Role of the surgical technologist in bariatric surgery

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Obesity has reached epidemic proportions in the United States. According to a 1999-2000 survey of adults 20 years of age and older, 64% of adults in the United States are considered overweight for their height (BMI of at least 25). Of them, 30%, 59 million Americans, are categorized as obese (BMI 30+). Numerous research studies confirm the connection between overweight and obesity and the increased risk of health conditions such as Type 2 diabetes, hypertension, ischemic stroke, coronary artery disease, osteoarthritis, and cancer, such as colon cancer, postmenopausal breast cancer and endometrial cancer. Annual medical costs attributed to overweight, obesity and their associated health problems are in the billions of dollars.

Gastric bypass surgery is becoming the most common tool to treat this disease. As a result, there is a need for a dedicated and skilled surgical team. The American Society of Bariatric Surgeons has emphasized the importance of having a designated team of professionals on each and every gastric bypass case. With this in mind, it is more important than ever that surgical technologists be prepared for their role in this procedure.

Bariatric surgery or gastric bypass surgery is becoming the tool of choice in treating clinically severely obese patients. The word bariatric is derived from the Greek word *baros,* which means pressure or weight (excess weight or obesity is implied). Doctors have used various procedures in bariatric surgery over the years; however, the three procedures that have been performed most often during the past 20 years are the biliopancreatic diversion with duodenal switch (BPD–DS) (Figure 1), adjustable band gastroplasty (Lap Band) (Figure 2), and the Roux-en-Y Gastric Bypass (RNY) (Figure 3). The Roux-en-Y gastric bypass is considered the gold standard by the American Society of Bariatric Surgeons (ASBS). The gastric bypass can be performed as an open or laparoscopic procedure. This article will discuss the latter.

Considerations

The standards for performing gastric bypass surgery have been set by the ASBS and Association of periOperative Registered Nurses (AORN). In these standards, both groups have identified the importance of a multidisciplinary team approach to the gastric bypass. This multidisciplinary team includes, but is not limited to, representatives from the surgery, pulmonary, radiology, physiology, nutrition services, psychology departments and the postanesthesia care unit (PACU). In the operating room (O.R.), the team consists of the bariatric surgeon, anesthesia provider, circulator, surgical technologist, and an assistant surgeon or a nonphysician surgical assistant.

While surgical technologists normally do not interact with patients prior to their arrival in the operating room suite for the procedure, they should understand the events that have influenced the decision to undergo surgical intervention. The decision is complex and is impacted by many personal, physical, financial and social factors.

The bariatric surgery patient undergoes extensive preoperative education and evaluation. Comprehensive laboratory testing and numerous consultations may be performed. In addition, each patient must fit within the guidelines set by the National Institutes of Health (NIH) and individual insurance company standards to be considered for surgical intervention. These include a body mass index (BMI) greater than 40 or BMI of 35 with significant comorbidity such as Type II diabetes, hypertension, gastroesophageal reflux disease (GERD), sleep apnea or others. Insurance companies may also mandate specific medical weight-loss parameters for patients prior to surgical consideration. Postoperatively, follow-up care, including monthly support groups, is recommended for patients for a minimum of five years.

Instrumentation

The surgical technologist should open laparoscopic instruments, such as those used on a laparoscopic colectomy, along with some additional extra long instruments to accommodate the bariatric surgery patient. Disposable endomechanical staplers and their various disposable cartridges for reloading are also needed for the transection of the bowel and stomach tissue.

The surgical technologist needs to be aware of each surgeon's specific needs so that the procedure flows smoothly. He or she must also know the size and length of staple (eg, 2.0 mm for mesentery or thin tissue, 2.5 mm for the bowel, and 3.5 mm or 4.8 mm for the stomach or other thick tissue) and the number of staple reloads (30 mm, 45 mm, or 60 mm linear length) used during each portion of the procedure. Surgeons have a specific staple length that they prefer and a specific order in which they use them. The surgical technologist should understand the rationale for using a 2.5 mm staple on bowel and a 3.5 mm or 4.8 mm on the stomach. If the incorrect size is used, a staple-line leak could occur and cause the patient to return to surgery. If a staple is not long enough, it could cause a disruption in the staple line that would result in various complications.

Trocars will also be used in the laparoscopic procedure. Although trocar preference will vary, most surgeons will use two 5 mm, two 10 mm, and one 12 mm. In addition, a liver retractor will also be utilized.

Keep in mind the possibility of conversion to an open procedure due to technical considerations and ensure that the appropriate laparotomy supplies are available.

Positioning, Prepping and Draping

Proper positioning, prepping and draping is essential with the bariatric patient, not just for gastric bypass surgery, but for the other surgical/diagnostic procedures this patient population may undergo. Although generally seen as a major role of the circulating nurse, ensuring proper patient positioning is the responsibility of the entire surgical team. Understanding the importance of proper body alignment, support and the correct use of positioning aids and other equipment will assist in recognizing potential intraoperative complications before they occur. Key points are noted below for reference and review.

