

## BINGE EATING DISORDER AND BARIATRIC SURGERY: A CASE REPORT

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### ABSTRACT

**Introduction:** Recent research has shown significant increases in depressive symptoms in long-term follow-up after bariatric surgery (BS). Also the subjects with Binge Eating Disorder (BED), regardless of weight loss in the post-BS phase, show a state of psychophysical discomfort, if not treated with a psychotherapeutic intervention. In this framework, the research aimed at evaluating psychic variables of patients before and after BS could reduce the risk of regaining weight, optimizing the effect of the procedure and maintaining a state of psychophysical wellbeing.

**Materials and methods:** A 33-year-old Italian woman suffering from BED weighing 96 kg (BMI 37.5 kg / m<sup>2</sup>) went to a psychological and psychiatric visit in order to undertake the path for the second bariatric surgery (BS). Anamnestic data has revealed the problems related to weight since childhood. Results: At 20, weighing 90 kg (BMI 35.16 kg / m<sup>2</sup>), she underwent surgery for intra-gastric balloon (BIB). At 25, her weight reached 120 kg (BMI 46.88 kg / m<sup>2</sup>), following the pregnancy of her first daughter. Diabetes and musculoskeletal problems have been associated with its obesity. In 2011 she underwent first BS. Following this intervention, the patient's weight dropped to 59 kg (BMI 23.05 kg / m<sup>2</sup>) but increased over the years to reach the current weight of 96 kg (BMI 37.5 kg / m<sup>2</sup>). The patient was subjected to the administration of six investigative tools: the D.F.U., the MMPI-2, the SCL-90 R, the BDI-II, the SF-36 and the EDI-2, before the second bariatric surgery procedure.

**Conclusions:** Our study suggests that BS alone is not the best solution to treat morbid obesity in patients diagnosed with BED, as it is shown that disordered eating behavior persists post-BS. In summary, adequate preoperative psychological/psychiatric evaluation and postoperative psychotherapeutic support should be provided to increase the long-term success of BS and reduce the risk of complications.

**Keywords:** Binge eating disorder, BED, bariatric surgery, obesity, Multidisciplinary assessment, psychotherapy.

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### Introduction

Binge Eating Disorder (BED) is a nutritional disorder characterized by binges similar to those of bulimia, but which are not followed by elimination or compensation practices. The bingeing take place in solitude, they are associated with a feeling of loss of control over the amount of food taken and they end only after a feeling of unpleasant fullness. The binge is immediately followed by physical and psychological malaise, with a strong sense of frustration, self-aversion and reduction of self-esteem<sup>(1)</sup>. About half of people with BED also suffer from depression, which manifests itself before or after the development of eating disorder<sup>(2-4)</sup>.

Sleep disorders are also closely related to BED<sup>(5-7)</sup>. The origin of BED is complex and partly linked to a genetic predisposition, to which are added several unfavorable personal, family, social and environmental factors<sup>(1)</sup>. Those who are affected are almost always obese, as despite repeatedly trying to follow diets for weight loss do not reach satisfactory results<sup>(8)</sup>.

Obesity is a major health problem worldwide and has reached epidemic proportions in both developed and developing countries<sup>(9-10)</sup>, making it an extremely important public health problem. Clinically defined in terms of body mass index (BMI), a person is considered obese if his/her BMI is greater than 30 kg / m<sup>2</sup><sup>(11-12)</sup>.

In recent years, bariatric surgery (BS) has been identified as the only long-term effective treatment for morbid obesity<sup>(13)</sup>. Specifically, BS is a procedure indicated in patients with obesity type III (body mass index [BMI  $\geq 40$ ]) and with recurrent unsuccessful attempts to reduce weight<sup>(14)</sup> and important comorbidities such as obstructive sleep apnea (OSA), diabetes, hypertension and cardiomyopathy, that can improve or even disappear with weight loss<sup>(15-20)</sup>. Furthermore, it is important to underline that BS is a therapeutic intervention and not an aesthetic strategy, because it involves changes in the functional anatomy of the digestive system, and therefore must be followed by a change in eating habits and lifestyle<sup>(21-23)</sup>. The positive comments on BS and the weight loss of highly publicized celebrities have made surgery a popular option for obese patients, masking the side effects and outcomes of the intervention. Although the potentially lethal side effects or even death for this type of surgery are rare, other complications frequently occur<sup>(24)</sup>. Do not underestimate the psychiatric comorbidity of obesity patients in the pre-BS phase, which can lead to a consequent social stigma and a deterioration in the quality of life<sup>(25,26)</sup>. Specifically, De Zwaan and colleagues studied the course of anxiety and depressive disorders in 107 patients with extremely obese BS using face-to-face interviews pre and post surgery at 6-12 months and 24-36 months. Participants with both depressive and anxiety disorders at baseline lost significantly less weight after surgery, during long term follow-up<sup>(27)</sup>.

