

Clinical assessment to determine a patient's suitability for bariatric surgery

Screening for surgical safety, history taking, physical examination, laboratory investigations, and clinical interviews are all needed to establish whether a patient with obesity can benefit from a bariatric procedure.

ABSTRACT: Bariatric surgery is a safe and effective treatment for obesity and its comorbidities. In order to qualify for bariatric surgery, a patient must have a BMI greater than 40.0 kg/m² or a BMI greater than 35.0 kg/m² with one or more obesity-related comorbidities such as depression, hypertension, or type 2 diabetes. Clinical assessment should be done over a period of time by a multidisciplinary team and include screening for surgical safety in accordance with the literature as well as history taking, physical examination, and laboratory investigations. Interviews are needed to determine if the patient understands the procedure and postoperative demands involved and to establish whether the necessary social supports required by bariatric procedures are in place or whether any psychiatric conditions exist that might impair the patient's ability to handle the surgery. Although 1 million Canadians satisfy the criteria for bariatric surgery, only 6500 undergo this treatment each year, suggesting this surgery is far too limited in its use.

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Criteria for bariatric surgery

Great strides have been made in the field of bariatric surgery, with procedures that are relatively free of complications and provide effective treatment for obesity and its comorbidities.¹⁻⁶

The Canadian criteria for selecting patients to undergo either sleeve gastrectomy or gastric bypass are not without limitations. In order to qualify for bariatric surgery, a patient must have a BMI greater than 40.0 kg/m² or a BMI greater than 35.0 kg/m² with one or more obesity-related comorbidities (e.g., depression, hypertension, type 2 diabetes, obstructive sleep apnea, hyperlipidemia, coronary artery disease, arthritis, fatty liver).

The limitations of these criteria stem from the use of body mass index, a simple measurement of weight against height.⁷ BMI is only a surrogate measure of body fatness because it describes excess weight rather than excess body fat and does not take into account factors such as age, sex, ethnicity, and muscle mass or the pathophysiological effects that certain fat tissue has in the development of obesity-related comorbidities.⁸

By using a simple equation we limit the overall understanding of obesity-related risks in a patient. Women, for example, tend to have more fat than men.⁹ As well, age plays a role in fat distribution, and BMI in isolation does not point to the location of body fat. Intra-abdominal fat has been shown to be far more toxic metabolically than subcutaneous fat.¹⁰

BMI is a simple and convenient tool that has its merits, but it should not be used in isolation when managing patients with the disease of obesity. While BMI remains central to establishing eligibility for bariatric surgery, clinicians can and should take obesity assessment beyond BMI in all clinical settings.

Comorbidities

Patients should be assessed for obesity-related comorbidities whether they are pursuing bariatric surgery or not. The Edmonton Obesity Staging System

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(EOSS)¹¹ takes into account the severity of obesity-related comorbidities as well as the patient's metabolic, functional, and psychological state:

- Stage 0. No obesity-related comorbidities. No effects on a patient's metabolic, functional, or psychological state.
- Stage 1. No obesity-related comorbidities. Mild effects on a patient's metabolic, functional, or psychological state. For example, the patient has metabolic syndrome and/or mild anhedonia associated with obesity.
- Stage 2. Patient has an obesity-related comorbidity such as diabetes, arthritis, or depression.
- Stage 3. Patient has an obesity-related comorbidity with organ dysfunction such as type 2 diabetes with renal dysfunction or obstructive sleep apnea with right heart failure.
- Stage 4. Patient has end-stage comorbidities associated with obesity.

Although the EOSS is not the clinical standard for establishing a patient's eligibility for bariatric surgery, it can be a useful clinical tool for determining the potential risk of obesity and the potential benefit of bariatric surgery.

Contraindications for bariatric surgery

Bariatric surgery is contraindicated¹² if the patient presents with any of the following:

- Cirrhosis.
- Portal hypertension.
- Uncontrolled psychiatric disorder.
- Suicide attempt within the last 18 months.
- Uncontrolled inflammatory bowel disease.
- Active substance abuse.
- Active smoking (patients must be smoke-free for at least 6 months).
- Chronic long-term steroid use.
- Mental or intellectual limitations that

would make adherence to dietary or lifestyle modifications a challenge.

