

## In Brief

Bariatric surgery has become a highly effective treatment intervention for morbidly obese patients struggling with comorbidities such as diabetes. Research has found that patients with certain psychosocial stressors may be at higher risk for postoperative complications, including weight regain. As a result, psychologists often play an integral role on an interdisciplinary bariatric team to aid with assessment and treatment of these patients by using empirically validated treatment recommendations to optimize outcomes.

# Psychosocial Evaluation, Preparation, and Follow-Up for Bariatric Surgery Patients

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*Ms. B. is a 35-year-old divorced woman with two children (ages 13 and 10) who is seeking a Roux-en-Y gastric bypass (RYGB) for health reasons. Her medical comorbidities include poorly controlled type 2 diabetes, hypertension, hyperlipidemia, obstructive sleep apnea, and gastroesophageal reflux disease. She has a history of adult-onset obesity and various previous structured and unstructured weight loss attempts, with only temporary weight loss success. She is currently at her highest weight with a corresponding BMI of 51 kg/m<sup>2</sup>.*

*Ms. B. has also been diagnosed with bipolar I disorder, with her most recent episode as depressed, and she has been stable on lamotrigine for the past 6 months. She has had two psychiatric hospitalizations for suicidal ideation, 18 months and 3 years ago. She also has a history of methamphetamine dependence, has gone through chemical dependency treatment, and has been sober for 2 years. Ms. B. also meets criteria for binge eating disorder and describes herself as an “emotional eater who loves food.”*

Is this patient a reasonable candidate for bariatric surgery? This is the challenging question bariatric clinical staff face when trying to determine which patients should undergo surgery and when to achieve an optimal outcome.

Successful bariatric surgery requires significant lifestyle and behavioral changes that are influenced by psychosocial factors. Research has

suggested that 10–25% of patients tend to have weight regain, and 5–25% (or more) may have complications postoperatively because of poor adherence to treatment recommendations.<sup>1–3</sup> Significant weight loss and lifestyle change can also lead to psychosocial challenges postoperatively for some patients. Thus, psychosocial and behavioral evaluation, preparation for surgery, and follow-up are common components within most bariatric programs. Enhanced knowledge of the typical bariatric surgery preparation, follow-up, and psychosocial experience can enhance diabetes care teams’ referrals for, and treatment and support of, potential bariatric patients.

### Preoperative Psychosocial Assessment

Although variability exists in preoperative psychosocial evaluations, there is general agreement regarding the psychologist’s role in identifying emotional, psychiatric, cognitive, and behavioral factors that might influence bariatric surgery success and providing psychoeducation and treatment to help patients better prepare for surgery.<sup>4</sup> Most psychological evaluations involve a clinical interview and, often, psychological testing to assess bariatric knowledge, adherence, eating behaviors, mood, substance use, cognitive functioning, and psychiatric history.

Patients need to have a competent understanding of the surgery and the lifelong behavior changes that must occur to achieve long-term success.

Realistic expectations about weight loss and an understanding that surgery is only a tool are important for patient satisfaction with outcome.<sup>5</sup>

Research suggests that patients who have had bariatric surgery maintain between 44 and 80% of their excess weight loss between 1 and 5 years postoperatively, with RYGB and biliopancreatic diversion/duodenal switch patients experiencing higher weight loss than patients having laparoscopic adjustable gastric banding (LAGB). Excess weight is defined as any weight that results in a BMI > 24.9 kg/m<sup>2</sup>, the highest weight considered to be within the normal weight range.<sup>6,7</sup> Bauchowitz et al.<sup>8</sup> found that, in 217 preoperative patients, 65% overestimated perceived weight loss and only 25% accurately assessed weight loss. Unrealistic expectations for potential weight loss could result in disappointment and depression.

A history of problematic adherence is concerning given the lifelong postoperative regimen bariatric patients must face. Missed appointments and poor adherence to a current diabetes regimen or continuous positive airway pressure (CPAP) therapy for sleep apnea is often discussed. For patients with diabetes, improvement in glucose control achieved through collaboration with the diabetes management team can demonstrate their ability to adhere to a complex regimen and reduce perioperative risk.<sup>9</sup>

Individuals who seek bariatric surgery for cosmetic purposes or those who have a superficial understanding of the required behavioral changes (e.g., chewing food to applesauce consistency, avoiding fluids with meals, and lifelong vitamin supplementation) may not be good candidates without further intervention.<sup>10</sup>

Assessment of eating behaviors typically examines eating patterns (restrained versus graze pattern), as well as binge, nighttime, and emotional eating tendencies, all of which are patterns that are detrimental to long-term weight control.<sup>1</sup> Most patients also see a clinical dietitian to enhance their nutritional knowledge. Many patients eat too quickly or while engaged in other activities, both of which are problematic behaviors that could lead to dumping or plugging sensations after surgery. Individuals may also eat in response to emotions, stress, or boredom rather than physi-

ological hunger cues, suggesting a lack of mindful eating.

