Surgical Management of Morbid Obesity: Benefits, Techniques, Complications, and Considerations

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SUGERMAN: Bariatric surgery can result in more than just significant weight loss in the morbidly obese patient. The various procedures often result in the resolution of some of the more devastating comorbidities associated with a high body mass index (BMI).

In 1992 the National Institutes of Health (NIH) consensus conference concluded that patients with a BMI of ≥35 and significant comorbidity, or BMI of ≥40 without comorbidity, should be considered appropriate candidates for bariatric surgery. Our average patient BMI at the Medical College of Virginia is >52. Before we discuss the various procedures, let’s discuss some of the comorbidities that we see in very obese patients. I preface this discussion with the understanding that many of the comorbidities are due to increased pressure within the abdomen, which is transmitted to the chest, legs, and brain.

PORIES: Morbid obesity is an enormously serious and increasingly common disease. The comorbidities—the diseases associated with morbid obesity—are legion. They include hypertension, diabetes, pseudotumor cerebri, and endocrine disorders of various types. Arthritis in weight-bearing joints is a major problem.

In addition to the physical problems, there exist various socioeconomic problems associated with the disease, including situational depression, the inability to find employment, and difficulty maintaining personal relationships. These problems take on a much more human face when you hear stories of children who are ashamed of their obese parents.

DOHERTY: To Dr. Pories’ list I would like to add sleep apnea, urinary stress incontinence, and reflux esophagitis. And many of these patients also suffer from severe chronic panniculitis.

SUGERMAN: What about venous stasis disease and venous stasis ulcers?

DOHERTY: There is small subset of obese patients who suffer chronic venous disease. Many of these patients have ulcers that are very difficult to heal, and frequently recur if they do heal, unless there is sustained weight loss.

SUGERMAN: Dr. Pories, could you update us on your experience treating Type II diabetes mellitus?

PORIES: A rewarding aspect of treating obese patients is what we have learned about other diseases, particularly diabetes. We saw insulin-dependent patients who, within 3-4 days following surgery, suddenly no longer require insulin. And by the end of the month these patients become totally euglycemic.

For example, we recently had difficulty keeping the blood sugar level of a particular patient below 400 mg/dL. This patient was receiving 120 units of NPH and regular insulin a day, and was severely brittle. Within 4 days of the gastric bypass (GBP), the patient no longer required insulin, and by the end of the
month the patient's glucose levels were 100 mg/dL. Now, that's remarkable. That kind of patient response brings the value of the procedure into focus.

There is no other treatment—medical, surgical, behavior modification, hypnosis, acupuncture—that puts diabetes in complete remission. The return to euglycemia is not only a chemical indicator, because long-term follow-up of diabetic patients who have had a GBP has shown that these patients have one-fourth the mortality of a similar control group who did not have the GBP.

So, for the first time, we have shown that surgery for obesity has actually produced marked improvement in mortality from a dreaded disease.

**SUGERMAN:** With regard to other comorbidities, what has been your experience in terms of the efficacy of weight loss?

**DOHERTY:** Generally, I think that patients with sleep apnea will benefit from either a simple gastric procedure or a GBP. The evidence at this point favors GBP as opposed to a vertical banded gastroplasty (VBG) as the preferred procedure for patients with type II diabetes. With regard to patients who suffer from degenerative joint disease—specifically in weight-bearing joints—it's very difficult to predict success, regardless of the procedure or the amount of weight lost.

**SCHAUER:** I see patients with other surgical diseases, such as gastroesophageal reflux disease, and other gastrointestinal problems. These patients, who have suffered for many years with obesity, come to the operating room with relatively much more severe morbidity and have much to benefit from the operation.

Furthermore, patients with severe morbid obesity have a quality of life similar to patients with severe congestive heart failure, chronic renal failure, or cirrhosis.

