

# BARIATRIC MEDICINE ALERT

*A monthly survey of developments in bariatric medicine*

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## INSIDE

*Does experience preclude leaks in laparoscopic GB*  
**page 11**

*Brain leptin resistance in human obesity revisited*  
**page 12**

*Laparoscopic GB: Results and learning curve of a high volume academic program*  
**page 13**

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## Mini Loop Gastric Bypass: Is It a Safe Alternative?

ABSTRACT & COMMENTARY

**By Nicole R. Basa, MD, and Amir Mehran, MD, FACS**

*Dr. Basa is a Fellow at UCLA, and Dr. Mehran is Assistant Clinical Professor of Surgery, Director, Bariatric Surgery, Section for Minimally Invasive and Bariatric Surgery, Department of Surgery, UCLA*  
*Drs. Basa and Mehran report no financial relationships relevant to this field of study.*

RE-POPULARIZED BY ROBERT RUTLEDGE, MD, IN THE LATE 1990's, the mini-loop gastric bypass (MLGB) has gained increasing attention in both the surgical and lay literature. The procedure is similar to the Billroth II gastrectomy, where a loop of jejunum is anastomosed to a smaller stomach pouch. In contrast to the conventional Roux-en-Y gastric bypass, the loop is not divided and a jejunojejunostomy anastomosis is not performed. The secretions from the in-situ stomach and duodenum, therefore, flow past the gastrojejunostomy, potentially causing an increased rate of bile reflux gastritis, marginal ulceration, and the possible future development of gastroesophageal carcinoma.

In Mason and colleagues' series of loop gastric bypass patients from the 1960's and 70's, the incidence of bilious vomiting and gastritis was as high as 70%.<sup>1</sup> Subsequently, the Roux-en-Y gastric bypass (LRYGB) became more popular, as it eliminated this side effect. MLGB proponents, however, believe that by creating the gastrojejunostomy at a more dependent portion of the gastric pouch, the incidence of dyspepsia and ulcers secondary to bile reflux is reduced to around 5%.<sup>2</sup>

There is a paucity of independent literature regarding this procedure. Most recently, Lee and colleagues<sup>3</sup> have performed a limited, randomized, controlled trial comparing 40 laparoscopic LRYGBs to 40 laparoscopic MLGBs. The duration of surgery was longer for the LRYGB compared to the MLGB [(205 min vs 148 min ( $P < 0.05$ )), as was the length of hospital stay [(6.9 ± 2.8 days vs 5.5 ± 1.4 days ( $P < 0.05$ ))]. Lee et al also reported a higher postoperative complication rate for the LRYGB group (20%) compared to the MLGB segment (7.5%). Weight loss and quality of life results,

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however, were similar between the 2 groups at 2 years. This article was criticized for having an inadequate number of patients to demonstrate a true significance, and the LRYGB results were not comparable to other published reports in the literature.<sup>4</sup> Longer operative time and hospital stay may reflect the surgical inexperience of the surgeons performing the LRYGB, resulting in a technical bias towards the MLGB.<sup>4</sup>

One recent article by Johnson and colleagues<sup>5</sup> combines the experience of 5 academic institutions in North Carolina and Virginia that have seen a high volume of complications resulting from MLGB. This review countered the conclusions made by the MLGB group regarding a lower morbidity and reoperative rate than the RYGB. A total of 32 patients had been seen, with 65% of them requiring a conversion to RYGB. Three patients had anastomotic leaks, and 20 had intractable bile reflux gastritis. Johnson et al raised concerns about the unknown denominator (total number of patients), concerned that if 5 institutions in one segment of the country treated several MLGB complications, there may be many more unreported ones elsewhere, as MLGBs are performed at specialized centers throughout the country.

## ■ COMMENTARY

MLGB has also received unwanted publicity in the lay press. A 2005 *Wall Street Journal* (WSJ) article calls Dr. Rutledge a “doctor-entrepreneur.”<sup>6</sup>

Since MLGB is not covered by most insurance companies, patients are responsible for all of the costs. Mini-gastric bypass programs have been established throughout the country, including at hospitals in Florida, Michigan, North Carolina, California, Missouri, Arkansas and, most recently, Las Vegas. According to the WSJ, surgeons who perform MLGB are trained by Dr. Rutledge and pay a portion of their fees to him for each surgery that they do.

