

Preoperative Evaluation in Bariatric Surgery

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Abstract

An adequate preoperative workup is critical for the success of bariatric surgery. A key component of the preoperative evaluation involves a comprehensive patient education about surgical outcomes and the postoperative behavioral regimen required. A complete medical evaluation should include the study of the cardiovascular, pulmonary, and gastrointestinal systems as well as a metabolic status assessment. The nutrition professional should be in charge of the nutritional assessment, preoperative weight loss efforts, and diet education regarding postoperative eating behaviors. A psychological evaluation is also needed because psychosocial factors have a significant impact on the long-term outcomes of bariatric surgery, including adherence to recommended postoperative lifestyle regimen, emotional adjustment, and weight loss outcomes. We recommend preoperative abdominal ultrasound to assess for biliary tract pathology, steatosis, fibrosis, and presence of nonalcoholic steatohepatitis. A routine preoperative esophagogastroduodenoscopy is also recommended to evaluate common gastrointestinal disorders associated with obesity. Preoperative weight loss should be strongly encouraged.

Keywords: obesity, bariatric surgery, preoperative evaluation

Introduction

OBESITY IS A worldwide increasing concern, and is believed to be the second most preventable cause of mortality in the United States (US).¹ The prevalence of obesity has risen rapidly over the past several decades in the United States, and according to the latest figures for 2011 to 2014 from the Centers for Disease Control and Prevention, 36% of U.S. adults and 17% of youth are obese.²

Obese individuals are at increased risk for many health problems, including cancer, heart disease, stroke, type 2 diabetes mellitus, hypertension, and gastroesophageal reflux disease (GERD) among others.³ In addition to the devastating health comorbidities associated with obesity, this condition has important economic consequences. The percent of the United States' national medical expenditures devoted to treating obesity-related illness in adults rose from 6.13% in 2001 to 7.91% in 2015, an increase of 29%.⁴ Medical management of obesity includes pharmacotherapy targeting obesity and medications treating associated comorbidities.⁵ However, since nonsurgical treatment for weight loss in the morbidly obese patients is rarely successful in the long term,

bariatric surgery has gained in acceptance and popularity in the last years.⁶

An adequate preoperative workup is critical for the success of bariatric surgery. This review will focus on the preoperative studies and counseling that are needed for patients planning to undergo bariatric surgery.

Patient Education

An integral component of the preoperative evaluation involves a comprehensive patient education about surgical outcomes and the postoperative behavioral regimen required. A multidisciplinary assessment by a team of endocrinologists, dietitians, psychologists, and the surgeon, preoperatively to evaluate and educate the patient, helps in appropriate patient selection to ensure that the patient is physically and psychologically fit to undergo weight loss surgery (WLS). Candidate selection criteria for bariatric surgery include body mass index, presence, and effect of comorbidities to patient's overall health, and a history of prior weight loss attempts. Personalized assessment of the risk and benefits of the procedure, along with the assessment of the individual's ability

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to comply with postoperative care is vital to the preoperative assessment and education of the patient.

Many patients seeking WLS hold unrealistic expectations, without a complete understanding of the procedures and the subsequent long-term implications.⁷⁻⁹ Patient understanding of long-term consequences of WLS, such as postoperative lifestyle modification, psychosocial implications, need for long-term follow-up, and consistent implementation of recommended postoperative regimens, facilitates a more informed decision making.

The preoperative education is pivotal in managing expectations and dispelling any misconceptions that patients may have. It is crucial to evaluate each patient, in terms of existing comorbid conditions to establish individual patient goals and expectations. For instance, while WLS has significant benefits of sustained weight loss and improvements in metabolic comorbidities,¹⁰⁻¹³ it is important to be cognizant of the effect of existing comorbidities on perioperative morbidity.

Overall, a thorough discussion of the potential postoperative morbidity and patient expectations of postsurgical weight loss, including the potential for weight regain, is strongly recommended.

Medical Evaluation and Clearance

A comprehensive medical evaluation entails meticulous history taking, a thorough physical examination, including a review of the cardiovascular, pulmonary, and gastrointestinal systems, as well as a metabolic and nutritional status assessment.

