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Bariatric surgery



It's no easy fix

p. 58

Treating
HTN crisis
p. 37

Low-tech
nursing
p. 43

SUMMER INJURIES
Heat emergencies
p. 46

What's wrong
with this patient?
p. 53



Although bariatric surgery offers help for the severely obese, patients need to approach the procedure with their eyes wide open to the lifestyle changes they'll be required to make and the complications they may encounter.

The morbidity and mortality that's linked to obesity has been well documented—one recent report even suggests that its increasing prevalence could lead to a reduction in average life expectancy of the entire population of the United States.¹ Yet almost one-third of the nation's adults are obese.² Many have repeatedly tried dieting, exercising, and weight-loss medication to no avail, and see bariatric surgery as their last hope.

Such surgery, which reduces the size of the stomach and, in some cases, manipulates the digestive system to restrict how much food can be absorbed, enables many patients to lose up to three-quarters of their excess weight—and to keep it off for years.³ The sustained weight loss often improves or even eliminates obesity-related conditions such as diabetes, hypertension, and obstructive sleep apnea.³ It's not surprising, then, that the number of patients undergoing bariatric surgery has grown from approximately 16,000 in 1992 to 103,000 in 2003.²

It would be easy to conclude that bariatric surgery is the answer to the obesity epidemic. But the reality is not so simple. Although the procedures commonly used to induce weight loss have a low mortality rate—estimated at 0.1% – 2%²—all are major surgical interventions with many potential complications and adverse effects. What's more, postop weight loss is not automatic. Long-term success requires a lifelong commitment to rigid dietary restrictions and regular medical follow-up.

Caring for a patient who is a candidate for bariatric surgery presents its share of nursing challenges. In fact, success will hinge, in part, on your thorough patient teaching and your ability to spot complications, should any arise. But before you can provide this care, you need to know something about the surgical options.

How it works, who it's for

There are three types of bariatric procedures: restrictive, malabsorptive, and those that use a combination of both techniques.⁴ Vertical banded gastroplasty (VBG) and laparoscopic gastric banding (Lap-Band) are widely used restrictive procedures. They create a small pouch out of the top of the stomach and a narrow passage from the pouch to the lower part of the stomach, thereby limiting the amount of food an individual can consume at one time.⁴

In contrast, malabsorptive procedures bypass most of the small intestine, excluding it from the digestive tract. But because this type

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of surgery leads to severe nutritional deficiencies, it's no longer recommended.⁴

Combination procedures—most notably the Roux-en-Y gastric bypass—have taken its place. RYGB, as the procedure is known, limits the size of the stomach and bypasses part of the small intestine.⁴ To learn more about how the VBG, Lap-Band, and RYGB are done, see the box on page 61.

To be a candidate for one of these procedures, a patient must have a body mass index (BMI) of 40 or higher—about 100 pounds overweight for men and 80 pounds for women.⁴ Someone with a BMI of 35 or higher might also be a candidate if she has diabetes, heart disease, obstructive sleep apnea, or another serious obesity-related condition.³

Because of the major commitment and lifestyle change bariatric surgery requires, a candidate must undergo rigorous screening (usually by her primary care provider), psychiatric evaluation, and consultation with a dietitian. The idea is to ensure that the patient has been unable to lose weight or maintain weight loss with non-surgical methods and that she wants weight loss not just for cosmetic reasons, but because obesity

severely impairs both her health and the quality of her life.

She must also be realistic about the level of commitment required and recognize that the procedure is not a magic bullet, but a tool to help her lose weight. In addition, she needs to realize that if she continues to eat as she has in the past after surgery, she'll not only fail to slim down but will likely suffer serious adverse effects. Finally, the patient must be aware of the potential complications of surgery, and both patient and surgeon must be certain that the benefits outweigh the risks.

Watch for these complications

Regardless of which bariatric procedure a patient undergoes, there are risks. Up to 20% of patients require additional surgery to correct problems such as leakage or bleeding of the stomach.⁵ Pulmonary complications, infection and other wound-related problems, stomal stenosis, ulcers, and gallstones are also potential complications.

Let's start with leakage. A GI leak involving the release of the contents of the stomach into the abdomen is one of the most frequently reported major complica-

tions.³ If left untreated, it can quickly lead to a fatal infection, so rapid detection and surgical correction is essential.

