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Research Article

Body Image and Quality of Life in Post-Bariatric Patients Before and after Body Contouring and Predictors of Positive Outcome

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Abstract

Obesity is one of the most serious public health problems in the 21st century. An effective therapy is bariatric surgery. Body Contouring Surgery is a technique recently developed to improve its outcomes. However, the literature on it is very recent and limited. The aim of this study is to determine if and how BCS improves the quality of life of post-bariatric patients and to evaluate the possible pre-operative psychological variables that may influence the outcome. A sample of patients assessed before and after the surgery were recruited using specific questionnaires such as the Vulnerability Related Stress Scale, General Health Questionnaire, Mini Locus of Control Scale and the Body Image and Quality of Life Inventory. The results show statistically significant improvements in quality of life, self-image and general well-being. However, there is a small subgroup, characterized at the baseline by a condition of mental suffering, such as anxiety, stress, depression, that does not enhance. The outcome in some cases were even worsening. The hypothesis, apparently trivial, that after BCS all patients improve, is not at all obvious: the removal of excess adipose panniculus would not automatically lead the patient to 'feel better'. A 'pre-operative screening' based on psychological evaluation could early identify subjects who would not benefit from the BCS.

Keywords: Body contouring surgery; Body image; Post-bariatric; Quality of life

Abbreviations: BCS: Body Contouring Surgery; VRS: Stress-related Vulnerability Scale; BIQLI: Body Image Quality of Life Inventory; GHQ: General Health Questionnaire; QOL: quality of life

Introduction

Obesity is a medical condition characterized by an excessive accumulation of adipose tissue and a significant increase in body weight. It is a typical, though not exclusive, pathology of the Western World, in particular of the so-called "welfare" societies [1].

Patients with obesity often show impaired quality of life, difficult adaptation to problems [2], and increased morbidity and mortality. Recent studies have suggested that depressive disorders and obesity can be associated with each other and may have shared biological mechanisms [3], suggesting the occurrence of a "Mood-Metabolic Syndrome" characterized by metabolic, psychological and neurobiological dysfunctions [4]". Bariatric surgery is one of the most effective therapies, that allows lasting healing, therefore a significant long-term weight loss, improving quality of life [5] but this and the speed with which it occurs leads to extreme skin laxity,

disabling from a functional and aesthetic point of view. To remedy this, in the last decade post-bariatric plastic surgery or Body Contouring Surgery (BCS) has taken over, an ultra-specialized branch of plastic surgery aimed at restoring and remodeling integumentary outcomes [6].

While bariatric surgery is an extensively explored field, the knowledge on post-bariatric plastic surgery is limited. Few studies have systematically examined various body image domains from pre-to post-bariatric surgery and subsequent BCS. There is a paucity of research that examines the multidimensional elements of body image following bariatric surgery [7]. In this regard, it is important to emphasize that some studies have shown that pre-existing psychological and psychiatric disorders can have negative effects on the outcome of bariatric surgery in terms of body image perception and quality of life regardless of the positive outcome of the surgery [8]. This would make it appropriate to investigate the psychological characteristics of patients who may be at greater risk of an unfavorable outcome beyond the successful technique of the intervention, in order to also integrate a specialized psychological/psychiatric treatment in this subgroup at risk.

In the available literature there are no guidelines in this regard, and, to the best of our knowledge, only one study has proposed a procedure with pre-surgical psychological evaluation and one at 6 and 9 months post-surgical to be implemented for patients undergoing Body Contouring after bariatric surgery [9]. The few studies available to date have documented how Body Contouring improves self-perception, self-esteem, physical functioning and the performance of common daily activities [10,11], but the effects on more specific aspects of quality of life are less investigated: social relationships, sexual functioning, body satisfaction, symptoms of anxiety and depression, and concerns for health. Both bariatric and plastic surgeons should regard BCS not only as an aesthetic supplement but also as a relevant component of functional recovery [12], although such is still little explored. A marked improvement in quality of life seems to be considered a natural consequence of BCS. This is an universally accepted postulate but no one has proved it. Since there are no specific tests in the literature, we performed this study to explore this common belief. At first, we used in our clinical routine a 0-10 dissatisfied-satisfied VAS scale but it was too unsatisfactory and we looked for more specific questionnaires. In our study some interesting results came out that we did not expect. The aim of this study is to determine if, and to what extent, Body Contouring Surgery interventions improve the quality of life of the post-bariatric patients, to evaluate the presence of variables which predict the psychological response to the intervention.