**SUGERMAN:** Not many surgical procedures can resolve several comorbidities within a relatively short period of time following a single operation. Within 3-6 months after the operation, the terrible headaches and ringing in the ears from pseudotumor are gone. GERD symptoms are gone the day after the operation. And women with stress incontinence no longer have to use a perineal pad. Such results from these operations can be very gratifying to the surgeon, and the patients are ecstatic.

Dr. Pories, Dr. Doherty made a statement that he thought that GBP was more effective for diabetes than a gastroplasty procedure. Has that been your experience? As you know, we published data some time ago comparing the 2 procedures, and while our study was not a randomized prospective trial, we had a similar impression.

**PORIES:** It's a fair question. I believe the GBP procedure is more effective, but I have been impressed with the improvement and disappearance of diabetes in our recent experience with gastric banding. We plan to evaluate insulin resistance between the 2 groups. Simply looking at the glucose levels at random is not going to give us that answer.

**THE COST OF OBESITY**

**SUGERMAN:** What are your thoughts about the economic impact of weight reduction surgery?

**DOHERTY:** Some of our patients have told us that their monthly pharmacy bill has been reduced by several hundred dollars.

**SUGERMAN:** Dr. Pories, what are your thoughts about health maintenance organizations that refuse to support coverage for the surgery?

**PORIES:** I wear 2 hats: Besides being a bariatric surgeon, I also serve as chairman of the board of an independent physician association (IPA) involved in managed care programs. It is evident that it's much smarter for a health maintenance organization (HMO) to support bariatric surgery. The HMO will clearly save money on these patients 2-4 years down the road.

**SUGERMAN:** We have a problem in Virginia with several companies that refuse to cover any surgery for obesity, despite all the published data on the benefits of the obesity operation. One is left with the impression that they are not really concerned with the long-term outcome of their patients. They are only interested in this year's bottom line. Even though surgery for this patient might be economically beneficial in 5 years, the data show that many of these patients will be in another plan in 5 years.

**SCHAUER:** The average patient is with an HMO 2-3 years. I think it's up to us to provide long-term cost comparison data, clearly documenting that the relative cost of managing obese patients who have diabetes, sleep apnea, and so forth, will be
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much, much reduced.

**SUGERMAN:** Dr. Pories, what are your long-term data?

**PORIES:** Our data show that 83% of our patients have long-term total remission of diabetes. Furthermore, the data from our recently completed 16-year study show that the average maintained weight loss just exceeds 100 lb. That means that 16 years after surgery, the average patient still weighs 100 lb less than when the patient came to us.

**SUGERMAN:** Our experience is similar. We published 5-year sleep apnea data that showed striking improvement in these patients. However, it's very difficult to get clinical data because the insurance companies will not pay for follow-up sleep apnea or GERD studies in the absence of symptoms.

**DOHERTY:** Generally we have very good data for VBG at 3 years. The follow-up rate drops to about 70% at 5 years, and to 50% at 10 years. We see a bimodal distribution in the results with the procedure with regard to the amount of excess weight loss. At 5 years, 50% of patients lose ≥50% of their excess weight, and maintain it. But this drops to about 40% loss of excess weight at 10 years.

**PORIES:** I think that the economic impact reaches further than just health issues and healthcare costs. I think your work, Dr. Sugerman, has shown that obese drivers of taxi-cabs and tractor trailers are very dangerous on the road and may lose their jobs, but may safely return to work after gastric-bypass-induced weight loss. We find that our patients want to find jobs and they want to buy clothes. They go off the welfare rolls.

**DOHERTY:** If you ask these patients why they want to take this risk, they tell you, “Doctor, I am tired of being weary, and not feeling well.” And with any sustained weight loss they all rejoice in an increased quality of life. We haven’t fully measured that important aspect.