Finally, MLGB is not considered a mainstream bariatric procedure by the American Society for Bariatric Surgery (ASBS), which has excluded it from the Resolutions adopted by its members in 2003 (Bylaws, Article 1, Section 2.2). The ASBS describes the need for more objective, evidence-based data on MLGB before it can be accepted as a safe bariatric procedure.

To determine the safety and effectiveness of MLGB, a large randomized trial comparing MLGB to RYGB is undoubtedly needed. The self-report of a practice's data can be fraught with bias and may be criticized by opponents to the procedure. Johnson et al have proposed the creation of a national registry to track complications, as well as the need for revisional surgery after MLGB or other non-traditional operations.<sup>3</sup> Until then, the debate about MLGB will continue. Further maturation and honest reporting of MLGB data is needed prior to making any definitive conclusions about the merits or dangers of this procedure. ■

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# Does Experience Preclude Leaks in Laparoscopic GB?

ABSTRACT & COMMENTARY

By **Richard M. Peterson, MD, MPH**

Clinical Instructor of Surgery, Department of Surgery, USC

Dr. Peterson reports no financial relationship relevant to this field of study.

**Synopsis:** *The incidence of staple-line leaks appears to be independent of the number of LRYGBs performed. These data suggest that surgeons' experience may not eliminate anastomotic complications experienced by patients undergoing LRYGB.*

**Source:** Gonzalez R, et al. Does experience preclude leaks in laparoscopic gastric bypass? *Surg Endosc.* 2006;20:1687-1692.

**B**ACKGROUND IMPROVED OUTCOMES OF LAPAROSCOPIC Roux-en-Y gastric bypass (LRYGB) have been demonstrated once practice has moved beyond the learning curve. However, there is no evidence that experience has a favorable impact on the incidence of leaks. This study evaluated the incidence of staple-line leaks as experience accrued in a university-based bariatric surgery program.

**Methods:** Prospectively collected data on our first 200 patients undergoing LRYGB since July 1998 were analyzed. Linear staplers were used to divide the stomach and to create a side-to-side jejunojejunostomy. A side-to-side cardiojejunostomy was created using a 21-mm circular stapler. Patient characteristics, operative data, and outcomes were evaluated chronologically, with comparison of outcomes between quartiles.

**Results:** Staple-line leaks developed in 9 (4.5%) of the first 200 patients undergoing LRYGB. Among the 200 patients, there were 190 women (95%). The median age of the patients was 48 years (ranges, 24-62 years), and their body mass index was 43 kg/m<sup>2</sup> (ranges, 32-59 kg/m<sup>2</sup>). As surgeons' experience increased over time, there was a significant increase in the weight of patients and the percentage of patients with previous abdominal operations. There also was a significant decrease in conversion rates and operative times. Leaks occurred in 6 patients at the cardiojejunostomy (3%), in 2 patients jejunojejunostomy (1%), and in one patient at the excluded

stomach (0.5%). Of the 50 leaks that occurred in each quartile, there were 3 in the 1st quartile, one in the 2nd quartile, 2 in the 3rd quartile, and 3 in the 4th quartile. The differences were not significant. There was no correlation between the number of LRYGBs, and the occurrence of a leak ( $P = 0.59$  confidence interval 0.13-0.22).

## ■ COMMENTARY

The incidence of staple-line leaks appears to be independent of the number of LRYGBs performed. These data suggest that surgeons' experience may not eliminate anastomotic complications experienced by patients undergoing LRYGB.

Gonzalez and colleagues provided an interesting article that was surprising. They analyzed their data on LRYGB and noted that even after developing significant experience with the operation that the incidence of staple line leak seemed to remain relatively constant. They broke down their analysis into quartiles, each containing 50 patients. Their data do show a significant improvement in 2 areas of measure after the first 100 patients (quartiles 1 and 2). This first 100 patients constitutes their learning curve as has been established previously in the literature and corroborated in several studies. Their improved measures were OR time (decreased from 305 minutes to 218 minutes) and conversion rates (decreased from 7% to 1%). The interesting finding in their data was that the complication rate did not decrease with their experience. This may be because as the surgeons improved their technique and operative skill, they were more likely to take on more complicated patients. This was evidenced by the increase in patient average BMI from quartile 1 to 4 (44 to 48 although statistically not significant), an increase in patient comorbidities and an increase in patients with previous operations (both found to be statistically significant).