A complete medical history should include weight history, past diet history, social history, complete psychological history (including history of eating disorders and substance abuse), physical activity, medication review, and psychosocial factors that may affect weight loss.¹⁴ The clinical examination should include an assessment of anthropometrics, biochemical laboratory values (including electrolytes, vitamins, iron, folate, and calcium levels), and a complete metabolic panel. All efforts should be made to achieve optimal glycemic control perioperatively to minimize the risk of postoperative complications.¹⁵

Obesity is a well-established risk factor for cardiovascular comorbidities including coronary artery disease, arrhythmias, left-ventricular hypertrophy, and heart failure.¹⁶ While the American Heart Association Assessment classifies intraabdominal surgery as an intermediate risk procedure, optimization of these comorbidities is essential to prevent poor surgical outcomes in bariatric surgery patients.¹⁷⁻¹⁹ Cardiac evaluation includes a 12-lead electrocardiogram, followed by assessment of cardiac function with stress testing. The traditional stress testing methods (e.g., treadmill exercise, scintigraphic imaging) may not be feasible in morbidly obese patients given the weight limitations of the testing equipment and the difficulty to accurately interpret the images owing to the patient's body habitus.^{20,21} Pharmacological stress echocardiography, with or without ultrasound contrast agents, is an effective alternative for this patient population that can provide an accurate assessment of cardiac function.^{22,23}

Given that obesity is a risk factor for airway disease secondary to mechanical restriction, routine preoperative pulmonary function tests help assess the pulmonary reserve and

identify those at risk for postoperative pulmonary complications, such as atelectasis, laryngospasm, and the need for reintubation.^{24,25} While a large proportion of patients undergoing WLS often have associated obstructive sleep apnea (OSA), some may receive the diagnosis during the preoperative workup for the surgery.²⁶ The patients at risk for OSA, as identified by any of the screening tools (e.g., Epworth Sleepiness Score, the Berlin Questionnaire or the STOP-BANG questionnaire) are further evaluated using an overnight polysomnography test. Additionally, some patients may present with daytime hypercapnia; a pulmonary derangement termed obesity hypoventilation syndrome (OHS). Most patients diagnosed with OSA and/or OHS benefit from continuous positive airway pressure or bilevel positive pressure preoperatively.²⁷⁻²⁹ While routine spirometry testing in all patients undergoing WLS is debatable, some have suggested a benefit of preoperative spirometry in those at a high risk for pulmonary complications.^{30,31}

Venous thromboembolism (VTE) remains an important cause of postoperative morbidity in patients undergoing WLS. While the optimal approach for VTE prophylaxis in these patients is not clear, most receive some form of prophylaxis, including lower extremity compression, pharmacologic prophylaxis, or both. The standard antithrombotic regimen minimizes the risk of VTE,³² with a growing body of evidence suggesting superiority of standard (i.e., non-adjusted) low-molecular-weight heparin over unfractionated heparin.^{33,34} Evidence for the benefit of routine venous duplex scan is lacking, and is not currently recommended.³⁵⁻³⁷

A comprehensive assessment and stratification of the risk of adverse events can inform clinical decision making, and help identifying ideal candidates for bariatric surgery and those that may require closer postsurgical monitoring.

Psychological Evaluation and Clearance

Psychosocial factors have a significant impact on the long-term outcomes of bariatric surgery including adherence to recommended postoperative lifestyle regimen, emotional adjustment, and weight loss outcomes. Thus, a comprehensive evaluation by bariatric behavioral clinicians is recommended, to identify risk factors that may affect optimal surgical outcomes and weight loss goals. The preoperative psychological evaluation also helps establish a trusting working relationship between the behavioral clinician and the patient.³⁸ The psychological evaluation includes a thorough clinical interview for assessment of:

- Weight history
- History of eating behaviors/disorders (including binge eating, anorexia nervosa, night eating syndrome, and compensatory behaviors)
- Current or lifetime history of mood and anxiety disorders
- Cognitive functioning
- Current and past mental health treatment
- Patient knowledge and motivation for weight loss

The psychological evaluation is critical to determine the quality and extent of social support available to the patient. Evidence suggests that the presence of self-reported support from family, friends, and/or community is associated with a higher likelihood of successful outcomes.³⁹ Patients with

a greater perceived affective response and emotional involvement are associated with long-term health behaviors that promote weight maintenance.⁴⁰ Thus, the psychological evaluation serves to identify coexisting risk factors that may affect postoperative weight loss outcomes, and recommend interventions before or after surgery to optimize surgical outcomes.