**PROCEDURES**

**SUGERMAN:** Gastric bypass (Figure 1) is regarded as the gold standard among bariatric procedures due to multiple randomized and retrospective studies that have shown a significantly greater weight loss with the GBP than with the VBG procedure (Figure 2), including our study published in 1982.\(^1\) In that study, we found that “sweets eaters” did especially poorly after the VBG, probably because of the absence of dumping syndrome symptoms that occur in GBP patients (Figure 3). When we selectively assigned sweets eaters to GBP, we had a significant im-

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**Figure 1. Vertical banded gastroplasty (left) and Roux-en-Y gastric bypass (right).** (From Sugerman HJ, Starkey JV, Birkenhauer R. A randomized prospective trial of gastric bypass versus vertical banded gastroplasty for morbid obesity and their effects on sweets versus non-sweets eaters. Ann Surg. 1987;205:613-624. Reprinted by permission.)
provement in the VBG group, but they still lost significantly less weight than the GBP group. It was after this study that we stopped doing the VBG procedure.

More recently, laparoscopic placement of an adjustable silicone gastric band has been performed in >30,000 obese Europeans [unpublished data, BioEnterics Corporation, Carpinteria, Calif.] It is currently under Food and Drug Administration (FDA) multicenter study in the U.S.

In our own experience at the Medical College of Virginia, 25% of the patients who underwent the banding procedure are now undergoing conversion to GBP or removal of the band. I understand other centers have had a similar experience. So, I agree with Dr. Doherty that long-term follow-up of these patients is important. This is consistent with the FDA’s request that these patients be followed for ≥3 years after band insertion before the product is evaluated for market approval in this country.

PORIES: Dr. Kenneth MacDonald has done perhaps ≥50 procedures thus far at our institution, and while he feels he is able to reduce the migration of the band—thus reducing some of the associated problems—he, too, feels that GBP is by far the gold standard. I predict that the various banding procedures will fall by the wayside, and that GBP will be the procedure of choice.

DOHERTY: Banding procedures may yet be proven effective, but it might be for a different subset of patients than those presently being studied. If the problem of reoperation can be resolved, the laparoscopic placement of a band in a patient who is 50 lb overweight could be considered. However, I think that the Roux-en-Y gastric bypass is the procedure of choice for patients with a strong genetic penetration of problems with excess calorie storage.

SUGERMAN: Let’s discuss some of the problems with the GBP procedure, beginning with micronutrient deficiencies. PORIES: B₁ and B₆ vitamin defi-
ciencies can be quite serious, yet some patients resist taking their vitamins. We have seen occasional patients with pellagra, beriberi, and Wernicke-Korsikoff syndrome and a few patients with vitamin B<sub>12</sub> pernicious anemia. Other nutrient deficiencies include calcium and iron.

**SUGERMAN:** It seems from the published literature that vitamin B<sub>1</sub> (thiamine) deficiency is the probable cause of Wernicke-Korsikoff encephalopathy or a terrible peripheral neuropathy that may occur when patients who have had a VBG or GBP vomit frequently after the operation and don’t get the proper treatment. Have you seen that, Dr. Doherty?

**DOHERTY:** I haven’t seen it in my own practice, but I am very aware of this occurring in several tragic cases. In the usual scenario, the patient develops obstructive symptoms and is rehospitalized under different doctors and in a different location. The patient repeatedly receives intravenous fluids without any vitamin supplementation, and goes home and continues to vomit. The effects of thiamine deficiency are tragic, so I alert everyone to always have a consciousness about that.

**SUGERMAN:** The dibasic cations—iron, calcium, magnesium, and zinc—are absorbed primarily in the duodenum, which is bypassed. Iron deficiency is clearly a problem in menstruating women and can be a difficult problem to resolve in women with hypermenorrhea. The calcium deficiency should be prophylactically prevented.

**PORIES:** We have tested patients before and after their GBP for deficiencies of magnesium and zinc ions. We have not found any greater occurrence of zinc deficiency after the operation than before.

**SUGERMAN:** What do you do for your patient who fails a standard GBP? First, let’s talk about the issue of an intact staple line but a dilated stoma.

