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The Role of Behavioral Health in Bariatric Surgery

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Introduction

Bariatric surgery is considered the most effective treatment for severe obesity ($\text{BMI} \geq 40 \text{ kg/m}^2$), resulting in an average weight loss of 35 % of initial body weight (IBW) and significant reductions in medical comorbidity [1]. This marked effectiveness has resulted in bariatric surgery becoming an increasingly common surgical procedure. However, unlike many other common surgeries, bariatric surgery is closely linked with behavior and psychosocial factors. Eating and exercise behaviors as well as psychological and social factors may have caused, exacerbated, or maintained the severe obesity necessitating surgery. Further, bariatric surgery candidates are a psychiatrically vulnerable population with a high level of psychiatric and psychosocial comorbidity [2, 3]. Additionally, bariatric surgery, and the weight loss it engenders, likely results in major changes to patients' medical status, body image, quality of life, emotional well-being, and social relationships [4]. Finally, although surgery results in significant anatomical alterations, long-term success requires significant behavioral change and necessitates individuals to adhere to permanent lifestyle alterations in diet and exercise as well as the ability to reduce reliance upon food to cope with life stressors. Although improvements are experienced by the majority of bariatric surgery patients, there is considerable variability in outcome [5]. A significant minority of individuals fail to lose the expected amount of weight. Others instead may have initial weight loss success but regain considerable weight, particularly within the first few years following surgery. Reasons for weight regain are generally not well understood. Many biological and physiological mechanisms have been posited, but the majority of putative factors relate to behavior, compliance, and psychiatric comorbidity [6–8].

Due to these challenges, mental health professionals are an essential component of the multidisciplinary assessment and treatment team at most bariatric surgery treatment centers [9]. This chapter will focus on the role of the psychologist within

this multidisciplinary team. Although the focus will be on the licensed psychologist, this role can be (and often is) fulfilled by a variety of mental health professionals. The objectives of this chapter are to (1) review why behavioral health is a critical component of the bariatric team and (2) provide a review of the presurgical evaluation including psychiatric vulnerability, psychosocial comorbidity, domains that are assessed, as well as methods of assessment. Finally, the chapter will focus on areas of concern perioperatively and postoperatively.

Why Bariatric Behavioral Health?

Psychological evaluation is a widely utilized and accepted part of the multidisciplinary assessment for all weight loss surgery candidates, particularly those with a known or suspected psychiatric illness. Indeed, when bariatric programs have been surveyed, 97–98.5 % of centers endorse utilizing psychosocial interviews for their surgical candidates [9–11]. However, it may be helpful to further explore the role of mental health in weight loss surgery.

Over 20 years ago, the NIH released a consensus statement on surgery for severe obesity [4]. This statement outlined nine indications for surgery including: $\text{BMI} > 40 \text{ kg/m}^2$ or $\text{BMI} > 35 \text{ kg/m}^2$ with significant obesity-related comorbidities, acceptable operative risk, failure of nonsurgical weight loss programs, psychologically stable with realistic expectations, well-informed and motivated patient, supportive family/social environment, absence of active alcohol or substance abuse, and absence of uncontrolled psychotic or depressive disorder. Thus, outside of the first two indications, these criteria rely upon an understanding of the patient's psychological well-being, psychosocial functioning, behavior, and cognitions. More recently, in 2013, the American Association of Clinical Endocrinologists, the Obesity Society, and the American Society for Metabolic and Bariatric Surgery jointly published updated guidelines for the clinical practice of bariatric surgery [12]. Similar to the NIH consensus

statement, three of four of the listed contraindications relate to psychosocial risk. These contraindications include: reversible endocrine or other disorders that can cause obesity; current drug or alcohol use; uncontrolled, severe psychiatric illness; and lack of comprehension of risks, benefits, expected outcomes, alternatives, and lifestyle changes required with bariatric surgery.

Extreme obesity is associated with considerable psychosocial comorbidity, and patients who present for bariatric surgery are considered to be a psychiatrically vulnerable population [2, 3]. Moreover, a number of studies have demonstrated that patients burdened by depression and other psychiatric difficulties may have greater difficulty with weight loss after surgery [6, 13, 14]. As a consequence, psychological evaluation of bariatric surgery candidates has become the norm within the majority of programs. Finally, the majority of insurance companies require an assessment by a mental health professional prior to approving weight loss surgery [15].

