

BARIATRIC MEDICINE ALERT

A monthly survey of developments in bariatric medicine

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Bariatric Medicine Alert's physician editor, Namir Katkhouda, MD, FACS, is a consultant for Baxter, Ethicon, Storz, and Gore. Peer reviewer Rebecca Kelso, MD, reports no financial relationships relevant to this field of study.

Insulin Resistance Following Weight Loss Surgery for Morbid Obesity

ABSTRACT & COMMENTARY

By Namir Katkhouda, MD, FACS

Synopsis: Both LAGB and LRYGBP significantly improved insulin resistance during the first 3 months following surgery. Both operations generated similar changes in HOMA IR, although postoperative HOMA IR levels were significantly lower after LRYGBP.

Source: Ballantyne GH, et al. Short-term changes in insulin resistance following weight loss surgery for morbid obesity: Laparoscopic adjustable gastric banding versus laparoscopic Roux-en-Y gastric bypass. *Obes Surg.* 2006;16:1189-1197.

BACKGROUND: LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING (LAGB) and laparoscopic Roux-en-Y gastric bypass (LRYGBP) both effectively treat insulin resistance associated with type 2 diabetes mellitus (T2DM). Restriction of caloric consumption, alterations in the enteroinsular axis, or weight loss may contribute to lowering insulin resistance after these procedures. The relative importance of these mechanisms, however, following LAGB and LRYGBP, remain unclear. The aim of this study was to compare directly the short-term changes in insulin resistance following LAGB and LRYGBP in similar populations of patients.

Methods: Patient preference determined operation type. The Homeostasis Model Assessment for Insulin Resistance (HOMA IR) was used to measure insulin resistance. Preoperative values were compared to postoperative levels obtained within 90 days of surgery. Significant differences between groups were tested by ANOVA.

Results: There were no significant preoperative differences between the groups. The 56 LAGB patients had a mean age of 42.5 years (25.7-63), BMI of 45.5 kg/m² (35-66), and preoperative HOMA IR of 4.1 (1.4-39.2). Seventy-five percent of LAGB patients

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were female, and 43% had T2DM. The 61 LRYGBP patients had a median age of 39.9 years (22.1-64.3), BMI of 45.0kg/m² (36-62), and preoperative HOMA IR of 5.0 (0.6-56.5). Seventy-nine percent of LRYGBP patients were women, and 44.3% had T2DM. Median follow-up for LAGB patients was 45 days (18-90) and 46 days for LRYGBP patients (8-88 days). LAGB patients had a median of 14.8% excess weight loss (6.9%-37.0%) and LRYGB patients had 24.2% (9.8%-51.4%). Postoperative HOMA IR was significantly less after LRYGBP, 2.2 (0.7-12.2), than LAGB, 2.6 (0.8-29.6), although change in HOMA IR was not significantly different. Change in HOMA IR for both groups did not vary with length of follow-up or weight loss, but correlated best with preoperative HOMA IR (LAGB, r = 0.8264; LRYGBP, r = 0.9711).

Conclusions: Both LAGB and LRYGBP significantly improved insulin resistance during the first 3 months following surgery. Both operations generated similar changes in HOMA IR, although postoperative HOMA IR levels were significantly lower after LRYGBP. These findings suggest that caloric restriction plays a significant role in improving insulin resistance after both LAGB and LRYGBP.

■ COMMENTARY

This paper by Ballantyne and colleagues shows that both the lapband and lap bypass improve type 2 diabetes through an improvement of insulin resistance. Both operations showed similar lowering of Homa IR, an indicator of insulin resistance, even if the Roux-en-Y was slightly better. He concluded that calorie restriction is a fundamental factor in the improvement of insulin resistance.

This contradicts many other authors including Rubino and Cummings who have championed the "gut" theory for improvement of type 2 diabetes. In other words, they believe that the bypassed duodenum is critical in rapid improvement of type 2 diabetes. Rubino has proposed that the duodenum produces not only the incretin hormone glucose dependent insulinotropic polypeptide (GIP) but also an unidentified anti-incretin factor which is hyperactive in the diabetic state. The 2 opposing factors are stimulated by enteral nutrients so exclusion of the upper intestine from digestive continuity silences both of them. In patients with diabetes, the result is an improvement in glycemic control because the anti-incretin dominates in this setting. These findings are supported by several rat studies.