**PORIES:** Of the patients who begin to regain weight, the majority of those failures are the result of staple line failures. Since we have changed to Dr. Sugerman’s triple staple line, with 3 superimposed staples, our 13% staple line failure rate is now down to about 2%, based on GI series.

The patient who has a large dilated stoma or who can out-eat the GBP is a special problem. We have revised some of these patients by narrowing their stomas, reducing the size of their pouches, or both, and they will lose weight after the surgery. But you can predict that within 2-3 years they will begin to regain again, in spite of having a GBP with excellent anatomic integrity.

**SUGERMAN:** Reoperation to revise an enlarged stoma will not resolve the problem, because the primary problem appears to be the patient’s food choices rather than the stoma size.

**PORIES:** We have converted some of these patients to a much longer Roux-en-Y loop. I wish I could tell you that this is a wonderful approach, but 2 of our patients developed neurologic symptoms that made it necessary to reverse the malabsorptive procedures.

**SUGERMAN:** In patients with a very small gastric pouch, we have brought the Roux limb down toward the ileocecal valve at various lengths—50, 100, 150 cm. The patients then lose weight, and comorbidities are corrected. Some patients, however, get into serious trouble with protein calorie malnutrition and fat-soluble vitamin deficiencies that require lengthening of the functional intestine or reversal of the malabsorptive procedure.5

What are your thoughts about the VBG as an adequate bariatric procedure for superobese patients: those with a BMI ≥ 50?

**DOHERTY:** VBG is an adequate procedure for such patients if the operation is done to technical standards,6 and the patient cooperates fully with eating behavior modifications and engages in physical activity. However, this is generally not the profile of many of the superobese patients on whom we have performed VBGs. The evidence now is that a Roux-en-Y gastric bypass would be a more adequate procedure for these patients.

**SUGERMAN:** What do you think should be done for the patient who has an intact VBG, confirmed by radiographic and endoscopic studies, who is failing the operation apparently because an excessive ingestion of high carbohydrate liquids such as regular sodas, lemonade, iced tea with sugar, or candy and ice cream?

**DOHERTY:** Such a patient will not benefit from another straightforward gastric restriction procedure. There are not enough data yet to answer that question in my mind.

**SUGERMAN:** Perhaps it was a loaded question because we published a study showing that those patients who have a problem with sweets and high

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— Dr. Doherty
carbohydrates will do extremely well if they are converted to a GBP. The problem patients we have seen with the GBP are the patients who are drawn to high-salt crunchy junk foods, such as potato chips.

**THE LAPAROSCOPIC APPROACH**

**SUGERMAN:** Dr. Schauer, you have had a great deal of experience in recent years with laparoscopic surgery for obesity. Could you give us your experience with that approach?

**SCHAUER:** Laparoscopic abdominal procedures have advanced considerably in the last 5-10 years. Virtually every abdominal operation has been done laparoscopically, including laparoscopic Roux-en-Y gastric bypass (Figures 4-7).

Morbidly obese patients can benefit from a less invasive operation, with reduced postoperative pain and perhaps advanced or improved recovery. The potential benefits of laparoscopic bariatric surgery are similar to those we have seen with laparoscopic cholecystectomy and laparoscopic Nissen fundoplication. But there are 2 particular areas in which the morbidly obese patient will benefit from the laparoscopic approach.

The first is reduction in cardiopulmonary morbidity. It is probably true that the rate of cardiopulmonary complications after open bariatric operations is fairly low. However, when they do occur these cardiopulmonary complications can be devastating in these high-risk patients with multiple comorbidities. The laparoscopic approach offers a potential to reduce perioperative morbidity, particularly pulmonary and cardiac.

The second area involves wounds, including wound infections, hernia rates, and wound dehiscence. I think my colleagues would agree that these can be quite significant in patients undergoing open bariatric operations. Both Dr. Sugerman and Dr.
Pories have shown that the frequency of wound hernias can be as high as 25%. The laparoscopic approach certainly has great potential to reduce these complications.

