# Bariatric Surgery 2.0 CE Hours

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**Objectives:**

1. Describe obesity and the influencing factors associated with it.

2. Examine how the Body Mass Index is used to indicate obesity.

3. Recognize comorbidities associated with morbid obesity.

4. Identify pros and cons for the various types of bariatric surgeries.

5. Indicate possible post-operative complications a bariatric patient may experience.

6. Discuss bariatric nursing discharge instructions as well as symptoms requiring the patient to call their physician.

## Obesity Overview

Obesity is a complex, chronic disease influenced by genetics, endocrine, metabolic, social, cultural, behavioral and psychological components. Obesity occurs when caloric intake exceeds energy expenditure.

Obesity is a major health problem and has reached epidemic proportions in the U.S. Up to two thirds of the population in the United States is overweight, and half of those are obese. Research has shown that obesity is a major risk factor for many diseases and is associated with significant morbidity and mortality.

Bariatric surgery is known to result in improvement in obesity-related comorbidities. The number of bariatric surgeries performed in this country is increasing, and nurses need the knowledge and skills to care for the needs of morbidly obese patients after surgery.

Surgery for obesity should be considered as a treatment of last resort after dieting, exercise, psychotherapy, and prescribed drug treatments have failed. Surgery is not done when patient illnesses greatly reduce life expectancy and are unlikely to improve with weight reduction (e.g., advanced cancer, end-stage renal, hepatic, or cardiopulmonary disease). Also, if the patient does not understand the nature of bariatric surgery or the behavioral changes required afterward (e.g., untreated schizophrenia, active substance abuse, and noncompliance with previous medical care), they are not candidates for bariatric surgery. Bariatric surgery is not a cure. It is part of a plan to help the obese person lose weight and lead a healthy lifestyle. The plan must include healthy eating and regular physical exercise for the rest of their lives in order for it to be successful.

## Body Mass Index (BMI)

The body mass index (BMI) gives an accurate measurement of a person's size and is a good indicator of obesity. A person's BMI number is calculated by dividing mass (in kilograms) by his or her height (in meters, squared). A normal BMI is considered in the range of 18.5-24.9 $kg/m^2$. A BMI of 25-29.9 $kg/m^2$ is considered overweight. A BMI of 30 $kg/m^2$ or greater is classified as obese. The obese category is further subdivided into class I, II, or III obesity.

Other factors other than just height and weight should be

considered. An extremely muscular, physically fit individual may have a high BMI score without being overweight. Waist circumference has been shown to be an excellent indicator of abdominal fat mass. A circumference of greater than 88 cm (35 in) in women or greater than 102 cm (40 in) in men is correlated with obesity.

Though generally accepted criteria for bariatric surgical treatment was first developed at the 1991 National Institutes of Health (NIH) Consensus Development Conference Panel was with type 2 diabetes (T2D) include a BMI of greater than 40 $kg/m^2$ or a BMI of greater than 35 $kg/m^2$ in combination with high-risk co-morbid conditions, there is currently data that generally accepted criteria for surgical treatment for patients in the populations of class I obesity (BMI 30-34.9 $kg/m^2$). Studies have shown great short-term success when using the lap band surgery (LAGB) in mild to moderately obese patients with a BMI of 30-35 $kg/m^{2.}$ This caused the Food and Drug Administration to approve LAGB for these patients with the above criteria and other obesity-relation comorbidities. This was considered controversial but was also adopted by the International Diabetes Federation.

## Comorbidities of Morbid Obesity

Morbid obesity is the associated with diseases that affect every organ system. These patients are at higher risk for preoperative and postoperative complications due to these co-morbidities. The following is a partial list of co-morbidities seen with the morbidly obese patients:

- **Cancer**: endometrial, breast, ovarian, prostate, and pancreas, colorectal
- **Cardiovascular**: hypertension, atherosclerotic heart,

peripheral vascular disease myocardial infarction, cerebral vascular accidents, peripheral venous insufficiency, thrombophlebitis, and pulmonary embolism
- **Dermatologic:** dermatitis
- **Endocrine and reproductive:** polycystic ovary syndrome, high risk pregnancy and fetal abnormalities, male hypogonadism
- **Gastrointestinal:** cholelithiasis, gastroesophageal reflux disease, nonalcoholic fatty liver disease, hepatic cirrhosis, hepatic carcinoma, colorectal carcinoma
- **Metabolic:** type 2 diabetes (T2D), impaired glucose tolerance, hyperlipidemia
- **Musculoskeletal:** back strain, disc disease, weight bearing osteoarthritis of the hips, knees, ankles, and feet, degenerative joint disease
- **Neurological:** pseudotumor cerebri, carpal tunnel syndrome
- **Psychological:** depression, eating disorders, body image disturbances
- **Respiratory:** asthma, obstructive sleep apnea, obesity-hypoventilation syndrome (Pickwickian Syndrome)
- **Urologic:** stress incontinence

## Bariatric Surgery

In 1954, Kremen and Linner did the first surgery for obese patients in the United States, the jejunoileal bypass. In this surgery, the proximal jejunum was connected directly to the distal ileum, bypassing 90% of the small intestine. The surgery induced a state of malabsorption which led to significant weight loss. Sadly it also caused serious malabsorption complications and many patients required the surgery to be reversed. Modifications in the original surgery

and the development of new techniques have led to today's three types of bariatric surgery:

- Gastric restriction (adjustable-banded gastroplasty, vertical-banded gastroplasty)
- Gastric restriction with mild malabsorption (Roux-en-Y gastric bypass)
- A combination of mild gastric restriction and malabsorption (Duodenal switch)