According to Cummings, this is the real mechanism for improvement of type 2 diabetes rather than calorie and weight loss. He quotes the results published by Buchwald in a 2004 issue of *JAMA* that shows that the lap band which does not bypass the duodenum improved diabetes in 48% only as compared with 84% and more than 95% in lap roux en y and BPD respectively to support his theory. In the BPD, it is possible that a distal gut theory might come to play through the GLP 1 mechanism

What to think about all this? It is difficult at this point to make any final conclusions. If I had to bet, I would go with Rubino because of the current clinical evidence but it is not a sure bet. More body of evidence will emerge as this is currently the one of the most researched topic. Maybe at the end all the mechanisms will be involved in a combined fashion and there will be no winner after all! ■

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<p>Questions & Comments</p> <p>Leslie Hamlin, Managing Editor, at (404) 262-5416 or e-mail at leslie.hamlin@ahcmedia.com between 8:30 a.m. and 4:30 p.m. ET, Monday-Friday.</p>
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Reduction of Biochemical Cardiac Risk Factors

ABSTRACT & COMMENTARY

By, **Nicole R. Basa, MD**

Clinical Instructor, Department of Surgery, UCLA Division of Minimally Invasive and Bariatric Surgery

Dr. Basa reports no financial relationships relevant to this field of study.

Synopsis: Gastric Bypass improves patient risk for Coronary Artery Disease.

Source: Williams DB, et al. Gastric bypass reduces biochemical cardiac risk factors. *Surg Obes Relat Dis.* 2007;3:8-13.

BACKGROUND: CORONARY ARTERY DISEASE (CAD) IS a major health problem throughout the world. It is the leading cause of death in the United States. There are 2 primary, modifiable risk factors for CAD, including tobacco use and obesity. Tobacco use has demonstrated a decline in the United States, but obesity has continued to increase. The only effective, long-term treatment for morbid obesity is the gastric bypass.

The gastric bypass not only results in long-term weight loss, but it has also resulted in a reduction in cardiac risk, as well as survival benefit, as compared with morbidly obese controls. Many biochemical markers are correlated with the severity of CAD. These markers include total cholesterol, high-density lipoprotein (HDL), low-density lipoprotein (LDL), triglyceride level, lipoprotein A, C-reactive protein (CRP), and homocysteine.

Methods: Between 2003-2004, biochemical cardiac risk factors were measured at a single institution after gastric bypass at 3,6, and 12 months postoperatively. The data was analyzed using the Wilcoxon signed rank test.

Results: Three hundred fifty-six total patients were analyzed. There was significant improvement in HDL, LDL, total cholesterol/HDL ratio, triglycerides, lipoprotein A, C-reactive protein, and homocysteine.

Conclusions: Gastric bypass improves biochemical markers of CAD and decreases cardiac risk by both weight loss and improvement of biochemical markers.

■ COMMENTARY

This study consisted of a sample size of 356 patients at one year follow-up. The preoperative demographics consisted of 84% women, with comorbidities including diabetes (33%), hypertension (50%), and known CAD (3%). Twenty-three percent of patients were on antilipid medications such as statins. Postoperatively, these

patients were not restarted on their lipid-lowering medications. Findings demonstrated a statistically significant improvement in lipid profile. Dramatic reduction occurred as well in CRP, lipoprotein A, and homocysteine levels.