Binge eating is defined as eating an excessive amount of food in a discreet period of time and feeling out of control. Associated factors can include secretive eating, eating until uncomfortably full, and guilt about eating behaviors. The prevalence of binge eating disorder is higher in bariatric-seeking samples and has been estimated at ~8–15% of those seeking surgery when assessed in a standardized manner.<sup>11,12</sup>

Night eating syndrome (NES) has most recently been defined as: 1) consumption of at least 25% of total caloric intake after the evening meal and/or 2) nocturnal awakenings with ingestions at least twice per week, with associated awareness of the eating episodes.<sup>13</sup> NES occurs in ~1.5% of the general population, and prevalence estimates range widely in bariatric surgery and diabetic patient samples, likely because of definition variability.<sup>14</sup> Patients with diabetes and comorbid NES have been found to have higher A1C values (>7%) than those without NES, suggesting a concerning influence on metabolic factors if night eating is left untreated.<sup>14</sup>

In sum, bariatric surgery alone is not likely to alter the eating patterns previously discussed, and up to 34% of postsurgical patients report cravings for certain foods even 6 weeks postoperatively.<sup>15</sup>

The psychological assessment before bariatric surgery should also focus on current and previous psychiatric disorders, which, if left untreated, may affect adherence to recommendations.<sup>10,16</sup> Recent research using standardized interviews for assessment that were not associated with surgical candidacy (to limit patient motivation for symptom minimization) has shown that a significant percentage of patients present with a mood or substance (Axis I) disorder before surgery, including major depressive disorder (10.4–13.3%), dysthymia (3.8%), bipolar disorder (up to 1.7%), and anxiety disorders (16.2–24.0%).<sup>17,18</sup> A subset of this research showed that 28.5% of bariatric surgery patients also had some form of personality disorder.<sup>17</sup>

Patients with binge eating disorder may exhibit a higher rate of comorbid psychopathology, and those with Axis I diagnoses are likely to have a higher BMI and lower perceived health.<sup>17,18</sup> To the best of our knowl-

edge, ~50% of patients presenting for the preoperative psychological evaluation are on psychotropic medication (primarily antidepressants). However, few data exist regarding absorption and management of the medications after bariatric procedures and related weight loss.<sup>19–21</sup>

Similar to bariatric patients, research has suggested higher prevalence rates of depression (~21–27%) for individuals with type 1 or type 2 diabetes, which may also put them at risk for poor adherence to diabetes treatment. In fact, a large sample of diabetes patients with ongoing depressive symptoms were found to struggle to adhere to healthy eating and exercise programs, were more likely to be on insulin, had higher A1C measurements, were more likely to be smokers, and were more obese.<sup>22</sup> A higher mortality rate has also been shown among patients with type 2 diabetes who have a comorbid depressive disorder diagnosis. This is possibly related to poor adherence to nutrition, exercise, and smoking-cessation recommendations, as well as medication management.<sup>23</sup>

Current substance abuse or dependence is rare in bariatric-seeking populations ( $\leq 1.7\%$ ), although  $\leq 18\%$  may have a history of alcohol abuse or dependence, and family history of substance abuse is associated with higher BMI.<sup>17,24</sup> The construct of a “food addiction” has recently been studied.<sup>24</sup> It is believed that certain foods such as sugar may trigger an addictive process in the brain and that individuals may meet similar “food-dependence” criteria.<sup>24</sup> Although it is generally agreed that the psychosocial bariatric assessment should include an addiction component, this does not suggest that all bariatric-seeking patients have an addiction or will necessarily engage in addictive behaviors postoperatively. When identified, substance abuse should be treated, and achievement of stable sobriety is often recommended before surgery.

Psychosocial bariatric assessment typically involves the use of psychometrically sound, objective psychological tests in conjunction with a clinical interview. Psychological testing should be seen as a means to support or call into question clinical diagnostic impressions. It is used as an adjunct to clinical interviews similar to the role of medical tests that physicians would order to provide additional data when performing medical assessments.