A second reason, however, may be that the analysis of their patients is too small of a sample size. Their data analysis for the purposes of their publication ended in 2004. It would be very interesting to see if their current data still support this conclusion. If it does still support the conclusion then the question becomes is the problem attributable to the technique or possibly the device? Even with the previously stated learning curve of 100 cases for the LRYGB, the process of improvement in these complex cases continues

far beyond that. Even in our own data we have seen differences and improvements in our patients' outcomes with decreases in operative times and decreases in both early and late complications but we have also noted small changes in our technique over that period.

The real take home message from a paper like this is that even as surgeon experience increases, technical challenges still abound and must be addressed meticulously. ■

## Brain Leptin Resistance in Human Obesity Revisited

ABSTRACT & COMMENTARY

**By Helen Sohn, MD**

Assistant Professor of Surgery, Department of Surgery, USC

*Dr. Sohn reports no financial relationship relevant to this field of study.*

**Synopsis:** *This study indicates that it is very difficult to explain human obesity on the basis of central nervous system "leptin resistance," in that leptin is released in the brain, and at a higher level in the obese, and brain leptin receptor gene expression is not impaired in obesity.*

**Source:** Eikelis N, et al. Brain leptin resistance in human obesity revisited. *Regul Pept.* 2007;139:45-51.

LEPTIN IS A 16 KDA PEPTIDE PREDOMINANTLY produced by adipocytes. Leptin and its receptor are known to be involved in the regulation of energy balance. The data from animal studies, as well as our own observations of leptin overflow from the brain suggest that the central nervous system is a site of leptin synthesis. Using simultaneous arterio-venous blood sampling we here confirm that leptin is released from the brain into the internal jugular vein, and that release is greater in overweight men and in females compared to lean men,  $467.3\text{ng}/\text{min} \pm 160.4$  and  $1426\text{ ng}/\text{min} \pm 769.3$  vs  $80.0\text{ng}/\text{min} \pm 29.3$ , respectively ( $P < 0.05$ ). Furthermore, we have examined the gene expression of leptin and its receptor isoforms by reverse transcription-polymerase chain reaction (RT-PCR) in human cadaver hypothalami across a broad range of adiposity.

Leptin gene expression was detected in a number of donors; the presence of detectable leptin mRNA was related to the mode of death rather than BMI or gender. We have also demonstrated gene expression of the 3 leptin receptor isoforms in the human hypothalamus. No relation was observed between the levels of hypothalamic expression of the long-signaling form of the leptin receptor and BMI. In summary, this study indicates that it is very difficult to explain human obesity on the basis of central nervous system leptin resistance, in that leptin is released in the brain, at a higher level in the obese, and brain leptin receptor gene expression is not impaired in obesity. (*Regul Pept.* 2007;139:45-51.)

### ■ COMMENTARY

The discovery of leptin, a hormone produced primarily by fat cells, and its studies since 1994 has led us to seek a metabolic answer to our growing obesity problem. First was a speculation that "leptin deficiency" was the cause of obesity but this did not correlate with high levels of plasma leptin found in obese humans and animals. Then "leptin resistance" theory emerged to attempt to explain the obesity: leptin receptors were resistant to high levels of leptin and therefore must be producing signals to promote continued leptin production. This study used both human and cadaver data to investigate whether leptin resistance is related to obesity.

The data obtained from human subjects (obtained from arterial and internal jugular venous sampling) suggested that some leptin is actually made in the brain and released into the circulation. This finding was not expected as the authors were actually expecting leptin to go into the brain from systemic circulation. This is the first study to demonstrate and report brain synthesis of leptin but the implications of this finding are unclear.

Then cadaver hypothalami were examined for leptin gene expression and the presence of leptin receptors. There was no correlation between the BMI's of the cadavers and the level of leptin receptor expression in the CNS. These findings make "leptin resistance" explanation of the human obesity questionable.

It seems that leptin may not be the answer to obesity that everyone has been hoping for. For now, obesity is still a problem of excess intake of calories compared to expenditure, may it be metabolic or physiologic. ■

# Laparoscopic GB: Results and Learning Curve of a High Volume Academic Program

ABSTRACT & COMMENTARY

By *Namir Katkhouda, MD, FACS*

**Synopsis:** *Laparoscopic Roux-en-Y gastric bypass is a complex procedure performed on a high-risk patient population. Good results can be attained with experience and volume.*

**Source:** Shikora SA, et al. Laparoscopic Roux-en-Y gastric bypass: Results and learning curve of a high-volume academic program. *Arch Surg.* 2005;140:362-367.