CRP level, which is the single best measure of cardiac risk, was elevated in 80% of the patients in the study. The CRP level is a strong independent predictor of future myocardial infarction, stroke, and peripheral arterial disease in a healthy population.¹⁻³ After statin therapy, CRP reduction has a greater impact than LDL cholesterol reduction on cardiovascular risk.⁴ In the patients enrolled in the study, 80% had elevated CRP. This may be due to a strong correlation between BMI and CRP levels. The strong correlation may also demonstrate the many inflammatory disorders, which include diabetes, DJD, and depression, found in the morbidly obese patient. Gastric bypass surgery reduced the CRP level by 80%, whereas statins only improved CRP by 16.9% within a similar time period.⁵

This study demonstrates nicely the improvement in cardiac risk factors by measuring biochemical markers before and after surgery. Improvement in cardiac risk factors may not only lead to improved cardiac status but may also lead to other downstream benefits, which include prevention of peripheral vascular disease and the development of prostate and endometrial cancers. Overall, this study objectively shows how gastric bypass improves one's lipid profile. This, in turn, decreases one's weight and risk for developing metabolic syndrome, which is comprised of abdominal obesity, hypertension, hyperglycemia, and hyperlipidemia. Metabolic syndrome is an inflammatory disease which may be represented by the inflammatory marker CRP. As this study shows, CRP is markedly reduced after gastric bypass surgery. ■

References

1. Ridker PM. High-sensitivity C-reactive protein: Potential adjunct for global risk assessment in the primary prevention of cardiovascular disease. *Circulation.* 2001;103:1813-1818.
2. Ridker PM, et al. Plasma concentration of C-reactive protein and risk of developing peripheral vascular disease. *Circulation.* 1998;97:425-428.
3. Ridker PM, et al. Comparison of C-reactive protein and low-density lipoprotein cholesterol levels in the prediction of first cardiovascular events. *N Engl J Med.* 2002;347:1557-1565.
4. Ridker PM, et al. C-reactive protein levels and outcomes after statin therapy. *N Engl J Med.* 2005;352:20-28.
5. Albert MA, et al. Effect of statin therapy on C-reactive protein levels: The pravastatin inflammation/CRP evaluation (PRINCE): A randomized trial and cohort study. *JAMA.* 2001;286:64-70.

Medicolegal Analysis of 100 Malpractice Claims

ABSTRACT & COMMENTARY

By *Namir Katkhouda, MD, FACS*

Synopsis: *This study found that leaks and delayed diagnosis were the most common cause of litigation.*

Source: Cottam D, et al. Medicolegal analysis of 100 malpractice claims against bariatric surgeons. *Surg Obes Relat Dis.* 2007;3:60-66.

BACKGROUND: VERY FEW STUDIES HAVE ADDRESSED malpractice litigation specific to bariatric surgery. This study was designed to analyze litigation trends in bariatric surgery to prevent further lawsuits, as well as improve patient care.

Methods: A total of 100 consecutive bariatric lawsuits were reviewed by a consortium of experienced bariatric surgeons, as well as an attorney specializing in medical malpractice.

Results: Of the 100 lawsuits, 45% were reviewed for defense attorneys. The mean patient age was 40 years (range, 18-65), 75% were women, 81% had a body mass index of < 60, 31% were diabetic, and 38% had sleep apnea. Of the surgeons, 42% had < 1 year of experience, and 26% had done < 100 cases. Although 69% of the physicians were members of the American Society of Bariatric Surgery, only 22% had detailed consent forms.

The surgical procedures were performed between 1997 and 2005 and included Roux-en-Y gastric bypass (78% total, 33% open, and 45% laparoscopic), vertical banded gastroplasty (3%), minigastric bypass (6%), biliopancreatic diversion/duodenal switch (4%), and revision (9%). Of the 100 cases, 32% involved an intraoperative complication and 72% required additional surgery. The most common adverse events initiating litigation were leaks (53%), intra-abdominal abscess (33%), bowel obstruction (18%), major airway events (10%), organ injury (10%), and pulmonary embolism (8%). From these injuries, 53 patients died, 28% had a full recovery, 12% had a minor disability, and 7% had major disabilities. Evidence of potential negligence was found in 28% of cases. Of these cases, 82% resulted from a delay in diagnostics and 64% from misinterpreted vital signs.