Materials and Methods

Participants

39 patients who have undergone bariatric surgery were enrolled, of which 37 were female and 2 male, with an average age of 46.6 (DS 5) years, consecutively referring to the Plastic Surgery Department of Policlinico Umberto I Hospital in Rome, in a period of time from October 2018 and February 2020. The criteria for admission to post-bariatric intervention in our faculty were: BMI < 32, body weight stability for at least 6 months, stability and adequacy of the nutritional status, hemoglobin values in the norm, absence of serious associated pathologies.

The exclusion criteria were: tobacco smoke, age > 70 years, BMI > 32, and changes in coagulation. Sociodemographic data, such as age and sex, family, and clinical anamnesis were collected. Patients eligible for the study expressed informed consent for the collection and use of the data necessary for the study and were adequately instructed on how to fill in the questionnaire measures. Before the admission to our hospital, they mainly performed two types of bariatric surgery: sleeve and gastric band. Both are restrictive interventions, that is, they limit the introduction of food, with a mainly mechanical action. Specifically, 32 patients underwent vertical gastric resection, also called “sleeve gastrectomy”, an operation in which the stomach is tabulated, while 7 patients underwent gastric bandage, a non-demolitive and completely reversible operation, in which the bandage consists of an inflatable silicone ring that is placed at the highest part of the stomach. Thanks to bariatric techniques, the patients lost an average of about 49 kg. Subsequently, post-bariatric surgery was performed after about two years in our department: 21 patients underwent abdominoplasty, 7 underwent brachioplasty, 3 with thigh lift and 8 with breast lift.

Evaluation Tools

Each patient was preliminarily evaluated about one week before BCS using a personal data sheet for information relating to sex, age, level of education, marital status, weight, height, BMI, duration of overweight in years, number of kg lost and bariatric surgery technique performed. In addition to standard clinical evaluations, participants underwent an assessment of psychopathological status through the following questionnaires one week before BCS and four months later. Stress-related Vulnerability Scale (VRS) [13]. It is a self-administered questionnaire of 9 items with scores on a 4-point scale: not at all (0), mildly (1), quite (2), very much (3). Unlike other tools, this investigates perceived stress, with explicit emphasis on emotional

aspects such as moods of discouragement, irritability, worry and also investigates perceived social support or isolation, involvement in social activities and support. The evaluation period of VRS is one month and results in three subscales each of three items called "tension", "demoralization", and "reduced social support". The three subscales scores are independently assessed and also added together in a total score. Higher scores indicate greater stress-related vulnerability.

General Health Questionnaire - 12 (GHQ) [14]. It is one of the most popular tools for assessing the state of mental well-being, with particular reference to the psychological and stress setting. It does not investigate the presence of specific pathologies nor diagnoses but detects the presence of a component of discomfort / difficulty in the general psychological condition, mental functioning and state of mood. The average value considered normal for reference in normal subjects is in the range between 4 and 5, often using a cut-off score greater than 5 as indicative of potential alteration in mental well-being: it was therefore chosen to use as a threshold score to distinguish between absence and presence of possible psychological distress lower than the score 5. The assignment of subjects to the two categories is therefore as follows: scores <5: subjects not positive to the test; absence of distress or psychological problems - scores ≥ 5: positive test subjects; presence of distress or psychological problems. It is the abridged version of the GHQ, originally developed by Goldberg et al in 1979. The abridged version is currently used in clinical research, particularly when rapid, multiple-test evaluation is required, without over-engaging the patient, to various reasons, including participation and compliance in an assessment. The data obtainable from the reduced version GHQ-12 are considered satisfactory and reliable. It has been used in a large number of studies in different areas, epidemiological, clinical, in different populations. It consists of 12 items, each graded on a scale from 0 (no) to 3 (much more than usual, with two intermediate grades. The test is self-administered. It is evaluated both on the basis of the total score and on the basis of 3 factors, each consisting of a different subset of items (general well-being, depression, cognitive status).