- Inability to care for self.
- Serious chronic disease where surgery itself would be contraindicated.
- Active bulimia nervosa.

Clinical assessment

The cornerstone of a bariatric surgery program is clinical assessment to determine if surgery is safe and appropriate for a particular patient with obesity. Clinical assessment should be done over a period of time and by a multidisciplinary team that includes a dietitian, a physician, a surgeon, and, when necessary, a psychologist or psychiatrist. Ideally, some clinical assessment will have been done by a primary care provider before the patient is referred to a bariatric program for surgery. A more in-depth assessment is then done by the bariatric team.

Clinical assessment includes screening for surgical safety in accordance with the literature, and involves history taking, physical examination, laboratory investigations, and interviews to determine a patient's motivation for undergoing surgery and how much the patient understands about the procedure and postoperative demands. Clinical interviews also provide information about the patient's weight-loss and weight-gain history and current eating behaviors, and establish whether the patient has the necessary social supports bariatric procedures require or any psychiatric conditions that might impair the patient's ability to handle the surgery.

Metabolic and other disorders

All patients preparing for bariatric surgery should undergo general metabolic screening. Many patients will have disorders such as diabetes, hypertension, and dyslipidemia. Screening for these allows the bariatric team to better manage a patient's

comorbidities preoperatively.¹³

All patients should have a baseline fasting glucose test, an HbA1c test, a full cholesterol panel, and testing for liver function, renal function, and thyroid function. Patients being considered for a gastric bypass should also have vitamin B12, vitamin D, and multivitamin baseline assessment. All patients should have an electrocardiogram to screen for arrhythmias and silent ischemia. Further cardiac and pulmonary testing should be based on the patient's specific clinical state and comorbidities.

Obstructive sleep apnea

All patients undergoing bariatric surgery should be screened for obstructive sleep apnea (OSA). This is done by a polysomnography test. Untreated OSA remains one of the key contributors to perioperative mortality after bariatric surgery.¹⁴ In a pivotal study of 359 bariatric patients evaluated for OSA preoperatively, 309 (86%) had positive test results. On the basis of apnea-hypopnea index (AHI) scores, 18% of the 359 patients had mild OSA, 17% had moderate OSA, and 51% had severe apnea.¹⁵ An analysis of patients by preoperative BMI showed that the following tested positive for OSA:

- 34 of 37 patients with BMI values of 35.0 to 39.9 kg/m² (92%).
- 178 of 218 patients with BMI values of 40.0 to 49.9 kg/m² (82%).
- 78 of 85 patients with BMI values of 50.0 to 59.9 kg/m² (92%).
- 19 of 19 patients with BMI values of 60.0 kg/m² or greater (100%).

It is because of studies like this that the American Society of Metabolic and Bariatric Medicine recommends polysomnography for all patients undergoing bariatric surgery.¹⁶

Psychological fitness for surgery

Best practice guidelines for assessing

a patient's psychological fitness for surgery do not yet exist, although we do know that such an assessment can rarely be done in a single visit. Not all patients preparing for bariatric surgery need to be evaluated by a psychologist or psychiatrist. However, the effect of certain critical psychosocial changes resulting from weight loss should be considered before surgery.¹⁷

Weight-loss and weight-gain history

A weight-loss and weight-gain history (weight cycling) should be obtained. This allows the clinician to screen for secondary causes of obesity and eating disorders. It can also help delineate physiological triggers of weight gain such as medications and endocrinopathies. Not all patients need a complete hormonal workup for obesity.¹⁶ Baseline thyroid function and screening for diabetes and dyslipidemia should be done in all patients but not everyone pursuing bariatric surgery needs to be screened for Cushing syndrome or polycystic ovarian syndrome. This is where clinical judgment is paramount. Focusing on weight-loss and weight-gain history also allows a clinician to gauge a patient's readiness for surgery.