Conclusions: This study found that leaks and delayed

diagnosis were the most common cause of litigation. Even experienced bariatric surgeons should understand the most common errors made by others to prevent complications and avoid litigation.

■ COMMENTARY

There are several interesting findings. First, there were no lap bands included in this series. It is not clear why, but one explanation is that the rate of lawsuits following a lapband procedure is indeed very low. The explanation may simply be because the lapband has very low, immediate, life-threatening complications; it is unlikely to have an early mortality, and most complications occur late in the course of the follow-up. This is actually what is making the band so attractive among patients and surgeons alike. Leaks, as expected, are the most common reason for lawsuits. What we know, and confirm in the paper, is that it is almost always a delay in the diagnosis and treatment of the leak rather than the leak itself.

Tachycardia, postoperatively, is not recognized as an ominous sign, and many surgeons will rely on the gastrophin swallow to rule out a leak. In my experience of medicolegal review, the swallow was always negative even though the patient was tachycardic. Surgeons should also recognize such signs as a normal or low white cell count with a left shift or even bandemia, which by itself should prompt an immediate return to the operating room, especially in the presence of mild abdominal symptoms.

A patient returned early for a leak will survive and not sue.

Another important factor of litigation is communication and honesty with the patient and his family. All lawyers will say that communication is the best anti-lawsuit tool.

Death, unfortunately, as shown in this paper, constitutes a major risk management situation, and in this paper, of 100 cases, it constituted more than 50% of the cases.

Finally, of note, the majority of the surgeons in this article had performed more than 100 cases, so litigation is not just reserved for the inexperienced. Even experts can get sued. In my opinion, in the event of a lawsuit, particularly if it has no merit, surgeons should not settle, and should have their day in court. With a vigorous defense, the odds of winning are vastly in favor of the surgeon; more than 80% of medicolegal verdicts are in favor of the doctor. This is confirmed here where evidence of medical negligence was found in only 28% of the cases. ■

Barrett's Esophagus and Intestinal Metaplasia

ABSTRACT & COMMENTARY

By Helen Sohn, MD

Assistant Professor of Surgery, Department of Surgery,
University of Southern California

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

Synopsis: Gastric bypass in patients with Barrett's esophagus and morbid obesity is an excellent antireflux operation, proved by the disappearance of symptoms and the healing of endoscopic esophagitis or peptic ulcer in all patients, which is followed by an important regression to cardiac mucosa that is length-dependent and time-dependent.

Source: Csendes A, et al. Effect of gastric bypass on Barrett's esophagus and intestinal metaplasia of the cardia in patients with morbid obesity. *J Gastrointest Surg.* 2006;10:259-264.

GASTRIC BYPASS IN PATIENTS WITH MORBID OBESITY should be an excellent antireflux procedure because no acid is produced at the small gastric pouch and no duodenal reflux is present, due to the long Roux-en-Y limb. Five hundred fifty-seven patients with morbid obesity were submitted to resectional gastric bypass, and routine preoperative upper endoscopy with biopsy samples demonstrated 12 patients with Barrett's esophagus (2.1%) and 3 patients with intestinal metaplasia of the cardia (CIM). An endoscopic procedure was repeated twice after surgery, producing 7 patients with short-segment Barrett's esophagus (BE) and 5 patients with long-segment BE. Body mass index (BMI) decreased significantly from 43.2 kg/m² to 29.4 kg/m² 2 years after surgery. Symptoms of reflux esophagitis, which were present in 14 of the 15 patients, disappeared in all patients one year after surgery. Preoperative, erosive esophagitis and peptic ulcer of the esophagus healed in all patients. There was regression from intestinal metaplasia to cardiac mucosa in 4 patients (57%) with short-segment BE and in one patient (20%) with long-segment BE. Two (67%) of 3 cases with CIM had regression to cardiac mucosa.

There was no progression to low- or high-grade dysplasia. Gastric bypass in patients with Barrett's esophagus and morbid obesity is an excellent antireflux operation, proved by the disappearance of symp-

toms and the healing of endoscopic esophagitis or peptic ulcer in all patients, which is followed by an important regression to cardiac mucosa that is length-dependent and time-dependent. (*J Gastrointest Surg.* 2006;10:259-264.)