**SUGERMAN**: Some of our patients may not be happy with that, because a lot of them would like to have a hernia that would help justify getting a panciclectomy in association with their hernia repair. Nevertheless, I agree with Dr. Schauer that a reduction in the incisional hernia rate and in devastating wound infections are the 2 major advantages for laparoscopic surgery.

However, one of the major benefits of laparoscopic approaches—a shortened hospital stay—is not really an advantage in bariatric surgery. Our patients are going home after an average of 3.6 days, with some going home as early as 2 days, after an open GBP. What are your thoughts on that, Dr. Schauer?

**SCHAUER**: It’s a question of whether they are going home with a smile or a frown on their face. With the laparoscopic approach, our patients’ mean stay is 2 days, and we have actually sent some patients home the day after surgery with a smile on their face.

One consideration with the super morbidly obese is that many of them live alone, and have to get up stairs and get out of bed and in general get around, which may be difficult with a large abdominal incision. With a laparoscopic approach, these patients have fewer problems ambulating and carrying out their daily activities at home.

One other potentially profound benefit of the laparoscopic approach is that it may actually encourage patients to seek surgery for their morbid obesity. Few patients who meet the established NIH criteria for morbid obesity surgery are having the surgery. I think one of the barriers is the perception of the morbidity of the operation. And a laparoscopic approach may favorably alter patient impression of the procedure.

**SUGERMAN**: Dr. Schauer, at your course in Pittsburgh, you and your guest faculty present laparoscopic adjustable silicone gastric banding, laparoscopic VBG, and laparoscopic GBP. You are currently doing only laparoscopic GBP, I believe. Do you want to give any thoughts on the relative values of those procedures?

**SCHAUER**: When we first began exploring laparoscopic approaches to bariatric surgery, it was clear that GBP was the gold standard for North American patients. Even though it would have been much easier to begin doing laparoscopic bariatric procedures with a gastric restriction procedure such as VGB, we believed that the GBP, although more difficult, was simply a more effective operation.

So we began with the GBP because it has a well-established track record. However, laparoscopic approaches to the banding procedures and the VGB are emerging. The early work with these procedures and the VGB has thus far demonstrated the benefits of less invasive approaches: reduced pain, faster recovery, and fewer wound-related problems.

**SUGERMAN**: Dr. Doherty, you have had fairly extensive experience at the University of Iowa with the adjustable silicone gastric banding procedure, as both open and laparoscopic procedures. Can we have your thoughts at this date on that procedure?

**DOHERTY**: I don’t think there are enough long-term data from multiple centers that would justify making laparoscopic banding procedures available as standard of care at this point.

**M A L A B S O R P T I V E P R O C E D U R E S**

**SUGERMAN**: What are your thoughts on the malabsorptive procedures, including the partial biliopancreatic bypass of Dr. Scopinaro from Genoa, Italy, and the duodenal switch operations of Drs. Hess and Marceau?

**PORIES**: Dr. Scopinaro’s biliopancreatic bypass struck me as a rather outlandish procedure, but his good results may in part be due to the typical Italian diet. But I don’t think it’s an acceptable operation for American patients.

The duodenal switch is still new, and regarded as an experimental procedure. I think it’s promising and appears to be somewhat easier to do, but I don’t have any long-term data.

**DOHERTY**: The Scopinaro procedure results in an obligatory weight loss because of the amount of malabsorption. So, for these patients to stay in a good state of nutrition, some of them are consuming 6,000-7,000 calories a day. Most of them are easy to identify, because of frequent and malodorous flatus.

**SUGERMAN**: I have met many of the Italian patients who have had the biliopancreatic bypass and...
I was impressed by how well they are doing. I have seen the data. Our patients in the United States eat larger quantities of fat, and that's going to markedly increase steatorrhea and malodorous flatus. When I was in Italy I questioned whether their patients' stools floated because I was interested in steatorrhea, but they don't have standing-water flush toilets.