However, signs and symptoms of a GI leak may be subtle.⁶ Patients may have tachycardia, dyspnea, or restlessness.⁶ Diagnosing a GI leak can be done with upper GI studies using a contrast agent or a CT scan of the abdomen.⁶

Generally, GI leaks occur early in the postop period, often prior to discharge. But with VBG, the band may erode into the stomach over time and cause leakage. And with RYGB, stretching of the gastric pouch may cause the staple line to break and result in a leak.

Pulmonary complications include pneumonia, atelectasis, and pulmonary embolism often due to DVT.⁶ Most patients are given low molecular weight heparin from preop to discharge to reduce the risk of clot formation.

The incidence of wound-related problems has dropped because of the increased use of laparoscopic procedures, which in 2003 accounted for 56% of all bariatric surgeries.^{2,7} But patients are still at risk for wound infections, dehiscence, and hernias, which may develop at the incision site or internally.⁶ Because X-rays may appear normal, internal hernias are difficult to diagnose. Symptoms of a hernia include abdominal colic that can't be explained by any other source. If one is suspected, surgical exploration is usually required.

Stomal stenosis is also common, occurring in up to 20% of bariatric procedures, usually within the first six months after surgery.⁶ Suspect it if your patient has postprandial epigastric pain and vomits undigested food, followed by fluids. Upper GI studies are used to diagnose stomal

Quick facts

- ▶ Bariatric surgery candidates must undergo rigorous screening, psychiatric evaluation, and consultation with a dietitian because of the major lifestyle changes involved.
- ▶ After surgery, nausea and vomiting can be avoided by eating slowly and having only one cup of food at a time.
- ▶ Patients who undergo a Roux-en-Y gastric bypass must take vitamin supplements for the rest of their lives.

Three surgical routes to weight loss

In the United States, there are three commonly performed bariatric surgeries: vertical banded gastroplasty (VBG) and laparoscopic gastric banding (Lap-Band), both of which are restrictive procedures, and Roux-en-Y gastric bypass (RYGB). Here's how they're done:

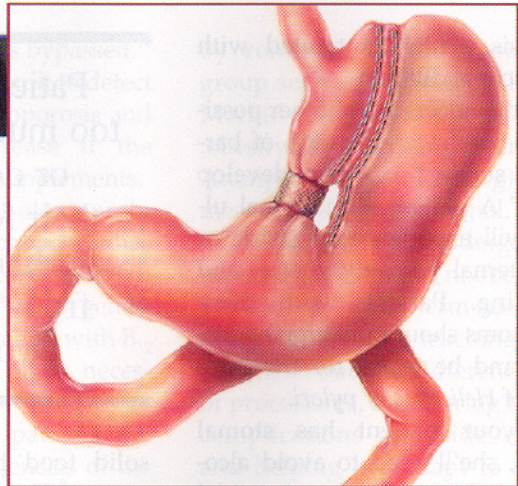
VBG: The surgeon uses a surgical stapler to create a small gastric pouch out of the top of the stomach. A polypropylene mesh band is placed around the bottom of the pouch, restricting the size of its outlet to approximately $\frac{1}{4}$ inch. The small pouch and narrow outlet limit how much food the patient can comfortably consume, create a feeling of fullness after only a small amount is eaten, and delay the emptying of food into the larger part of the stomach. Initially, the pouch holds 1 ounce of food, but may eventually stretch to hold 2–3 ounces.

Lap-Band: Approved by the FDA in 2001, Lap-Band is a minimally invasive laparoscopic procedure in which an inflatable band is placed around the top of the stomach to create a small pouch. The size of the outlet to the lower stomach can be adjusted without additional surgery by instilling saline solution into the band via an access port placed under the patient's skin.

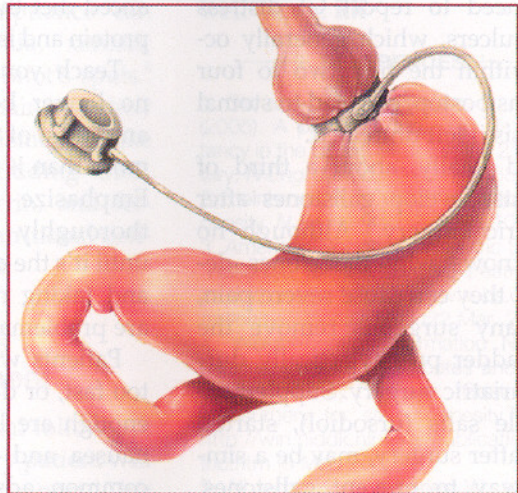
RYGB: In this two-part procedure, the surgeon creates a small pouch by stapling the stomach, then divides the upper jejunum and reroutes and attaches one end of it—called the Roux limb—to the newly created pouch. The other end of the divided jejunum is reattached to the Roux limb at a lower point. The rerouting causes food to pass down the esophagus, into the gastric pouch, and down the Roux limb into the remaining small intestine, bypassing the lower stomach and duodenum and resulting in decreased nutrient and calorie absorption.

