

# BARIATRIC MEDICINE ALERT

*A monthly survey of developments in bariatric medicine*

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## INSIDE

*Comparison of laparoscopic linear staplers in clinical use*  
**page 39**

*LRYGB vs laparoscopic vertical banded gastroplasty*  
**page 39**

*Internal hernia after gastric bypass*  
**page 40**

*Intestinal malrotation*  
**page 41**

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

## Gastrogastric Fistula: It May not be as Bad as it Sounds!!!

ABSTRACT & COMMENTARY

**By Amir Mehran, MD, FACS**

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Section for Minimally Invasive and Bariatric Surgery,  
Department of Surgery, UCLA*

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

**Synopsis:** *Weight loss failure or weight regain is an uncommon short-term finding with gastrogastric fistulas after divided RYGB that requires surgical revision as the definitive treatment option.*

**Source:** Carrodeguas L, et al. Management of gastrogastric fistulas after divided Roux en-Y gastric bypass surgery for morbid obesity: Analysis of 1,292 consecutive patients and review of literature. *Surg Obes Relat Dis.* 2005;1:467-474.

TO HEAR, "THERE IS CONTRAST IN THE GASTRIC REMNANT" WAS the last thing I expected after my patient in the ER had 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 did ignore post-operative 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 that 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.<sup>1</sup> The typical presenting symptoms, if any, are abdominal pain,

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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.<sup>2</sup> 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 in Florida has published the 2 most detailed papers about GGF and its surgical management.<sup>1, 3</sup> 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 post-operation. 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 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,<sup>3</sup> 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. The authors 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. The authors 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.

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) Carrodegua, L. et al. Management of gastrogastric fistulas after divided Roux en-Y gastric bypass surgery for morbid obesity: Analysis of 1,292 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.
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## Questions & Comments

Leslie Hamlin,

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# Comparison of Laparoscopic Linear Staplers in Clinical Use

ABSTRACT & COMMENTARY

By *Namir Katkhouda, MD, FACS*

**Synopsis:** *The results have shown that the Ethicon 6-row stapler had more misfires and the Autosuture Endo-GIA 6-row stapler resulted in more bleeding complications.*

**Source:** Simper SC, et al. Comparison of laparoscopic linear staplers in clinical patients. *Surg Obes Relat Dis.* 2007;30: Epub ahead of print.

**BACKGROUND:** ONLY ONE PREVIOUS STUDY HAS EVALUATED the clinical safety of the 2 laparoscopic linear stapling devices available. Our study compared these staplers using laparoscopic gastric bypass as the standard procedure.

**Methods:** A total of 400 consecutive patients were prospectively studied. Group A (200 patients) underwent gastric bypass with the Endo-GIA Universal 6-row stapler (Autosuture) used, and group B (200 patients) underwent the procedure with the Ethicon 6-row stapler used. The measured parameters included stapler misfires, staple line bleeding, staple line leaks, unexplained gastrointestinal bleeding, unexplained intra-abdominal bleeding, total bleeding events, and total adverse events.

**Results:** Both groups were similar in preoperative body mass index, age, and gender. Both groups had a single staple line leak (0.5%;  $P = 1.0$ ). Three (0.25% of staple firings) misfires occurred in group B. No misfires occurred in group A ( $P = .25$ ). Gastrointestinal bleeding, staple line bleeding, and unexplained intra-abdominal bleeding occurred in 6 (3%), 2 (1%), and 5 (2.5%) patients in group A and in 1 (0.5%), 0 (0%), and 2 (1%) patients in group B ( $P = .12$ ,  $P = .5$ , and  $P = .45$ , respectively). Total bleeding events occurred in 13 patients (6.5%) in group A and in 3 patients (1.5%) in group B ( $P = 0.019$ ). The total number of patients with an adverse event was 14 (7%) in group A and 7 (3.5%) in group B ( $P = .18$ ).