**PORIES:** I think that may be a clue—there is quite a difference between butter and olive oil. The answers regarding Scopinaro's approach are not in, but the finding that Italians do well and Americans do poorly after the procedure is fascinating, and must relate to diet.

**COMPLICATIONS**

**SUGERMAN:** One of the most devastating complications that we all have seen after operations on severely obese patients is fatal pulmonary embolism. Dr. Doherty, what do you do at the University of Iowa to prevent this complication?

**DOHERTY:** We preoperatively educate them, and encourage and motivate them to be fully ambulatory immediately postoperatively. We like to hydrate them preoperatively with an infusion of 5% dextrose to suppress the elevation of free fatty acids during the fasting state. We give them low-dose heparin pre- and postoperatively, and we use external venous compression devices. We feel very strongly that it's important that they be functioning on the lower extremities before the anesthetic is induced.

**PORIES:** We use all the same techniques, the compressive devices, hydration, and subcutaneous heparin. We used heparin after our first 900 patients. Curiously, we seem to have a higher incidence of pulmonary emboli with anticoagulation than without it. So, I am still not quite sure that all these therapies are helping much.

**SCHAUER:** The laparoscopic technique may increase or decrease the risk of deep venous thrombosis (DVT), depending on the risk factor involved. For example, the factors that may increase the risk of DVT include the increased intraabdominal pressure during the procedure. Some studies show that venous return from the legs is reduced during laparoscopy, particularly during long procedures. On the other hand, patients tend to ambulate quickly after laparoscopic surgery, and there is evidence that the postoperative hypocoaguable state is reduced.

It has been our practice to just assume that laparoscopy does increase the risk of venous thrombosis, so we are very aggressive in preventing venous thrombosis, employing both pneumatic compression garments and prophylactic subcutaneous heparin. Despite these techniques, we have had 2 cases of pulmonary emboli out of approximately 225 laparoscopic GBPs, with 1 death. That has been the only mortality in our series. We had 1 other case of documented venous thrombosis.

**SUGERMAN:** Another potentially devastating complication that can occur after any type of bariatric gastric procedure is a leak. Mason discussed the importance of recognizing a leak, and described the signs and symptoms. In addition to tachycardia, these patients complain of left shoulder pain, increasing back pain, urinary frequency, and tenesmus. Most importantly, if the patient expresses a feeling of impending doom, it's best to pay attention. We tell our colleagues, nurses, medical students, and residents that if the patient says, "I think I am going to die," they may in fact have a leak and may die if it is left uncorrected.

In the presence of these symptoms, the safest course may be to re-explore these patients. Because even though they have no tenderness and no guarding—standard signs that you would expect to see in patients with peritonitis—they may have a leak and peritonitis.

**DOHERTY:** Tachycardia is probably the best early indicator of a leak. If the tachycardia doesn't respond quickly to increased fluid infusion or a slight increase in analgesia, the patient should have an immediate diatrizoate meglumine/sodium (Gastrograffin, Squibb Diagnostics) study. Unfortunately, you can have false negative studies. We would then proceed with a CT scan. One of the difficulties with some of the superobese patients is that they may exceed the capacity of these imaging studies to give interpretable studies. The next step is to explore operatively.

**PORIES:** If a patient is not doing well you have to assume a leak or infection. — Dr. Pories

**SUGERMAN:** Other triggers for re-exploration include a negative base deficit and persistent acidosis.

**PORIES:** It is worth pointing out that re-explo-
Is Bariatric Surgery Right for Your Practice?

Sugerman: Let’s address the issue of who should be doing bariatric procedures. Pories: Surgery as a whole appears to be moving toward an era in which surgeons who specialize—for example, surgeons who operate on knees and do so almost exclusively—get better results. The same is certainly true of cardiac surgeons. Even general surgeons no longer do all procedures, but tend to concentrate on several specific areas. Bariatric surgery is similarly a clearly defined specialty that requires special expertise. Moreover, I favor bariatric centers, where we also have nurses, anesthesiologists, and technicians who all understand the disease, and perhaps even more important, who are compassionate to the morbidly obese patient.

