ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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Beyond Proton Pump Inhibitors and Nissen Fundoplication: Minimally Invasive Alternatives for Gastroesophageal Reflux Disease

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G&H What is the primary cause of gastroesophageal reflux disease, and how common is this condition?

RB The primary cause of gastroesophageal reflux disease (GERD) is a defective high-pressure zone at the gastroesophageal junction (GEJ). This high-pressure zone is a combination of the intrinsic lower esophageal smooth muscle sphincter and the extrinsic crural diaphragmatic sling-type sphincter. In some cases, the high-pressure zone simply opens too often, allowing gastric reflux into the esophagus. In most cases of severe reflux, a hiatal hernia leads to mechanical incompetence of the crural sphincter and then the lower esophageal sphincter (LES), rendering both of them less competent.

Most people think of GERD as acid reflux disease, but the word *acid* is not included in the acronym. GERD affects approximately 15% of adults on an occasional basis. In 2017, nearly 7% of US adults were taking prescription acid suppressant medication, primarily for GERD. The primary therapy is proton pump inhibitors (PPIs).

G&H How effective are PPIs in the management of GERD?

RB PPIs reduce the pH level of gastric contents, but they do not significantly affect the frequency of reflux events. Because acid is the most noxious component of gastric reflux, many patients find relief, especially for heartburn, by taking PPIs. However, several studies from gastroenterologists, such as Dr Ronnie Fass, have shown that 25% to 40% of patients who are on PPI therapy are not satisfied with their symptom control. The percentage is likely even higher in patients who experience regurgitation. Reflux may not be the reason for dissatisfaction in all of those patients, but a significant proportion of patients continue to have symptoms because of GERD despite appropriate medical therapy.

G&H When should surgical or endoscopic management be recommended?

RB Procedural management of GERD is most often considered in patients who continue to be symptomatic despite appropriate medical therapy and have objective findings of reflux based on endoscopy or pH testing. Roughly 10% of patients who fail medical therapy do not actually have GERD based on pH or endoscopic findings, and their symptoms are caused by something else. It is very important to confirm the diagnosis of GERD prior to an antireflux intervention.

Occasionally, clinicians are presented with a patient who is intolerant to PPI therapy, as indicated by diarrhea, headache, or other adverse effects. Other patients may have ongoing disease processes in terms of recurring strictures and significant esophagitis despite PPI use. PPI

intolerance and the presence of a complicated disease process are indications for moving to a more aggressive treatment approach.

Then there are patients who simply do not want to be on PPI therapy, including those who have fears of PPIs because of what they have read online. Clinicians should try to reassure such patients that when PPIs are used appropriately, they are very safe, although the risk of adverse events should be explained and put into perspective.

G&H What alternatives to Nissen fundoplication are currently available, and how do they compare?

RB In Nissen fundoplication, the fundus of the stomach is plicated or folded 360 degrees around the lower esophagus. This creates an extremely competent one-way valve mechanism, which happens to restrict normal gastric venting. This is far more reconstruction than most patients need.

Although few patients have significantly troublesome side effects following Nissen fundoplication, side effects can include bloating, diarrhea or meteorism, and swallowing issues. Twenty percent to 40% of patients have increased gas, and most patients who have an intact Nissen fundoplication likely cannot vomit or pass a gastric belch.

Four alternatives exist. One is a partial fundoplication. An anterior fundoplication, which is preferable, is not commonly performed in the United States, but has been used in Europe and Australia for a long time. This involves a 180-degree fundoplication. Although this type of fundoplication still acts as a one-way valve and compromises the ability to have a gastric belch or to vomit, bloat-related side effects appear to be significantly less. Good long-term data from Australian studies and randomized controlled trials show equivalent outcomes for Nissen fundoplication and partial anterior fundoplication with fewer side effects from the latter.

Another alternative is the LINX (Johnson & Johnson) procedure. LINX is a bracelet of 5-mm magnetic beads held together by individual wires that allow this bracelet-like device to expand and contract. It is placed noncompressively around the LES and then clasped during laparoscopy.

The LES in a normal person—and even in most patients with reflux—is closed, and reflux occurs when the LES relaxes spontaneously. The pressure required to open the LINX device is approximately 30 mm Hg. As most reflux events occur at a pressure gradient of 10 to 15 mm Hg, the LINX device controls reflux by augmenting the LES opening pressure to greater than normal reflux gradients.