**Conclusion:** The results of our study have shown that the Ethicon 6-row stapler had more misfires and the Autosuture Endo-GIA 6-row stapler resulted in more bleeding complications. Only the difference in total bleeding events reached statistical significance, but the difference in the total number of adverse events was not statistically significant. Therefore, in our experience, both devices were equally safe and effective.

## ■ COMMENTARY

This paper compared 2 staplers from different manufacturers and found that one was more hemostatic than the other, while the other had had less staple misfiring. The study has some methodological limitations: the comparison was made between 2 different surgeons, each using a different stapler, thus introducing a big variable. Data was also analyzed retrospectively, further weakening the results. This study contradicts a previous paper by Champion. In his study, Champion randomized 100 patients and found exactly opposite results. Therefore, in the absence of a good scientific study, no conclusion can be definitively drawn. Our results are similar to Champion's. In more than 1200 procedures using the same stapler, we had 5 severe bleeding episodes leading to 4 take backs to the operating room. We now have, together with the majority of the surgeons, started using buttress material to increase the thickness and render the staple lines more hemostatic. We also add clips and other glues to ensure better hemostasis.

The perfect staple line represents a big challenge to most companies, as they have to juggle between a perfectly formed staple that will reduce leaks and achieve better hemostasis, and avoid ischemia of the compressed tissue. They also have to incorporate the notion that within the same organ, the thicknesses may vary from one area to another, as well as gender-related variations; male tissues tend to be thicker.

The future possibly resides in the development of intelligent staplers that will sense tissue thickness.

Postoperatively, it is prudent to check hematocrit and hemoglobin levels before discharge to recognize an early postoperative bleed. ■

# LRYGB vs Laparoscopic Vertical Banded Gastroplasty

ABSTRACT & COMMENTARY

By *Namir Katkhouda, MD, FACS*

**Synopsis:** *The patient's eating habits before surgery play an important role in the choice of the operative technique used.*

**Source:** Goergen M, et al. Laparoscopic Roux-en-Y gastric bypass versus laparoscopic vertical banded gastroplasty: Results of a 2-year follow-up study. *Surg Endosc.* 2007;21: 659-664.

**BACKGROUND:** THE WORLD'S EPIDEMIC OF OBESITY is responsible for the development of bariatric sur-

gery in recent decades. The number of gastrointestinal surgeries performed annually for severe obesity (BMI > 40 kg/m<sup>2</sup>) in the United States has increased from about 16,000 in the early 1990s to about 103,000 in 2003. The surgical techniques can be classified as restrictive, mal-absorptive, or mixed procedures. This article presents the results for 2 years of bariatric surgery in Goergen and colleagues' minimally invasive center, and analyzes the results of the most used surgical techniques with regard to eating habits.

**Methods:** Between January 2002 and January 2004, Goergen et al attempted operations for morbid obesity in 110 consecutive patients adequately selected by a multidisciplinary obesity unit. This represented 43% of all consultations for morbidly obese patients. The patients were classified as sweet eaters or non-sweet eaters. All sweet eaters underwent gastric bypass. The procedures included 70 Roux-en-Y gastric bypasses, 39 Mason's vertical banded gastroplasties, and one combination of vertical gastroplasty with an antireflux procedure. Revision procedures were excluded.

**Results:** The mean age of the patients was 41.36 years (range, 23-67 years), and 72.3% were female. The mean preoperative body mass index was 44.78 kg/m<sup>2</sup> (range, 34.75-70.16 kg/m<sup>2</sup>). The mean operating time was longer for gastric bypass than for the Mason procedure. Three patients required conversion to an open procedure (2.7%). The 2 operative techniques had the same efficacy in weight reduction. Early complications developed in 11 patients (10%), and late complications occurred in 9 patients (8.1%). The postoperative length of hospital stay averaged 4.4 days (range, 1-47 days; median, 4 days) and was longer in the gastric bypass group. The mortality rate was zero. Data were available 2 years after surgery for 101 of the 110 patients (91%). Most comorbid conditions resolved by one year after surgery, regardless of the type of operation used.