More recent research has shown significant increases in depressive symptoms in long-term follow-up after BS<sup>(28-31)</sup>. Regarding the prevalence of BED, the literature data show a reduction in the number of uncontrolled feeding episodes after short-term BS, but in the long term it is possible the reappearance of the disorder with negative outcomes on the patient's quality of life<sup>(32-34)</sup>. Overall, therefore, the evidence emerging from recent systematic reviews shows that BS can lead to a lifestyle improvement<sup>(35,36)</sup>, but most of these studies are limited to the first 2-3 years of post-intervention follow-up<sup>(37)</sup>.

In this framework, the research aimed at evaluating psychic and behavioral variables before and after surgery of patients could reduce the risk of regaining weight, optimizing the effect of the procedure and maintaining a state of psychophysical wellbeing<sup>(37)</sup>. The authors reported a case study with BED pre and post BS that it highlights the importance of an accurate psychological and psychiatric evaluation.

## Case Presentation

The patient gave written informed consent before participating in the study and permission to use her biographical and test data for this presentation. A 33-year-old Italian woman suffering from BED<sup>(1)</sup> weighing 96 kg (BMI 37.5 kg / m<sup>2</sup>) went to a psychological and psychiatric visit in order to undertake the path for the second BS. Earnest of three children, one girl and two boys, the woman has a low schooling (middle school), is a housewife, married and has two children, a girl of 9 years and a child of 4 years, the latter suffering from attention deficit and hyperactivity (ADHD).

The collection of anamnestic data has revealed the problems related to weight since childhood. At 6 she underwent surgery to remove the adenoids, after which she started to gain weight. Subjected to many attempts at diet, repeatedly failed, she made several specialist endocrinological and metabolic medical examinations, which were negative. At 20, weighing 90 kg (BMI 35.16 kg / m<sup>2</sup>), she underwent surgery for intragastric balloon (BIB). At 25, her weight reached 120 kg (BMI 46.88 kg / m<sup>2</sup>), following the pregnancy of her first daughter. Diabetes and musculoskeletal problems have been associated with obesity. In 2011 she underwent first BS. Following this intervention, the patient's weight dropped to 59 kg (BMI 23.05 kg / m<sup>2</sup>), but increased over the years to reach the current weight of 96 kg (BMI 37.5 kg / m<sup>2</sup>). The causes of the recovery of the bulimic behaviors to say of the patient are: the separation from the husband, the recovery of an unhealthy lifestyle, the intake of large quantities of beer and soft drinks, the no longer following the medical indications post -intervention. She also reports having had two panic attacks, with tachycardia and fear of dying. The first during a surgery that involved the older sister and the second during the birth of her first daughter.

During the specialized interviews, her appearance seems not very well taken care of. She has a collaborative attitude. She is lucid and well oriented. Language appears to be fluent and well-articulated. There are no disturbances of the form and content of thought. About affective-emotional modulation, the mood tone appears to be dysphoric with impulsive traits and difficulty in managing emotions: "I eat when I'm sad or angry". Food becomes a way to "anesthetize" negative emotions and manage moments of crisis. She reports that her social relationships are poor and that she does not like being in contact with others because of the low esteem she has of herself

and of her physical appearance. Family relationships are currently serene. Her perception of health is poor, "worse than a year ago", with limitations in physically demanding activities, reduction of time spent on activities of daily life and decline in concentration. It reports widespread osteoarticular pain due to its obesity.

*The patient was subjected to the administration of six investigative tools:*

- The D.F.U. - drawing of the human figure (Machover Test) a projective technique that evaluates the image of oneself, but also the global functioning of the personality<sup>(20)</sup>.

- The MMPI-2 (Minnesota Multiphasic Personality Inventory) questionnaire, a broad-spectrum test to evaluate the main structural, personality and emotional disorders<sup>(21)</sup>.

- The SCL-90 R (Symptom Checklist-90-R) questionnaire, an instrument used to assess the level of general distress and specific factors: somatization (SOM), obsessive symptoms (OBS), Depression (DEP), sensation of vulnerability (SENS), anxiety (ANX), hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PAR), psychoticism (PSY)<sup>(22)</sup>.

- The BDI-II (Beck depression Inventory 2) is a self-report tool that allows to assess the severity of depression in adult and adolescent patients, providing a total index of depressive reaction, a somatic-affective index (SAI) and a cognitive-depressive index (IC). A cut-off score of 14 (total index) has been confirmed to be differentiated between persons without or with a major depressive disorder<sup>(23)</sup>.

- The SF-36 (Short Forms Health Survey-36item) questionnaire that allows to assess the perception of the state of physical health (PHI: Physical health index, PF: Physical functioning, PR: Physical role, PP: Physical Pain), general health (GH: General Health, V: Vitality), Psychological-emotional health (MHI: Mental health index, SF: social functioning, ER: Emotional role, MH: Mental Health)<sup>(24)</sup>.

