



Secrets for successful laparoscopic antireflux surgery: predictors

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Abstract: Gastroesophageal reflux disease (GERD) is a common malady. It is a protean disease with many manifestations. Most patients seek medical attention due to symptoms. When a surgical remedy is contemplated, it is incumbent upon the surgeon to identify those patients in whom antireflux surgery (ARS) will lead to elimination of pathologic reflux and symptomatic improvement. There are many patient-related factors and technical factors which can predict success or failure of ARS. These predictors can be divided into proper diagnosis of GERD-like symptoms, GERD-related patient factors, non-GERD related patient factors, and operation-related factors. Proper diagnosis includes insuring that the GERD-like symptoms are in fact related to pathologic reflux and not some other disease or psychological process. GERD-related patient factors include differentiating between typical and atypical symptoms, as well as upright and supine reflux. This also includes assessing for reflux related complications, such as ulcers, strictures and neoplasia. Non-GERD-related patient factors include other gastrointestinal disorders such as irritable bowel syndrome (IBS), gastroparesis and peptic ulcer disease. Psychological disorders, such as anxiety and depression, can also affect the outcomes of ARS. Lastly, technical aspects, such as the type and geometry of the fundoplication, hiatal closure, division of the short gastric vessels and addition of a pyloroplasty can affect success. Attention to these details will place the surgeon in the best position to insure a favorable outcome of an antireflux operation.

Keywords: Antireflux surgery (ARS); gastroesophageal reflux disease (GERD); GERD evaluation; psychological disorders

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Introduction

Antireflux surgery (ARS) is a common operation in the Western world and increasingly so in South America and Asia for the purposes of improving the quality of life of patients with gastroesophageal reflux disease (GERD). GERD is a protean disease with many manifestations, including “typical” symptoms of heartburn and regurgitation and “atypical”, or sometime referred to as “extra-esophageal”, symptoms of laryngeal symptoms, respiratory disease and chest pain (1). Often associated with GERD, but sometimes a completely separate entity, is hiatal hernia and paraesophageal hernia. Understanding these manifestations of GERD and hiatal hernia is critical in successful management.

There are many types of ARS. All generally include reducing of the herniated stomach back into the abdomen, closure of the diaphragmatic crura (hiatal hernia repair) and some type of fundoplication (1). Choice of the operation will depend on the goals the surgeon wishes to achieve and patient related factors. The purpose of this article is to discuss predictors of the successful ARS.

What is a “successful” antireflux operation?

In order to determine what the predictors of a successful ARS are, we must first define what a “successful” ARS is. The definition has to be multi-factorial. Firstly, the operation needs to be completed without serious complications. Secondly, there needs to be adequate

symptomatic relief. Thirdly, there needs to be minimal adverse postoperative symptoms. As “technical” issues related to the conduct of the operation are reviewed elsewhere in this issue, I will focus on patient-related and surgeon judgment factors.

Proper identification of the GERD patient

The best single predictor of ARS success is the proper diagnosis of the patient's symptoms (2). Many of the symptoms that suggest GERD can also be attributable to other disease process. This is particularly true for the atypical symptoms. Therefore, identification of the patient with pathologic reflux is paramount. The best way to accomplish this is objective testing. The mandatory tests in the evaluation of patients with GERD-like symptoms include esophagogastroduodenoscopy (EGD), esophageal manometry and 24 or 48 hours esophageal pH monitoring (1). EGD is required to assess for significant esophageal pathology such as esophagitis, stricture, Barrett's esophagus or event neoplasm (3). Esophageal manometry is necessary to rule out esophageal motility disease, such as achalasia, and assess adequacy of esophageal peristalsis (3). pH monitoring is needed to confirm pathologic reflux and assess the association of symptoms to actual acid reflux (3). Other testing can be needed depending on the circumstances. Contrast upper gastrointestinal series may be necessary to assess the presence of a paraesophageal hernia or assess the size of a hiatal hernia (1). Gastric emptying scintigraphy may be necessary to assess for delayed gastric emptying (DGE) (4). Laryngoscopy, bronchoscopy, and pulmonary function testing may be necessary to assess atypical symptoms (5).

Gastroesophageal reflux related predictors

The characteristics of reflux can predict symptomatic outcome. Patients with typical symptoms have a higher likelihood of a good outcome after ARS than patients with atypical symptoms. Of patients with typical symptoms, those who responded well to proton pump inhibitors are more likely to respond to ARS. Patients who have predominately supine, nocturnal reflux tend to respond better to ARS than patients with upright, daytime reflux (6).

Patients who have preoperative symptoms that can also be considered postoperative side effects portend to continuation of these symptoms. The presence of

preoperative dysphagia is the most reliable predictor of postoperative dysphagia (7). Preoperative bloating, without some type of surgical intervention during ARS, portends to postoperative bloating (7).