Qualifications of the Behavioral Health Professional

The practice of behavioral health related to surgical weight loss is slowly evolving into a specific subspecialty. The 2004 *Suggestions for the Pre-Surgical Psychological Assessment of Bariatric Surgery Candidates* was published by the ASMBS and outlined minimum standards for this specialty which include: knowledge of the nature and mechanics of the various bariatric surgical procedures, the expected postoperative course, and the physiology of obesity, dieting, and weight loss [4]. In addition, they suggest that an understanding of how these factors can interact in the postoperative course is essential. Given the importance of evaluating and addressing psychiatric comorbidities, practitioners should be licensed practitioners who can assess and treat psychological conditions. Further, practitioners should have a thorough understanding of the biological, psychological, and social causes and consequences of morbid obesity and of behavioral factors that may impact weight loss and weight loss maintenance. A background in eating disorders is also preferred. Finally, we would add that professionals should be competent in weight sensitivity and present a bariatric-friendly patient environment (e.g., appropriate size furniture, scales).

Unfortunately, although most programs require one, there is significant variability in the quality of such psychosocial evaluations. Unlike specialized certifications for nursing or physicians, a standardized exam for mental health professionals has not yet been established. A recent study of ASMBS members found that the majority felt that mental health professionals working with bariatric populations should have extensive and specific knowledge of weight loss surgery, obesity, and nonsurgical management of obesity and experience

in working with these patients pre- and postoperatively [16]. The care of bariatric patients would undoubtedly be improved by better standardization across the field.

Presurgical Evaluation

As previously noted, despite the almost universality of psychological evaluation for bariatric surgery candidates, 20 years of guidelines suggesting the need for such evaluations and a substantial literature on psychosocial risk factors in this population, there is no consensus regarding how an evaluation should be conducted; the role, need, and utility of objective psychological testing [17]; or reasons for denial. Unfortunately, this has limited the ability of bariatric behavioral health to fully engage in empirical trials and has, at times, diminished the perceived value of these clinicians' roles.

In reviewing the literature, there does appear to be general agreement upon important factors to assess [18, 19]. Generally, researchers agree that a standard psychiatric interview focusing on diagnostic comorbidities is necessary but not sufficient for evaluating candidacy. In addition, a detailed assessment of eating behaviors, stress and coping, and social support are considered essential points of evaluation. Further, capacity to consent, understanding of risk and benefits of the surgery, knowledge of surgery, and expectations for weight loss, health outcomes, and psychosocial impact are largely accepted as being of additional importance.

There also appears to be consensus regarding psychosocial contraindications for weight loss surgery including: current illicit drug abuse, active/under-controlled schizophrenia or other overt psychiatric illness, severe intellectual disabilities, heavy alcohol use, severe and untreated eating disorder, lack of knowledge about surgery, severe situational stress, insufficient motivation, and lack of significant support. In studies examining rates for psychological denial of weight loss surgery, refusals for psychosocial reasons tend to range between 2 and 6 % [9, 11, 20–22]. Beyond such denials, patients may be required to complete additional treatment or delay surgery in order to stabilize a condition. Studies suggest that programs do not immediately approve patients due to psychosocial reasons up to 25 % of the time [11]. A survey of 103 psychologists who conduct presurgical psychological evaluations indicated significant variability in such decision making. Although respondents noted delaying or denying surgery for an average of 14.3 % of candidates, the range was 0–60 % [9]. Further, the benefits of delaying surgery as well as the costs due to potential loss of patients as a result of delays are largely unknown [12].

Beyond clear-cut contraindications, patients may be considered high risk psychiatrically and may be triaged into differing pathways which may require more in-depth assessment and/or treatment. Within the Cleveland Clinic's program, patients are triaged as high risk if they have a history of: schizophrenia,

bipolar disorder, past suicide attempt, inpatient psychiatric hospitalization, substance abuse/dependence, history of anorexia nervosa or bulimia nervosa, cognitive dysfunction, developmental delay, personality disorder, or multiple psychiatric medications. These patients are seen initially by the psychologist rather than potentially having their visit later in the preoperative process (e.g., after initiating an insurance-mandated supervised diet). Thus, patients who may not be candidates, or who may be delayed, can be identified prior to numerous appointments with other program providers (e.g., surgical consult, sleep study, etc.).