THE STUDY IS A RETROSPECTIVE STUDY PERFORMED in a tertiary academic center. Seven hundred fifty consecutive morbidly obese patients undergoing surgery from March 1998 to April 2004 underwent laparoscopic Roux-en-Y gastric bypass.

**Measures:** Perioperative deaths and complications.

**Results:** The patient population was 85% women and had a mean body mass index of 47 kg/m<sup>2</sup> (range, 32-86 kg/m<sup>2</sup>). The overall complication rate was 15% and the mortality was 0.3%. For the first 100 cases, the overall complication rate was 26% with a mortality of 1%. This complication rate decreased to approximately 13% and was stable for the next 650 patients. The incidence of major complications has also decreased since the first 100 cases. Leak decreased from 3% to 1.1%. Small-bowel obstruction decreased from 5% to 1.1%. Overall mean operating time was 138 minutes (range, 65-310 minutes). It decreased from 212 minutes for the first 100 cases to 132 minutes for the next 650 and 105 minutes (range, 65-200 minutes) for the last 100 cases.

## ■ COMMENTARY

In conclusion, Laparoscopic Roux-en-Y gastric bypass is a technically difficult operation. This review of a large series in a high-volume program demonstrated that the morbidity and mortality could be reduced by 50% with experience. The results are similar to those reported from other major centers. In addition, as reported elsewhere, the learning curve for this procedure may be 100 cases.

Shikora and colleagues from a tertiary academic center presented their series in an elegant way to

assess the learning curve, basically results analyzed in quartiles. They showed what other studies have also demonstrated namely that the learning curve for laparoscopic Roux en Y gastric bypass is one of the highest in advanced laparoscopic surgery (around 100 cases). These are also the findings of Oliak and Shauer. As a comparison, the learning curve for laparoscopic hernia is around 50 cases and for laparoscopic Nissen fundoplication and laparoscopic splenectomy 20 cases.

A learning curve in surgery can be defined in many ways and my own interpretation would be “the number of cases required beyond which results are constantly reproducible with the same acceptable complication rate and operating time as published by others considered as reasonable benchmarks ( or standard of care ) in the field”. In this paper, Shikora et al reduced his leak rate from 3% to 1.1%. Although the number is very good and acceptable by any standard, there is still room for a small improvement as some large series demonstrate leak rates under 1%. On the other hand, the small bowel obstruction rate of 1.1% in this series is low but a longer follow up can show a slight increase despite mastering the learning curve. Indeed, the increased incidence of SBO in laparoscopic gastric bypass surgery as shown by Capella (*Archives of Surgery* 2006) due to the reduced adhesion formation characteristic of laparoscopy might be due to internal hernias. Despite the closure of the internal hernia sites during the initial operation, the massive weight loss and the destruction of the sutures over time can be contributing factors.

The operating time in this study was sliced down from 212 minutes for the first 100 cases to 132 minutes for the next 650. Even after 750 patients, it was still possible to reduce in the last 100 cases by half an hour. More operating room efficiency and increased knowledge of tips and tricks can contribute to these improved results.

The final important question that comes to mind is the issue of training in academic centers. The mandatory new requirements for training in advanced laparoscopy for residents and the number of bariatric fellowships will have without a doubt an impact on outcome data. The real challenge will be to find ways to reproduce the same acceptable complication rates and operating room times in a teaching environment as in the hands of surgeons beyond their learning curve and avoid potential yoyo results ( worse at the beginning of the academic year and improved at the end). ■

# EGD and UGI Contrast Studies of Weight Regain

ABSTRACT & COMMENTARY

By *Richard Peterson, MD, MPH*

**Synopsis:** EGD and UGI contrast studies are complementary in the evaluation of patients with weight regain after bariatric surgery.

**Source:** Brethauer SA, et al. Endoscopy and upper gastrointestinal contrast studies are complementary in evaluation of weight regain after bariatric surgery. *Surg Obes Relat Dis.* 2006;2:643-648.

TO ASSESS THE UTILITY OF UPPER ENDOSCOPY (EGD) and upper gastrointestinal (UGI) contrast studies in the evaluation of weight regain after previous bariatric surgery.

