

The Emergence of Eating Pathology after Bariatric Surgery: A Rare Outcome with Important Clinical Implications

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ABSTRACT

Objective: The present review examines the extant literature regarding the post-operative development of eating disorders (e.g., EDNOS) in bariatric surgery patients.

Method: Internet, PsycINFO, Pubmed, and reference lists were examined to aggregate and compare literature from January 1985 to May 2010.

Results: Several case studies and case series have investigated the emergence of eating disorders after bariatric surgery. Clinical considerations are outlined.

Discussion: The development of classical eating disorders after bariatric surgery

appears to be a rare occurrence; however, eating problems are far more common. Unfortunately no typology exists to classify such eating problems. Future research should examine the incidence, risk factors, symptomatology, course, and outcome of such eating disorders and eating problems. It is highly likely that such problems are underreported.
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Keywords: bariatric surgery; postoperative outcomes

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Introduction

Bariatric surgeries have become increasingly common procedures in the United States with the rate increasing significantly from 7.0 per 100,000 patients in 1998 to 38.6 per 100,000 patients in 2002,¹ although there is some evidence that this increase may have plateaued.² In 2004, the Consensus Panel of the American Society for Metabolic and Bariatric Surgery (ASMBS) suggested, “Bariatric surgery is the most effective therapy available for morbid obesity and can result in improvement or complete resolution of obesity comorbidities”³ and this statement is supported by much research in the area.^{4,5}

Since the 1970s, research has examined the existence of eating pathology in bariatric surgery patients both before and after surgery. Several articles have examined the relationship between eating pathology such as night-eating syndrome (NES) and binge eating disorder (BED) in bariatric

surgery patients.^{6–8} A limited but growing number of articles and case studies have also addressed the unexpected emergence of classical clinical eating disorders (anorexia nervosa [AN], bulimia nervosa [BN], and eating disorder not otherwise specified [EDNOS]) and related subsyndromal eating pathology after weight-loss surgery. Although this research literature is limited, the current article reviews the available literature on this phenomenon, discusses problems in studying eating disorders in postbariatric surgery patients, and delineates future research needs in the study of eating disturbances after bariatric surgery.

Method

Internet, PsychINFO, Pubmed, and the reference lists of the articles obtained were searched for the period from January 1985 to May 2010. Search terms included: bariatric surgery, bariatric surgery outcomes, eating disorders and bariatric surgery, and binge eating and bariatric surgery.

Results

Table 1 summarizes the essential features of the available case studies and series. The case reports present a heterogeneous group of patients in terms of age, history, and bariatric procedure.^{9–23} Many of

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TABLE 1. Characteristics of bariatric surgery patients in case studies of eating disorders