Elements of the Psychological Evaluation

For illustrative purposes, we describe the elements that we utilize within our evaluations. Many patients are very concerned about the requirement for a psychological evaluation. Often they believe that if the professional uncovers something negative, it will adversely affect their ability to undergo surgery. Thus, the evaluation is seen as an obstacle between them and a very strongly desired outcome. As a result, it is often important to first build rapport and discuss the collaborative role of the evaluation (e.g., identifying strengths to build upon and addressing obstacles that could impact their ability to have an optimal outcome). We begin by asking what surgery they are interested in and what led to their decision to pursue weight loss surgery. Next, an assessment of their understanding of the mechanics of their surgery, expected experience, and recovery time as well as their knowledge regarding risks vs. benefits should be determined. Next, we assess their weight loss expectations; beyond weight loss, what do they expect will be different, improved, etc. following weight loss surgery? This allows the evaluator to not only assess consent and expectations but also to provide education about what to expect and what surgery can—and cannot—alter.

A comprehensive evaluation should also include a thorough eating and weight history. The patient's weight history should be determined, including lowest and highest adult weight and how these relate to current weight as well as factors that led to obesity. A thorough assessment of past weight loss strategies should be conducted focusing on what was beneficial, difficulties with adherence, and length of maintenance. During the assessment of past dietary attempts, history of purgative attempts such as vomiting and laxative and diuretic abuse should be determined. Although most patients will also see a dietitian, some assessment of the patient's typical eating pattern can be informative—particularly with focus on abnormal timing of eating, skipping of meals, etc. Such assessment segues well into an assessment of binge eating disorder. We currently follow the diagnostic criteria

from the DSM-5 [23]. Patients should be queried regarding objective binge episodes, subjective lack of control over eating during the binge episode, as well as the associated distress related to binge eating. Other disordered eating behaviors such as excessive graze eating patterns or night eating should also be assessed.

Next, we review medical comorbidities related to obesity as well as currently prescribed medications. This can lead to further discussion regarding a patient's adherence with prescribed medications or other medical recommendations (e.g., adherence with CPAP). Capacity to consent (and brief cognitive screen if needed) should also be determined with a review of memory and concentration difficulties, history of learning difficulties, special education, traumatic brain injuries, and other cognitive issues that could impact decisional capacity.

The next part of the evaluation is more consistent with a traditional psychiatric diagnostic interview. Patients are queried on their current mental state, and relevant diagnostic symptoms of psychiatric disorders are assessed. Past and current outpatient, inpatient, and psychotropic treatments are reviewed as well as past history of suicide attempts and self-injurious behavior. Family mental health history is determined and a brief trauma history is conducted. Further, a standard mental status examination is conducted.

Next, the patient's current use of nicotine, alcohol, and illicit and prescription drugs are determined. Symptoms of abuse and dependence should be determined, and any past history of alcohol and/or drug abuse/dependence or treatment should be evaluated. Other potentially problematic habits such as caffeine use, carbonation, and sugar-sweetened beverages can also be determined. All patients, including those considered low risk for alcohol abuse, should be educated about the risk for increased sensitivity and potential increased risk for abuse following surgery [24]; additional information on conducting an alcohol history in the bariatric presurgical patient can be found in a review by Heinberg et al. [25].

Support plays a crucial role in patient's adjustment and success; thus, a thorough psychosocial history is taken beginning with a review of the patient's family of origin and childhood. Next, the patient's current living situation and relationship status should be evaluated. The impact that surgery, altered eating and activity behaviors, and weight loss may have on relationships should be discussed. Patients should be queried regarding who they will share the decision with, how they will address negative commentary, and who will help care for them following surgery. A psychosocial history should also include information about patients' educational level and achievement, work history, and their plans for time off following surgery. Interpersonal, occupational, financial, legal, and other stressors should be reviewed with an assessment of coping strategies. Often, eating is listed as a primary coping method, and this can lead to early discussion about the need to identify alternative coping resources.

Physical and sedentary activity should be assessed. If patients are not currently active, it is helpful to identify any past exercise attempts, degree of adherence, and intention to exercise following surgery.

Following this interview, the evaluator should be able to at least provisionally provide a DSM-5 diagnosis and make an initial impression about the patient's relative strengths entering into weight loss surgery and make recommendations about the plan of care pre- and postoperatively. We find it most helpful to delineate between requirements—those tasks that are necessary prior to writing a clearance letter (e.g., smoking cessation, adherence with psychiatric medications, abstinence from drugs and/or alcohol) and recommendations that are not necessary but determined to be helpful (e.g., attendance at a support group, importance of bringing a support person to future appointments, wean off of carbonated beverages). Finally, as a means of summarizing the findings in a more consistent and empirical manner, the Cleveland Clinic Behavioral Rating Scale can be utilized [18]. This measure has evaluators rate patients on a 5-point scale (poor, guarded, fair, good, excellent) across 8 domains of interest (consent, expectations, social support, mental health, chemical/alcohol abuse/dependence, eating behaviors, adherence, and stress/coping) with a final overall rating ranging from excellent candidacy to poor noncandidacy.