■ COMMENTARY

When the stomach is resected to a 20 mL pouch, acid production reduces to a minimum so that no acid can reflux into the esophagus. Therefore, Roux-en-Y gastric bypass procedure is considered to be an anti-reflux procedure. This study reports the findings of endoscopic surveillance of intestinal metaplasia in morbidly obese patients after their "weight reducing/anti-reflux" gastric bypass surgery. There were 15 patients out of 557 who had evidence of intestinal metaplasia of either the esophagus or cardia who were followed for 24-29 months after surgery. They lost weight, reflux symptoms disappeared, erosions and ulcers were healed, no progression to dysplasia occurred, and about half showed regression of their intestinal metaplasia. And though not reported, their obesity-related comorbidities probably subsided also. In this study, in the patient population with morbid obesity and intestinal metaplasia, gastric bypass surgery was increasingly beneficial in that it helped them lose weight, and therefore, decrease comorbidities, treat reflux symptoms successfully, and treat the complications of reflux disease, such as erosions, ulcers, and intestinal metaplasia.

Csendes and colleagues do not mention whether there were any patients without intestinal metaplasia who had symptomatic reflux disease. There must have been since gastroesophageal reflux disease is more common than Barrett's esophagus, which is a complication of untreated reflux. It would have been nice to see if gastric bypass procedure also treated uncomplicated reflux symptoms such as heartburn. It should, theoretically, but they did not provide any data on that.

As with any patients with Barrett's esophagus, it is important to follow them with surveillance upper endoscopies to evaluate the progression or regression of intestinal metaplasia with some sort of treatment, may it be medical or surgical. Medical therapy reduces acidity, but not the amount of reflux, whereas surgical therapy reduces the reflux. Barrett's esophagus should be aggressively treated and followed because it can progress to cancer. It will be interesting to see updated information on long-term follow-up of these gastric bypass patients regarding the status of the intestinal metaplasia, whether they continue to regress, plateau, or if there are any cases of progression of the disease. ■

Duodenal-jejunal Bypass for the Treatment of Type 2 Diabetes

ABSTRACT & COMMENTARY

By *Namir Katkhouda, MD, FACS*

Synopsis: *Type 2 diabetes disappeared in the absence of weight loss. This goes clearly against the theory that weight loss through calorie restriction following bypass surgery for morbid obesity is the essential mechanism.*

Source: Cohen RV, et al. Duodenal-jejunal bypass for the treatment of type 2 diabetes in patients with body mass index of 22-34 kg/m²: A report of 2 cases. *Surg Obes Relat Dis.* 2007;3:195-197.

TYPE 2 DIABETES (T2D) AFFECTS MILLIONS OF patients worldwide, with an estimated 333 million patients expected in 2025. It can be prevented and/or cured by bariatric surgery in morbidly obese patients. The clinical resolution of diabetes has been reported by Cohen and colleagues to occur in 47-70% of patients after restrictive procedures, 80-98% after Roux-en-Y gastric bypass (RYGB), and 92-100% after biliopancreatic diversion (BPD). The improvement in glycemic control after RYGB and BPD typically occurs too fast to be accounted for by weight loss alone, as postulated by Cohen et al, suggesting that these 2 operations may have a direct impact on glucose homeostasis. Both RYGB and BPD bypass the duodenum and proximal jejunum.

In 2004, Cohen et al demonstrated that duodenal-jejunal bypass (DJB), an operation that simply excludes the duodenum and proximal jejunum without restriction of the gastric volume, achieved glycemic control in nonobese rats with T2DM in the absence of weight loss or decreased caloric intake. These findings suggest that DJB might be beneficial in patients with type 2 diabetes. Consistent with this possibility are clinical observations showing that BPD can normalize plasma insulin and blood glucose levels in lean subjects with T2D, and that gastrectomies with duodenal exclusion also improve T2D in the absence of significant weight loss.