Non-reflux related patient predictors

There are many “non-reflux” related factors which affect ARS outcomes. These can be co-existing patient comorbidities, gastrointestinal disorders and psychological issues.

Patient stature and body habitus can affect recurrences of hiatal hernia. It is well known that obesity is both a risk factor for hiatal hernia and recurrence of hiatal hernia after repair (8). Although there is not an “upper limit” on body mass index (BMI) that should preclude ARS, patients with BMI's >35 with obesity-related co-morbidities or those with BMI's >40 should be offered weight loss surgery with repair of the hiatal hernia in lieu of a standard ARS. Kyphosis, particularly in older women, is associated with paraesophageal hernia (9). Although data are limited as to the effect of kyphosis on recurrence, it seems reasonable to assume that these patients are at higher risk. The quality of the crura as well as the tension of repair, although not studied in any scientific manner, most likely affects recurrence rates after repair.

Associated gastrointestinal disorders affect symptomatic outcomes after ARS. Up to 15% of patients with GERD will have DGE (4). DGE can manifest symptoms of gastroparesis, such as nausea, vomiting, bloating and pain. These symptoms can be exacerbated by ARS. Some have advocated a pyloroplasty or pyloromyotomy to help mitigate symptoms associated with DGE after ARS (4). Irritable bowel syndrome (IBS) is associated with bloating, diarrhea and constipation. There is an overlap in some patient with both GERD and IBS (10). ARS does not necessarily affect these symptoms and they can be interpreted as side-effects of ARS. Although IBS does not necessarily preclude ARS, patients need careful counseling that their IBS symptoms will continue post-ARS.

Co-existing psychological issues and chronic pain issues affect outcomes of ARS (11). Patients with major depression and anxiety do not respond as well to ARS as patients without such disorders. It is not that their GERD symptoms are not relieved, it is that the magnitude of relief is not perceived as very great. Chronic pain syndromes, such as fibromyalgia and chronic fatigue syndrome, also portend to a poor outcome. As with patients with psychological

disorders, most of the dissatisfaction has to do with perception of side effects, especially excessive pain at the incision sites. Surgeons need to be aware of the “nocebo” phenomenon (12). This can be considered opposite of the placebo effect. In the nocebo phenomenon, patients perceive side effect of the ARS which are not attributable to the physiologic effects of the operation. Patients at risk for the nocebo phenomenon can be identified by a long list of medications to which the patient is “allergic”. These patients should be approached with great caution and an operation undertaken only for GERD-induced physiologic or anatomic complications.

Operation related predictors

There are factors identified at the time of the operation which can predict a poor outcome. Any surgical misadventure, such as an esophageal perforation, or poorly constructed fundoplication can lead to a poor result. In order to avoid such issues, an upper endoscopy to evaluate the fundoplication has been advocated.

The gastrosplenic ligament has been thought to cause tension and tethering of the fundoplication. Because of this, division of the short gastric vessels has been advocated (13). This, although a common practice, has not been definitively associated with improved outcomes of ARS (14). In addition, in patients who have large paraesophageal hernias, the gastrosplenic ligament has been stretch for usually some time and is quite lax. It is therefore not confirmed that failure to divide the short gastric vessels will predict lack of success.

In patients who have had GERD for years, sometime decades, the persistent inflammation and fibrosis may lead to a short esophagus. A short esophagus is defined as after maximal dissection of the hiatus, the esophagus and gastric cardia, the gastroesophageal junction does not rest in the abdomen inferior to the esophageal hiatus without tension. Although it is more likely that patients with large paraesophageal hernias, peptic stricturing of the esophagus, recurrent hiatal hernia, slipped fundoplications and herniated fundoplications will have a short esophagus, there is no reliable way to preoperatively predict the presence of a short esophagus. The method that I employ is after hiatal dissection, I release the gastroesophageal junction and determine if it retracts superior to the hiatus. If it does not, then I proceed with a routine ARS. If it does, then I proceed with a Collis-Nissen or Collis-Toupet fundoplication (15).

Conclusions

There are a variety of preoperative and intraoperative predictors of ARS outcome. The surgeon needs to be familiar with these predictors in order to achieve optimal patient outcomes. The most important aspect is patient selection. The surgeon must be sure that the symptoms the patient is suffering are indeed due to pathologic reflux. He or she must insure that the patient is a good operative candidate and that there are no other disease processes which can hinder surgical or symptomatic recovery. The operation must be executed well, identifying technical issues, such as a short esophagus, which have to be addressed. With this stepwise approach, one can predict a high likelihood of success.

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