Restrictive procedures are easier to perform than RYGB and don't involve bypassing of the intestinal tract, so they're generally safer—but less effective. Over three years, the average weight reduction is 40%–63% for VBG, compared to 68%–72% for RYGB.

Sources: 1. Weight-control Information Network, National Institute of Diabetes and Digestive and Kidney Diseases. "Gastrointestinal surgery for severe obesity." 2004. <http://win.niddk.nih.gov/publications/gastric.htm> (8 Mar. 2005). 2. Bock-Lopez, M. (2001). Hope for the morbidly obese. *RN*, 64(12), 56. 3. U.S. Food and Drug Administration. "FDA approves implanted stomach band to treat severe obesity." 2001. www.fda.gov/bbs/topics/ANSWERS/2001/ANS01087.html (10 Mar. 2005). 4. American Obesity Association. "Obesity surgery." 2002. www.obesity.org/education/advisor.shtml (22 Mar. 2005).



Vertical banded gastroplasty (VBG)



Laparoscopic gastric banding (Lap-Band)



Roux-en-Y gastric bypass (RYGB)

stenosis, which is treated with endoscopic dilation.

Stomal ulcers are another possibility, but fewer than 8% of bariatric surgery patients develop them.⁶ A patient with stomal ulcers will experience epigastric or retrosternal pain, dyspepsia, and vomiting. Patients with these symptoms should undergo endoscopy and be tested for the presence of *Helicobacter pylori*.

If your patient has stomal ulcers, she'll need to avoid alcohol, smoking, and nonsteroidal anti-inflammatory drugs.⁵ She will also need to report GI distress since ulcers, which generally occur within the first two to four months postop, can lead to stomal stenosis if left untreated.⁶

And finally, about a third of patients develop gallstones after bariatric surgery.⁶ Although no one knows why the stones develop, they can cause severe pain, so many surgeons remove the gallbladder prophylactically during bariatric surgery. Supplemental bile salts (ursodiol), started soon after surgery, may be a simpler way to prevent gallstones. One study found the incidence of gallstones following bariatric surgery dropped from 32% to just 2% among those who took 600 mg/day of the supplement for six months postop.⁸

Eating right to avoid adverse effects

A patient who undergoes bariatric surgery must drastically alter her eating patterns. Dietary compliance is essential, since many of the most unpleasant side effects can be reduced or eliminated.

Patients can consume clear liquids immediately after surgery, then eat soft, low-residue foods for four to six weeks, and return to

Patients who eat too much or too fast or don't chew their food enough are likely to suffer from nausea and vomiting.

solid food by about 12 weeks postop.⁹ The patient's dietitian will help her select a nutritionally balanced diet that supplies adequate protein and is low in fat and sugar.

Teach your patient that she'll no longer be able to eat large amounts of food, typically no more than ½ to one cup at a time. Emphasize the importance of thoroughly chewing her food until it's the consistency of yogurt and taking note of which foods are problematic for her.⁴

Patients who eat too much or too fast, or don't chew their food enough are likely to suffer from nausea and vomiting, the most common adverse effect. Vomiting, which affects up to 30% of bariatric surgery patients, is more common after a restrictive procedure, but can also occur in patients who've undergone RYGB.⁶

Vomiting can be triggered by a specific food, so do a thorough assessment. Many patients, for instance, can no longer tolerate meat and dairy products.⁶

Diarrhea, another adverse effect, may be due to lactose intolerance, food sensitivity, malabsorption, bacterial overgrowth, or infection. Constipation, on the other hand, is generally the result of decreased food and fluid intake. Calcium or iron supplements may also cause or contribute to constipation.⁶

Overeating can lead to acid reflux, another common adverse effect that's seen more often after VBG. It may also be caused by a vagal nerve injury, delayed gastric emptying, or stomach stricture.⁶

Dumping syndrome—nausea, weakness, sweating, diarrhea, and lightheadedness—is a common adverse effect of RYGB. It occurs when food (typically, something that's high in sugar) moves too quickly through the small intestine.¹⁰