**Conclusion:** With zero mortality and low morbidity, bariatric surgery performed for adequately-selected patients is the most effective therapeutic intervention for weight loss, as well as subsequent amelioration or resolution of comorbidities. The patient's eating habits before surgery play an important role in the choice of the operative technique used.

#### ■ COMMENTARY

This study by Goergen et al is very interesting, as it compares the laparoscopic gastric bypass versus vertical banded gastroplasty. It shows that both techniques, in good hands, yield good results. The part that is original is that sweet eaters, identified carefully according to defined criteria, were given the laparoscopic gastric bypass while

non-sweet eaters were chosen for the vertical banded gastroplasty. The reason for this distinction is that patients who are sweet eaters who underwent a laparoscopic gastric bypass will present with dumping syndrome in the event of a sweet meal, whereas it would not be an issue for the non-sweet eaters to get a purely restrictive operation.

These results can be extrapolated to the lap band and the sleeve gastrectomy, both restrictive procedures. There is no other study in the literature that compares the 3 operations based on the eating habits. It might be very worthwhile to do, as the restrictive procedures do not produce the same good results in terms of weight loss and resolution of type 2 diabetes. Are we maybe offering the wrong operation to the wrong patient?

A big eater logically should do better than a sweet eater with a restrictive procedure. Opponents to these theories will say that it is very difficult to categorize the eating patterns of the morbidly obese, and most patients have hybrid eating habits.

At the launch of the lap band, surgeons were taught that one should avoid the placement of this device on sweet eaters. With the current enthusiasm for this procedure, we tend to forget this initial warning. ■

## Internal Hernia after Gastric Bypass: Seven CT Signs

ABSTRACT & COMMENTARY

By *Namir Katkhouda, MD, FACS*

**Synopsis:** *Mesenteric swirl is the best indicator of internal hernia after laparoscopic Roux-en-Y gastric bypass, and even minor degrees of swirl should be considered suspicious.*

**Source:** Lockhart ME, et al. Internal hernia after gastric bypass: Sensitivity and specificity of seven CT signs with surgical correlation and controls. *AJR Am J Roentgenol.* 2007;188:745-750.

**OBJECTIVE:** THE PURPOSE OF THIS STUDY WAS TO evaluate the sensitivity and specificity of 7 CT signs in the diagnosis of internal hernia after laparoscopic Roux-en-Y gastric bypass.

**Materials and methods:** With institutional review board approval, the CT scans of 18 patients (17 women, one man) with surgically proven internal hernia after laparoscopic Roux-en-Y gastric bypass were retrieved, as were CT studies of a control group of 18 women who had

undergone gastric bypass but did not have internal hernia at reoperation. The scans were reviewed by 3 radiologists for the presence of 7 CT signs of internal hernia: swirled appearance of mesenteric fat or vessels, mushroom shape of hernia, tubular distal mesenteric fat surrounded by bowel loops, small-bowel obstruction, clustered loops of small bowel, small bowel other than duodenum posterior to the superior mesenteric artery, and right-sided location of the distal jejunal anastomosis. Sensitivity and specificity were calculated for each sign. Stepwise logistic regression was performed to ascertain an independent set of variables predictive of the presence of internal hernia.

**Results:** Mesenteric swirl was the best single predictor of hernia; sensitivity was 61%, 78%, and 83%, and specificity was 94%, 89%, and 67% for the 3 reviewers. The combination of swirled mesentery and mushroom shape of the mesentery was better than swirled mesentery alone, sensitivity being 78%, 83%, and 83%, and specificity being 83%, 89%, and 67%, but the difference was not statistically significant.

**Conclusion:** Mesenteric swirl is the best indicator of internal hernia after laparoscopic Roux-en-Y gastric bypass, and even minor degrees of swirl should be considered suspicious

#### ■ COMMENTARY

This study defined in a very elegant way the sensitivity and specificity of 7 radiological signs that correlate best with postoperative internal hernias following laparoscopic gastric bypass.