| Authors | Location | Demographic Information | Type of Surgery | Pre-Surgery BMI (kg m ⁻²) | Lowest Post Surgical BMI (kg m ⁻²) | ED-Related Behaviors |
|---|---|---|---|---------------------------------------|--|--|
| Shamblin et al. (1984) ⁹ Mitchell (1985) ¹⁰ | United States United States | * 41 y. o. Female | Gastroplasty Surgery Gastric Stapling | * * | * * | Bulimia nervosa Binge eating 1,000 to 4,000 calories, self-induced vomiting |
| Thompson et al. (1985) ¹¹ Ringel (1987) ¹² | United States United States | 37 y. o. Female 40 y.o. Female | Gastroplasty Surgery Gastroplasty Surgery | 31 * | 17 * | Binge eating, self-induced vomiting Bulimia nervosa |
| Viens and Hranchuk (1992) ¹³ Bonne et al. (1996) ¹⁴ | Ottawa, Canada Jerusalem, Israel | 35 y. o. Female 27 y. o. Male | Gastrorectomy Vertical Banded Gastroplasty | * 47 | * "15% below normal standards" | Binge eating, self-induced vomiting Eating 400 Calories/day |
| Bonne et al. (1996) ¹⁴ | Jerusalem, Israel | 19 y. o. Male | Vertical Banded Gastroplasty | 45 | 62* | Eating 300 Calories/day, vomiting |
| Atchison et al. (1998) ¹⁵ Atchison et al. (1998) ¹⁵ | South Australia South Australia | 44 y. o. Female 53 y. o. Female | Gastric Bypass Gastric Bypass | * * | 19 15 | Laxative use, self-induced vomiting Excessive exercise, laxative use, vomiting, restricted categories of food |
| Scioscia et al. (1999) ¹⁶ Counts (2001) ¹⁷ | United States United States | 38 y. o. Female 39 y. o. Male w/ Prader-Willi Syndrome | Gastric Bypass Gastric Bypass | 56 27.8 | 16.2 17.4 | Avoided eating, preoccupation with weight, self-induced vomiting Avoiding foods high in carbohydrates and/or calories |
| Guisado et al. (2002) ¹⁸ | Madrid, Spain | 32 y. o. Female | Vertical Banded Gastroplasty | 43.0 | 24.2 | Self-induced vomiting, diuretic use |
| Deitel (2002) ¹⁹ Deitel (2002) ¹⁹ Cordás et al. (2004) ²⁰ | Toronto Toronto | * * | Gastric Bypass Gastric Bypass Gastric Banding | * * * | * * 26.4 | Refusal to eat Refusal to eat Anorexia nervosa symptoms "without low weight" |
| Segal et al. (2004) ²¹ Segal et al. (2004) ²¹ | Sao Paulo, Brazil Sao Paulo, Brazil | 42 y. o. Female 41 y. o. Female | Gastric Bypass Gastric Bypass Gastric Bypass | 48 52 | 24 20 | Refusal to eat, body image distortion Refusal to eat, self-induced vomiting, body image distortion |
| Segal et al. (2004) ²¹ Segal et al. (2004) ²¹ Segal et al. (2004) ²¹ | Sao Paulo, Brazil Sao Paulo, Brazil Sao Paulo, Brazil | 44 y. o. Female 42 y. o. Female 51 y. o. Female | Gastric Bypass Gastric Bypass Gastric Bypass | 48 57 46 | 24 30 30 | Refusal to eat, self-induced vomiting Refusal to eat, self-induced vomiting Self-induced vomiting |
| Taylor and Sharma (2006) ²² de Zwaan and Mühlhans (2007) ²³ | Hamilton, Canada Nürnberg, Germany | 25 y. o. Female 43 y.o. female | Gastric Band Gastric Banding | * * | * 18.4 | Bulimia nervosa with self band adjustment Bulimia nervosa |

* information not presented by author(s).

the cases involved self-induced vomiting. However, abuse of laxatives, fasting, and specific food restriction were reported by some patients,^{16,18} while other authors suggested preoccupation with continued weight loss, fear of the surgery failing, and dissatisfaction with body-image secondary to hanging skin as contributing to the eating disorder after surgery.^{12,14,17} Additionally, the reinforcing effects of weight loss after surgery and the continued efforts to maintain weight loss may escalate to include compensatory behaviors.¹⁹

Examples of the variability in these cases are provided in two case studies. Mitchell¹⁰ and Thompson et al.¹¹ reported cases of BN occurring post-bariatric surgery. Mitchell¹⁰ reported a 41-year-old woman who underwent gastric stapling and experienced considerable involuntary postoperative vomiting, and, eventually, began vomiting after engaging in eating binges on high fat and high carbohydrate foods, with a per binge calorie count between 1,000 and 4,000 calories. Thompson et al.¹¹ treated a 37-year-old woman who began to experience nausea and vomiting 2 months after surgery. She subsequently began to self-induce vomiting after subjective binge eating episodes or after ingesting high calorie and/or high carbohydrate foods. Unlike the vomiting after high-calorie food intake that Mitchell¹⁰ had reported, this patient reported uncontrollable vomiting after eating foods such as vegetables and meat and reported this was due more to the texture of the foods. In short, the variability in the cases is perhaps the most striking finding.

One of the most interesting cases is that of the 25-year-old woman reported by Taylor and Sharma.²² This patient had a long history of bulimia nervosa, and learned to self-adjust the band to permit binge eating after surgery.