The most commonly used measures include the Minnesota Multiphasic Personality Inventory-2 (MMPI-2), the Beck Depression Inventory-II, and the Millon Behavioral Medicine Diagnostic (MBMD), although measures specific to other mood disorders, alcohol use, or childhood trauma may be included.<sup>25</sup> Social desirability can influence psychosocial assessment; therefore, measures with validity scales to detect for impression management that have been validated with bariatric surgery samples such as the MMPI-2 and MBMD can be helpful.<sup>25-28</sup> These inventories can provide insight into underlying psychopathology, potential characterological issues, compliance, and ability to develop a secure support system, all of which are areas that could affect the outcome of a bariatric surgical procedure. More specifically, the Restructured Clinical Scales of the MMPI-2, when used with bariatric surgery candidates, have been found to correlate with life dissatisfaction, judgment, insight, life satisfaction, behavioral impulsivity, adherence, and potential for substance abuse.<sup>28</sup>

Generally speaking, most psychiatric issues do not preclude bariatric surgery. It remains uncertain whether the presence of a comorbid psychiatric disorder affects surgical outcome, although a history of depressive and anxiety disorders may result in less weight loss postoperatively.<sup>16</sup> Limited data exist regarding outcomes for patients with serious mental illness or cognitive dysfunction because they are often excluded from surgery or research protocols. Recent data suggest that, from the psychosocial assessment, 70-90% of patients are unconditionally recommended to proceed toward surgery, 15-30% are referred for additional psychological or nutritional counseling, and the remainder are excluded for psychiatric reasons.<sup>4</sup> In one recent study, recommendations typically included psychological or nutritional intervention for 3-6 months, and, of those patients who returned for follow-up, > 50% were adherent to recommendations and continued the process toward surgery.<sup>4</sup>

The most widely accepted psychiatric contraindications to bariatric surgery include active substance abuse, psychosis, uncontrolled mood or eating disorders, major life stressors, and history of problematic adherence,

with disagreement about binge eating disorder.<sup>11,25,29-31</sup> In sum, research and clinical experience suggest that, although the presence of a psychiatric disorder is not necessarily a contraindication to bariatric surgery, it may suggest the need for concomitant psychological intervention and additional interpersonal support pre- and postoperatively. Diabetes health care professionals can work collaboratively with psychologists to formulate creative, individualized, and empirically supported treatment plans for bariatric patients with diabetes.

#### Preoperative Lifestyle Interventions

Some bariatric surgery programs require or recommend preoperative lifestyle interventions given the emerging evidence that weight loss before surgery may minimize perioperative complications and increase postoperative weight loss and that promoting self-regulation of eating and activity can enhance long-term weight loss maintenance.<sup>32</sup> Preoperative lifestyle interventions typically involve evidence-based behavior therapy for weight management, which usually results in a loss of 5-10% of body weight and at least short-term improvement in obesity-related health parameters.

Behavior therapy for obesity incorporates self-monitoring, stimulus control, goal setting, problem solving, reinforcement, and social support.<sup>33</sup> Patients are encouraged to increase 10-minute bouts of physical activity as well as lifestyle activity as they are able. In many centers, behavior therapy is provided in a group setting to enhance social support for a period of 3-6 months before surgery.<sup>32</sup>

Standard behavior therapy for obesity is often enhanced with bariatric-specific psychoeducation and goal setting for preoperative patients. Bariatric-specific behavioral goals might include slowing the eating rate, limiting consumption of calorie-dense soft foods or liquids, eating regular meals (aimed at reducing restrained eating and grazing), taking a multivitamin, and practicing separation of liquid and solid food consumption. Reducing or eliminating soda, caffeine, and alcohol is important for bariatric surgery patients, as is smoking cessation.<sup>32</sup> Preoperative interventions might also focus on issues of disclosure regarding surgery or planning ahead for the immediate postoperative period

(i.e., pureed foods, protein intake, and support).

Diabetes providers can help support their patients who are considering bariatric surgery by encouraging good glycemic control and dietary choices, adherence to medication regimens and CPAP usage, and appointment attendance.

#### Postoperative Psychosocial Concerns and Treatment

Most bariatric surgery patients do well psychologically after surgery and report improved mood and increased energy, self-confidence, and social activity. Improvements in depression and anxiety have been demonstrated up to 4 years after surgery for many patients, although the Swedish Obese Subjects study suggested a trend toward baseline levels of depression at 2 years postoperatively.<sup>4,34</sup>

Recent research has also suggested that bariatric surgery and resulting substantial weight loss may also improve sexual functioning.<sup>35</sup> Joint pain may decrease after weight loss, and, most often, activity levels are greatly enhanced. Various comorbidities including diabetes may be resolved or improved for many patients, resulting in improved overall health-related quality of life.