Doherty: I recommend that the surgeon practice general surgery or gastrointestinal surgery for several years—and during that time develop very advanced laparoscopic skills. And then work with established bariatric surgeons to determine if he or she wants to make the commitment to this type of patient care as described by Dr. Pories.

Sugerman: Dr. Schauer, there are concerns that, especially in Europe, many laparoscopic surgeons are doing the laparoscopic banding procedure without having much experience with bariatric surgery in general. I anticipate that is a potential problem in the United States. What are your thoughts on the laparoscopic surgeon becoming involved in bariatric surgery?

Schauer: I agree completely with Dr. Pories and Dr. Doherty that, first and foremost, the surgeon must have a very good understanding of bariatric surgery principles, including the preoperative and postoperative care of these patients. Many surgeons have acquired very good laparoscopic skills, but don’t have a bariatric surgery background. Surgeons jumping into this arena without being prepared are going to subject their patients to very preventable problems. Well-trained laparoscopic surgeons need to do their bariatric homework before they launch into this field.

The converse also is true: Well-established bariatric surgeons who have very long and very good experience with bariatric surgery using open techniques may not have much experience in laparoscopic surgery, and they need to do their homework and training to learn the laparoscopic skills. They can just as easily or just as profoundly have perioperative complications related to their lack of appropriate skill and training in laparoscopic surgery. I highly recommend that anyone interested in learning laparoscopic GBP surgery prepare very carefully. This operation is one of the most advanced laparoscopic procedures. For many general surgeons, their most commonly performed operation is a laparoscopic cholecystectomy. In terms of degree of difficulty, laparoscopic cholecystectomy is somewhere around a 3 or 4 on a scale of 0-10. Bariatric GBP rates a 9 or 9.5. Appropriate preparation—perhaps mentoring or proctoring—is necessary for most general surgeons before they jump into this procedure.

Sugerman: A preceptorship program has been developed through the American Society for Bariatric Surgery. It provides surgeons who are interested in this field with the necessary background and training. And established bariatric surgeons can develop their laparoscopic skills at laparoscopic bariatric workshops, such as the one at the University of Pittsburgh with Dr. Schauer.

Pories: There is an opportunity for many surgeons to come back into the realm of gastric surgery with this operation. I think there is no other example of a gastric operation that has this potential volume and degree of satisfaction.

Sugerman: All major surgical training programs in the country should have exposure to this surgery. At the Medical College of Virginia, all of our residents have been involved with an average of 20 procedures during their third year. It’s an extremely valuable education for them.


ration of the patient on the first or second day after surgery is not a major procedure. You remove the sutures, go into the patient, and irrigate. If there is a leak you can drain it. If there is no leak and no infection of any kind, you can simply close the patient up primarily.

Schauer: We were concerned about leaks when we began performing the laparoscopic GBP procedure a little over 2 years ago. Leak rates tend to be higher for laparoscopic approaches, in part due to the complexity of the operation, as well as the learning curve issue. Our leak rate with our first 50 cases was approximately 7%, which is higher than the generally acceptable 2%-3% rate. Since that time our leak rate has dropped below 3%, which suggests that leak rates with the laparoscopic approach may be associated with learning the procedure.

Sugerman: Another complication that can occur with GBP is marked dilatation of the bypassed stomach. Early on, we routinely put gastrostomy tubes in these patients. We stopped doing that not long after the initial series. Do you use routine gastrostomy tubes? And if not, what triggers your concern
about this complication’s developing, and what do you do for it, should it develop?

PORIES: We have not routinely used gastrostomy tubes for the past 15 years, and I have seen only 1 patient with a dilatation during that time, who was re-explored and drained.