The diagnosis of internal hernias is a real problem following gastric bypass. Most patients will present with vague abdominal symptoms such as intermittent pain, distension, and sometimes postprandial vomiting. There are many possible explanations for these symptoms, not limited to, anastomotic strictures, dumping, extra small size of the pouch, and ulcers. Internal hernias should be recognized as early as possible, as the delay of diagnosis can lead to possible massive strangulation of the small bowel and possible mortality.

Most workup include an upper GI endoscopy to rule out ulcers and anastomotic strictures, and until now, a CT was done and reported to be negative in the majority of the cases, as subtle radiological signs of small internal hernias were not previously described.

With this study, Lockhart and colleagues insist on several signs, the most important one being the mesenteric swirl sign, which should prompt the diagnosis of internal hernia and an operation.

We would like to propose that all patients presenting with persistent vague pain and vomiting undergo an upper GI endoscopy and a CT scan. The detected lesions

should be treated, and internal hernias be repaired laparoscopically. If the CT is negative, patients should still be suspect of an internal hernia, given the gravity of a missed diagnosis, and we have offered this approach to 4 patients, 3 of whom had internal hernias.

The best method is prevention by a rigorous closure of all hernia spaces created during a laparoscopic gastric bypass, namely the jejunojejunostomy site, the space of Petersen behind the Roux en Y loop, and the transmesocolic space in the event of a transmesocolic Roux-en-Y. ■

## Intestinal Malrotation Discovered During LRYGB

ABSTRACT & COMMENTARY

**By Helen Sohn, MD**

Assistant Professor, Surgery, Department of Surgery, USC

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

**Synopsis:** This study presents four cases, and offers recommendations should this unusual congenital defect be discovered at the time of laparoscopic gastric bypass.

**Source:** Palepu RP, et al. Intestinal malrotation discovered at the time of laparoscopic Roux-en-Y gastric bypass.

*J Gastrointest Surg.* 2007;Epub ahead of print.

FOUR MORBIDLY OBESE WOMEN WHO MET THE NIH criteria for bariatric surgery had laparoscopic Roux-en-Y gastric bypass. At operation, each was found to have intestinal malrotation. Two cases were completed laparoscopically, and 2 were converted to open operation because of difficulty defining the anatomy. All 4 operations were successful, with no immediate complications, and the patients tolerated the procedures well. We present the 4 cases and offer recommendations should this unusual congenital defect be discovered at the time of laparoscopic gastric bypass. (*J Gastrointest Surg.* 2007 May 9; epub ahead of print)

#### ■ COMMENTARY

Palepu and colleagues report their experience of operating on 4 patients with malrotation discovered at the time of laparoscopy for bariatric surgery. They paint a detailed description of what they found, along with illustrations to make it easy for the readers to understand what was going on. We can sense the surprise of Palepu et al, as we all have been faced with surprising or unexpected findings during an operation at one point or another. Then, they go

further into how they approached the problem, again in a detailed description. They went on to perform either a complete or a partial Ladd's procedure prior to safely completing the intended operation. Some modifications of the gastrojejunostomy are necessary, depending on the degree of the malrotation encountered. They conclude by sharing what they learned from these cases.

#### ■ COMMENTARY

I enjoyed very much reading this case report, and believe that many readers will, too, as it was a light read with just the right amount of details, physiology, embryology, and illustrations to get their point across. And they were not afraid to report that they failed to remove the appendices in the first 2 patients. They stressed the point of performing the Ladd's procedure in order to prevent potential complications of intestinal malrotation, such as obstruction from volvulus or compression leading to ischemia. When in doubt while performing a laparoscopic procedure, the safe thing is to convert to an open procedure for clearer delineation of the anatomy.

