Endoscopic Treatment of Gastroesophageal Reflux Disease

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KEYWORDS

• Gastroesophageal reflux disease • Endoluminal devices • Stretta • EsophyX

KEY POINTS

- Gastroesophageal reflux disease (GERD) is a disease that affects over 20% of the US population on at least a weekly basis.
- Laparoscopic Nissen fundoplication has been the gold standard for treatment of refractory GERD, but endoluminal therapies are gaining popularity and showing significant symptom control, at least in short-term data.
- There are 2 predominant devices currently in production for endoluminal treatment of GERD: Stretta, using radiofrequency ablation, and EsophyX, a transoral incisionless fundoplication; studies show improved symptom control and decreased proton pump inhibitors use but lack consistent long-term data demonstrating a decrease in esophageal acid exposure.
- Future studies are needed to demonstrate long-term efficacy of radiofrequency ablation (Stretta) and transoral incisionless fundoplication (EsophyX).

INTRODUCTION

Gastroesophageal reflux disease (GERD) is the most common disorder of the esophagus, affecting over 20% of the North American and Western European populations. More recent studies indicate the prevalence of GERD, defined as at least weekly heartburn and/or regurgitation, to be as high as 18% to 27% in the United States alone.[1] Current treatment of GERD costs close to $10 billion annually, with antireflux medication accounting for over one-half of the total cost.[2]

GERD is a chronic medical condition stemming from one or more factors:

1. Incompetent lower esophageal sphincter (LES) secondary to a hypotensive LES, increased intra-abdominal pressure that overwhelms a near normal LES, or inappropriate transient LES relaxations (TLESRs)

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2. Decreased contractile response of the diaphragmatic sphincter
3. Hiatal hernia
4. Poor esophageal clearance of acid as is seen in scleroderma

These physiologic disturbances cause a burning sensation in the chest or throat and/or regurgitation as the most common symptoms but may also be associated with extra-esophageal symptoms including chest pain, cough, hoarseness, and aspiration pneumonia. Prolonged acid exposure or bile reflux also increases the susceptibility of strictures, erosion, ulceration, Barrett esophagus, and even esophageal cancer.

Medical treatment consists of proton pump inhibitors (PPIs), which largely replaced the role of H2-blockers discovered in the 1970s. PPIs are effective in reducing gastric secretion of acid, yielding symptom relief in the majority of patients compliant with a daily or twice daily regimen. Many PPIs are now available over the counter and have affordable generic counterparts. In 2012, Nexium alone earned nearly $6 billion in sales, making it a top seller among all US medications.[3] Adjuncts to medical therapy include lifestyle changes such as smoking cessation and limiting meal sizes and alcohol intake. Overall, PPIs have adequate long-term safety, although the prolonged use has been linked to osteoporosis and susceptibility to *Clostridium difficile* colitis and, committing patients to a lifetime of PPI therapy can be expensive over time, and even cost-prohibitive in some patients. Also, despite lifestyle changes and optimized medical treatment, up to 20% of GERD patients have refractory or recurrent symptoms.[4]

Surgery for GERD is indicated when medical treatment fails or is no longer feasible (because of adverse effects, patient intolerance, or cost), when complications of GERD such as strictures, aspiration pneumonia, refractory asthma, esophageal bleeding occur, or at the patient's request when objective evidence of pathologic GERD has been diagnosed. The gold standard for surgical treatment of GERD is the laparoscopic Nissen fundoplication with hiatal hernia repair if indicated. The fundoplication increases lower esophageal sphincter pressure, decreases compliance of the gastroesophageal junction (GEJ), decreases frequency of TLESRs, increases the length of the intra-abdominal segment of the LES, reduces the sliding hiatal hernia, and restores the angle of His.[5] Although laparoscopic Nissen fundoplication (LNF) has excellent outcomes, with average cure rates in line with Kellokumpu's data of 87.7% at 5 years and 72.9% at 10 years,[6] it does carry inherent surgical and anesthetic risks. Postoperative dysphagia is the most commonly reported complication (although often transient, this may affect over 70% of patients in some studies),[6] followed by bloating, inability to belch, increased flatus, and need for repeat antireflux surgery. In a large cohort analysis based on 7531 patients between 2005 and 2009 from the National Surgical Quality Improvement Program (NSQIP) database, overall surgical mortality was less than a fraction of a percent, and in patients younger than 70 years of age, it was less than 0.05%.[7]

While the laparoscopic Nissen fundoplication was introduced into clinical practice in 1991 and remains the most frequently utilized operation for GERD,[8] the risks associated with surgery and adverse effects of dysphagia, bloating, and increased flatus are deterrents for many patients, thereby urging the surgical community to further pursue laparoscopic and endoscopic alternatives. Endoluminal techniques fall into 3 major categories: implantation or injection of foreign materials, radiofrequency ablation, and endoscopic tissue apposition techniques. Most endoluminal procedures are reserved for patients with documented symptomatic GERD, positive esophageal pH studies, and hiatal hernias less than 2 to 3 cm. Patients with evidence of pulmonary disease, Barrett esophagus, large hiatal hernias, obesity or morbid obesity, severe medical comorbidities, or esophageal dysmotility disorders are often excluded.