One advantage over fundoplication is that, if the patient needs to burp or vomit, enough intragastric pressure can be generated to do so. Gas bloat is significantly less with LINX than with fundoplication, and the ability to belch and vomit is upwards of 90% higher with LINX.

Another option is transoral incisionless fundoplication (TIF), which is performed with the EsophyX (EndoGastric Solutions) device. An internal fundoplication is created endoscopically and uses transmural fasteners to hold the fundoplication in place. Unlike a standard laparoscopic fundoplication, a 90- or 120-degree external fundoplication is established. This technique achieves pH normalization in 45% to 55% of patients while preserving the ability to belch and vomit. Overall success of TIF in terms of symptom relief has been in the range of 65% to 75%, whereas success rates with LINX and standard fundoplication are 85% to 95%.

The fourth operation is the Stretta (Restech) procedure, which has been available for some time. Although clinical trial data support its use, it has never become mainstream therapy. Its mechanism of action is not yet fully understood. The Stretta device endoscopically delivers radiofrequency energy to the LES and gastric cardia to remodel the tissue.

The Stretta procedure, which decreases acid sensitivity in the esophagus, may have a role in patients who have an acid-sensitive esophagus or a hypersensitive esophagus, but this needs to be explored in more detail. Patients with acid sensitivity are currently being treated with neuromodulators such as gabapentin, which is moderately effective but has some side effects.

G&H What insights have emerged regarding the efficacy and safety of minimally invasive procedures?

RB The TIF procedure requires a bit more specialized training compared with the other techniques discussed. Clinicians new to the procedure may require several hours to complete it, whereas an experienced surgeon may need only 15 minutes.

Concerns have been expressed about whether LINX will present complications similar to those of the Angelchik prosthesis or laparoscopic gastric banding. However, LINX is more flexible and much smaller than an Angelchik prosthesis. The erosion rate has been approximately 0.3% at 5 years. Removal of an eroded device can be performed either endoscopically or laparoscopically, and the body heals with minimal complication. Its safety profile has been excellent and better than fundoplication. With fundoplication, reoperation is needed in 5% to 15% of patients, with complication rates of 2% to 3%.

LINX is contraindicated in patients who have titanium allergies, which are uncommon. LINX is not an option in patients who are aperistaltic.

G&H What insights have been gathered from patient satisfaction reports following surgical or endoscopic GERD management?

RB Most patient satisfaction studies include comparisons with PPIs. A multicenter study published by the team at the Institute of Esophageal and Reflux Surgery examined patients with ongoing moderate-to-severe regurgitation despite once-daily PPI therapy. Study participants were randomized to twice-daily PPI therapy or LINX. Regurgitation resolved in 90% of patients allocated to LINX compared with only 10% of patients allocated to twice-daily PPI dosing.

With that being said, overall patient satisfaction with the procedures previously discussed is 90% or greater. Quality-of-life measures also improve dramatically after these procedures. This is important because so many patients nowadays become resistant to therapeutic interventions because of what they see online. Clinicians should show and discuss actual research, including patient satisfaction data, with patients to correct misinformation and allay concerns.

G&H What noteworthy innovations are in development?

RB It should first be noted that the major hindrance to adoption of the LINX, TIF, and Stretta procedures has been insurance carrier reimbursement. Not wanting to pay for innovation has likely impacted the scope of innovation of other procedures.

The technique that likely has the most promise right now is endoscopic mucosal resection of the GEJ, which attempts to scar the GEJ so that it is less distensible. This may be worthwhile in patients with mild reflux disease.

Several other procedures in early-stage studies are exploring ways to encircle the esophagus laparoscopically in ways different from LINX to try to strengthen the LES.

One important development has been better interaction between gastroenterologists and surgeons. The American Foregut Society's goal is to enhance communication between surgeons and gastroenterologists as well as to foster expertise in this realm. Antireflux procedures are reconstructive and require in-depth understanding of physiology and anatomy. Outcomes are better when performed by specialists.

Finally, successful outcome of an antireflux procedure should not hinge on complete elimination of PPI use. Unfortunately, studies involving surgical intervention have used PPI elimination rates as a marker of success. Most patients who undergo surgical intervention are partially responsive to PPIs. It seems reasonable that a scenario in which a less-invasive antireflux procedure can control symptoms with a PPI that were uncontrollable with a PPI alone should also be considered a therapeutic victory. This has yet to be studied as an outcome measure.

Disclosures

Dr Bell is a consultant for Johnson & Johnson, Intuitive, BD, Ambu, and Medtronic.

Suggested Reading

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