

# ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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## Surgical Treatment of Gastroesophageal Reflux Disease



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### G&H When is surgical treatment indicated in patients with gastroesophageal reflux disease?

**JP** Antireflux surgery is indicated when a patient has moderate-to-severe gastroesophageal reflux disease that can be objectively documented (usually via a positive 48-hour pH study). In addition, the patient usually has persistent symptoms of heartburn and regurgitation despite undergoing proton pump inhibitor therapy.

### G&H What are the current options for surgical treatment of gastroesophageal reflux disease?

**JP** Nissen fundoplication is the most well-established and efficacious surgical treatment for gastroesophageal reflux disease. This operation involves repairing the hiatal hernia, which is often associated with gastroesophageal reflux disease, followed by fashioning the fundus of the stomach around the lower esophagus to form an external buttress. Although the operation has been used in clinical practice since the 1950s, Nissen fundoplication is currently almost always performed using minimally invasive surgery. This treatment has a very well-documented short- and long-term track record of between 80% and 90% relief of gastroesophageal reflux disease symptoms in dozens of well-done prospective studies.

Another surgical option for gastroesophageal reflux disease is the recently developed esophageal sphincter device (Linx Reflux Management System, Torax Medical, Inc). This device is essentially an artificial sphincter consisting of a ring of 12 to 14 magnets (approximately the size of the average ankle or wrist bracelet). The attraction of these magnets restores competency to the gastroesophageal junction

by making it less compliant. When a patient is eating, the food forces the magnets apart; once eating is finished, the magnets reattract, restoring competency to the gastroesophageal junction. This device has a reasonably well-documented short-term efficacy of approximately 75% to 80% and is an acceptable alternative to Nissen fundoplication in patients with mild-to-moderate gastroesophageal reflux disease.

Transoral incisionless fundoplication (EsophyX, EndoGastric Solutions, Inc), which has been around for approximately 5 or 6 years, is an endoscopic intraluminal procedure that is performed in the operating room but does not require entry into the abdominal cavity. However, this procedure has demonstrated mixed success and is not widely practiced in the clinical setting.

Finally, there is a promising surgical antireflux procedure in development, lower esophageal sphincter stimulation therapy (EndoStim), which involves an implantable neurostimulator similar to a pacemaker. However, most of the research on this procedure comes from animal studies; there is not yet much research on the use of this therapy in humans.

### G&H Are there any data on the long-term efficacy of these procedures?

**JP** Three- to 5-year data are available for the esophageal sphincter device. The Linx pivotal trial showed relief of heartburn and regurgitation in over 85% of patients, normalization of pH studies at 1 year in 58% of patients, and satisfaction with the outcome at 3-year follow-up in 94% of patients. Nissen fundoplication is the only surgical antireflux procedure that has 10- and 20-year data. Relief of gastroesophageal reflux disease symptoms is long-lasting in 75% to 80% of patients, depending on the indication.

**G&H** How do these surgeries compare in terms of adverse effects?

**JP** The Nissen operation is arguably the most complex. It has a low mortality rate, a complication rate of 3% to 7%, and an adverse effect rate of 10% to 15% (most commonly involving difficulty swallowing and flatulence). The esophageal sphincter device also has a low mortality rate in addition to a complication rate of less than 5% and, at least to date, an adverse effect rate that is lower than that of Nissen fundoplication. Transoral incisionless fundoplication and lower esophageal sphincter stimulation therapy appear to have morbidity rates similar to the one associated with the esophageal sphincter device.

**G&H** How does a physician determine which procedure to perform in a patient with gastroesophageal reflux disease?

**JP** Right now, by and large, the decision comes down to Nissen fundoplication or the esophageal sphincter device, with occasional use of transoral incisionless fundoplication and hardly any use yet of lower esophageal sphincter stimulation therapy. The first branch point is the severity of the patient's gastroesophageal reflux disease, as represented by the size of the hiatal hernia and the degree of endoscopic esophageal damage, esophagitis, or Barrett esophagus. Nissen fundoplication can treat gastroesophageal reflux disease of all degrees of severity, whereas the esophageal sphincter device and transoral incisionless fundoplication are generally used only in patients with mild-to-moderate gastroesophageal reflux disease.

**G&H** Are repeat procedures or supplemental therapies usually needed with surgical treatment for gastroesophageal reflux disease?

**JP** These operations are redone between 3% and 5% of the time; however, as many as 30% to 35% of patients end up back on gastroesophageal reflux disease medications, a number that is higher than would be indicated by any objective measure of recurrent reflux.

**G&H** Have there been any head-to-head studies comparing any of the surgical treatments with nonsurgical treatments for gastroesophageal reflux disease?

**JP** There have been at least 5 prospective randomized trials of Nissen fundoplication vs medical therapy for gastroesophageal reflux disease, all of which have shown superiority of the surgical treatment. There have been no comparative studies of the other surgical therapies.

**G&H** How difficult are these procedures to perform? Are there significant learning curves?

**JP** Yes, there are significant learning curves for all of these procedures. I would say that the procedures are of moderate difficulty for a well-trained general surgeon.

**G&H** Is antireflux surgery being performed as frequently as it was in the past?

**JP** It is performed more frequently than it was in the 1970s and 1980s but less frequently than it was in the 1990s. Although patients are generally receptive of antireflux surgery in the right circumstances nowadays, there is often a mistaken or misplaced reticence in the gastroenterology community to use antireflux surgery; it is often thought that Nissen fundoplication is a poorer operation than it really is, particularly in good hands, both in terms of complication rates and long-term adverse effects. There is also a general misconception about the longevity of these procedures; they are generally more long-lasting than is recognized.

**G&H** What are the next steps in research in this area?

**JP** We need to refine the outcomes of Nissen fundoplication and of the esophageal sphincter device, which means improving patient selection as well as improving the widespread technical capabilities of these procedures. A technological evolution is needed in terms of the instrumentation and longevity of transoral incisionless fundoplication. Finally, lower esophageal sphincter stimulation therapy needs further research so that it can be brought into clinical practice.

*Dr Peters has received research support in the past from Torax Medical, Inc.*

## Suggested Reading

Bonavina L, Saino G, Bona D, Sironi A, Lazzari V. One hundred consecutive patients treated with magnetic sphincter augmentation for gastroesophageal reflux disease: 6 years of clinical experience from a single center. *J Am Coll Surg.* 2013;217(4):577-585.

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