Interview with the Expert: Philip R. Schauer, M.D.

Dr. Schauer is Assistant Professor of Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA. He received his Bachelor’s degree in biological sciences from Texas A&M University (College Station, TX) and his medical degree from Baylor College of Medicine (Houston, TX). He completed a fellowship in laparoscopic surgery at Duke University Medical Center (Durham, NC). Dr. Schauer currently serves on the Editorial Board of the Journal of New Surgery.

Dr. Schauer, please tell our readers about the recent conference on laparoscopic bariatric surgery that you organized. What were the main points of discussion?

The conference, titled “Advances in Surgery for Morbid Obesity,” took place this past winter in Snowbird, UT. It was a two-part conference: three and a half days devoted to the topic of morbid obesity, and two days devoted to advances in surgery for gastroesophageal reflux disease (GERD). I will focus my comments on the obesity aspect.

Basically, we brought together a faculty of more than 20 world-renowned experts on obesity surgery. This was a unique event, with such an esteemed group of bariatric and laparoscopic surgeons meeting in one place to discuss some of the changes in the field. Much of the focus was on advances in the field, particularly related to minimally invasive operations for morbid obesity. During the past 5 years, there has been an enormous change in the field of bariatric surgery. A host of interesting and exciting minimally invasive operations have not only been developed but also perfected.

We are now in a transition period. Until a few years ago, only a handful of surgeons were performing these procedures. The techniques are now being passed on to surgeons in clinical practice outside a major university setting. The public is dramatically embracing these new surgical options, and the interest in surgery for weight loss is expanding at a rapid rate. Patients now believe they have a surgical option that is very effective in reducing weight in the long term. In addition, the operations are now safer and much less invasive.

At the conference, we discussed the various operations that are available. These range from fairly simple procedures to highly advanced and complicated ones. An example of a simple procedure would be laparoscopic gastric banding, which involves placement of a Silastic collar around the upper stomach. The collar has an adjustable reservoir. Through Silastic tubing that tunnels from the collar to the abdominal wall, you can access and either inflate or deflate the collar. This will increase or decrease the diameter of the collar. By filling the reservoir with saline, you make the diameter smaller. Over time, with incremental additions of saline, the outlet of the stomach can be made tighter and tighter, creating a very small stomach pouch—about 15 mL in volume above the collar. The concept is that the patient feels satisfied when that small pouch is full of food. This operation involves a laparoscopic, minimally invasive procedure.

The next level of surgical complexity is the gastric bypass. This operation, which has been done for 25 to 30 years using conventional laparotomy, can now be done laparoscopically. The first surgeons to do this operation were Drs. Wittgrove and Clark in San Diego. They, along with our group in Pittsburgh and half a dozen other groups, have perfected this operation. Gastric bypass is more involved than the gastric banding procedure. In addition to creating a small stomach pouch, 15 mL in volume, we also bypass the stomach and a segment of upper intestine. This operation is gastric restrictive and also provides a small amount of decreased calorie absorption. The surgery itself is a bit more complex and a bit more invasive than the band procedure, but it has better weight loss results. We have very good data on patients 10 to 15 years after bypass showing good weight loss.

The third type of operation is even more complex and more invasive. It is based on the concept of malabsorption, in which the calorie intake is not necessarily changed, but the percent of calories absorbed by the body...
is dramatically reduced. The two prototype operations are the biliopancreatic diversion, developed by Dr. Scopinaro in Italy, and the duodenal switch procedure. These operations modify the stomach volume very minimally, but they bypass most of the intestinal tract. By shortening the intestinal tract, they decrease the length of intestine available for absorption. Therefore, a large percentage of calories consumed by an individual are never absorbed; they are eliminated in the patient’s feces. These operations are even more effective than gastric bypass; however, there is a higher price to pay. Patients face a higher risk of malnutrition-related complications, such as protein–calorie malnutrition and certain vitamin deficiencies.

Bariatric surgery for morbid obesity now includes a continuum of operations, from very simple for modest weight loss, to the malabsorption operations, which offer excellent weight loss but a higher risk of complications. All of these procedures can now be done laparoscopically. At the conference, we discussed the technical aspects of how the operations should be performed, the common complications, and the importance of adequate training before performing these procedures.