These are good lessons for any surgeon to practice during all cases. It is easy to panic when faced with a rare unexpected finding. As long as patient safety is foremost in mind, the outcome should not differ. Another lesson not discussed by Palepu et al is to take advantage of intraoperative consults, granted that they are available, especially in rare findings, and especially for the less experienced surgeons. ■

## VLED can Result in Changes in Liver and Abdominal Fat

ABSTRACT & COMMENTARY

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

*Clinical Instructor of Surgery, Department of Surgery, USC*

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

**Synopsis:** *Given the observed early reduction in LV and the progressive reduction in VAT, we suggest that the minimum duration for a preoperative VLED be 2 weeks.*

**Source:** Colles SL, et al. Preoperative weight loss with a very-low-energy diet: Quantitation of changes in liver and abdominal fat by serial imaging. *Am J Clin Nutr.* 2006;84:304-311.

**A** VERY LOW-ENERGY DIET (VLED) CAN RESULT IN substantial, rapid weight loss and is increasingly

prescribed before obesity surgery to minimize risk and difficulty by reducing liver size and abdominal adiposity. Despite its growing popularity, a VLED in this setting has received little attention.

Colles and colleagues took a concept that is followed by many surgeons in bariatric surgery and were able to establish a means to quantify the use of a VLED and its impact on liver size. Several concepts surrounding preoperative weight loss exist. Some surgeons require a mandatory preoperative weight loss before surgery, whereas some have not found a correlation. For some, the loss of weight preoperatively signifies the patient's commitment to their surgery and their new lifestyle. There are studies to both support and refute this claim. This study identifies another reason for the weight loss. In our practice we have found that mandatory preoperative weight loss confers an advantage to the surgeon, technically, which translates to increased patient safety. We have not statistically correlated this with operative times, but anecdotally it seems that our performance is improved in these settings. Additionally, in those patients who have not lost weight preoperatively, these have been the cases that had large livers and were technically more difficult.

Colles et al, in their study, were able to quantify a reduction in the size of the liver in those patients that were compliant with their VLED. Thirty-two subjects were enrolled in the study and were followed for a 12-week period. The outcomes measured during this time were changes in liver volume and visceral and subcutaneous adipose tissue. CT scans and MRI were used to measure and follow the progression of these factors at baseline, 2, 4, 8, and 12 weeks.

They found that 80% of the liver volume change occurred in the first 2 weeks in their study population, and a maximal liver volume reduction was achieved at 8 weeks. The change in visceral adipose tissue was uniform over the 12-week period.

The study strengths were an ability to track and confirm compliance of the patients with the VLED. Additionally, they were able to quantify with radiographic evidence the reduction in the size of the liver and visceral adipose tissue. The weakness of the study is in its patient size and its generalizability to the population at large, which Colles et al point out. A study of a larger size would improve the power and generalizability of their results. It would also be helpful to know if these same patients did translate to "technically easier" patients as they underwent surgery.

The recommendations by Colles et al for surgeons to place their patients on a VLED prior to surgery for 6 weeks addresses the time frame for the majority of

the reduction of liver volume. Additionally, with a shorter time period (less than 12 weeks), patient compliance is more likely possible. ■

## Bariatric Surgery: A Systematic Review and Meta-Analysis

ABSTRACT & COMMENTARY

By *Namir Katkhouda, MD*

**Synopsis:** *Effective weight loss was achieved in morbidly obese patients after undergoing bariatric surgery. A substantial majority of patients with diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea experienced complete resolution or improvement.*

**Source:** Buchwald H, et al. Bariatric surgery: A systematic review and meta-analysis. *JAMA*. 2004;292:1724-1737.

**INTRODUCTION:** ABOUT 5% OF THE US POPULATION IS morbidly obese. This disease remains largely refractory to diet and drug therapy, but generally responds well to bariatric surgery.

**Objectives:** To determine the impact of bariatric surgery on weight loss, operative mortality outcome, and 4 obesity comorbidities (diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea).

**Data sources and selection of papers:** Electronic literature search of MEDLINE, Current Contents, and the Cochrane Library databases plus manual reference checks of all articles on bariatric surgery published in the English language between 1990 and 2003. Two levels of screening were used on 2738 citations.