- EDI-2 (Eating Disorder Inventory 2), a tool for the self-assessment of symptoms commonly associated with anorexia and bulimia, in clinical and non-clinical patients. Divided into 11 subscales: Body dissatisfaction (BD), Ineffectiveness (I), Interocept awareness (IA), Drive to thinness (DT), Bulimia (B), perfectionism (P), Interpersonal distrust (ID), Maturity fears (MF), asceticism (A), impulsivity (I) and social insecurity (SI)<sup>(25,26)</sup>.

The outcome measures provided below refer to the woman presented in the case report.

Regarding the D.F.U. (figure 1) the arrangement of the drawing in the space shows an excessively filled

space, with a placement of the drawing upwards and to the left, indices of introversion and closure; the size and proportions of the figure large enough and in the norm, express a good capacity for perception and collocation of the ego (bodily, psychic, emotional, cognitive) in the environment, as well as a good sense of self that knows how to relate adequately with the others; The stroke is irregular, comes with scraps, blocks and breaks, at times it is wide and curved, in others it is tangled and nervous. It is a trait that belongs to an introverted person with considerable social anxiety, a high degree of emotionality, a psychological rigidity and hypercontrol. The first drawing made represents a female figure, a sign of a good sexual identification.

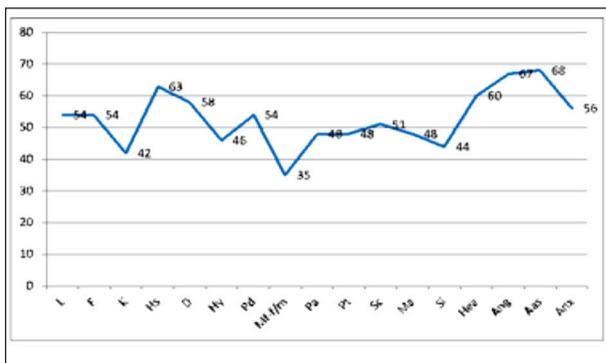


**Figure 1:** Drawing of the human figure (Machover Test).

In the drawing the large and marked mouth indicates altered relationship with food; the small neck indicates respiratory problems, confirmed by the patient's experience; the limbs drawn with insecure traits indicate difficulties in contact and fear towards the other. The depressive state, both in the affective and somato-cognitive component, is confirmed at the BDI-II (total index of depressive reaction = 25, index of somatic-affective symptomatology SAI = 17 and cognitive depressive index IC = 8).

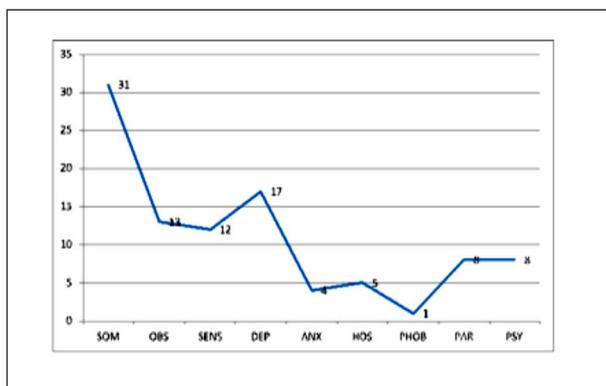
The SF-36 showed a poor perception of physical health (PHI = 38; GH = 35), in particular for the limitations due to physical functioning (PF = 60; PR = 0), for Physical pain (PP = 22), is a poor perception of a good mental health (MHI = 22), in particular for the limitations due to difficulties in the emotional role (ER = 0; MH = 20), in social functioning (SF = 37) and poor vitality (V = 35). The difficulty of managing one's emotions and the poor control of impulses are confirmed by the results of EDI-2, which specifically highlight the presence of body dissatisfaction (BD = 27), ineffectiveness (I = 13), interpersonal distrust (ID = 5), poor interocept awareness (IA = 3), drive to thinness (DT = 12), bulimia (B = 9).

Regarding MMPI-2, the validity of the protocol is confirmed by the scores obtained on the scales L (T = 54), F (T = 54), K (T = 42) which fall within the norm and show a good adaptation of the subject towards the test (balance between defensive attitude and openness). The averages of the T points (Moodlin profile) of the HS scales (T = 70), D (T = 58), HY (T = 46), PD (T = 52), PA (T = 48), PT (T = 52), SC (T = 50), MA (T = 51) are shown in Figure 2.