Mini Locus of Control Scale [15]. It evaluates the way in which the individual believes that the events of his life are produced by his behaviors or actions, or by external causes independent of his will. As reported by Perussia and Viano (2008), the Mini Locus of Control Scale 23 presents a rather clear and well-defined factorial structure with 3 factors that confirm, even in the case of this representative sample of the adult Italian population, a possible tripartition based on: Fortuna, that is the casual game of external circumstances (Trait-Factor 1: "Some are born lucky and those are not"; "Without the right opportunities, it is difficult to be successful in life"); Etherodependence, that is the influence exerted by the social environment (Trait-Factor 2: "My life is controlled above all by the influence exerted by other people"; "It is others who decide whether you succeed in your life or not") ; Internalism, that is, personal will-abilities (Trait-Factor 3: "People could do much more, if only they really tried"; "It only depends on me if I can take advantage of the opportunities that life offers me"). The study conducted by the authors found an average agreement of 74% for items 1 and 2 (Fatalism); for items 5 and 6 (Internalism) an average agreement of 84%; for items 3 and 4 (Heterodependence) an average agreement of 20%.

Body Image Quality of Life Inventory (BIQLI). As reported by the author T. Cash [16], a substantial amount of research confirms that body image influences multiple aspects of psychosocial functioning in its positive and negative aspects. The test is built on 19 items with a graduated scale on 7 points from "very negative effect" (-3) to "very positive effect" (+3). The results of the BIQLI were shown with internal consistency and stable in the period of 2-3 weeks. The test is useful for evaluating to what extent the experience of the person's body image affects the sense of self, social functioning, emotional well-being, sexuality, eating behavior, physical exercise, and grooming, etc. According to the author, BIQLI has potential usefulness as a clinical evaluation to specifically discern how the individual body image has an impact on life and as a measure of the outcome of body image interventions.

Statistic Analysis

Since the the psychological variables are not normally distributed, the comparisons of the average scores of the various scales between pre- and post- intervention of BCS were verified with the Wilcoxon test. The hypothesis of correlation between psychological variables and body image and quality of life was tested with Spearman's rank correlation test. The significance level chosen was $p < 0.05$.

Results

The results are shown for the tests used in the pre-operative and post-operative settings.

- As regards the pre-operative data on the VRS questionnaire the average score was 6.92 (DS 5,7) As for post-operative data the average score was 4 (DS 4,9): half of the subjects improved significantly and half remained unchanged. The improvement concerned the items of tension and demoralization, while the social support remained unchanged. (p value 0.00001)
- At the Mini Locus of Control in the pre-operative it appears that: in item 1 and 2 (Fatalism), more than half of the sample is not fatalistic, while a quarter turns out to be "enough fatalistic". In items 3 and 4 (Heterodependence), the totality of the sample

is not heterodependent. In items 5 and 6 (Internalism), half of the sample is internalistic and half is "enough internalistic". Overall, Mini Locus remained essentially unchanged: it did not show statistically significant changes between before and after the surgery. (p value 0.00031)

- At the GHQ-12 in the pre-operative the average score was 8.6 (DS 7,4). After BCS the average score was 5.4 (DS 6,5) , with a statistically significant reduction (Wilcoxon test: p value = 0.00255.)
- At the BIQLI in the pre-operative the average score was 27,6 (DS 16,5) while after BCS it increased to 40,6 (DS 15,3). (Wilcoxon test: p value = 0.00001). BIQLI has shown improvements in the area of self-esteem, sense of femininity, emotions, life satisfaction, food control, body satisfaction, sexual enjoyment and happiness of oneself.

The correlation analysis showed that the higher the VRS test score, the lower the post-intervention BIQLI score with R = -0.6486 (p value 0.0035). Furthermore, the higher the pre-BCS GHQ scores, the lower the post-intervention BIQLI scores, with R = -0.8284. (p value 0.00021).