The Perioperative Stage

Research on the perioperative phase of bariatric surgery focuses mostly on medical management issues (e.g., perioperative glycemic control, strategies for managing obstructive sleep apnea) [26, 27] and perioperative outcomes, including in-hospital mortality, complications, and length of stay [28–30]. In-hospital morbidity and mortality following bariatric surgery relate to procedure type, having open vs. laparoscopic procedures, accreditation of the bariatric surgery program, and surgical volume [28, 30].

Median inpatient length of stay following RYGB is 2–3 days, and longer procedure time, surgeon, higher BMI, being African-American, older age, and status as a Medicare/Medicaid beneficiary have all been identified as predictors of a longer inpatient length of stay [29]. Currently, we are aware of no research that has systematically assessed psychological factors associated with inpatient perioperative outcomes; however, we anticipate the Longitudinal Assessment of Bariatric Surgery-3 (LABS-3) Psychosocial study [3] will provide good insight on this issue. In the absence of strong research and guidelines on behavioral and psychological risk management during the perioperative period, the following are considerations for those providing psychological care during the inpatient phase of bariatric surgery.

Bariatric psychologists as well as inpatient mental services often need to serve as consult-liaisons (C/L) for bariatric patients. As previously noted, the bariatric surgery population

is psychiatrically vulnerable with approximately one-third having a current Axis I psychiatric diagnosis. Further, the medically compromised state of surgery may exacerbate a number of symptoms and disorders. C/L behavioral health provides a comprehensive analysis of the patient's response to illness and surgical course, can help identify mental disorders or psychological response to surgery that is in need of further intervention, and can help identify effective coping mechanisms to improve outcomes and postoperative adjustment. Common reasons for consultation include: depression, agitation, hallucinations, sleep disorders, confusion, suicidal ideation, nonadherence or refusal to consent to a procedure, and a lack of organic basis for symptoms (e.g., conversion, malingering, somatization). Finally hospitalized patients are particularly vulnerable to acute confusional states. Delirium is surprisingly common and can seriously complicate the postoperative course and can lead to significant management problems.

Another concern is managing patient's psychotropic medications following surgery. In examining bariatric populations, 72.5 % of surgical candidates report a lifetime history of psychotropic medication use—almost 90 % of which were antidepressants. Further, 47.7 % were currently on at least one psychiatric medication [20]. Unfortunately, many patients are NPO for at least 24 h. If complications occur, patients may be off of important psychiatric medications for a number of days.

The Postoperative Phase

Early Behavioral Adjustments

A few studies have examined postoperative outcomes that encompass the 30 days following surgery [29, 31–33]. However, similar to the studies on perioperative outcomes outlined above, studies on short-term postsurgical outcomes have not yet focused on psychosocial factors associated with 30-day adverse events. Although serious complications in the month following bariatric surgery are rare, many patients report overlapping and often vague symptoms, like abdominal discomfort and nausea in the first year following surgery, particularly in the first 6 months. These symptoms should be followed closely and often necessitate evaluation through an upper endoscopy and upper gastrointestinal series [34]. Abdominal pain is perhaps the most commonly reported postsurgical problem, and careful evaluation for conditions such as ulcer disease, upper gastrointestinal bleed, stomal stenosis, biliary disorder, and anastomotic leak may be indicated. However, studies have shown that the majority of patients who undergo endoscopy have normal findings and symptoms such as nausea/vomiting, abdominal discomfort, and gastroesophageal reflux are more likely explained by the reduced gastric pouch not being able to accommodate larger amounts of food [34]. It is unclear what overlap these symptoms have with psychological comorbidities such as

depression which may worsen pain complaints. In the first 6 months following surgery, overeating, rapid eating, brief impaction (i.e., plugging), and inadequate chewing are common. To identify behavioral explanations for pain and other gastrointestinal symptoms, a full and detailed assessment of symptoms in relation to eating behaviors is necessary. Fortunately, behaviorally induced symptoms typically resolve in the first 6 months, as patients identify the relationship between their eating behaviors and discomfort and correct the problems. During this period of adaptation and relearning, behavioral support is important and should be a standard component of postsurgical care.