Current eating behaviors

Patients should be questioned about past and present patterns of eating, timing of meals, and the presence of emotional triggers for eating. They should be asked to keep a food diary and to record their eating patterns preoperatively. Patients should also be screened for eating disorders.

Eating disorders are not uncommon in bariatric surgery patients. Bulimia nervosa, binge-eating disorder (BED), and night eating syndrome are all clinically relevant when determining suitability for surgery.¹⁸

Bulimia nervosa is an absolute

contraindication for surgery while binge-eating disorder is not.¹⁹ Unlike bulimia nervosa, binge-eating disorder does not involve purging after eating. It is estimated that 10% to 25% of bariatric patients meet criteria for BED, which involves the consumption of a large quantity of food in less than 2 hours, during which the person feels a subjective loss of

control. Additionally, some patients report night eating syndrome, which is defined as the consumption of more than 35% of daily calories after dinner, and disruption of sleep by episodes of nocturnal eating.

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Estimates of bariatric surgery candidates with BED range from 5% to 50%, likely a gross overestimate. When patients are assessed using a structured clinical interview and strict criteria, the prevalence rate ranges from 5% to 25%.

Study results are mixed regarding the effects of binge eating on a patient's postoperative success. Some studies find preoperative binge-eating disorder has no negative effects on outcomes after bariatric surgery, and indicate that bingeing resolves postoperatively as the neurohormonal mediators of bingeing are corrected by the surgery itself. Other studies show that "grazing" behavior persists postoperatively and becomes a barrier for weight loss. All patients are encouraged to consider supportive counseling when they binge frequently or are

Motivation for surgery

Patients should be asked the simple question "Why have surgery?" to assess their readiness and suitability for bariatric surgery. This allows the clinician to determine patient expectations of the procedure itself and

overall motivation for having the surgery. It is crucial to prevent patients from entering into the surgical process lightly and without a good sense of the implications. No one can understand all the implications of a decision in advance, but suitable patients will understand the demands involved.

Understanding the procedure and postoperative demands

Patients should be asked to describe the procedure, its risks and benefits, and the preoperative and postoperative diet. Bariatric patients need to be prepared for their "new normal." They must appreciate that they are essentially trading one disease for another. A relatively healthy gut is being altered anatomically to gain a therapeutic advantage: a more favorable disease state that will require lifestyle changes.

A discussion about the procedure and postoperative demands can reveal any gaps in understanding and allow the clinician to address these. If patients are unable to demonstrate knowledge of what they are undertak-

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ing, they can be referred for further education about the role of surgery as a treatment tool and the need to adhere to lifestyle modification throughout in order to garner the greatest benefit from this treatment as a whole. The vast majority of bariatric patients are enrolled in multidisciplinary programs where most have attended seminars preoperatively and talked with people who have had the surgery. Very infrequently, intellectual testing is needed to determine basic competence for informed consent.

Social supports

Patients should be asked about who lives in their household, how these loved ones have reacted to the planned surgery, what the eating habits and/or weight issues of other household members are, and who will be available to help immediately after surgery. A variety of studies show that bariatric patients are more successful when they have supportive environments and that bariatric surgery in itself is a social stressor, which is seen in the fact that divorce rates are higher after surgery.²⁰

It is imperative that clinicians gain a sense of the patient's social supports and find out whether the patient is aware of the potential social consequences of having the surgery by asking appropriate questions: Have loved ones expressed negative opinions about the surgery or demonstrated jealousy and discomfort when the patient is losing weight? Have loved ones tried to sabotage the patient's weight-loss efforts in the past? What will meal arrangements look like when the patient is unable to eat and drink in a fashion similar to others in the household? Surgery can change social dynamics and it is important to prepare a patient for that when necessary.

