

## Case Report

# Eating Behavior Pre and Post Bariatric Surgery: Two Case Studies

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**Abstract**

The aim of this study was to report two case studies with diagnosis of binge eating disorder (BED) pre bariatric surgery (BS). For this study two cases under gastric bypass surgery who met BED criteria were selected from a broader research. Patients signed an informed consent and were assessed with the diagnostic interview for eating disorders. Patients reported that during their childhood both were thin, they also used to played football, experienced body dissatisfaction, did not exercise constantly because of their body weight and both have involved in different dieting methods but all these strategies have worked temporarily, because they have gained more weight than they lose; even one of them was underwent gastric balloon procedure before BS. Thirty days post-BS, patients reached a weight-reduction range between 16 and 25 kg; However, three weeks post-BS, when postoperative dieting should be bland, both patients reported consuming solid and hypercaloric foods in response to stressful events. The BS leads to a significant body-weight reduction since the first month, however, even though the amount and frequency of food consumption of post-BS patients did not meet the binge eating criteria (DSM-5), there is evidence of loss of control over eating, since the amount and quality ingested was higher than the recommended. We conclude that despite the digestive anatomical modification of the BS, the abnormal eating behavior remains. However, it will be necessary to evaluate these patients in long-term follow-up to corroborate these findings and to determine feeding intervention pre-BS.

**INTRODUCTION**

Currently, it is more common to hear about bariatric surgery (BS) or also identified as surgery for obesity, since it has been positioned as the only effective treatment for morbid obesity. This procedure is indicated in patients with type III obesity (body mass index [BMI  $\geq 40$ ]), recurrent unsuccessful attempts to reduce weight, and important comorbidity [1-3]. Besides, it is worth mentioning that, BS is a therapeutic intervention, not an aesthetic strategy, because it involves changes in the functional anatomy of digestive system [1,4,5]. BS includes three different types of procedures: restrictive (reduced stomach capacity); absorptive (inducing malabsorption of food); or mixed (combination of the last two methods). Specifically, in the mixed procedure one technique has gained popularity "the gastric bypass", which consists of reducing gastric capacity and shorten

the length of intestines, reconnected with a bypass, leading to a significant weight loss. So it is a permanent surgical treatment that must be followed by a lifetime change in feeding habits; specifically eating small portions and consuming low-fat food to counteract malabsorption [6-8].

In general, results according to weight reduction post-BS indicate that it is an appropriate strategy for people with type III obesity; however up to 60% of cases does not reach the expected weight reduction [9-13]. In this regard, it has been hypothesized that one of the factors that may be affecting the weight reduction is the presence of binge eating disorder (BED), which is characterized by the presence of at least one binge episode per week in the last three months, with no recurrent compensatory behaviors (self-induced vomiting, use of laxatives/diuretics, exercising, etc.) [14]. Clearly the criteria of this disorder impact

the body weight, so a psychological intervention aimed to eating behaviors before BS may improve outcomes of weight reduction.

Some researchers found that BS diminish the frequency and the amount of food intake in a binge eating episode, suggesting an improved in the eating behavior [15-17], from our point of view, this could be due to the lack of gastric capacity. Besides it is worth to remember that BED is a bio-psycho-social disorder and the BS only addresses the biological dimension not the psycho-social. Contrary, other papers have reported that the surgery could trigger the binge eating behavior [18], in this case we assume that one reason might be that the disorder diagnosis prior surgery was not well identified. Most of these findings 15-20 have evaluated disordered eating behavior with a larger sample; nevertheless it is necessary to analyze specific cases diagnosed with BED since a clinical perspective is as relevant as the statistical one [15-20].

There are two methodological approaches for researching: one of them is the nomothetic which create laws or logical theories to explain the phenomena objectively, this route regularly is utilized for group analysis; this method is relevant to characterize populations and generalize findings; the second approach is the idiographic, which applies the laws or theories derived from the nomothetic and helps to understand, describe, explain or predict a phenomena considering the individual lives' experiences [21,22]. In this manner, an idiographic approach provides a greater understanding and deepening of the eating behavior, not only from a biological dimension of the human being, but also about the mental and social health. Thus the aim of this paper was to report the case study of two male patients with BED pre-BS and to describe their eating behavior post-BS.

## METHOD

This paper was part of a broader investigation –with a pre-experimental-longitudinal design and prospective study– which general objective was to derive an anthropometric and psychological profile of BS candidates and to assess post-BS changes [23]. The Research and Ethics Committees of each Health Institution approved the research protocol for this investigation. Therefore, in compliance with the norms for patients' treatment, there is the obligation to notify, –when were the case– the presence of any eating disorder, not only to the patient but also to the physician in charge (bariatric surgeon), to referred the patient to specialization care.