Postoperative Follow-Up

It is recommended, at a minimum, that patients who undergo bariatric surgery return to the bariatric surgery program for follow-up within 1–2 weeks of surgery, 6 months postoperatively, and annually thereafter. Those who undergo AGB may return more frequently for adjustments to the band. Patients are also encouraged to participate in postoperative support groups, which are a common component of most established bariatric surgery programs. Some programs recommend more frequent follow-up with the surgical team, particularly in the first postoperative year, and offer additional services to augment postsurgical support, including support groups, nutrition groups, and shared medical and shared psychological appointments. These groups allow for support, normalizing of experiences, and sharing of knowledge and lead to greater efficiencies within a program as providers can see a number of similar patients and impart similar information in a single setting. Importantly, both follow-up with the surgical program and attendance at support groups are associated with better postoperative outcomes [35, 36]; therefore, strong recommendations should be made for ongoing follow-up, and programs should do their best to offer easily accessible postsurgical services.

Guidelines for postsurgical behavioral health services are not as well defined as presurgical guidelines; however, it is advised that patients have available to them a psychologist or other specialized mental health professional to provide support during the psychological, behavioral, and interpersonal adjustments that can occur with surgery. This is particularly true for individuals who have psychiatric conditions and could experience a worsening of psychiatric comorbidity postsurgically.

Psychosocial Adjustments

Although not well studied, it is not unusual for patients to experience some regret after surgery, particularly when experiencing pain and discomfort in the initial postoperative weeks and while reestablishing eating patterns. The process can be somewhat akin to having a baby—patients can prepare

mentally and can even be excited about the changes to come; however, the physiological and mental changes that occur after surgery can collide to produce “postsurgical blues.” As with postpartum blues, it is important for this low, or blue, period to be carefully monitored and treated appropriately; however, it is our experience that patients typically move through this period within the first few postoperative weeks or months, and many do not experience it at all.

Research on the relationship between psychiatric symptoms and postsurgical outcomes, though not always easy to interpret when considered collectively, suggests that psychiatric comorbidity is associated with less favorable weight loss outcomes following bariatric surgery. This appears to be particularly true for those with more than one psychiatric diagnosis [6, 13], those with a bipolar disorder [14], and those with symptoms in the first 9 months following surgery [37]. For example, Semanscin-Doerr and colleagues found that patients who had a clinically diagnosable mood disorder at the time of their initial evaluation experienced less weight loss 1, 3, 6, and 9 months following VSG as compared to those without a psychiatric condition [14]. These findings were no longer significant at 1 year post-VSG, nor were they significant when removing those with a bipolar disorder from the analyses. Kalarchian and colleagues found that a lifetime history of a mood or anxiety disorder was associated with less weight loss 6 months following RYGB [8]. However, a current diagnosis of mood, anxiety, substance, or eating disorder at the time of presurgical psychological evaluation was not significantly associated with 6-month outcomes nor was a diagnosis of a personality disorder. In a prospective study following patients up to 3 years after RYGB, current or lifetime history of a depressive disorder did not relate to weight loss outcomes [13]. However, having more than one past or current psychiatric diagnosis (e.g., both an affective disorder and an anxiety disorder) was associated with poorer weight loss outcomes. Collectively, these studies suggest that psychiatric comorbidity, particularly multiple comorbidities or a diagnosis of bipolar disorder, may be associated with less favorable weight loss and that lifetime history, rather than diagnosis at the time of the presurgical evaluation, may be associated with poorer short-term outcomes. It is important to note, however, that this association may not exist at longer-term follow-up and that even those with less weight loss may likely be experiencing clinically significant improvements in health and will lose more weight with surgery than with more conservative interventions. Moreover, there is evidence that weight loss following surgery is associated with significant improvements in mood and quality of life [13]. Although improvements in health-related quality of life (vs. mental health-related quality of life) are more likely to occur early on (in the first 3 months following surgery) [38, 39], studies have shown improvements in a wide range of quality-of-life dimensions, including psychosocial and sexual functioning domains, 1–2 years following surgery [40, 41].

Research on interpersonal changes that occur after surgery is limited; however, clinically patients often share both positive and negative changes in their relationships. Whereas patients often find that they relate better to their family members, peers, and coworkers as they experience improvements in their sense of self and quality of life, they may also find that they struggle with their new identity and find that others treat and relate to them differently. A qualitative study by Bocchieri and colleagues nicely summarizes these issues and identifies a number of “tension-generating changes” that occur after surgery, including increased feelings of vulnerability, conflicted emotions regarding new reactions from others, and the need to develop and implement new, non-dietary means of coping with emotions [42]. Perhaps the best approach to helping patients adjust to these changes is attendance at support groups and participation in interpersonal, familial, or couples therapy. As discussed in our summary of the presurgical evaluation, assessing support is an important component of the presurgical assessment, and enlisting patients’ support system can be very important postsurgically. Moreover, patients can be empowered to understand how their behaviors and success can impact significant others in their lives.