Special Considerations

- If a urinary catheter is ordered, several assistants may be needed to provide retraction of the panniculus and thighs for access to the urethra during catheter placement.
- Properly fitted sequential compression devices should be utilized to prevent formation of deep vein thrombosis.
- Surgical team members may need step stools to work within the sterile field.
- A bariatric operating table, with side attachments specifically made for the table, should be utilized.
- A padded footboard is also needed.

Positioning

- The patient is placed in the supine position to provide good joint support.
- The team should assess the following potential pressure point areas: elbows, heels, and areas of safety strap placement.
- Arms should be secured with padding and fastening straps.
- Avoid the hyperextension of the patient's shoulder or forearm on the armboard.
- If the arm is tucked to the side, ensure good circulation and alignment.
- Place a pillow under the patient's knees to decrease back strain.
- Abduct thighs with comfortable physiological external rotation.
- Avoid pressure on the lateral aspect of the lower leg.
- Use safety straps to secure the legs.

Prepping

- Pay special attention to skin folds under the panniculus to ensure that all surgical site areas are clean and adequately prepped.

Draping

- Standard draping for an abdominal incision is used.

Procedure

- The patient is placed on the table in the supine position with his or her arms extended on armboards, if possible. The prep extends from the mid-chest line to the mid thigh and laterally as far as possible. A grounding pad is placed and, if ordered, a Foley catheter is inserted.
- The primary surgeon will stand on the patient's right side, and the surgical technologist and the assistant will stand on the patient's left. Two video towers should be used, so that the surgeon and the assistant will each have a monitor.

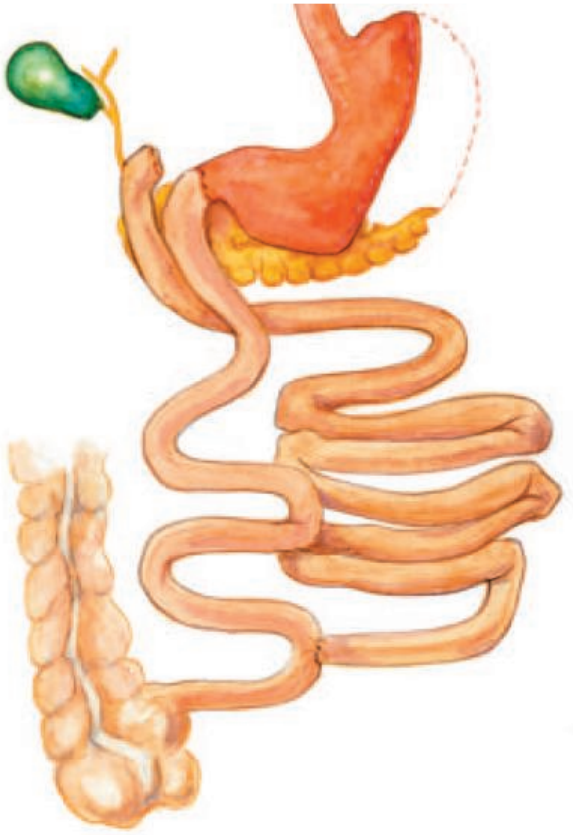

FIGURE 1

Malabsorptive: biliopancreatic diversion with duodenal switch.

Incisions

- A subumbilical incision is initiated and a blunt tip trocar is placed and used to create the pneumoperitoneum.
- Four to five additional trocars are placed as described below.

Port Placement

- Right anterior axillary line (AAL)
- Left AAL
- Right midclavicular line (MCL)
- Left MCL
- Subxiphoid, if necessary for liver retraction

FIGURE 2

Restrictive: adjustable band gastroplasty (illustration shows one type of lap band).

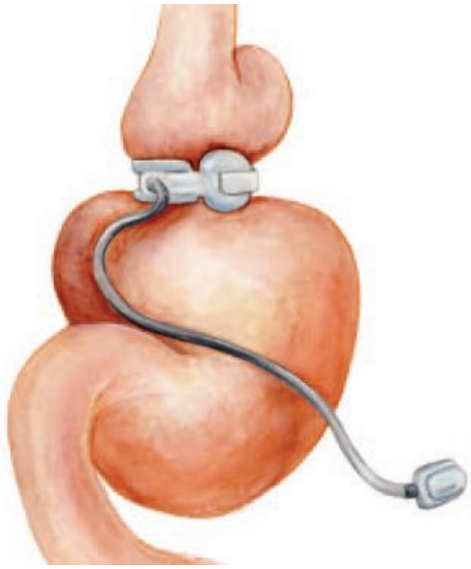

FIGURE 3

Combination: Roux-en-Y gastric bypass.

Exploration and Retraction

- Free the omentum of adhesions.
- Retract the omentum cephalad or use a Trendelenburg's position to exposure the ligament of Treitz.

