am totally unsatisfied.
2. I am partially unsatisfied
3. Neutral position
4. I am partially satisfied
5. I am complete satisfied

Data from surgical complications were collected (dehiscence, seroma, asymmetry, skin excess).

## Statistical analysis

Numerical data were presented as mean  $\pm$  SD(standard deviation). The questionnaire answer was categorized three levels: satisfied, neutral and unsatisfied. Numerical data pre and post plastic surgery was analysed by Wilcoxon signed- rank test. Spearman correlation was calculated to Body mass index, age, interval between bariatric surgery and plastic surgery and dependent variables. To internal validity test, Cronbach correlation test was applied. Univariate and multivariate regression evaluated demographic data and outcome. We adopted p-value  $<0.05$ .

## Results

22 subjects fulfilled the criteria and were included. Demographic data were shown in Table 1. All patients were submitted to Roux-En-Y-Gastric Bypass (RYGB). The interval of bariatric surgery and plastic surgery was  $7.4 \pm 2.9$  years.

Variable	Result (mean $\pm$ SD)
Age at RYGB	37.7 $\pm$ 8.5 years
Age at abdominoplasty	42.7 $\pm$ 9.1 years
BMI before RYGB	49 $\pm$ 10.0 kg/m <sup>2</sup>
BMI before abdominoplasty	27.2 $\pm$ 2.7 kg/m <sup>2</sup>
Abdominoplasty-interview interval	32 $\pm$ 8.2 months
RYGB: Roux-en Y Gastric Bypass; BMI: Body Mass Index	

**Table 1:** Demographic and clinical characteristics of the cohort.

Most patients (68.2%) were submitted to an inverted-T abdominoplasty, combining the classic transverse lower abdominal

incision with resection of the upper midline scar of the previous open RYGB. A minority of the population was managed by transverse (22.7%), vertical (4.5%), or circumferential abdominoplasty (4.5%) (Table 2).

When comparing pre and post abdominoplasty surgery, there were difference between all items of quality of life. Mobility, hygiene, sexual activity), corporal contour ( $p < 0.001$ ). To test the internal validity, Cronbach coefficient inter items was 0.61.

Rate of abdominoplasty complications	Result (%)
No healing complications	59.1
Seroma, minor dehiscence or asymmetry	31.8
Resuturing or retouch required	9.1

**Table 2:** Analysis of the abdominal scar.

Spearman correlation did not show any significant association among age, BMI and questionnaire of quality of life. The questionnaire all parameters related to pre and post abdominoplasty. All patients declared they would undergo the operation again (100%), and most would recommend the operation to others (90.9%). Univariate and multiple regression did not show any significance (Table 3).

Variable	Result	"r" index, significance
BMI at RYGB	Preoperative mobility score	-0.447, P=0.041
	Would operate again	0.429, P=0.049
	Would indicate to friend	0.429, P=0.049
BMI at abdominoplasty	Preoperative sexual score	-0.445, P=0.041
	Preoperative dressing score	-0.427, P=0.049
Age at RYGB	Postoperative sexual score	-0.437, P=0.044
Weight loss after RYGB	Postoperative sexual score	0.481, P=0.028
Results in bold were confirmed by multivariate analysis.		

**Table 3:** Correlations with clinical outcome.

## Discussion

Skin excess in the lower abdomen is not unusual after significant weight loss. In a previous study we documented depletion of collagen, but not of elastic fibers, in the dermis of female bariatric candidates, contributing to the lax skin [7]. Redundant skin folds impair self-stem. Moreover, this condition difficult personal hygiene, and causes sweat accumulation, itching or rashes, and secondary bacterial or fungal infections.

The fact that stylish, closely fitting clothes are almost impossible to wear may restrict social activities, conducting to psycho-social problems and impaired quality of life. Patients feel undignified sunbathing or bathing in public places, are ashamed to stay naked even in front of family or the sexual partner. In some circumstances they altogether avoid new personal relationships, and prefer to live isolated. A few might even regret having undergone bariatric treatment [8].

Ethnic origin might be relevant, some populations being more susceptible to weight-related quality of life than others [9]. The current study was conducted in a tropical country, with many beaches and an outdoor lifestyle. Nevertheless, even in colder climates and far away from the seacoast, similar abnormalities have been registered [8].

Results in this series were quite favorable. The majority of the population was satisfied with the intervention despite occasional scar troubles, and reported better quality of life after abdominoplasty. Such findings are consistent with other studies, pointing out 75- 90% satisfaction with abdominoplasty [10,11].

Differently from other series, complications requiring blood transfusion, or followed by skin necrosis or prolonged hospitalization were not seen. Probably on account of the comparatively benign course, no association between wound troubles and questionnaire scores materialized [12].

Given the fact that the slimming operation was RYGB, not abdominoplasty, it stands to reason that part of the good outcome of the plastic intervention deserved to be credited to successful bariatric weight loss. This should not be a surprise, as correction of abdominal aesthetical problems is only recommended for patients with stable weight, who are free from major aberrations of body composition. In case of insufficient weight loss or excessive residual abdominal adiposity, abdominoplasty becomes more risky, and additional or revisional anti-obesity procedures should be considered.

Koller et al. appropriately highlight that only after plastic surgery does body image fully improve, weight loss alone being insufficient [13,14]. The previous bariatric weight loss should not be overlooked as a determinant of quality of life, notably involving physical components, in contrast to the mental ones which might not respond so clearly [15]. However as here demonstrated, questionnaire scores were still low before abdominoplasty, reaching high values only after operation. The fact that the interviews displayed such pattern several years later reinforces the hypothesis that this was not an early postoperative emotional or placebo effect, but a real and sustained benefit for the population.

Corridi et al. suggested that candidates with higher pre-body contour body mass index, and not those who had already lost much weight, enjoyed the largest increase in functional markers. Such contrasting view may stem from the fact that these were also the most compromised subjects in the first place, including difficulty with walking, travel, hygiene, toilet habits, rising from a squat position, descending stairs, and skin irritation [16]. Our results coincide with regard to one detail only. Patients with elevated BMI before RYGB were the most prone to recommend the operation.

Despite the satisfactory results, some limitations must be addressed, the sample size was small, because we faced some difficulty in the follow-up interviews, we did not have a control group to compare ex-obese population along the time with no plastic surgery. This could impair internal validity, but alpha coefficient from Cronbach's test showed robustness in this questionnaire (alpha=0.61).

This paper suggests that abdominoplasty in ex-obese patients increased quality of life, related to the following domains body contour, mobility, hygiene, dressing, and sexuality [17].

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