Potential Contribution of Surgical Procedures to Eating Disorders

The American Society of Metabolic and Bariatric Surgery (ASMBS)²⁴ identified two major classes of weight loss surgery: (1) malabsorptive procedures, which limit the absorption of calories as well as important nutrients and proteins; and (2) restrictive procedures, which reduce gastric volume, thus limiting the amount of food that can be eaten. Some bariatric surgery procedures act through only one of these mechanisms (e.g., gastric banding) while other bariatric procedures act through malabsorption and restriction in concert (e.g., Roux-en-Y Gastric Bypass; RYGBP). Research over the last decade has also made it clear that with certain procedures

such as the RYGBP, changes in hormonal regulatory systems, including Glucagon-Like Peptide 1 (GLP-1), Peptide YY (PYY₃₋₃₆), and Ghrelin markedly alter hunger and satiety.^{25,26} Such changes represent important mediators of subsequent weight loss.

Nutrient deficits, specialized diets, and medical complications that may mimic eating disorder behavior or symptoms (e.g., purging, constipation, and decreased appetite) are often seen following these procedures, making the distinction between eating disorder and postsurgical sequelae at times unclear.^{27,28} Other postoperative symptoms of weight loss surgery (e.g., “plugging,” dumping, dysphagia, or constipation) may lead patients to engage in compensatory or restrictive behaviors to compensate for the uncomfortable feeling of having overeaten or having consumed foods that are difficult to tolerate after surgery.²⁹ Indeed it is difficult to distinguish between eating pathology and normal eating after bariatric surgery since many changes in eating are necessitated by the surgery. For example, routinely patients are instructed to limit meal size, to chew food extensively and to develop other eating patterns that could be regarded as ritualistic.²⁹ In examining such behaviors, one often must examine motivation, and in particular examine if the behaviors result from concerns about weight and shape.

Binge Eating Behavior

Available studies have found a great deal of variability in the prevalence of binge-eating behavior and BED prior to surgery, partly owing to the definitions used and the nature of the instruments utilized, with a range from 2 to 49%.^{30,31} Reviewing the literature on postoperative binge eating is difficult to do systematically because of the nature of the various bariatric surgery procedures. Niego et al.³⁰ reviewed the literature on binge eating among postbariatric surgery patients but the authors did not attempt a meta-analysis because the criteria used to assess binge eating and binge eating disorder were widely varied as well as the assessment instruments used in the assessments. The authors emphasized that there is confusion about the incidence and prevalence of binge eating in the bariatric population due to the fact that some studies used DSM-IV criteria and other studies used modified criteria, such as the existence of a subjective binge eating episode (a sense of “lack of control”; LOC), with the exclusion of the criterion that an abnormally large amount of food needs to be ingested, since the size of the gastric pouch after surgery limits the amount of food patients can eat and complicates assessment of

what is considered a large amount of food.³² Without a more appropriately operationalized definition of “binge eating,” assessing its presence is difficult, although the term LOC eating appears to be gaining favor. Overall, the available studies suggest high rates of subjective binge eating or loss of control eating in those populations.^{6,28,29,32–34}

Some have suggested that binge eating behavior may manifest itself postoperatively as grazing (i.e., continual ingestion of small amounts of food over extended times with feelings of loss of control) among postoperative bariatric surgery patients.³⁵ While this assertion is useful in generating hypotheses about future analyses of eating behavior in bariatric surgery patients, it has not been empirically examined. Developing a definition with more emphasis placed on patients’ reports of LOC or deviation from the prescribed density or type of food recommended by their physician may be an important consideration.

Vomiting Behavior

Literature has suggested that postoperative patients may develop vomiting.^{36–38} However, vomiting behavior may be used as a means to reduce discomfort from plugging symptoms that occur after eating newly indigestible foods. Conversely, vomiting may be used as a means to accelerate or maintain weight loss²⁹ and anecdotally has been encouraged by some surgeons. de Zwaan et al.²⁹ recently reported that vomiting was reported by more than 60% of a sample postoperatively, but only 12% admitted to vomiting with a clear goal of influencing shape and weight, which was very carefully assessed using various probes. Therefore such behavior appears to occur, but apparently in a minority of patients.

