

ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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Nonmedical Treatment of Gastroesophageal Reflux Disease



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G&H What is the pathophysiology of gastroesophageal reflux disease?

VV Gastroesophageal reflux disease (GERD) results from the failure of the lower esophageal sphincter to keep acid and other fluids in the stomach. This incompetency is commonly caused by the presence of a hiatal hernia, although a person can have pathologic reflux without a hiatal hernia and, conversely, can have no pathologic reflux even in the presence of a hiatal hernia. Most reflux is actually physiologic—that is, everyone experiences reflux, but defense mechanisms usually prevent it from becoming pathologic. Reflux becomes pathologic when it causes symptoms or damage to the esophagus.

G&H When is nonmedical therapy indicated for the treatment of GERD?

VV GERD is usually first treated via lifestyle modifications, such as keeping the head of the bed elevated; losing weight; quitting smoking; avoiding caffeine, alcohol, and mints; and not eating 2 hours before bedtime. Although these lifestyle modifications are laudable goals, adherence to them is generally poor. Medical therapy, such as proton pump inhibitors, is usually recommended.

Most patients with symptomatic GERD can be adequately managed with medical therapy. When GERD becomes very severe or difficult to manage with lifestyle modifications or medical therapy, physicians typically consider other types of intervention, such as surgery. In addition, some patients do not want to take medications long term and would rather undergo an operation. Other

patients experience adverse events while on medications—for example, allergic reactions, in which case surgery would then be indicated. Surgery is also indicated if patients experience a complication related to their GERD—for example, the development of strictures or bleeding ulcers.

G&H Is long-term proton pump inhibitor use typically problematic and something that should be avoided when possible?

VV Long-term proton pump inhibitor use is very common in patients with GERD. GERD is a lifelong issue; it generally does not improve on its own, although it may occasionally improve if the patient loses weight. It is generally accepted that increased weight, especially in the abdomen, increases reflux by causing an elevation in intra-abdominal pressure, which leads to a higher incidence of hiatal hernia and incompetence of the lower esophageal sphincter.

Issues such as calcium absorption and the development of fundic gland polyps have been noted with long-term use of proton pump inhibitors. Most calcium supplementation is in the form of calcium carbonate, which requires acid for absorption. Some physicians have suggested that long-term use of proton pump inhibitors increases the incidence of hip fractures because of poor calcium absorption. This can be mitigated to a certain extent by the use of calcium citrate. Fundic gland polyps are commonly associated with long-term proton pump inhibitor use, although they carry no malignant potential and do not require surveillance. However, most patients tolerate proton pump inhibitor therapy quite well, and some stay on it for years without much issue.

G&H How common is surgical treatment for GERD?

VV Treatment for GERD is a spectrum. As previously mentioned, we begin with lifestyle modifications, then medication, and then surgery. There has been great interest in endoluminal treatments, as an intermediate treatment between medication and surgery. However, surgery is considered the gold standard from the standpoint of any type of intervention other than medication. In the past, surgery was performed much more commonly; in fact, the number of operations being performed peaked in the late 1990s and has now dropped off by approximately half. Currently, fewer than 20,000 antireflux operations are performed yearly in the United States.

G&H What surgical options are currently available?

VV The surgical options generally involve antireflux surgery, usually a Nissen fundoplication, which includes repair of the hiatal hernia, ensuring 2 cm of intra-abdominal esophagus, and then a 360-degree fundoplication using the fundus of the stomach. Nissen fundoplication is by far the most common surgical operation being performed for GERD.

The other common option is a laparoscopic Toupet fundoplication. This operation also includes repair of the hiatal hernia, but instead of a 360-degree complete fundoplication, a 270-degree partial fundoplication is performed. This option is chosen for patients who have poor esophageal motility and in whom there is some concern that performing a 360-degree complete fundoplication could increase dysphagia.

There are also several far less common variants of fundoplications that are performed in patients who have, for one reason or another, a foreshortened esophagus and in whom there is an inability to ensure 2 cm of intra-abdominal esophagus. In this case, an esophageal lengthening procedure (a Collis-Nissen fundoplication) is performed, in which the surgeon divides the stomach in the same line as the esophagus in an attempt to lengthen the esophagus. However, this fundoplication is performed in only a minority of patients.

G&H Where does endoluminal fundoplication fit in?

VV In the mid-1990s, there was enthusiasm for developing endoluminal treatments for GERD. The first of these attempts involved an endoscopic suturing device, which allowed sutures to be placed at the gastroesophageal junction to create a small valve or flap to prevent GERD.

Unfortunately, this device fell out of favor because it did not have good long-term results. Another endoluminal therapy that was developed was the Stretta procedure, which involved radiofrequency ablation; however, although it caused some symptomatic improvement, there was continued pathologic reflux. The manufacturer went bankrupt, although another company has bought the technology and is trying to reintroduce it. Another company developed a transoral incisionless fundoplication device, which was named to emphasize the fact that the procedure did not require any abdominal incisions. The technique underwent several iterations and had encouraging initial results. In fact, I performed several of these operations and published initially good results. However, those results were not robust, and eventually patients experienced symptom recurrence. All of the endoluminal devices developed thus far have not been able to achieve reliable, long-term favorable symptomatic and pathologic outcomes.

G&H Are these procedures, particularly transoral incisionless fundoplication, still being performed in clinical practice?