Postsurgical psychosocial challenges can include body image concerns; relationship changes; changes in mood, stress, or substance use; and weight regain.<sup>4,36</sup> Some bariatric surgery patients may have an unrealistic belief about how much their body image will change after the procedure. Research has suggested that body image can improve after bariatric surgery, but the percentage of body contouring surgeries among bariatric surgery patients suggests that many are still dissatisfied with their body shape.<sup>37</sup>

Patients can also face social challenges related to even positive changes. Most patients find others to be supportive, but negative responses related to jealousy or adjustment to dramatic lifestyle change can occur. Many patients relate stories of relationships lost because of weight loss and lifestyle change. Less healthy marital relationships can become destabilized after surgery, resulting in separation or divorce.<sup>38</sup> Relationship changes and unmet expectations can also influence changes in mood for post-bariatric surgery patients.

A minority of patients may experience an increase in psychological distress after surgery for a variety of reasons, including severe restriction in food intake, malabsorption of psychotropic medications, and life stressors. For those experiencing increased depression after surgery, differential absorption of psychotropic medications could play a role.<sup>20</sup> Severe food restriction after surgery might contribute to depression for patients with a history of emotional eating.

Increased social attention after weight loss can be anxiety-provoking for those with a history of childhood sexual abuse. Bariatric patients with a history of childhood trauma may also have a higher rate of mood or substance disorders, which can recur or become exacerbated after surgery.<sup>39</sup> Although victims of childhood trauma may lose equivalent amounts of weight within the first year after surgery, quality of life and psychosocial complications (including rates of psychiatric hospitalization) may be more problematic for them.<sup>40</sup> It is important for these patients to be educated about the possibility that they may feel more vulnerable after losing a significant amount of weight and to have a treatment plan in place should that occur.

At present, survey data suggest that 3–10% of patients abuse or become dependent on alcohol after RYGB.<sup>41</sup> RYGB patients may experience greater effects of alcohol because of the faster absorption rate and alterations in alcohol metabolism.<sup>42</sup> In fact, there is concern that during the rapid weight loss occurring the first 12–18 months after RYGB, alcohol use could be potentially toxic to patients.<sup>41</sup>

Patients at risk for addiction after bariatric surgery are likely to be those with a personal or family history of addiction. Increased alcohol use postoperatively can be attributed, for some patients, to increased socialization in settings where alcohol is available.

The potential for “addiction transfer,” or the substituting of a substance for food postoperatively, has received little, if any, scientific support. However, it is a common anecdotal topic of discussion among providers and in the media. The most commonly abused substance after bariatric surgery is alcohol, although assessment of opioid use, gambling, and impulsive spending may be warranted for some patients. Empirical data are needed to determine whether addiction transfer

truly exists, which patients might be at risk, and how to treat them most effectively.

Approximately one in five patients experience surgical failure, defined as an inability to achieve or maintain > 50% excess weight loss (EWL), and regain is most common 2–10 years after surgery.<sup>36</sup> Factors associated with regain include the return of hunger, gastrointestinal adaptation, and decreased food intolerances, as well as drift from the postoperative nutrition recommendations. Drift might involve the return of maladaptive eating habits, consumption of calorie-dense soft foods or liquids, subjective binge episodes (“uncontrolled eating”), or graze eating.<sup>36</sup>

Additional observations from our practices regarding factors contributing to regain include depression, stress (especially associated with caregiving for others; S. Himes, unpublished observations), and socio-economic constraints that can limit access to healthy foods, vitamins and supplements, support group meetings, and medical follow-up care.<sup>43</sup> Other research has suggested that those in lower-income groups may have less access to educational resources, which translates to a more limited knowledge of the idiosyncrasies of surgery treatment recommendations, as well as the risks and benefits.<sup>44</sup>

Support groups can play an integral role in the long-term success of bariatric patients. Both LAGB and RYGB patients have greater weight loss 6 months and 1 year postoperatively when attending a postoperative support group regularly, and the number of groups attended positively correlates with 1-year weight loss for LAGB patients.<sup>45–48</sup>

Support groups assist with problem identification and solving, education, motivational enhancement, and provision of bariatric-specific support. Often, they can also include patients’ support people. Common topics of discussion include disclosure, body image changes, physical activity, food preparation after surgery, strategies for adherence, relationship changes, protein, weight loss maintenance, and plastic surgery. In essence, bariatric patients tend to have more successful outcomes when they have surrounded themselves with people who have had similar experiences in conjunction with professional accountability and support.