**Methods:** We retrospectively reviewed the findings of EGD and UGI studies for patients referred to our center for weight regain after bariatric surgery. All patients received a dietary assessment concomitant with the anatomic evaluations.

**Results:** From January 2003 and March 2006, 30 patients qualified for the study (25 women and 5 men, average age 49 years). Of the 30 patients, 16 had undergone gastroplasty and 14 open Roux-en-Y gastric bypass. Of the 30 patients, 27 (90%) had  $\geq 1$  abnormality detected on UGI study or EGD. Of these abnormalities, 10 were gastrogastic fistulas, 8 of which were detected with both UGI study and EGD; 11 dilated pouches were diagnosed by EGD but only 2 were also diagnosed on the UGI study. An enlarged stoma size was diagnosed in 7 patients (6 by EGD and 1 on the UGI study). Also, the UGI study diagnosed 1 Roux limb and 7 esophageal abnormalities not seen on EGD and EGD diagnosed 4 esophageal and 3 gastric abnormalities not seen on UGI study. On the basis of these findings and the dietary evaluation, 23 patients (77%) were offered a revisional procedure.

## ■ COMMENTARY

EGD and UGI contrast studies are complementary in the evaluation of patients with weight regain after bariatric surgery. The combination of the 2 studies detected all the gastrogastic fistulas present.

EGD provided more useful pouch and stomal information, and the UGI study detected esophageal or Roux limb abnormalities that frequently require additional evaluation.

Brethauer and colleagues present a nice evaluation of patients following surgery for morbid obesity with weight gain. The Roux-en-Y gastric bypass is the current surgical gold standard for morbid obesity. It provides a durable weight loss for most patients, but Shikora et al cite a 10-15% failure of weight loss and or weight recidivism. The causes of weight regain after surgery may be either behavioral or anatomic or a combination of the two.

Accordingly one of the most common indications for repeat bariatric surgery is insufficient weight loss or weight regain. There is data suggesting that revisional surgery is appropriate either when an anatomic abnormality has been identified or when behavioral issues such as grazing, bingeing, sweet eating or other behavioral issues have been ruled out. The change to a different procedure may provide a benefit to patients and the most success has been with the use of a salvage Roux-en-Y gastric bypass.

This study emphasizes the importance of evaluation of the most common causes of obesity surgery failure. In fact EGD or UGI studies in and of themselves are moderately accurate at detecting problems, but in combination are much more sensitive and specific. Brethauer et al, after evaluating their data, concluded that each of the 2 modalities was better at individually identifying:

### EGD:

- Pouch size
- Stoma size

### UGI:

- Esophageal abnormalities
- Roux limb abnormalities

However, Brethauer et al were able to put together the information from both studies and have more precise information. In fact, all of the gastrogastic fistulas were identified with the combination of the 2 studies.

Brethauer et al have provided us with information supporting the use of 2 studies in evaluation of patients who have failed after a bypass operation. They also emphasize the evaluation of patient behaviors in addition to ruling out anatomic causation. ■

# Endoscopic Retrograde Cholangiopancreatography and Gastroduodenoscopy after Roux-en-Y GB

ABSTRACT & COMMENTARY

By *Richard Peterson, MD, MPH*

**Synopsis:** *The transgastrostomy endoscopic route ensures access to the excluded stomach and proximal small bowel after RYGB.*

**Source:** Martinez J, et al. Endoscopic retrograde cholangiopancreatography and gastroduodenoscopy after Roux-en-Y gastric bypass. *Surg Endosc.* 2006;20:1548-1550.

THE USE OF ROUX-EN-Y GASTRIC BYPASS (RYGB) FOR morbid obesity has raised concern that subsequent endoscopic evaluation of the gastric remnant and duodenum is difficult. By gaining percutaneous access to the gastric remnant, however, both gastroduodenoscopy and endoscopic retrograde cholangiopancreatography (ERCP) can be performed easily. This report describes the results of a novel technique for performing transgastrostomy gastroduodenoscopy and ERCP.

**Methods:** Six patients with a RYGB for morbid obesity underwent transgastric remnant endoscopic evaluations. If a gastric remnant tube had not been placed prior to surgery, one was placed percutaneously by an interventional radiologist. The tube tract then was dilated to either 20- or 24-Fr. At the time of endoscopy, the gastrostomy tube was removed and the skin anesthetized. Then either a pediatric duodenoscope (outer diameter, 7.5-mm) or a slim gastroscope (outer diameter, 5.9-mm) was inserted through the gastrostomy tube tract.