Interestingly, bariatric surgery can also have a positive impact on family members’ health. One study has shown that mothers who have had surgery tend to model better eating behaviors for their children [43], and another found that family members of those undergoing surgery often experience weight loss and improved health behaviors, such as increased exercise, even though they themselves did not undergo surgery [44]. Furthermore, surgical patients who have a family member who has also undergone surgery tend to have better weight loss and follow-up than those without a family member who has also undergone surgery [45]. These studies underscore the importance and bidirectionality of family support in bariatric surgery.

Weight Loss Outcomes, Weight Regain, and Behavioral Adherence

Weight loss outcomes are often expressed as percentage of excess weight loss (%EWL = weight loss/excess weight × 100), and, on average, between the first and third postoperative years, patients lose ~70 %, 60–65 %, 55 %, and 45–50 % EWL (BPD/DS, RYGB, VSG, and AGB, respectively) [5, 46, 47]. Less data is available on shorter-term weight loss outcomes; however, a recent study conducted at Duke University examined weight loss patterns at earlier postoperative visits for those having RYGB [48]. They found that individuals who lost > 2 % EWL/week during the first 14 weeks postsurgically had the greatest chance of having better weight loss outcomes at 1 year. Moreover, they found that % EWL at month 1 significantly predicted % EWL at 12 months. Thus, identifying “underperformers” early on is important so that appropriate interventions can be identified to optimize early weight loss.

A sizeable minority (10–25 %) of bariatric surgery patients experience suboptimal weight loss, often defined as failure to lose at least 40 or 50 % EWL [49–53]. Although a number of physiological explanations can be offered, a commonly pursued explanation for less optimal weight loss following bariatric surgery is failure to adhere to and adopt the recommended lifestyle and dietary modifications required for success [54]. Weight regain following bariatric surgery is also common. The most commonly cited and longest study of bariatric surgery outcomes, the Swedish Obese Subjects Trial, has shown that, on average, RYGB and AGB patients lose ~30 % and 20 % of their IBW in the first 2 years following surgery, respectively [55]. After this period of time, weight regain is common in both procedures, with an average regain of 6–7 % of IBW at 10-year follow-up, most of which occurs between the second and sixth postsurgical years [52, 55, 56].

Only a few studies have assessed lifestyle behaviors following bariatric surgery. A recent study found that most patients adhere to the recommendation not to drink while eating, and most take their vitamins and medications as prescribed (95 %, 86 %, and 90 %, respectively) [57]. However, few (5 %) eat the recommended 5–6 meals per day, most exceed recommended portion sizes during meals and snacks (100 % and 72 %, respectively), and less than half consume the recommended servings of fruits and vegetables (≥5 per day). Furthermore, only 16 % regularly consume adequate liquids, and less than a quarter engage in ≥30 min of moderate to vigorous physical activity (MVPA) per day [57]. One study of objectively measured accelerometry data revealed that only 5 % of bariatric surgery patients are compliant with physical activity recommendations (≥150 min/week of MVPA in bouts ≥ 10 min) after surgery [58].

Recently, investigators have started to develop and assess behavioral and psychosocial interventions for patients who have undergone surgery with the goal of improving postoperative outcomes. A meta-analysis of this literature found that patients who receive postoperative interventions experience larger weight losses as compared to those who receive usual postoperative care, which does not typically include a level of ongoing behavioral support that many need to make sustained behavioral modifications necessary for success [59]. One of the most important contributions those who specialize in the behavioral health management of bariatric surgery patients can make to the field is to develop and study the efficacy of postsurgical programs designed to optimize weight and health outcomes and to ensure that patients maintain psychiatric stability.