Specifically for this case report, from a total sample of 45 patients evaluated, were selected for convenience two patients, the reason for selecting them was that both cases met the diagnosis for BED according to the Diagnostic and Statistical Manual version 5 (DSM-5, APA, 2013) [14]. Both patients underwent gastric bypass surgery in a public tertiary care hospital located at the Metropolitan Area of Mexico City. To protect the identity of patients they will be identified as Pepe (Case 1) and Luis (Case 2).

## Assessment Strategies

After signing informed consent format, patients filled out a general data sheet in which demographic data were collected. They were asked about personal and familial history of disease (including obesity), as well as patient history regarding obesity treatments. Subsequently, patients were interviewed with the

Interview for Diagnosis of Eating Disorders version IV (IDED-IV) [24]; this is a semi-structured interview developed with the purpose to check compliance with the signs and symptoms of eating disorders, and to formulate the diagnosis of anorexia nervosa, bulimia nervosa and BED. The authors reported a good validity of the IDED-IV, by diagnostic agreement between judges ( $Kappa = .86$ ). However, it should be noted that the IDED-IV format utilized in this research, corresponds to the one adapted for Mexican population by the Eating Disorders Laboratory UNAM, Facultad de Estudios Superiores Iztacala, which includes a reminder food intake format from three to five days.

## CASES PRESENTATION

### Case 1 (Pepe)

Pepe was interviewed 30 days after BS; therefore in this case, the diagnosis of pre-surgical BED was formulated retrospectively. This patient is male, he is 32 years old, he is married, father of one son (one year old), he is a government employee and he has a Bachelor's degree. According to his medical records, he has not medical comorbidity associated with obesity, his body weight (pre-BS) was 130 kg (286 lb), and his height was 1.69m with a BMI = 52, this last indicator placed him in the category of morbid obesity according to the World Health Organization (WHO) [25] or in super obesity category according to the American Society of Metabolic and Bariatric Surgery (ASMBS) [26]. Pepe reports that until he turned five years old, he was very thin, but after that, he started playing football and began a history of dieting. He points out that their parents used to care about his feeding, providing him a high protein dieting with low-calorie food; however –hidden from his parents–, his grandparents used to give him biscuits, bread, pasta, soda, candies, etc. When he turned 10 years old, he stopped playing football and as a result, he started to gain weight. He explains *"maybe because I could eat whatever I wanted"*; he is aware that his obesity condition emerged when he was 15 years old, since that time and for the next 13 years he started to prove several strategies to lose weight. On this manner when he was 28 years old, he underwent to a process of intragastric balloon (for eight months), he got married during this process. However once it was removed the balloon, Pepe refers *"I gained more weight than I had lost...after that, with marriage and job responsibilities, my weight was increasing"*. Therefore, he continued practicing different diets (mostly self-prescribed), repeatedly accompanied by weight loss pills (he did not specified the trade name or the active component, only referred to them as "pills to reduce appetite"). He reported that his maximum weight reached was 130kg (286 lb). Regarding his body image, he describes that constantly was concern about his body shape and weight, avoiding sometimes attend social events, because *"I was frustrated with my weight"*; even he believes that this has been one of the main aspects that at some point have affected his psychological adjustment.

## CLINICAL CASE FORMULATION

### Eating behavior pre-BS

Regarding his eating behavior, Pepe reported that before BS (approximately during the last eight years), he used to overeat at least once a week; he did not avoid any food because *"food*

is delicious"; in his house he did not eat in secret, stressing "In my house, I am the boss"; he did not fast, "because I could not go for long periods without eating" and also "job worries and responsibilities make me eat more"; regularly he used to increase his food intake at evenings or before going to sleep (7:00-10:00 pm); and he recalled that during these eight years, only once he woke up at night to eat. In general, he said that he could not eat little, since "I always end up eating a lot, even after I have overeaten", questioning himself several times "why do I still want to eat more?" He notes have been on many diets but always interrupt them, and he specifies: "I break them because I usually was hungry"; also he pointed out that several times he started to exercise, but he suspend it after a short time, "because he saw no results".

With the meal reminder –including the IDED-IV–, it was identified that Pepe used to eat everyday an excessive amount of food (overeating) and, once a week he experienced an episode of binge eating (e.g., in one sitting he ate 1 kg of meat, 1 kg of tortillas, 3 bowls of clear soup, 1 bowl of nopals, 2 avocados, 2 liters of soda and 6 regular cookies). It is worth mentioning that during these eating episodes he experienced loss of control (eat rapidly, without hungry, and continue eating even when he was uncomfortably full, among other features), thus amount and frequency denoted the presence of BED.