Nutritional Evaluation

The nutrition professional is a key component of the multidisciplinary bariatric care, and should be in charge of the nutritional assessment, preoperative weight loss efforts, and diet education regarding postoperative eating behaviors.⁴¹ Adequate preoperative nutrition counseling by a registered dietician facilitates better tolerance to postoperative lifestyle modification, including changes in diet patterns, thereby minimizing the risk of nutritional deficiencies.

All patients should undergo a rigorous nutritional evaluation, including micronutrient measurements, before any bariatric surgical procedure. In comparison with purely restrictive procedures, more extensive perioperative nutritional evaluations are required for malabsorptive procedures.⁴²

Preoperative Gastrointestinal Imaging

Upper gastrointestinal radiographic series

When planning to perform surgery on the upper gastrointestinal (GI) tract, which involves reconstructing or altering normal anatomy, it is reasonable to evaluate preexisting anatomical or physiological variations. An upper GI contrast swallow offers valuable information regarding the esophageal and gastric anatomy, esophageal clearance, and presence and size of a hiatal hernia. Nevertheless, there is an emerging consensus that this study is not a necessary component of the preoperative evaluation for bariatric surgery.⁴³

Abdominal ultrasound

The ultrasound should be performed primarily to assess for biliary tract pathology in obese patients, given the particularly high incidence of cholelithiasis in this population.⁴⁴ In addition, rapid weight loss induced by bariatric surgery further increases the risk of gallstones formation.⁴⁵ This is particularly important for patients undergoing Roux-en-Y gastric bypass because this procedure precludes the endoscopic exploration of the biliary tract in case of cholelithiasis. The management of cholelithiasis in patients undergoing bariatric surgery is still controversial.⁴⁶ The ultrasound is also useful for assessing steatosis, fibrosis, and the presence of nonalcoholic steatohepatitis.^{47,48}

Esophagogastroduodenoscopy

The routine use of esophagogastroduodenoscopy (EGD) in the preoperative evaluation of bariatric candidates is controversial. The American Society for Metabolic and Bariatric Surgery (ASMBS) recommends (with low level of evidence, grade D) to perform preoperative endoscopy only in the presence of clinically significant GI symptoms.⁴⁹ However, previous studies have documented a lack of correlation between obese patients' symptoms and endoscopic findings.^{50–53}

We believe that patients should undergo a preoperative EGD systematically for several reasons:

- Obesity represents a risk factor for several GI diseases that can be detected by EGD.⁵⁴
- The symptomatic evaluation has limited value for the diagnosis of GERD, as symptoms such as heartburn have low sensitivity and specificity.⁵⁵
- Given the high risk of postoperative GERD associated with a sleeve gastrectomy, the presence of severe esophagitis or Barrett's esophagus should be considered a contraindication for this procedure.^{56–58}
- The EGD should rule out malignancy of the stomach before gastric bypass, as the remnant stomach will no longer be accessible to endoscopic surveillance.^{59,60}

Preoperative Weight Loss

Preoperative weight loss should not be considered in isolation when clearance for bariatric surgery is being evaluated.⁶¹ For instance, Alami et al.⁶² conducted a randomized trial comparing a group of patients with a preoperative 10% weight loss requirement and a group that had no weight loss requirements. The percentage of excess weight loss at 6 months for the weight loss group and nonweight loss group was 53.9% and 50.9% ($P = NS$).⁶² However, preoperative weight loss should be strongly encouraged as it facilitates the operation by reducing the abdominal fat and the liver volume, which improves the access to the upper stomach during laparoscopic surgery and shortens the operative time.^{63–65}

Conclusions

An adequate preoperative workup is critical for the success of bariatric surgery. A comprehensive discussion of patient expectations of postsurgical weight loss, including the potential for weight regain, is strongly recommended. In addition, a complete assessment and stratification of patients' comorbidities (especially cardiovascular and respiratory) can inform clinical decision making, and help identifying ideal candidates for bariatric surgery and those that may require closer postsurgical monitoring. Abdominal ultrasound and EGD are recommended during the preoperative workup. Preoperative weight loss should be strongly encouraged.

Disclosure Statement

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