Cohen et al have performed DJB in 7 patients with T2D and a BMI of < 35 kg/m² as part of a prospective trial. They report here the clinical history and postoperative results of the first 2 patients who were followed up for 9 months.

Methods: The inclusion criteria for surgical treatment in our prospective series were patient age of 20-30 years, BMI of 22-34 kg/m², and a history of T2D for < 10 years; full informed consent was obtained.

The exclusion criteria were a history of T2DM of > 10 years and insulin use for > 7 years; pregnancy was excluded. IRB approval for the study on 50 patients was obtained. The operations were performed laparoscopically.

The outcome measures included hemoglobin A1c, fasting blood glucose, and plasma insulins and BMI measured one week after surgery and then monthly for the next 9 months.

Results: There were no complications, and both patients stayed 2 days in the hospital. Both patients were normoglycemic and free of their antidiabetic medication 5 weeks postop. These results were sustained at 9 months postop.

Of note, the second patient discontinued his antidiabetic medication upon discharge.

Finally, both patients who had a BMI of 29 and 27 kept the same weight at 9 months.

■ COMMENTARY

This is the first paper involving a duodenal-jejunal bypass in humans who are not morbidly obese. The operation was performed for control of diabetes. The results are remarkable, in that type 2 diabetes disappeared in the absence of weight loss. This clearly goes against the theory that weight loss through calorie restriction, following bypass surgery for morbid obesity, is the essential mechanism.

Cohen et al call this the foregut theory. This clinical paper confirms and opens the door for more research to determine the exact mechanism of glycemic control at the duodenal-jejunal level, and gives new hope for millions of patients that are on type 2 diabetes medications and are experiencing side effects.

One side note: Recently, a paper in the *New England Journal of Medicine* warned of possible serious cardiac effects of the most commonly prescribed antidiabetic medication, Avandia. ■

Gastrogastric Fistula: It May Not be as Bad as it Sounds!!!

ABSTRACT & COMMENTARY

By Amir Mehran, MD, FACS

Assistant Clinical Professor of Surgery; Director, Bariatric Surgery, Section for Minimally Invasive and Bariatric Surgery, Department of Surgery, UCLA

Dr. Mehran reports no financial relationships relevant to this field of study.

Synopsis: *Gastrogastric fistulas are an uncommon, but worrisome, complication after divided RYGB.*

Source: Carrodeguas L, et al. Management of gastrogastric fistulas after divided Roux-en-Y gastric bypass surgery for morbid obesity: Analysis of 1292 consecutive patients and review of literature. *Surg Obes Relat Dis.* 2005;1:467-474.

THE COMMENT, "THERE IS CONTRAST IN THE GASTRIC remnant" was the last thing I expected to hear after my patient in the ER had a CT scan performed for abdominal pain. This cannot be a gastrogastric fistula (GGF), could it? After all, she was only 2 weeks postop from an uncomplicated, fully-transected laparoscopic Roux-en-Y gastric bypass (LRYGB). Ok, so she ignored postoperative instructions, ate a very spicy semi-solid lunch, developed immediate severe abdominal pain, and did not report it for 4 days. But a GGF this early? How did this happen, and what do I do now?

GGF is a well-known complication of the RYGB, occurring in 1-6% of cases. Its exact incidence, however, is unknown, as a significant number of patients remain asymptomatic. It is believed that the incidence has declined over the years. This has been attributed to the modification of the surgical technique where, in contrast to the past, the stomach is now completely transected rather than just stapled off in continuity. The etiology of GGF includes contained anastomotic leaks, marginal ulcers ± perforation, foreign body erosion, incomplete gastric division at original operation, and possible gastric wall tissue migration.¹ The typical presenting symptoms, if any, are abdominal pain, intractable marginal ulcers secondary to acid backwash, and weight regain secondary to loss of restriction. Whereas most patients are managed conservatively, some do require more aggressive treatment modalities, either endoscopic or surgical. The former have included various plugs, medical glue, endoscopic clips, or suturing techniques. Depending on the etiology and size of the GGF, these techniques have had variable success rates.