### Post-BS weight changes and expectations

At the time of the interview (30 days post-BS), Pepe weighed 114 kg (251 lb), representing 12.3% of loss from initial weight and a BMI = 40, 12 units less than pre-surgical, placing him at the lower limit of morbid obesity category (BMI = 52 versus 40). In this regard, Pepe reported having high expectations on BS outcomes, because "I wish I could reduce more kilos, I would like to weight among 70 to 80kg (153 to 176 lb)". Further, he considered that BS will improve his quality of life and will prevent future health problems. Nevertheless at the same time, he thought that having undergone BS was "something extreme" explaining: "this shows my inability to control my own body weight". He commented that in his workplace he will keep in secret the BS procedure, "because I do not like criticism," but one month after surgical intervention he reported to be very happy, since he never has lost so many kilos in very short time. He adds that now he receives compliments from his co-workers because of his weight reduction and his "new appearance".

### Eating behavior post-BS

It is important to emphasize that, thirty days post-BS Pepe has not presented an episode of binge eating but Pepe said that after surgery, he acquired a new habit: to chew ice cubes "I have the feeling that I am eating something solid, thus I avoid thinking of food, at least briefly". In addition, the patient reports that three weeks post-BS, he got a new job offer which meant better pay, but also more responsibilities; he felt very upset with this situation "...the whole time I was thinking about food", and he describes "One day, after work, I went to my mother's house to pick up my son, but was no one at home, and while I was waiting for them, I ate two pieces of roasted chicken (leg and thigh), a piece of bread, some salad and one can of soda...but I felt nausea and stopped eating, although I wanted to keep eating". Pepe decided to reject the job

offering arguing, "I want to study a Master's degree, enjoy my boy and continue with my new lifestyle and new feeding program". Objectively the patient does not meet with the frequency and the amount of food required for a diagnosis of binge eating behavior due to the lack of physical capacity. However cognitively there is evidence that the patient still use "the food" (included ice cubes) as an emotional response which is a clinically relevant aspect for the diagnosis of BED. It is worth to remind that BED is characterized not only by behaviors but also by cognitions around the food. In addition, he recognized (as the first time in about eight years) that he has a problem and needs psychological help. This case was sent for specialty care.

### Case 2 (Luis)

Luis was prospectively interviewed 14 days pre BS, so he was diagnosed with BED pre-surgically. Luis is a 36-years old man, he is married, he has a four-year daughter, he is a government employee and he counts with a Bachelor's degree. His weight recorded *in situ* was 179 kg (394.6 lb) with a BMI = 52, corresponding to the category of morbid obesity or super obesity [26]. Luis has several medical comorbidities associated with obesity, such as hypertension, type 2 diabetes, high uric acid, dyslipidemia, history of cerebral thrombosis, sleep apnea (at times during the interview, he fell asleep), among others; therefore, he is under pharmacological treatment for these diseases. He describes that until he turned 10 years he was very thin, when he was 16 years he started to perform sport activities (weight training and playing basketball), when he turned 19 played football and, reached a weight of 120 kg (264 lb). Then, at the end of his Bachelor's, he stopped playing football (because of an injured knee ligament) and, in general, stopped exercising; in addition, he started "a life of excess: food, alcohol and nightclubs" and his body weight increased to 150 kg (330.6 lb). Therefore, during the next two years, Luis treated by several methods to lose weight, using strategies ranging from supervised dieting to those related with alternative medicine (e.g., acupuncture) and use of some drugs (he did not specified the trade name or the active component). He explains: "At some point I lost 20 kg, but...when suspending treatment, I return to the same weight...or even more. And now although I would like to try a new dieting, my hunger simply will not let me, and I cannot work out because of my weight". Finally, regarding his body image, Luis says that although he poorly accepts his body shape, and avoid wearing tight clothing in certain situations where people can see his body (e.g., a swimming pools), he does not think his body shape is an important factor in his daily live. However, Luis refers "my body weight led me to have a sad life, since I cannot walk more than 50 meters because I get tired...and I know that people make fun of me because of my weight"; "also there is no public transportation for people like me...so I bought a Van to move...although I know that, I am putting my life at risk and of others...because of my sleep apnea".