Some patients may require more individualized postoperative psychosocial intervention involving cognitive behavioral, mindfulness, or other therapeutic approaches. Behavioral therapy is a cornerstone of obesity treatment, and behavior changes advised for weight loss maintenance are similar regardless of the method of inducing weight loss.

One of the most effective treatment recommendations for behavior change has been self-monitoring.<sup>49</sup> Because individuals typically have relatively poor recall of their behaviors, self-monitoring of dietary intake, weight, and physical activity are key to long-term success in weight loss maintenance.<sup>50</sup> Newer forms of technology that can assist patients with self-monitoring (e.g., Internet-based, ecological momentary assessment, and accelerometers) could prove to be quite helpful to improving postoperative outcomes.<sup>51</sup>

For patients with comorbid obesity and depression, including cognitive behavioral therapy (CBT) for depression with a weight management program can improve outcomes.<sup>52</sup> Research in patients with diabetes has demonstrated that CBT can be effective in decreasing the intensity of depressive symptoms.<sup>53</sup> Among bariatric surgery candidates, it has been shown that brief group CBT can help to reduce binge eating episodes, and treatment may be indicated postoperatively for those experiencing a recurrence of binge eating or frequent uncontrolled eating.<sup>36,54</sup> CBT interventions tend to include stress management, relaxation training, assertiveness training, cognitive restructuring, self-monitoring, and regulation of eating patterns and has shown a higher postoperative percentage of estimated body weight loss.<sup>35</sup>

Mindful eating is a deliberate focus on eating behaviors without judgment in the present moment to decrease eating in response to external cues.<sup>55</sup> Mindful eating results in decreased caloric intake and a slowed eating rate, which promotes weight management and can diminish the intensity and symptoms of binge eating.<sup>56,57</sup>

## Summary

Bariatric surgery has become an effective intervention for morbidly obese patients. The benefits of surgery include not only significant weight loss and metabolic improvements,

but also enhanced quality of life for most patients, although some will face pre- and postoperative psychosocial challenges.<sup>6,7,36</sup>

Because successful surgical outcomes are dependent on behavior, the goal of the presurgical psychosocial assessment, preparation, and postsurgical follow-up is to optimize patient outcomes. Expectations, knowledge, and adherence are factors that influence success, and many bariatric patients have a history of or are currently struggling with psychiatric disorders. Although it is clear that depression affects adherence to a diabetes treatment regimen, it remains unclear whether psychiatric symptoms have a similar effect on bariatric surgery outcomes.

Psychologists may provide preoperative intervention focused on mood management and lifestyle change and often facilitate postoperative support groups, which have been demonstrated to have a positive impact on weight loss after surgery. It is vital that preparation for and follow-up after bariatric surgery is undertaken in a collaborative team approach to include surgeons, physicians, psychologists, diabetes educators, and dietitians to provide the best patient care.

Returning to Ms. B., the patient in the case study presented at the start of this article, how would readers view her readiness for surgery? These cases tend to not be black and white, and there is no guarantee of positive or negative outcomes. In addition to morbid obesity, this patient had a number of medical comorbidities that could affect her quality of life. It will be important for her to have a good understanding of how the surgery could affect her body image, relationships with others, and eating behaviors.

Ms. B.'s diagnoses of bipolar disorder and binge eating disorder, as well as her history of methamphetamine dependence, suggest that she is psychiatrically at higher risk for problems postoperatively. However, the evidence base regarding bariatric outcomes for patients with bipolar disorder and a history of substance dependence is sparse, and, if these conditions are well managed, there is potential for this patient to be successful. To her benefit, she has been able to show a significant period of sobriety and has had 6 months of mood stability with the aid of a mood stabilizer.

One also cannot assume that a history of substance dependence would "transfer" to another addiction, such as food, alcohol, gambling, or another illicit substance after surgery. Instead, because of the number of psychosocial stressors evident in this patient, she may benefit from further interventions such as CBT and mindful eating strategies before surgery and increased psychological follow-up after, including both individual and support-group intervention.

Patients who have struggled with mental illness and a history of problematic eating behaviors can still have successful bariatric surgery outcomes. Further research is necessary to enhance psychosocial assessment and preparation for bariatric surgery and to further elucidate factors that influence successful surgical outcomes.

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