## Gastric Restrictive Procedures

Restrictive surgeries attempt to limit the amount of food that can be eaten at one time and otherwise do not interfere with normal digestion. Restrictive surgeries include:

- **The adjustable-banded gastroplasty (ABG):** The ABG uses a hollow inflatable band that is wrapped around the top portion of the stomach and attached to a reservoir in the abdominal wall. The restrictive capabilities can be increased or decreased by injecting sterile saline into the reservoir or withdrawing it from the reservoir, filling or emptying the band to increase its tightness and affect the diameter of the stomach through which food passes. This is often referred to layterms as the "lap band" surgery (LAGB).
- **The vertical-banded gastroplasty (VBG):** The VBG sometimes referred to as "stomach stapling," limits the size of the stomach thereby restricting the amount of food that can be consumed at one time. Restrictive procedures are easier to perform, considered reversible, and therefore are considered safer procedures for patients.
- **Sleeve gastronomy (SG or LSG):** You might hear this referred to as "gastric sleeve." The stomach is reduced to about 15% of the size it was prior to surgical treatment. This is not a reversible procedure. Surgical staples are used to reshape the stomach and the stomach

is permanently reduced. Since 2008 this procedure has been considered as having as good results as the other surgeries.

They are often performed laparoscopically, meaning minimally invasively, which tends to increase the safety, reduce pain, and expedite recovery. However, patients tend to lose weight more slowly and lose less weight following restrictive procedures. Patients typically lose 50% of excess weight the first year, but tend to regain the weight at 3-5 years; by 10 years, only about 20% of patients have maintained the weight loss. This could be problematic in the patient whose life is seriously threatened by obesity. However, many patients receiving malabsorptive procedures maintain 60%-70% of weight loss at 20 years.

## Gastric Restriction with Mild Malabsorption Procedures

Malabsorptive procedures interfere with the absorption of food, and associated nutrients and calories, from the gastrointestinal tract. They typically result in quicker, greater weight loss than restrictive procedures but also are more likely to result in long-term nutritional deficiencies. The malnutrition risks and effects can be offset with long-term follow up, nutritional supplements, and patient adherence to the medical regimen.

- **The Roux-en-Y gastric bypass (RGB) –** a small stomach pouch is created to restrict food intake followed by the attachment of a Y-shaped section of the small intestine to the pouch to bypass the duodenum and part of the jejunum. As food travels through the gastrointestinal tract following the procedure, it bypasses a portion of the small intestine, thereby limiting the amount of food that is absorbed (NIDDK, 2004).
- **The Biliopancreatic Diversion (BPD) –** is a more complicated procedure involving removal of the lower portion of the stomach. The final segment of the small

intestine is attached to the remaining small pouch.

**Combination of Mild Gastric Restriction and Mild Malabsorption**

- **A variation of the BPD called the Duodenal Switch-** Because the BPD procedure carries a higher risk for nutritional deficiencies, a variation called the duodenal switch, is used more often. In the duodenal switch the surgeon leaves a larger portion of the stomach as well as a small part of the duodenum intact. This larger portion of the stomach allows patients to eat more after surgery.

**Post-op Complications requiring transfer to the ICU-** Most bariatric surgical patients do not need to go to ICU. The following is a partial list of conditions requiring admission to the ICU:

- ARDS/Respiratory failure
- Aspiration pneumonia
- MSOF/MODS
- Renal insufficiency
- Sepsis/Shock
- Skin breakdown

**Complications seen early in the recovery**

- Anastigmatic leaks (risk of death) – Signs and symptoms of anastomotic leak may be very subtle (e.g., unexplained tachycardia, dyspnea, and restlessness). The nurse should notify the physician immediately if the patient's abdomen becomes noticeably rigid, potassium rises, and the patient complains of non-incisional abdominal pain, or if lab results indicate metabolic acidosis.
- Bowel obstruction
    - Pulmonary embolism/DVT
    - Strictures at the anastamosis site
    - Vomiting occurs if patients eat too much or eat

foods that become lodged in the restriction formed by the band or the stapling, and can happen at any time after surgery. When vomiting occurs, patients should see their physicians.

## Complications seen later in the Recovery

- Altered nutritional status
- Anemia
- Dumping syndrome of common after the malabsorptive procedures. Symptoms include: nausea, bloating, abdominal pain, weakness, faintness, and diarrhea after eating a snack or meal that is high in simple carbohydrates. Many patients become very ill with dumping syndrome, which can be avoided if they diligently avoid intake of simple sugars such as sweets. The problem does not tend to occur in patients who have had the duodenal switch because the pyloric valve is left intact.
    - Herniation
    - Ulcers
    - Weight gain can occur when patients do not adopt a long-term plan of healthy eating and regular physical activity. Patients prevent weight loss and even gain weight by consuming large volumes of high caloric food that pass through the restriction easily (e.g., milk shakes, ice cream, purred foods).

## Discharge Teaching

Discharge teaching for the bariatric patient should address wound care, diet progression, eating methods, exercise, medications, supplements, bowel/bladder issues, follow up appointments, and information on how to reach their surgeon if any of the following occur:

- Abdominal pain with N&V

- Bladder infection
- Diarrhea past the 7th day after surgery
- Drainage that is cloudy or foul-smelling
- Fever over 100.5° F
- Hiccups or abdominal pain over a 2-hour duration
- Increased pain, swelling, redness
- New onset of back, chest, or left shoulder pain
- Night sweats
- Prolonged fatigue
- Pulse over 120

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