**What were the most important conclusions drawn from the conference?**

First, there was a clear consensus that minimally invasive approaches to bariatric surgery are here to stay and will dominate the field within the next 5 to 10 years. Currently, most bariatric operations are done with conventional open surgery. Because of the published benefits of laparoscopic bariatric surgery, it is likely to dominate the field. Second, the main benefits appear to be a significant reduction in perioperative morbidity, specifically in wound-related complications, which are quite common, and in some of the cardiopulmonary complications related to bariatric surgery.

**What are the main problems associated with wound healing in these procedures?**

You might imagine that in patients who are morbidly obese, who have an extra 100 pounds or more around their abdomens, how difficult it can be to close a large wound in the abdomen. There is so much tension on the wound that it causes problems, including an increased probability of infection, hernias, and wound dehiscence. Minimizing the incisions causes a dramatic reduction in these types of complications, which can be quite debilitating and dangerous.

**Why is the laparoscopic gastric banding procedure so controversial?**

Laparoscopic gastric banding is a device-based procedure. The U.S. Food and Drug Administration (FDA) has only recently approved the device, which is currently undergoing testing; our program in Pittsburgh is one of the testing sites. The device has been available in Europe for 8 years or so, and more than 30,000 procedures have been performed. The controversy extends to a couple of areas. First, the limited experience in the U.S. has shown the degree of weight loss to be about 35% of the patient’s excess weight. This compares with an average of 75% of excess weight loss with the gastric bypass procedure. In Europe, however, studies have shown that patients can lose 45% to 55% of their excess weight. In other words, they are getting better weight loss results in Europe for reasons that are not well understood.

Second, there are ongoing concerns about having a foreign material around the esophagus and stomach. Some specific complications can occur, such as the material eroding into the esophagus or the stomach, the collar slipping down the stomach, or the device itself, which contains tubing and connectors, springing a leak or leading to infection. However, the experience in Europe suggests that these problems are not insurmountable.

Probably the biggest controversy about the device is its effect on esophageal motor function. There have been a few reports of patients having esophageal dilation after the band is placed. One report in particular, by Weiss and colleagues showed that esophageal motility was impaired in many patients after the device was placed. What we don’t know is whether this is a long-lasting effect. Perhaps after the diameter of the device is expanded all of those effects might go away. No one knows; nevertheless, it is a potential problem, and many experienced bariatric surgeons are very concerned about the device causing permanent damage to the esophagus.


In this paper, we discussed our experience with laparoscopic gastric bypass in 275 patients. We have now performed the procedure in more than 600 patients. We reviewed the outcomes, including weight loss, the effect of the weight loss on patients’ comorbidities, complications, and the effect of the operation on a patient’s quality of life. Overall, we found that the operation can be safely performed, takes about 2 hours to complete, and requires an average stay in the hospital of about 2 days. Most patients can go back to work about 2 or 3 weeks after the operation. This compares with a 5- to 6-day stay in the hospital after an open gastric bypass and 4 to 6 weeks of recovery before returning to work.

We also noticed a low rate of perioperative complications, such as wound infections or wound hernias, and a
low rate of cardiopulmonary complications, which are fairly common in open bypass procedures. The average weight loss at 2.5 years was approximately 75% of the excess weight. This was associated with a significant improvement in patients’ comorbidities, including hypertension, sleep apnea, diabetes, asthma, and gastroesophageal reflux disease. In almost all patients, these medical problems either resolved completely with the weight loss or dramatically improved. The most dramatic effect occurred in patients with diabetes: 82% of the patients who had type II diabetes were cured after this operation.

We also found that the operation is difficult to learn. It requires a concentrated effort. Our first-year operations—with operating time being an indicator of the difficulty of an operation—took us longer than 6 hours. During the next 3 to 4 years, we gradually reduced the operating time to 1.5 to 2 hours.

How do you envision the future of the laparoscopic gastric bypass procedure?