**Figure 2:** Results on MMPI-2 clinical scale.

**MMPI-2-** Minnesota Multiphasic Personality Inventory; **L-** Lie; **F-** Frequency; **K-** Correction; **HS-** Hypochondria; **D-** Depression; **HY-** Hysteria; **PD-** Psychopathic deviate; **MF-fm** - Masculinity-Femininity; **PA-** Paranoia; **PT** Psychastenia; **SC-** Schizophrenia; **MA-** Hypomania; **SI-** Social Introversion; **HEA-** Health Concerns; **ANG-** Anger; **AAS-** Addictions Acknowledgement Scale; **ANX-** Anxiety.



**Figure 3:** Results of SCL-90.

**SCL-90 R-** Symptom Checklist-90-R; **SOM-** somatization; **OBS-** obsessive symptoms; **DEP-** depression; **SENS-** sensation of vulnerability; **ANX-** anxiety; **HOS-** hostility; **PHOB-** phobic anxiety; **PAR-** paranoid ideation; **PSY-** psychoticism.

The FTI index score ( $0.99 < 1$ ) assumes a "poor" tolerance to frustration. The mood tone as shown in the thymus axis (D / Ma; 58/48) shows an accentuation of depressive behavior and attitudes, as reported during the interview. From the comparison Hy-Hs / Pa-Sc and the score in the Aas scale (T = 68) emerges the admission of dependency traits. The score on the Ang scale (T = 67) shows high rage.

From the Mf-f scale (T = 35) emerge predominantly female interests and insecurity traits. From the scales Hs (T = 63) and Hea (T = 60) there emerges a relative concern for the state of health, consistent with the general health problems related to obesity.

The questionnaire SCL-90 R confirms the presence of somatization (SOM = 31; 65%), depression (DEP = 17; 32%), sensation of vulnerability (SENS = 12; 33%), obsessive symptoms (OBS = 13; 31; %), anxiety (ANX = 4; 12%), hostility (HOS = 5; 22%) (Figure 3).

## Discussion and conclusion

Our study suggests that BS alone is not the best solution to treat morbid obesity in patients diagnosed with BED, as it is shown that disordered eating behavior persists in post-BS. To confirm this, recent literature has shown that subjects with BED, regardless of weight loss in the post-BS phase, show a state of psychophysical discomfort, if not treated with a psychotherapeutic intervention or of hereditary characteristics<sup>(38)</sup> or with the practice of motor activity<sup>(26)</sup>.

BS effectively reduces body weight and allows the treatment of metabolic diseases associated with obesity, however it is not sufficient to produce benefits for the maintenance of the mental health of the individual affected by BED<sup>(39)</sup>. Therefore, a multidisciplinary assessment of the individual is needed that includes psychological/psychiatric evaluation as well as clinical and nutritional assessment, an essential step to consider BS as a treatment<sup>(40)</sup>.

In summary, adequate preoperative treatment and postoperative psychotherapeutic support should be provided to increase the long-term success of BS and reduce the risk of complications.

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#### List of abbreviations

*BED*: Binge Eating Disorder; *BMI*: body mass index; *OSA*: obstructive sleep apnea; *BS*: bariatric surgery; *ADHD*: attention deficit and hyperactivity; *BIB*: intragastric balloon; *D.F.U.*: drawing of the human figure; *MMPI-2* : Minnesota Multiphasic Personality Inventory; *SCL-90 R* : Symptom Checklist-90R; *BDI-II* : Beck depression Inventory 2; *SAI*: somatic-affective index; *ICI*: cognitive-depressive index; *SF-36*: Short Forms Health Survey-36item; *PHI*: Physical health index; *PF*: Physical functioning; *PR* : Physical role; *PP*: Physical Pain; *GH*: General Health; *V*: Vitality; *MHI*: Mental health index; *SF*: social functioning; *ER*: Emotional role; *MH* : Mental Health *EDI-2*: Eating Disorder Inventory 2; *BD*: Body dissatisfaction; *I*: Ineffectiveness; *IA*: Interocept awareness; *DT*: Drive to thinness; *B*: Bulimia; *P*: perfectionism; *ID*: Interpersonal distrust; *MF*: Maturity fears; *A*: asceticism; *I*: impulsivity; *SI*: social insecurity; *L*: Lie; *F*: Frequency; *K*: Correction; *HS*: Hypochondria; *D*: Depression; *HY*: Hysteria; *PD*: Psychopathic deviate; *MF-f/m* : Masculinity-Femminility; *PA*: Paranoia; *PT* Psychastenia; *SC*: Schizophrenia; *MA*: Hypomania; *SI*: Social Introversion; *HEA* : Health Concerns; *ANG*: Anger; *AAS*: Addictions Acknowledgement Scale; *ANX*: Anxiety; *SOM*: somatization; *OBS*: obsessive symptoms; *DEP*: depression; *SENS*: sensation of vulnerability; *ANX*: anxiety; *HOS*: hostility; *PHOB*: phobic anxiety; *PAR*: paranoid ideation; *PSY*: psychoticism.

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