In people whose digestive system is intact, the jejunum is not exposed to sugar, and it's ill-equipped to handle it. When sugar reaches the jejunum in patients who've undergone gastric bypass, the body circulates large volumes of fluid to dilute and absorb it, triggering dumping syndrome. Some clinicians consider this to be a positive side effect, because the symptoms associated with the dumping syndrome are so unpleasant that most patients stay away from sugar just to avoid them.⁵

To help your patient stay symptom-free, encourage her to make follow-up visits with her dietitian as recommended. Be sure she's comfortable with her dietary plan. Review the amount of food in a ½- to one-cup portion, what types of foods she should eat, and which foods to avoid.

If your patient can eat meat, tell her to cut it into small pieces; large chunks of meat that aren't thoroughly chewed will expand the gastric pouch and cause vomiting.⁶ Finally, remind her that no matter what she eats, she can usually avoid vomiting by eating slowly and stopping at the first sign of gastric discomfort.⁶

Fluid intake is also a concern after bariatric surgery. Often when a patient isn't feeling well,

it's because she's dehydrated. Instruct her to consume small amounts of fluid throughout the day. Tell her to drink in sips, not gulps, and to never use a straw or she'll risk stretching the gastric pouch with air.

Remind your patient, too, that the surgery doesn't prevent overeating—and is no guarantee she'll lose weight. If she consistently overeats, the pouch can stretch to the stomach's preoperative size. To keep on track, suggest she keep a food diary that includes measured portion sizes.

Taking supplements after RYGB

All bariatric surgery patients face the risk of nutritional deficiencies. While patients who undergo restrictive procedures can develop protein and vitamin deficiencies due to repeated vomiting, this is rare.³ Patients who undergo RYGB, however, are at greater risk because the food they eat bypasses the duodenum and part of the jejunum, so the amount of nutrients they absorb is reduced.⁴ The most common nutritional deficiencies after RYGB are iron, vitamin B₁₂, calcium, and folate, and a patient who undergoes this procedure will need to take supplements for the rest of her life.³

Iron deficiency is most common among premenopausal patients due to iron loss from menstruation, but anyone who has undergone gastric bypass is at risk.⁶ What's more, up to 70% of RYGB patients become deficient in vitamin B₁₂.¹⁰ If left untreated, this deficiency can lead to anemia, glossitis, and demyelination of peripheral nerves.

Calcium malabsorption may occur after RYGB because the duodenum, the primary site for the ab-

sorption of calcium, is bypassed.¹⁰ This deficiency is difficult to detect and may lead to osteoporosis and metabolic bone disease if the patient doesn't take supplements.

Folate deficiency is also a problem for these patients and studies show that about a third of RYGB patients develop it.⁶ This generally occurs in conjunction with B₁₂ deficiency, because B₁₂ is necessary to absorb folate.

Bariatric surgery patients are also at risk for deficiencies of the fat-soluble vitamins.¹⁰ These are easily replaced with oral supplements, but noncompliance can lead to xerophthalmia, xerosis, hyperkeratosis, and Bitot's spots.⁶ To help patients maintain their health, review supplement intake and draw labs, including CBC, serum iron, transferrin, and ferritin, to screen for nutritional deficiencies at every visit.

Surgery requires a major adjustment

In addition to medical follow-up, your bariatric surgery patient will need psychosocial support. This is important because her life will change drastically, particularly her relationship with food. Rather than focusing mainly on consuming it, she'll need to be diligent about limiting how much she eats and making sure she gets enough of particular foods to meet her body's basic metabolic needs.

Your patient may show signs of depression and grieve the life she left behind, even if it wasn't the life she wanted. The role she played in the family and in her social relationships, as well as her own identity, will change, too.

The ramifications of these changes can be enormous. You can help not only by listening and offering encouragement, but also

by referring her to a support group such as the Association for Morbid Obesity Support (www.obesityhelp.com) or Overeaters Anonymous (www.aa.org), or a mental health professional.

The decision to undergo bariatric surgery should not be made impulsively. Long-term success is not easy. But by teaching your patient about the different types of procedures, monitoring her for complications and side effects, and helping her adapt to a new way of life, you'll be making a major contribution to her future well-being. **RN**

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Have you ever cared for a bariatric surgery patient? Visit www.rnweb.com and vote in our poll.