**Data extraction:** A total of 136 fully extracted studies, which included 91 overlapping patient populations (kin studies), were included for a total of 22,094 patients. Nineteen percent of the patients were men and 72.6% were women, with a mean age of 39 years (range, 16-64 years). Sex was not reported for 1537 patients (8%). The baseline mean body mass index for 16,944 patients was 46.9 (range, 32.3-68.8).

**Data synthesis:** A random effects model was used in the meta-analysis. The mean (95% confidence interval) percentage of excess weight loss was 61.2% (58.1%-64.4%) for all patients; 47.5% (40.7%-54.2%) for patients who underwent gastric banding; 61.6% (56.7%-66.5%), gastric bypass; 68.2% (61.5%-74.8%), gastroplasty; and 70.1% (66.3%-

73.9%), biliopancreatic diversion or duodenal switch. Operative mortality ( $\leq 30$  days) in the extracted studies was 0.1% for the purely restrictive procedures, 0.5% for gastric bypass, and 1.1% for biliopancreatic diversion or duodenal switch. Diabetes was completely resolved in 76.8% of patients, and resolved or improved in 86.0%. Hyperlipidemia improved in 70% or more of patients. Hypertension was resolved in 61.7% of patients and resolved or improved in 78.5%. Obstructive sleep apnea was resolved in 85.7% of patients and was resolved or improved in 83.6% of patients.

**Conclusions:** Effective weight loss was achieved in morbidly obese patients after undergoing bariatric surgery. A substantial majority of patients with diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea experienced complete resolution or improvement.

### ■ COMMENTARY

This is a very important paper that illustrates the effectiveness of bariatric surgery. It shows that more than 45% of excess weight loss can be achieved with all 4 operations. The lap band has clearly had the lowest weight loss, but it also confirms that it is the most benign, with a mortality of 0.1%. The biliopancreatic bypass has the highest mortality (1.1%) but the most effective weight loss. The gastric bypass is in between.

It is possible that the complication rate of the lap band has been underestimated. Buchwald and colleagues found a much higher complication rate, finding that, at 10 years, the complication rate of the lap band is increased. As a matter of fact, as much as we are witnessing an enthusiasm for the lap band in the United States, the bypass and the sleeve are becoming more popular in Europe. We are left with the Australian data that surpasses everybody else. Are we dealing with a different population? Is the follow-up more intensive? The reasons for the superior data is unclear at this point.

The study of Sugarman and colleagues also shows that the metabolic consequences of obesity are reversed in more than 75%. This is maybe the most important message of this study, as the operation really gives the patients their life back. When this data is compared to other methods such as the gastric pacing or the intragastric balloon, (less than 20% excess body weight loss) or even medication (Orlistat, Meridia, Xenical), one can conclude safely that surgery is the most effective technique to deal a long-term blow to the epidemic. ■

## CME Questions

17. The diagnosis of internal hernia following laparoscopic gastric bypass often relies on CT scan because:
- The CT scan is less sensitive than a small bowel follow through.
  - The CT scan is more sensitive than an upper GI swallow.
  - The mesenteric swirl is the best sign of internal hernia on CT.
  - The mesenteric swirl is not seen on CT but on the small bowel follow through.
18. Weight loss following bariatric surgery:
- is most profound with the biliopancreatic diversion.
  - is most profound with the gastric bypass.
  - will affect resolution of diabetes but not depression.
  - will affect resolution of depression but not the metabolic syndrome.
19. Bleeding following laparoscopic gastric bypass:
- occurs rarely.
  - is a significant complication.
  - can be reduced by the use of buttress material with the stapler.
  - certain staplers are more prone to bleeding than others.

Answers: 17. (b); 18. (a); 19. (d)

## 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. ■

## CME Instructions

Physicians participate in this CME program by reading the issue, using the references for research, and studying the questions. Participants should select what they believe to be the correct answers, then refer to the answer key to test their knowledge. To clarify confusion on any questions answered incorrectly, consult the source material. ■

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