Special Psychiatric Considerations

Psychiatric Medications

Anatomical and physiological changes that occur during and after bariatric surgery, particularly RYGB, likely affect the pharmacokinetic properties (e.g., absorption, distribution, and

elimination) of medications. Alterations in these properties could affect the efficacy and tolerability of medications, which may be a point of particular concern when thinking about psychiatric medications. While a great majority of postsurgical patients are able to discontinue or decrease medications they were taking presurgically for many medical conditions (e.g., T2DM, hypertension), there is no evidence that patients should decrease or come off of psychiatric medications postsurgically. Moreover, though research in this area is limited, there is evidence of decreased absorption of a single dose of sertraline in post-RYGB patients in comparison to weight-matched nonsurgical controls [60]. Fortunately, research in this area is growing; however, to date there are no established clinical guidelines for psychiatric medication changes and/or dosage adjustments in bariatric surgery patients. In the absence of such guidelines, the following are actions that are sometimes considered by those prescribing psychiatric medications to patients who are considering or have undergone bariatric surgery: (1) switching to an immediate-release medication vs. sustained release; (2) when available, using liquid vs. tablet form; (3) when appropriate, crushing a medication vs. using in solid form; (4) when available, using an injectable medication vs. an oral medication; and (5) as possible, monitoring plasma levels of medications. While these medication adjustments could be considered, close and ongoing psychiatric management is always recommended.

Suicide Rates

The reported higher rate of suicide among bariatric patients postoperatively has been a source of significant concern within the field. These studies find a higher rate of suicide among bariatric patients postoperatively, compared to the population as a whole or to obese individuals who do not undergo weight loss surgery. Although overall mortality declines following weight loss surgery, increased deaths by accident, drug overdose, and suicide have all been documented following weight loss surgery [61–63].

One of the best controlled studies by Adams et al. compared long-term mortality rates and causes of death among over 7,000 gastric bypass patients and obese controls [61]. At a mean follow-up of 7.1 years, they found 15 suicides in surgery group vs. 5 in the control group. However the hazard ratio for suicide in the surgery group as compared to the control population was not significantly different. This suicide rate among surgical patients certainly appears to be considerably higher than the general US suicide rate of ~11/100,000. Bariatric surgery-related deaths in Pennsylvania have also been extensively studied over the last decade. Most recently, Tindle et al. reported an overall suicide rate of 6.6/10,000 in post-bariatric patients with highly differing rates for men and women (13.7 per 10,000 among men vs. 5.2 per 10,000 among women) [62]. However, in both studies the authors

were unable to determine whether participants were at higher risk of committing suicide preoperatively. Given the high prevalence of psychopathology among morbidly obese individuals and the high prevalence of past suicide attempts in bariatric candidates, it is unclear if this reflects a vulnerable population or something more specifically about the surgery [64].

Other than presurgical psychological distress, potential reasons for higher suicide rates among bariatric patients in the postoperative period include dissatisfaction with body image, alterations in metabolic biomarkers such as a decrease in serum cholesterol, and changes in the pharmacokinetics of psychotropic drugs resulting in reduced efficacy [65]. Although research should continue to identify the underlying reasons for suicide among bariatric patients, clinicians should absolutely continue to assess suicidality in this population and institute appropriate management as necessary.

Postsurgical Alcohol Abuse

Research indicates that individuals pursuing bariatric surgery have rates of lifetime alcohol use disorders (AUD) that are fairly comparable to the general population (35 % vs. 30 %, respectively) [24, 66]. However, current alcohol and substance abuse at the time of preoperative assessment is remarkably low (<1 %) compared to population norms (8.9 %), even in studies in which data collection is separate and confidential from the presurgical psychological evaluation [2]. Many patients continue to consume alcohol after surgery. A web-based questionnaire study indicated that 83 % of respondents continued to consume alcohol after RYGB, with 84 % of those drinking one or more alcoholic beverages a week and 28.4 % indicating a problem controlling alcohol use [17]. Suzuki and colleagues found that about 10 % of patients who had undergone AGB and RYGB met current diagnosis for an alcohol abuse disorder 2–5 years after surgery, rates that are similar to those in the general population [66]. The majority of these cases had a lifetime history of alcohol abuse disorders, suggesting relapses rather than new cases, and all occurred among those who had undergone RYGB, consistent with knowledge that physiological changes that occur with RYGB may change vulnerability to problematic alcohol use. More recently, longitudinal data across 10 bariatric programs and over 2,000 patients demonstrated a significant increase in AUD in the second (but not first) postoperative year and higher when compared to the year prior to surgery. A number of related risk factors were found including male gender, younger age, smoking, regular preoperative alcohol use, recreational drug use, and lower scores on social support [24]. In a study of longer-term outcomes (13–15 years) [67], an increase in alcohol abuse over time (2.6 % presurgery to 5.1 % postsurgery) but a decline in alcohol dependence was noted (10.3 % presurgery vs. 2.6 % postsurgery). In a study examining substance abuse

treatment center admissions, 2–6 % of admissions were positive for a bariatric surgery history [68].