Discussion

Regarding the first hypothesis of the study (if BCS improves the quality of life), the data obtained from the pre- and post-intervention BIQLI analysis suggest that BCS would significantly improve QOL in terms of general satisfaction, social relationships, body image, work and sexual relations. These data are consistent with what was also reported for bariatric surgery and, above all, with the study by De Zwaan et al (2014) which reported that BCS is followed by an improvement in the quality of life and by Barone and al. relating to the improvement of body image. The results of our study would suggest positive effects in a significant proportion of the patients in the sample after Body Contouring surgery. A further, detailed analysis of data, not reported here, preliminary shows, above all, a marked improvement was noted in some domains explored by BIQLI: self-esteem was significantly improved, with greater self-confidence; the underlying emotional state has generally improved; of particular value given that the sample was exclusively of women, the improvement of the sense of one's femininity, the feeling of actually appearing more attractive and beautiful, all aspects that have an impact on the satisfaction of one's life, capacity for sexual enjoyment and happiness of oneself. The post-surgery test also shows an improvement in the ability to control food, a fact that is apparently inexplicable since the surgery itself does not affect this aspect, but in reality it seems to represent an index of the ability to take better care of oneself. In other words, it could be interpreted as an indicator of the psychic side effects of an improvement produced by surgery. In this example we can note, anecdotally, the report of some patients who have just expressed.

These data have an interesting clinical significance because they suggest that reconstructive surgery, with all the effort, cost and pain of the procedures, has, beyond the successful surgical 'technique', a result that greatly pays off the patient with the improvement of functional areas strictly connected to well-being and quality of life, and, at the same time, represents for the team a strong return of the value of their business. It is interesting to note that the improvement of BIQLI and of these functional areas also appears to be correlated with the improvement in mental well-being found post-intervention with the GHQ. This would further confirm that the benefits of body contouring extend beyond a purely somatic action, also impacting psychic and well-being aspects.

Regarding the second hypothesis (if there are psychological factors predicting outcome) the results of the Spearman test suggest that higher levels of anxiety, stress, depression and loneliness, as detected by the VRS and GHQ test, are negative predictors of outcome or even of worsening. These data are in agreement with what reported from bariatric surgery studies. In fact, several studies of bariatric surgery have revealed in the past various critical psychological and personality aspects in obese patients, such as anxiety, depression, less ability to manage emotional stress, increased impulsivity [17]. Several studies have documented high rates of depression and anxiety in obese patients [18]. They are therefore potentially critical and 'difficult' patients under psychological aspects [19]. It was also found that higher rates of psychopathology and psychiatric disorders worsen the outcome of bariatric surgery.

We have not found in the literature evidence of outcome predictors for BCS and, in this sense, our preliminary data might be among the first in this field. If further confirmed by other studies, our findings could be very useful for the surgeon to detect these variables before BCS, as predictors of outcome regardless of the surgical technique. At the same time, this survey would allow the identification of critical patients to be addressed first to a psychological / psychiatric path and only subsequently, if improved, to BCS intervention. Recognizing this individual problem of some patients would mean being able to avoid surgical stress for them, which then turns out to be useless, and for the team the disappointment of not achieving a goal for which a strong commitment, time and cost was involved. We found a small subgroup, about 15%, that did not improve after the surgery, which had a condition of preceding mental suffering, of probable psychopathological-clinical entity, given the high value of GHQ and VRS; only in this case the results at BIQLI were unsatisfactory, in some cases even worse.

This seems to suggest that pre-existing states of psychological / psychopathological suffering do not improve post-operative despite the improvement of the physical appearance. A

depressed patient can improve self-image but does not improve mood. In other words, Body Contouring does not seem to have an anti-depressant effect. From a clinical point of view, this would suggest that when the surgeon encounters a patient with significant mental suffering from anxiety, depressive or other disorders in the pre-operative period, he suggests parallel professional support, preferably from a psychiatrist. Taken together, these data could lead to the reformulation of the BCS guidelines for eligibility for intervention: it is not taken for granted that the removal of excess panniculus adipose automatically leads to an improvement and that the patient 'feels better'. Communication with the patient in the informed consent procedure for this subgroup would therefore be crucial (also for the purpose of reducing possible disputes).

The limitations of the study are due to the small size of the sample, with a high proportion of female patients. As in the field of breast surgery, where the adoption of the breast q test, validated and internationally recognized, we hope that a similar agile set of tools, like our ones, might be introduces in BCS field.

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