Psychiatric history

Because psychiatric conditions can impair a patient's ability to handle the surgery, patients should be assessed for depression, anxiety, mania, psychosis, suicidal ideation, substance abuse, history of abuse, family history of mental health issues, and any psychiatric treatment experiences. Compared with the general population, patients affected by obesity have a higher rate of mental illness, addiction, and sexual abuse. Depression is especially common,²⁰ and patients with a BMI above 40.0 kg/m² are 5 times more likely to suffer from depression than those with a lower BMI. This can affect a patient's adherence to preoperative and postoperative demands. Anxiety can also affect a patient's ability to cope with the entire surgical experience.²¹

Patients who are at higher risk of mental illness or who have a history of uncontrolled mental illness should undergo psychiatric screening.¹⁶ Ideally, bariatric surgery teams will include a psychologist, a psychiatrist, or both. Further counseling should be mandated when clinically necessary. In patients with a history of psychiatric illness it will be important to plan for postoperative adjustments in medication in the short and long term.

Although best practice guidelines do not yet exist for psychological evaluation of the patient undergoing bariatric surgery, evidence is growing with regard to the critical elements and domains for assessment and the various functions the assessment must serve.²¹

Example of clinical assessment

The case of a fictional 36-year-old woman with obesity illustrates how a comprehensive assessment can answer two questions:

- Is bariatric surgery safe for this patient?

- Is bariatric surgery appropriate for this patient?

"Michelle" has carried extra weight for much of her life and tried many weight-loss programs, all with limited success. She has never been able to keep weight off for a considerable time, even though she diets with vigor. She will embrace a new weight-loss program but inevitably is challenged to continue with the required lifestyle modifications over the long term.

She had a deep vein thrombosis in university that was thought to be due to the birth control pill, and 3 years ago she was diagnosed with type 2 diabetes. Her diabetes is well managed on oral hypoglycemic agents, and her hypertension and dyslipidemia are under control. She has never been screened for obstructive sleep apnea. She has mild arthritis in both knees.

Michelle is interested in bariatric surgery. Her BMI of 38.0 kg/m² and her comorbidities alone qualify her for this surgery. She has an overall EOSS risk profile of stage 2, which confirms that she is likely to be a suitable candidate for this treatment.

Michelle begins an in-depth assessment for surgery by undergoing medical, metabolic, and psychiatric screening. She is found to have a long history of mild depression that has been well managed with antidepressants. She has a good understanding of the procedure proposed for her, a sleeve gastrectomy. She has done online research, attended an orientation meeting, and joined a preoperative support group. She has been exercising and keeping a regular food diary. In short, she is adhering to lifestyle modifications that will be needed postoperatively. She has been seeing a psychologist for over a year as her husband does not support her having the surgery.

After several months of assessment by the entire bariatric team, Michelle is approved for surgery.

Intervention needed

In October 2015, the Canadian Medical Association acknowledged that obesity is a chronic disease requiring long-term therapeutic approaches. One in four Canadians has obesity, and more than 3% of Canadians meet criteria for bariatric surgery. But although 1 million Canadians meet the criteria for bariatric surgery, only 6500 undergo this treatment each year. This is not to say that all patients meeting the BMI criteria should undergo bariatric surgery, but it does suggest that this surgery is far too limited in its use.

Our profession and our mandate demand that we pay attention to this global and national epidemic. Obesity is the greatest public health crisis this country has ever seen and as such requires intervention on all levels, from the bedside to the ballot.

Summary

Bariatric surgery has been shown to be a safe and effective procedure for the treatment of obesity. As with any treatment, screening and assessment are needed to determine a patient's suitability for surgery. After initial assessment by the referring primary care provider, clinical assessment should be done over a period of time by a multidisciplinary team that includes a dietitian, a physician, a surgeon, and, when necessary, a psychologist or psychiatrist. Patients should be screened for metabolic and other disorders, including obstructive sleep apnea, and interviewed about their understanding of the procedure and the postoperative demands involved. The relatively small number of eligible patients undergoing bariatric procedures in Canada each year

suggests this surgery is far too limited in its use. **BCMJ**

Competing interests

None declared.