We recently described assessment techniques and strategies to provide informed consent and education on alcohol among patients preparing to having surgery [25]. Little guidance, however, has been offered regarding how to conduct postoperative screening nor how to provide specialized treatment for those who develop alcohol problems after surgery, nor has research yet addressed alcohol abuse rates following SG.

Body Image Concerns

Although overall body image is rated more positively after bariatric surgery, studies suggest that both men and women remain dissatisfied with specific body areas associated with redundant skin [69]. Rapid and substantial weight loss is often associated with hanging, redundant skin, which is aesthetically displeasing to patients and often leads to skin irritation, skin breakdown, infection, and ulcerations. Further, patients often note its effects on physical functioning, sexual functioning, posture, and difficulties with urination. Thus, patients often consider body contouring surgery to address excess skin; however, this surgery is not always covered by third-party payers and may be too expensive for patients to pursue. Setting realistic expectations about both positive and negative aesthetic changes following surgery should be part of patient's preparation. Further, helping patients adjust to significant body image disturbance (vs. dissatisfaction that does not cause interference) may be an important aspect of postsurgical psychological care.

Development of Eating Pathology and Eating Disorders

Research on the emergence of eating pathology following bariatric surgery is limited and is complicated by uncertainty over when to classify postsurgical eating behaviors as pathological, since eating behaviors in postsurgical bariatric patients will differ from the "normal" population and, thus, may appear aberrant (e.g., avoidance of certain foods to avoid dumping, markedly slowing down chewing, etc.). A recent review of pathological eating following bariatric surgery concluded that the development of full-syndrome eating disorders following surgery is rare, though serious [70]. As the rate of bariatric procedures increases nationwide, eating disorder treatment programs are increasingly faced with the challenge of developing protocols for post-bariatric patients presenting with a clinically diagnosable eating disorder and, more frequently, eating problems that do not meet classic eating disorder criteria. Although a few assessment tools exist, De Zwaan and colleagues developed a Bariatric

Surgery Version of the Eating Disorders Examination (EDE-BSV) to help differentiate between eating behaviors influenced by anatomical alterations that occur with surgery (e.g., vomiting due to food getting stuck/plugging) and those that are aberrant behaviors motivated by body image concerns (e.g., vomiting to promote weight loss or avoid weight gain) [71]. When the EDE-BSV was administered to 59 patients 18–35 months after RYGB surgery, 12 % of patients reported self-induced vomiting for weight purposes, 30 % reported chewing and spitting out food, 12 % reported nocturnal eating, and 32 % reported picking or nibbling at food. No other compensatory behaviors (e.g., laxative and diuretic use) were reported, and chewing and spitting was not reported for weight reasons but to avoid plugging. When pathological eating behaviors are suspected, referral to an eating disorder specialist is recommended, and in the case of extreme weight loss, inpatient treatment may be necessary.

Summary

Mental health professionals are considered an essential component of the multidisciplinary assessment and treatment team at most bariatric surgery treatment centers. These practitioners should have a thorough understanding of the biological, psychological, and social causes and consequences of morbid obesity and of behavioral factors that impact weight loss and weight loss maintenance following weight loss surgery. We have provided a detailed overview of components of the presurgical psychosocial evaluation of bariatric surgery patients and have summarized the literature on pre-, peri-, and postoperative management of bariatric surgery patients as related to behavioral and psychosocial risk factors. It is our strong belief that behavioral health should be an essential focus of all bariatric surgery programs and that guidelines for efficacious postoperative psychiatric behavioral support are needed to further impact bariatric surgery outcomes, including optimizing weight loss, resolving medical comorbidities, and improving quality of life and mental health status.

Review Questions

1. Which of the following is NOT a common psychological reason for denying candidates bariatric surgery?
 - a. Current illicit drug abuse or dependence
 - b. Binge eating disorder
 - c. Active/under-controlled schizophrenia or other psychotic illness
 - d. Lack of capacity to consent
 - e. None of the above

Answer: b

2. Problematic alcohol use following bariatric surgery has been linked to
- RYGB procedures
 - Male gender
 - Food addiction
 - a and b
 - All of the above

Answer: d

3. Poorer weight loss outcomes (as defined by % EWL) has been associated with
- Depression
 - Disordered eating behaviors
 - Bipolar disorder
 - Total number of psychiatric diagnoses
 - All of the above

Answer: e

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