Gastric Transection

- Place liver retractor if necessary for visibility purposes.
- Measure pouch size (approximately 30 cc using a 34 mm bougie or sizing balloon).
- Incise the gastrophrenic ligament at the Angle of His for better accessibility.
- Dissect starting from the lesser curve to the lesser sac.
- Transect the gastric pouch using an endo GIA (either a 3.5 [Blue] or 4.8 [Green] staple length) requiring two to three loads (ie cartridges) depending on linear length used (eg, 30 mm, 45 mm, or 60 mm).
- Use one "firing" (ie placement of staples) across, and one to two firings upward toward the Angle of His to create a pouch approximately 30 cc in size.

Creating the Roux Limb

- Divide the jejunum approximately 20 cm below the ligament of Treitz.
- Measure the length of the Roux limb approximately 150 cm down the distal portion of the jejunum.
- The jejunojejunostomy is performed by making an enterotomy in both portions of the jejunum, using a side-to-side anastomosis (a 2.5 white, 45 mm or 60 mm load) to create the Roux limb.
- Reattach the biliopancreatic limb to the jejunum farther down in the digestive tract to decrease malabsorption problems.
- Close the enterotomy, using an endo GIA 2.5 load.
- Transect the omentum using staples.
- Position the new Roux limb at the posterior end of the newly formed gastric pouch.

Gastrojejunojejunostomy

- The new Roux limb should be attached to the new pouch using a gastroenterotomy
- Close the gastroenterotomy with suture.
- The creation of the gastrojejunojejunostomy marks the completion of the gastric bypass procedure.

Leak Tests

- Check for leaks at the gastrojejunojejunostomy site.
- Use air or methylene blue to check for bubbles or evidence of dye around gastrojejunostomy site.
- Leak tests are necessary to prevent any complication to the patient.
- Some small leaks will seal themselves if the patient is kept NPO for 72 hours.

Closure and Placement of Drains

- Close the mesentery.
- Place a 10 mm Jackson-Pratt drain to detect leaks, evacuate fluid, signal bleeding, and to provide a route of egress if a leak is detected (70% of detected leaks do not require the patient to return to surgery).
- Close the wounds in the usual manner.

Postoperative Care

After the patient has been extubated and the dressings have been applied, she or he is transported to the PACU and later to the bariatric ward.

Potential Complications

- Cardiac problems related to morbid obesity
- Damage to nearby structures
- Deep vein thrombosis
- Deterioration of gastrointestinal anastomosis
- Diarrhea
- Dumping syndrome
- Enterostomy stenosis
- Hair loss due to insufficient protein intake
- Hemorrhage (to the point of necessitating transfusion)
- Kidney stone formation
- Malabsorption of specific vitamins and nutrients
- Mesenteric hernia
- Pulmonary embolism
- Respiratory insufficiency related to morbid obesity

Conclusion

Although a very technical procedure, the positive results and successful outcomes are enhanced by the presence of a knowledgeable and dedicated surgery team. It is imperative that the surgical technologist's knowledge of the preoperative, intraoperative and postoperative process of the respective bariatric surgery program is all encompassing. This knowledge should be partnered with an in-depth understanding of the specific surgical procedure being performed, as well as the "hows and whys" of the instrumentation being utilized. Failure to possess this procedural and instrumentation knowledge may create a delay in the procedure itself, as well as an atmosphere of frustration and uncertainty in the room. A surgical technologist who demonstrates advanced knowledge of the gastric bypass surgery can readily anticipate the needs of the surgeon and, as such, be prepared should the procedure require conversion from a laparoscopic to an open procedure. These attributes will identify the surgical technologist as a key member of the dedicated surgical team… worth their weight in gold!

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About the author

Bobbi Moore has been a Certified Surgical Technologist for more than 17 years. She is currently a Bariatric Clinical Consultant for Auto Suture, a division of US Surgical Corp/Tyco Healthcare, helping to set up bariatric programs throughout the Rocky Mountain Region. Moore is also the treasurer of the Utah State Assembly.

References

1. Overweight and Obesity Frequently Asked Questions (FAQs). National Center for Chronic Disease Prevention and Health Promotion. ***www.cdc.gov/nccdphp/dnpa/obesity/faq.htm*** (accessed 4/14/2005)
2. Overweight and Obesity Economic Consequences. National Center for Chronic Disease Prevention and Health Promotion. ***www.cdc.gov/nccdphp/dnpa/obesity/economic_consequences.htm*** (accessed 4/15/2005)
3. AORN Bariatric Surgery Guideline. *AORN Journal*. 2004;79(5):1026-1052.
4. Kenneth Champion. ASBS Centers of Excellence, October 2003. ***www.asbs.org*** (accessed 4/15/2005)
5. DeMaria EJ, Latifi R, Sugerman HJ. *Laparoscopic Bariatric Surgery: Techniques and Outcomes*. Georgetown, Tex: Landes Bioscience; 2002.
6. Quilici, PJ. Online Laparoscopic Technical Manual 2003. ***www.laparoscopy.net*** (accessed 4/10/2005)