SUGERMAN: Our dilatation rate is around 3%. The primary symptom is hiccups. If a patient begins to complain of hiccups or of feeling bloated, we get a plain film of the abdomen, which usually shows a very dilated stomach. Our initial treatment for these patients has been percutaneous skinny needle de-compression. But if the dilatation recurs, we will percutaneously place a gastrostomy tube. We have not reoperated on these patients in more recent years.

SCHAUER: In our series of approximately 225 patients, we have had 1 leak that required operative intervention and was repaired using an open approach. We have had 6 subclinical leaks identified on the patient’s first postoperative visit, approximately 10 days after surgery. These leaks were identified by the off-color drainage material from a drain placed near the gastrojejunal anastomosis. They were treated primarily with antibiotics and withholding oral intake for a few days without consequence. So, at least for some of our patients, a drain seemed helpful in identifying these leaks, and perhaps avoiding operative intervention.

SUGERMAN: Do any of you use prophylactic drains with open GBP or gastroplasties?

DOHERTY: No.

SUGERMAN: We don’t either.

PORIES: Neither do we. I would like to add, however, that regardless of whether you use an open or laparoscopic approach, the upper abdomen becomes contaminated. In the hopes of reducing the infection rate, we have just recently begun to give 2 g p.o. neomycin the night before surgery.

DOHERTY: If you reoperate on a patient for a leak, and don’t demonstrate it, do you leave drains? Would you consider gastrostomy or a feeding jejuno- stomy under those circumstances?

SUGERMAN: We would not. When we reoperate out of concern for a leak but find no gross evidence of a leak, we will test the anastomosis with methylene blue. We will not put in a prophylactic drain or feeding tube without evidence of a leak.

However, if we find a leak in a GBP patient we will routinely put in a gastrostomy tube. That tube can be used both for decompression and for feeding.

PORIES: We do exactly the same.

SUGERMAN: Let’s turn our attention to internal hernias after laparoscopic GBP. It is one of my major concerns, because I think many laparoscopic surgeons, at least in their early experience, were not closing the 3 potential internal hernia defects that were present. That is, at the jejunojejunalostomy, the mesocolic opening, and at the Petersen hernia defect between the small bowel mesentery and the mesocolon.

SCHAUER: From the very beginning, we were closing the jejunojejunalostomy defect, and we have not had a problem with internal hernias at that site. We were not closing the window in the transverse colon mesentery, and we did fine until about our 40th patient. This patient herniated the Roux limb through that defect. We have since routinely closed that defect, and have seen no further problems at that site.

PORIES: The mesocolon window is the most important one, and it must be closed.

DOHERTY: The problem with the internal hernia complication is that it will take a very long time to determine the effectiveness of even closing these defects, because the patients are at risk for this for the rest of their lives.

SUGERMAN: Now, the primary symptom of an internal hernia is cramping periumbilical pain—typical small-bowel obstructive pain. We have had a few patients who have had normal upper GI series develop this complication. One patient, in particular, went on to infarct a large component of her small intestine. As a result, our policy is to re-explore patients who develop persistent or severe cramping periumbilical pain despite a normal upper GI series and small-bowel follow-through study.

Another aspect of an incarcerated internal hernia involves patients who develop this complication and go to another facility and see another surgeon with very little experience with bariatric surgery. These patients must be made to understand that should they develop complications, they must see the bariatric surgeon.

PORIES: Some of these patients become so sick they can’t be transferred. Perhaps we should give these patients little cards to put in their wallets that state very clearly, perhaps with a diagram, what operation they have had, and that an experienced bariatric surgeon should be consulted.

Even though we have spent about 40% of this discussion on possible complications, the complications are relatively infrequent. The benefits of surgically induced weight loss far exceed these complications. However, surgeons need to be aware of these poten-
tial problems before they embark on providing this operation to patients.

References


Coming next month:

Peter Gloviczki, MD—
joined by John J. Bergan, MD, and E. John Harris, Jr, MD—
moderates a symposium on management of peripheral venous insufficiency.