**Results:** Percutaneous gastroduodenoscopy was successfully performed for all 6 patients. The findings included 2 patients with prepyloric ulcers identified and assessed with a biopsy, one patient with intestinal metaplasia and a benign gastric polyp, and 3 patients with a normal gastric remnant and duodenum. A nonstructured enteroenterostomy was noted in one of the 3 patients with a normal endoscopic evaluation. Percutaneous transgastrostomy ERCP was performed for 3 of the 6 patients who underwent gastroduodenoscopy. The findings included one patient who had papillary fibrosis treated with a sphincterotomy, a second patient with a normal biliary tree, and a third patient with a normal pancreatic duct. Selective cannulation of the common bile duct was not successful in the third patient.

## ■ COMMENTARY

The transgastrostomy endoscopic route ensures access to the excluded stomach and proximal small bowel after RYGB. This route is safe and effective, allowing the use of a duodenoscope to improve the cannulation success rate for ERCs in this patient population.

Martinez and colleagues present a very interesting paper with a novel technique. With the ever growing popularity of obesity surgery and the need for it rising, we are presented with an interesting problem. Laparoscopic Roux-en-Y gastric bypass is the gold standard in treatment of morbid obesity. This procedure consequently divides the stomach into a neopouch and a remnant stomach. This means a segment of the population are going to be left without a means of evaluating a portion of their gastrointestinal tract by conventional methods. Martinez et al identified several disorders that can affect a bypassed stomach.

- Intestinal metaplasia
- Bleeding ulcers
- Anastomotic strictures
- Intestinal polyps
- Gastric cancer
- Biliary/pancreatic abnormalities

Martinez et al developed a new approach to accessing the bypassed segment of the gastrointestinal tract. This new approach relies on a gastrostomy tube and healed gastrostomy tract. The initial access is obtained by interventional radiology via a CT-guided approach to access the gastric remnant. After insufflation of the stomach under fluoroscopy a 14-Fr gastrostomy tube is placed and upsized to a 20-Fr for a duodenoscope, or 24-Fr for ERCP scope over the next 2-3 weeks. Martinez et al present their approach in 6 patients. They reported successful evaluation of all of the patients. In 5 of the 6 patients, they performed procedures ranging from biopsies to ERCP.

There are other less invasive approaches to evaluation of the excluded segment of bowel, including virtual gastroduodenoscopy and percutaneous contrast approaches. Many will agree that these are useful diagnostic tools, but the disadvantage is that they are limited by their nontherapeutic potential.

While this approach does offer reasonable access to the excluded GI tract, it seems clear that the time delay may pose potential problems. There was no specific mention of time for each patient, but it appears that the earliest a patient was evaluated with this method was about 4 weeks later. This approach does have advantages, but in some of the more acute patient evaluations the time delay will be problematic. Martinez et al have laid the groundwork for a solid approach; the next step is to fine tune and improve the turn-around time to the procedure itself. ■

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## CME Questions

5. **The learning curve following laparoscopic gastric bypass:**
  - a. is considered the highest in laparoscopic surgery.
  - b. is about 100 cases.
  - c. is about 50 cases.
  - d. is equal to laparoscopic splenectomy.
  - e. a and b
6. **Miniloop gastric bypass:**
  - a. is an operation recommended by the ASBS.
  - b. is faster than the standard Roux-en-Y GB.
  - c. is longer than the Roux-en-Y GB.
  - d. its main concern is bile reflux.
  - e. b and d
7. **Patients gain weight after gastric bypass:**
  - a. if their gastric pouch distends.
  - b. they develop a gastrogastic fistula.
  - c. if they develop bad eating habits.
  - d. and upper GI and an EGD are both helpful and complementary in addressing the problem.
  - e. All are correct

Answers: 5. (e); 6. (e); 7. (e)

## CME Objectives

- Discuss the clinical implications of various types of bariatric surgery;
- Discuss comorbidities resulting from obesity, as well as secondary pathologies resulting from bariatric surgery;
- Review peri-operative and post-operative procedures to ensure long-term success, lower mortality from surgery, and a decrease in comorbidities;
- Review current data regarding use of obesity drugs, as well nutritional support in the fight against obesity. ■

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