### Eating behavior pre-BS

Luis reported about their eating habits before the BS, that approximately seven years ago, he overeat at least twice a week, and does not avoid any food; adding, "I usually ate so fast that I have not realized the amount of food I had eaten". Further he stress that thinking about work responsibilities, induce him to



overeating, but in general, Luis believes that he “just eats a lot”. Based on the meal remainder, it was identified the presence of binge eating, for example, at night during a T.V. program lasting 30 minutes and when his wife was already in bed, he ate 3 hamburgers or 3 sandwiches, a chips’ bag of 297 gm, 3 liters of soda, 2 cupcakes and some candies, he used to have this behavior three times per week with loss of control (i.e., cannot stop to eat and he eats quickly). He explains never have risen from bed at night to eat, and only once, he engaged in self-induced vomiting. He said that he is not dieting anymore because this method does not work for him; on the contrary, he gains more weight. However, he reports having fast during the last weeks, sometimes up to 12 hours, for controlling his weight, and he can do so three or four days during the week, but he specify that this behavior does not occur in consecutive weeks. The frequency, amount of food intake and behaviors around of episodes allowed us to diagnoses the BED [14].

### Weight post-BS, changes and expectations

At the second interview, a month post-BS, Luis weighed 153 kg (14.5% less than his initial weight), with a BMI = 43.8, representing 8.4 units less than pre-surgical phase and reaching the lower limit of the morbid obesity category. In this regard, Luis says that has improved their sleep apnea problem and stopped taking medication for glucose, blood pressure and uric acid, this despite the prescription that he should still take them. Although Luis says that he is happy and feels more energetic, he also says: “I would like to weight 100 kilos, because I think that if I lose more weight...I will look weird...because of my height” (height =1.81m). He also said that losing body weight, he would sleep well, feel rested and be able to stop taking so many drugs. Finally, for family life, he mentioned that his weight limits him to play with her daughter, but “I think that the BS can improve my quality of life and the relationship with my daughter”.

### Eating behavior post-BS

Thirty days after BS, Luis said that he cannot get used to eat little, and sometimes he wants “to eat a lot” as he did before surgery. He narrates that two weeks post-BS with lack of control (cannot stop to eat) he ate roasted chicken (an entire breast), four tortillas and one can soda; over the third week, he ate three beef tacos, one can soda and half of a cucumber; finally one day before the interview he ate a tamale, a quesadilla and an entire bag of light popcorn, arguing “being fanciful”. This amount of food does not represent an objective binge eating but considering the gastric reduction, it could be identified as a disordered eating behavior. Also, Luis says he has discovered that eating fatty foods cause him nausea and stomach ache, so sometimes suspends this kind of food, but other times “I can tolerate the discomfort to keep eating”. This behavior denotes his inability to control his feeding even when he experiences discomfort, suggesting the presence of a stressor or emotional factor linked to his eating pattern that was not clearly identified at that moment. Also he explains that now he chews food more times before the BS “I do it to digest better and feel less discomfort” and he learned to identify when his glucose level gets high “I feel sleepy, and that means it is time to take my glucose pill”.

## DISCUSSION

In this study, were reported two cases of patients with pre-surgical diagnosis of BED and their eating behavior post-BS. It was identified that both patients have chronic BED (seven to eight years of history with the disorder), this may explain why patients do not consider their excessive food intake as abnormal and therefore in these cases the BED diagnosis could be a maintainer factor for morbid obesity or super obesity, thus it can be understood that only with BS is possible the weight reduction that is not achieved with conventional diets. However, as noted above, the modification of the digestive system as a result of gastric bypass involves a permanent reduction in food consumption [6-8], so it was important to observe eating behavior post-BS of these patients. It is worth to emphasize that peri and post-surgical dieting begins consuming only clear liquids (first week), followed by pureed foods (second week), then soft foods (third week) and finally on the eighth week, start with solid foods but in small quantities (regarding to the consumption of any other healthy adult), since this new habits must be maintained for the rest of their lives. Also, in the two cases analyzed was identified a large amount of food intake considering the reduced gastric capacity also the loss of control over eating, both aspects are clinically relevant because these appeared since the third postoperative week. This abnormal eating behavior could arose in response to stressful events, in which solid food intake was disproportionate not only for the amount recommended post-BS (much higher), but also for the nutritional quality, being totally contrary to the commonly prescribed (high-calorie; high-fat and sugar). Therefore, in the two patients assessed was not observed the findings reported by some authors [27,28] regarding post-surgery patients, in which it is stressed that given their history of failed attempts to reduce body weight and extreme fear to recover it, they often prolong soft dieting or restrict even more their already limited dieting. It should also be noted that although the frequency and amount of food eaten post-surgery by both patients, did not denoted the presence of binge eating behavior neither the persistence of BED, both patients development disordered eating behaviors. In this regard, some authors have warned that after BS it is morpho-physiologically impossible to perform an objective binge (eat an excessive amount of food), dismissing the behavior which better defines the presence of binge eating [25]; this situation, as some researchers warn, may lead to an underestimation of the presence of BED among patients with obesity who have been undergone to BS. Contrarily, it has been documented that loss of control over food intake may persist after the BS [28-30]; this fact was confirmed in the current study.