VV There are still pockets of enthusiastic practitioners, but these procedures are not being performed routinely any more. Most surgeons, such as myself, have given up on them. At this point, I do not offer any endoluminal treatments at all; my recommendation is for either medical therapy or a standard laparoscopic Nissen or Toupet fundoplication.

The most significant problems for endoluminal treatments are the lack of good long-term outcomes and the lack of reimbursement. The Centers for Medicare & Medicaid Services does not reimburse physicians for any endoluminal approaches to GERD, and many private insurers have followed suit. Therefore, even if a physician is a big believer in a technique, if he or she is not going to be reimbursed for it and the patient is not willing to pay out of pocket for the procedure, the procedure will fall out of favor.

G&H Is research still being conducted on these procedures to confirm the results?

VV A recent randomized trial of transoral incisionless fundoplication found modest improvement on a short-term basis. However, these results are still not great, and there have certainly been enough failures even in the short term and in expert hands to further diminish any enthusiasm for the use of this procedure. It is unclear whether other endoluminal devices will be any better. I think that the ultimate problem is not so much the device, but the concept behind it—that is, creating a fundoplica-

tion endoluminally when all of the anatomic structures holding the esophagus and stomach in place, such as the phrenoesophageal ligament and short gastric vessels, are still in place in the abdomen because there is no dissection of the esophageal hiatus allowing a tension-free fundoplication to be performed. This is in contrast to a surgical fundoplication, in which the surgeon dissects everything to make sure that the fundoplication and the hiatal hernia repair are performed adequately, with little tension. There is no such luxury with an endoluminal procedure; the physician can put a stitch, fastener, or staple to try to hold the stomach up to the esophagus, but the phrenoesophageal ligament, the short gastric vessels, and other structures are still intact, putting tension on whichever fastener is used. In addition, the fastener will eventually erode through the esophagus. However, the problem is not the fastener itself; it is that the physician cannot dissect the esophageal hiatus to ensure proper juxtaposition of the stomach and the esophagus.

G&H How effective is standard fundoplication for treating GERD?

VV Standard fundoplications are more than 90% effective at providing symptom relief and at allowing people to stop medication use. The most important components of the surgical approach for the treatment of GERD are proper patient selection and good execution of the procedure itself. With these 2 components, it is possible to obtain consistently good results with very few side effects or complications.

G&H How is proper patient selection determined?

VV Ideal candidates for standard fundoplication are patients with typical symptoms of GERD (ie, heartburn and regurgitation) who typically experience some, if not complete, relief of their symptoms with medication. In addition, these patients have undergone an endoscopy showing that there is no other cause for their symptoms (eg, cancer), 24- or 48-hour pH monitoring showing pathologic reflux with good symptom correlation (ie, the occurrence of symptoms when acid is in the esophagus), and esophageal manometry showing no other esophageal motility disorders. If a patient does not meet the criteria in each of these areas, a good result is not likely. Depending on associated conditions and symptoms, the patient may need other studies, such as a contrast upper gastrointestinal series or gastric emptying scintigraphy.

G&H Are there any complications associated with standard fundoplication?

VV Standard fundoplication requires a general anesthetic, so patients are at risk for the usual complications associated with surgery, such as wound infection and bleeding. Procedure-specific side effects include dysphagia, bloating, gassiness, diarrhea, and early satiety. Many patients are actually happy to have the last of those side effects because feeling full quickly can cause weight loss. The most feared complications are esophageal and gastric perforations and splenic injury, which are potentially life-threatening. These complications occur infrequently, but when they do occur, they can be quite problematic.

G&H Are there any other treatments for GERD that are currently in development?

VV Several endoluminal devices are currently under development, such as the MUSE System (Medigus) and the aforementioned Stretta device, which is trying to make a comeback. The Stretta device might have some utility, but I think that overall it will not be the windfall that some are expecting.

In terms of operatively placed devices, the esophageal sphincter device (LINX Reflux Management System, Torax Medical) has shown some promise, and good early results have been published. This device consists of a ring of magnets placed around the lower esophagus laparoscopically, allowing food boluses to pass into the stomach, but preventing acid reflux from the stomach into the esophagus. However, this device requires general anesthesia and has the same reimbursement problems as endoluminal devices.

Dr Velanovich has no relevant conflicts of interest to disclose.

Suggested Reading

- Kim D, Velanovich V. Surgical treatment of GERD: where have we been and where are we going? *Gastroenterol Clin North Am.* 2014;43(1):135-145.
- Perry KA, Pham TH, Spechler SJ, Hunter JG, Melvin WS, Velanovich V. 2014 SSAT State-of-the-Art Conference: advances in diagnosis and management of gastroesophageal reflux disease. *J Gastrointest Surg.* 2015;19(3):458-466.
- Stefanidis D, Hope WW, Kohn GP, Reardon PR, Richardson WS, Fanelli RD; SAGES Guidelines Committee. Guidelines for surgical treatment of gastroesophageal reflux disease. *Surg Endosc.* 2010;24(11):2647-2669.
- Velanovich V. Endoscopic, endoluminal fundoplication for gastroesophageal reflux disease: initial experience and lessons learned. *Surgery.* 2010;148(4):646-651; discussion 651-653.
- Witteaman BP, Conchillo JM, Rinsma NF, et al. Randomized controlled trial of transoral incisionless fundoplication vs. proton pump inhibitors for treatment of gastroesophageal reflux disease. *Am J Gastroenterol.* 2015;110(4):531-542.