Predictive Value of Preoperative Eating Disorders and General Psychopathology

In the majority of centers performing bariatric surgeries, preoperative psychological evaluations are required before patients are allowed to undergo surgery.³⁹ It is presumed that healthy presurgical psychological functioning may prevent negative postoperative outcomes³; however, the predictive validity of psychopathology leading to untoward outcomes of bariatric surgery has been variable and a subject of much debate.^{40,41} Preliminary evidence suggests that patients who are diagnosed with certain kinds of eating problems after surgery are more likely to regain weight than those diagnosed with an eating disorder before surgery who do not redevelop the problems postoperatively,⁴² although a preoperative problem with binge eating

clearly does not preordain such an outcome.²⁹ However, evidence suggests that participants who develop binge eating or LOC eating after surgery appear to lose more weight or to regain more weight than those without this problem.^{29,34,37,40,43} Such symptoms also appear to be associated with vomiting for weight-related reasons and with more pathological score on measure of eating disorders and generally psychopathology.²⁹

Plugging and dumping are also frequent in patients postoperatively. As might be assumed, plugging is associated with postoperative non-weight-related vomiting, and with preoperative eating problems.³¹ Dumping has not been shown to be associated with less weight loss.^{29,44}

Treatment, Clinical Monitoring, and Future Research

Limited research has examined psychological interventions targeted at postoperative patients. Recently, Leahey et al.⁴⁵ performed a small pilot study to assess treatment adherence targeted at reducing binge eating and grazing among bariatric surgery candidates who were referred to the treatment preoperatively or postoperatively. The authors found that patients who were referred for the treatment after undergoing surgery were significantly more likely to complete the treatment and attended significantly more treatment sessions than did their counterparts who received referrals for the treatment prior to undergoing surgery.⁴⁵ These early findings suggest an important consideration in targeting disordered eating pathology after surgery in bariatric surgery patients.

In the case of the eating disorders that occur after surgery, behavioral and cognitive approaches have been helpful for some patients who develop BN and AN symptoms,^{46–48} although no controlled studies are documented. Atchison et al.¹⁵ noted the difficulties in treating the eating pathology in post-bariatric surgery patients that included at least that factors: their fear of weight gain which is in some ways realistic, that postsurgical dieting and food intolerance limit food intake, and the intense focus on weight management and body image. Indeed, management of body image concerns (e.g., hanging skin, plateau in weight loss, body checking) and monitoring of eating behavior and psycho-education are important components of postbariatric surgery follow-up care.⁴¹

The literature has been clear in documenting that severe medical repercussions can occur from repeated vomiting, laxative abuse, or fasting.⁴⁹ At a minimum, it is necessary for medical providers to

inform patients about the dangers certain behaviors, such as repeated vomiting and fasting, can pose. If patients continue to eat foods they have found to cause plugging with intentions of vomiting, health care providers should be concerned. Education about eating disordered thoughts, beliefs, and behaviors may help patients recognize disordered eating patterns, body image distortions, and the undue influence on shape and weight before negative medical effects occur or before patients are faced with diagnosable eating disorder symptoms.

Segal et al.²¹ have described a set of criteria which may be helpful for practitioners attempting to determine if their postbariatric surgery patients may be experiencing what they have termed post-surgical eating avoidance disorder and Fandiño et al. have reported a case of a patient with this disorder who developed Wernicke Karsakoff syndrome.⁵⁰ While this unwieldy term is perhaps unlikely to gain favor, the cases reported by this group well illustrate the problems that can develop. Using clinical judgment about the attitudes, thoughts, and behaviors of patients can be helpful in ensuring adequate postoperative outcomes.

Discussion

The development of eating disorders after bariatric surgery seems to be a rare yet serious postoperative problem in the bariatric surgery population. Sub-syndromal eating disorders are probably more common, but no nomenclature has been developed to classify and capture these syndromes. LOC eating and grazing appear to be two useful constructs. It is difficult to identify commonalities among the recorded cases, but that in itself is an important observation. A controlled study investigating the factors contributing to eating pathology after bariatric surgery is needed. Also, the number of eating disorders that develop after bariatric surgery, particularly subsyndromal cases, is probably underreported. This underreporting may occur for a number of reasons, one being that patients may not be monitored by health professionals at the time of symptom development.

Additional empirical study is needed to fully understand this problem. As bariatric surgery becomes increasingly popular as a means for treating severe obesity, further attention should be focused on this area, specifically in systematically identifying pre- and postoperative corre-

lates of eating pathology in the population and potential risk factors for a pathophysiological mechanism involved in such eating problems. Also it is important to inform practitioners who work with this population about this potential adverse outcome.

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