References

1. Padwal R, Klarenbach S, Wiebe, et al. Bariatric surgery: A systematic review and network meta-analysis of randomized trials. *Obes Rev* 2011;12:602-621.
2. Flum DR, Dellinger EP. Impact of gastric bypass operation on survival: A population-based analysis. *J Am Coll Surg* 2004;199:543-551.
3. Christou NV, Sampalis JS, Liberman M, et al. Surgery decreases long-term mortality, morbidity, and health care use in morbidly obese patients. *Ann Surg* 2004;240:416-423.
4. Zhang W, Mason EE, Renquist KE, Zimmerman MB. Factors influencing survival following surgical treatment of obesity. *Obes Surg* 2005;15:43-50.
5. Sjöström L, Narbro K, Sjöström CD, et al. Effects of bariatric surgery on mortality in Swedish obese subjects. *N Engl J Med* 2007;357:741-752.
6. Adams KF, Schatzkin A, Harris TB, et al. Overweight, obesity, and mortality in a large prospective cohort of persons 50 to 71 years old. *N Engl J Med* 2006;355:763-778.
7. Prentice AM, Jebb SA. Beyond body mass index. *Obes Rev* 2001;2:141-147.
8. Haslam DW, James WP. Obesity. *Lancet* 2005;366(9492):1197-1209.
9. Price GM, Uauy R, Breeze E, et al. Weight, shape, and mortality risk in older persons: Elevated waist-hip ratio, not high body mass index, is associated with a greater risk of death. *Am J Clin Nutr* 2006;84:449-460.
10. Frankenfield DC, Rowe WA, Cooney RN, et al. Limits of body mass index to detect obesity and predict body composition. *Nutrition* 2001;17:26-30.
11. Padwal RS, Pajewski NM, Allison DB, Sharma AM. Using the Edmonton obesity staging system to predict mortality in a

population-representative cohort of people with overweight and obesity. *CMAJ* 2011;183:e1059-e1066.

12. Pories WJ. Bariatric surgery: Risks and rewards. *J Clin Endocrinol Metab* 2008;93:s89-s96.
13. DeMaria EJ, Portenier D, Wolfe L. Obesity surgery mortality risk score: Proposal for a clinically useful score to predict mortality risk in patients undergoing gastric bypass. *Surg Obes Relat Dis* 2007;3:134-140.
14. Dixon JB, Schachter LM, O'Brien PE. Polysomnography before and after weight loss in obese patients with severe sleep apnea. *Int J Obes* 2005;29:1048-1054.
15. Bangura AS, Gibbs KE. Is routine preoperative polysomnography necessary in patients having bariatric surgery? Abstract presented at 28th meeting of the American Society for Metabolic and Bariatric Surgery, Orlando FL, 12-17 June 2011.
16. Mechanick JI, Kushner RF, Sugerman HJ, et al. American Association of Clinical Endocrinologists, The Obesity Society, and American Society for Metabolic & Bariatric Surgery medical guidelines for clinical practice for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient. *Obesity (Silver Spring)* 2009;17(suppl 1):S3-S72.
17. Bocchieri LE, Meana M, Fisher BL. A review of psychosocial outcomes of surgery for morbid obesity. *J Psychosom Res* 2002;52:155-165.
18. Herpertz S, Kielmann R, Wolf AM, et al. Do psychosocial variables predict weight loss or mental health after obesity surgery? A systematic review. *Obes Res* 2004;12:1554-1569.
19. Wadden TA, Faulconbridge LF, Jones-Corneille LR, et al. Binge eating disorder and the outcome of bariatric surgery at one year: A prospective, observational study. *Obesity (Silver Spring)* 2011;19:1220-1228.
20. Sarwer DB, Fabricatore AN. Psychiatric considerations of the massive weight loss patient. *Clin Plast Surg* 2008;35:1-10.
21. Yen YC, Huang CK, Tai CM. Psychiatric aspects of bariatric surgery. *Curr Opin Psychiatry* 2014;27:374-379.