The findings of this case studies are paradoxical, since it appears that surgery improves the disordered eating behavior (e.g., less frequency and less amount of food eaten), as have been statement by some researchers [15-17]. Nonetheless, based in two clinical facts: 1) anatomical gastric restriction; 2) food restriction inherent to BS, we rejected the improvement; at least it is not applicable in morbidly obese patients diagnosed with BED here presented. Thus, in patients with this profile, it is required to redefine not only the parameter about excessive amount of food in the post-surgical phase, but also it is important to stand out the clinical relevance of both, the quality of food

eaten and the loss of control over eating. Consistent with this, it is necessary to consider two aspects: 1) the patients with a chronic history of BED in whom dieting has not worked; 2) patients must have a food restriction peri and post-BS. Hence, these two aspects can re-trigger the adoption of atypical eating patterns in patients with BED. In the eating disorder field is well known that a period of restrictive diet is a precipitant factor important of binge eating, thus a combination of physical and psychological conditions (restriction and preoccupations about food) may raise the loss of control [31-34].

The two cases presented in this study developed post-BS atypical eating behaviors, for instance, one of the patients reported the new habit of chewing ice cubes to feel that he is consuming solid foods; while the other patient reported having acquired the habit of chewing foods longer than he did before the BS. These data confirm the basic precept that the study of eating behavior cannot refer to the mere act of food intake, but also their approach should be broad enough to allow the analysis of the functional significance of certain behaviors [35], and particularly when this implies the interaction of emotion regulation and body weight.

As we mentioned in the introduction to our knowledge, only a psychological treatment could help in the remission of BED or its symptoms, in this regard, even though there are several psychological treatments for eating disorders [36], it has proven the effectiveness of cognitive behavioral therapy (CBT) on the symptoms of BED and the psychopathology associated as well, in over 50% of the cases, because this psychological treatment include self-monitoring, stimulus control, solving problem, cognitive restructuring, among others techniques, all of them useful in the treatment of disordered eating behavior. Based on the findings of this study, it is worth taking into account the recommendation of the ASMBS [26] to perform pre and post psychological evaluation/intervention that include a multidisciplinary approach to treat the BED or its symptoms. In the specific case of Mexico it is imperative to take these recommendations strictly in the daily practice with BED patients candidates to BS, since these will impact positively in the cost-benefit of this type of intervention [37,38].

Some limitations are highlighted in this study: 1) in the first case study the diagnosis of BED was retrospective; 2) the two case studies were only with men; 3) the evaluation post-BS was in a short period (30 days); 4) the surgical technique in both cases was gastric bypass; 5) the emotional triggers of binge eating were not explored in depth. Future research should conduct prospective studies, including women, to consider longer periods of follow-up and to compare findings with other surgical techniques. Therefore, it is imminent that future research should deepen the characterization of eating behavior pre and post-surgical of patients with morbid obesity, identifying those factors that promote an adjustment of the patient to his/her new lifestyle, and those other factors on the contrary, that may affect or diminish psychological adjustment.

## CONCLUSION

Although there is a statistically large evidence about the effectiveness of BS in terms of weight reduction, in general it is

insufficient the knowledge about its effects on eating behavior; this situation is particularly relevant in patients with a pre-surgical diagnosis of BED, because in this case report was demonstrated that BS does not improve disordered eating behaviors, since in a short time post-BS (30 days), the patients ate forbidden food (in quality and amount), they continued presenting the loss of control over food, and both patients developed new atypical eating patterns. These findings are clinically important, because suggest that the disordered eating behavior post-BS, may affect the weight reduction at medium and long term. Finally it is noted that, the regulation of the procedures to manage morbid obesity such as it is the BS, in patients with BED should include obligatorily both, the assessment and intervention of psychological issues, such as disordered eating behaviors or eating disorders. This should be imperative in the selection criteria of BS candidates as well as in the follow-up, aiming to contribute to a greater effectiveness of treatments addressing the current main health problem in society: The obesity.

The two main contributions of this paper are: 1) BS by itself (biological dimension) is not the best solution to treat morbid obesity in patients diagnosed with BED (psycho-social dimension), since there is evidence that disordered eating behavior remained post-BS; 2) the case studies are relevant to continue studying the effects of BS, since these provide information more detailed by the patients which help to understand and supplement theories.

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