The gastric bypass, of all the bariatric operations, is the gold standard procedure. It has withstood the most scrutiny, has the best long-term follow-up, and seems to offer the best benefit-to-risk ratio. I think that over the next 3 to 5 years, surgeons who now use an open procedure will learn how to do it laparoscopically. We have already seen that many more people who suffer from obesity now consider surgery as an option. Up until 3 or 4 years ago, only about 20,000 bariatric operations were being done in the entire United States. That number has already doubled to more than 40,000 cases.

If you anticipate that large an increase in the number of physicians wanting to learn these laparoscopic procedures, and in the number of patients wanting to have them done, what are the issues regarding training? Are there sufficient resources at present?

That question is difficult to answer. This is one of the most advanced laparoscopic procedures performed today. On a scoring system of 0 to 10, with 0 being an easy operation and 10 being a very difficult one, this is about a 9.5. Many surgeons whose skill level is about a 3 or 4, which is what one needs to do a laparoscopic cholecystectomy, have a huge jump to make. These surgeons learned how to remove gallbladders laparoscopically by taking weekend courses. You cannot learn to do laparoscopic gastric bypass in a weekend course.

At the University of Pittsburgh, we offer introductory courses. These are 2-day courses, in which the surgeons attend an animal laboratory, observe several live cases, and attend several lectures. But that is by no means sufficient for someone to begin performing the operation. The best training is a fellowship, in which someone takes a year and learns under an experienced bariatric surgeon. The problem is that few practicing surgeons can take off a year to learn this procedure. Yet patients are demanding laparoscopic bariatric surgery. So surgeons are forced to learn how to do it but without the appropriate resources. At Pittsburgh, we recently developed a mini-fellowship program, in which surgeons attend a very concentrated training session over a 6- to 8-week period, in which they train with an expert surgeon and get a number of cases under their belts.

What other cutting edge therapies for the treatment of upper gastrointestinal disease are on the horizon?

At the conference, we discussed some of these cutting-edge techniques. Gastric pacing, for example, involves placing electrodes on the stomach and a pacemaker under the skin. For reasons that are not well understood, the gastric pacemaker seems to decrease appetite and increase satiety in some patients. It is not clear whether it affects stomach motility or signalling to the brain.

A similar concept involves placing electrodes on the vagus nerve. Preliminary studies in the dog model suggest that this decreases appetite. These procedures are even less invasive than laparoscopic surgery and can be done as outpatient procedures with very low risk of harm. Therefore, they represent an exciting opportunity. Whether they will induce long-term weight loss remains to be proven.

At Pittsburgh, we are beginning to use the Stretta procedure to treat GERD. Basically, this involves radiofrequency ablation, as discussed elsewhere in this issue. Using endoscopic techniques, a series of probes is placed down the esophagus and into the esophageal submucosa. A current of radio wave energy is then delivered to the area. The mechanisms of the Stretta procedure are unclear at this time. Some people believe that certain nerve pathways are destroyed, which prevents transient relaxation of the lower esophageal sphincter. Another possible mechanism is the creation of scar tissue in that area, which acts as a barrier to acid reflux. This is all under investigation. Some studies with about 1-year follow-up have shown that the procedure stops reflux in some patients. The procedure does show some promise, but it needs to be subjected to critical analysis over time.

Another procedure for reflux is an endoscopic suturing device that is used to create a reinforced valve inside the esophagus. This reconstruction takes place entirely inside the esophagus and stomach, eliminating the need for surgery. Both the Stretta procedure and the endoluminal suturing concept have a common theme: mechanically stopping reflux using a procedure that is delivered intraluminally. Although the results are very preliminary, these types of procedures are opening up an exciting era in which
the standard operations we are performing now could potentially be replaced by much less invasive procedures.

*Overall, how do you view the field of bariatric surgery at this time?*

I think we are in the midst of an extremely exciting era in surgery, in which there is constant innovation that directly affects the operations we perform. Many of the operations I learned during my training, which ended in the early 1990s, are no longer being performed, having been replaced by minimally invasive procedures. There appears to be no end in sight to this innovation. I believe that general surgeons are leading the way in much of this innovation. Furthermore, it has spawned many interesting developments in areas such as communication technology, robotics, tissue welding, and synthetic glues. It is a great time to be a surgeon.

*Thank you, Dr. Schauer.*

*Interview prepared by Vicki Glaser*