One surgical approach has been published by Roberts and colleagues from Yale University.² In one patient, a gastrotomy was made in the gastric remnant, followed by endoscopic introduction of pneumogastrium and transgastric suturing of the GGF. However, the follow-up was only 18 months, and there have been no other similar reports.

The Bariatric Surgery Institute at the Cleveland Clinic Florida has published the 2 most detailed papers about GGF and its surgical management.^{1,3} In 2005, the authors presented their experience with over 1200 patients. They identified GGFs in 15 (1.2%) of these subjects. The mean time to GGF diagnosis was 80 days, and ranged from 3 days to one year postop. Abdominal pain and nausea or vomiting were the most common symptoms, followed by weight regain. Imaging and endoscopic studies were confirmatory in all patients. Of interest, 4 patients had a known postoperative gastrojejunostomy leak that had been treated conservatively. GGF was associated with marginal ulcers in 8 of these subjects, most of whom responded to medical therapy (proton pump inhibitor and sucralfate). The authors also presented a concise treatment algorithm for GGF, and emphasized the need for aggressive follow-up to include gastrointestinal imaging and endoscopy for the presence of any abdominal pain symptoms or weight regain.

In a follow-up paper published recently,³ the same group presented their unique surgical approach to the management of GGF in 15 patients who failed conservative management. In the laparoscopic remnant gastrectomy, the fistula tract was transected with an endoscopic stapler, the pouch was trimmed, if necessary, and finally the gastric remnant was excised and removed. Cho and colleagues believe that the final step is very necessary. The number of gastric-producing cells is reduced, decreasing the odds of pouch acid production, and hence, future marginal ulcerations and strictures. Furthermore, this technique prevents future GGF formation by removing inflammatory tissue from the current GGF basin, reducing the possibility of gastric wall migration or new GGF formation. Cho et al do point out several flaws in their study, namely the small number of patients, short follow-up period, and possibility of future complications from remnant gastrectomy.

■ COMMENTARY

So how did we manage our GGF patient? She was placed on a high protein liquid diet, sucralfate every 3 to 4 hours, and a proton pump inhibitor twice daily. Her pain symptoms resolved within 48 hours and, at 2 weeks, she remains pain free and is losing weight. We are only debating on whether we need to restudy her at any point with an imaging modality, and if so, when? ■

References

1. Carrodeguas L, et al. Management of gastrogastric fistulas after divided Roux-en-Y gastric bypass surgery for morbid obesity: Analysis of 1292 consecutive patients and review of literature. *Surg Obes Relat Dis.* 2005;1:467-474.
2. Roberts, KE, et al. Laparoscopic transgastric repair of a gastrogastric fistula after gastric bypass: A novel technique. *Surg Innov.* 2007;14:18-23.
3. Cho M, et al. Laparoscopic remnant gastrectomy: A novel approach to gastrogastric fistula after Roux-en-Y gastric bypass for morbid obesity. *J Am Coll Surg.* 2007;204:617-624.

CME Questions

14. Litigation in bariatric surgery:

- a. affects predominantly inexperienced surgeons.
- b. is mostly the consequence of undetected leaks.
- c. is mostly due to undetected small bowel obstructions.
- d. can be reduced with better communication with patients
- e. b and d

15. Type 2 diabetes mellitus can be dramatically reversed:

- a. with the lap band procedure
- b. with the BilioPancreatic Diversion procedure
- c. with a very well controlled diet and weight loss
- d. with the gastric bypass
- e. b and d

16. Gastric bypass for control of gastroesophageal reflux disease:

- a. is effective.
- b. is not as effective as antacid medications.
- c. can reverse Barrett's esophagus in a significant number of patients.
- d. prevents progression of Barrett's esophagus to low- or high-grade dysplasia in the majority of cases.
- e. a, c, and d

Answers: 14. (e); 15. (e); 16. (e)

CME Objectives

The objectives of *Bariatric Medicine Alert* are to:

- 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 as nutritional support in the fight against obesity. ■

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