Continuing Education Test #1021



“Bariatric surgery: It’s no easy fix”

OBJECTIVES After reading the article you should be able to:

1. Identify adverse effects and complications following bariatric surgery.
2. Discuss nursing and medical management for a bariatric surgery patient.
3. Develop a plan of care for a bariatric surgery patient.

Circle the one best answer for each question below. **Transfer your answers to the card that follows page 68.** Save this sheet to compare your answers with the explanations you’ll receive. Or, take the test online at www.rnweb.com.

1. **How many adult Americans are obese? Almost:**
 - a. One-eighth.
 - b. One-fourth.
 - c. One-third.
 - d. One-half.
2. **Approximately how many patients had bariatric surgery in 2003?**
 - a. 16,000.
 - b. 52,000.
 - c. 76,000.
 - d. 103,000.
3. **Surgical procedures commonly used to induce weight loss have a mortality rate estimated at:**
 - a. 0.1% – 2%.
 - b. 2.5% – 3%.
 - c. 3.5% – 4%.
 - d. 4.5% – 5%.
4. **Which of the following bariatric procedures limits the size of the stomach and bypasses part of the small intestine?**
 - a. Lateral gastrectomy.
 - b. Laparoscopic gastric banding (Lap-Band).
 - c. Roux-en-Y gastric bypass (RYGB).
 - d. Vertical banded gastroplasty (VBG).
5. **An obese patient who has diabetes, heart disease, obstructive sleep apnea, or another serious obesity-related condition may be a candidate for bariatric surgery if her BMI is:**
 - a. 20 or higher.
 - b. 25 or higher.
 - c. 30 or higher.
 - d. 35 or higher.
6. **Which of the following symptoms is suggestive of a GI leak?**
 - a. Bradycardia.
 - b. Headache.
 - c. Pleural effusion.
 - d. Restlessness.
7. **The diagnostic tool of choice for a patient suspected of having an internal hernia following bariatric surgery is:**
 - a. CT scan.
 - b. MRI.
 - c. Surgical exploration.
 - d. Upper and lower GI series.
8. **Up to how many bariatric surgery patients require additional surgery to correct complications?**
 - a. 10%.
 - b. 15%.
 - c. 20%.
 - d. 25%.
9. **Symptoms of stomal ulcers include:**
 - a. Abdominal colic.
 - b. Bradycardia.
 - c. Headache.
 - d. Epigastric pain.
10. **If a patient develops stomal ulcers after surgery, he should be instructed to avoid all of the following EXCEPT:**
 - a. Alcohol.
 - b. Nonsteroidal anti-inflammatory drugs.
 - c. Smoking.
 - d. Vegetables.
11. **Which of the following agents may help to prevent gallstones after bariatric surgery?**
 - a. Niacin.
 - b. Supplemental bile salts (ursodiol).
 - c. Cholestyramine (Questran).
 - d. Atorvastatin (Lipitor).
12. **About how many weeks after surgery can patients return to eating solid foods?**
 - a. Four weeks.
 - b. Six weeks.
 - c. Eight weeks.
 - d. 12 weeks.
13. **After bariatric surgery, many patients can no longer tolerate:**
 - a. Dairy products.
 - b. Cereals.
 - c. Legumes.
 - d. Vegetables.
14. **Following surgery, patients should typically eat no more than how much food at a time?**
 - a. $\frac{1}{4}$ – $\frac{1}{2}$ cup.
 - b. $\frac{1}{2}$ – 1 cup.
 - c. 1 – 1.5 cups.
 - d. 1.5 – 2 cups.
15. **Which of the following is most likely to move quickly through the small intestine?**
 - a. Fat.
 - b. Protein.
 - c. Sodium.
 - d. Sugar.
16. **All of the following are common nutritional deficiencies following RYGB EXCEPT:**
 - a. Iron.
 - b. Folate.
 - c. Calcium.
 - d. Magnesium.
17. **Patient teaching concerning fluid intake includes:**
 - a. Fluid restriction.
 - b. Drinking large amounts of fluids at a time.
 - c. Drinking fluids with a straw.
 - d. Drinking sips of fluids.
18. **Acid reflux is seen more often after which of the following procedures?**
 - a. Lap-Band.
 - b. Lateral gastrectomy.
 - c. RYGB.
 - d. VBG.

Credit will be granted for this unit through June 2007. It was prepared by Marilyn Herbert-Ashton, RN, BC, MS. Approved for ANCC credit and AACN Category A credit. California Board of Registered Nursing (#CEP10864).