

# ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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## Preoperative Esophageal Evaluation of Patients Being Considered for Antireflux Surgery



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### **G&H** What are the indications for antireflux surgery?

**RT** There are several indications, but the primary one is a patient who has gastroesophageal reflux disease that is refractory to medical therapy (typically high-dose proton pump inhibitor therapy, possibly in combination with other agents). Antireflux surgery has the strongest role in these patients. It is certainly not a first-line treatment option for gastroesophageal reflux disease and is not effective in all patients.

### **G&H** What is the specific goal of preoperative esophageal evaluation of these patients?

**RT** In general, the goal is to evaluate the appropriateness of the candidate for the procedure (ie, to verify that the patient has objective evidence of gastroesophageal reflux disease and to rule out certain contraindications to the procedure, such as esophageal cancer or a severe motility disorder like achalasia).

### **G&H** Is there consensus on which tests should be used to evaluate patients for antireflux surgery?

**RT** There is no absolute consensus on which tests are necessary for all patients being considered for antireflux surgery; in fact, there is quite a bit of variation among providers in terms of which tests they consider to be necessary. Generally, 4 tests are performed to evaluate a patient for an antireflux procedure. The most important

test overall is the upper endoscopy, which is performed to evaluate the patient for the presence of Barrett esophagus, esophagitis, esophageal cancer, or any abnormality that might change the operative plan. The upper endoscopy also provides anatomic information, including the presence and size of a hiatal hernia.

In my opinion, esophageal manometry is the only other test that is absolutely necessary in general because it is important to rule out severe esophageal motility disorders, particularly achalasia, which is an absolute contraindication to antireflux surgery. Other findings on esophageal manometry may or may not influence the type of procedure that is performed and whether the procedure should be performed in the first place.

pH testing is necessary to provide objective evidence of gastroesophageal reflux disease in most patients; however, if a patient is found to have biopsy-confirmed esophagitis or Barrett esophagus on upper endoscopy, in my opinion, these findings can be taken as objective evidence of gastroesophageal reflux disease. Nevertheless, many physicians (myself included) would typically order a pH study anyway to obtain a baseline for esophageal acid exposure prior to performing an antireflux operation. In general, when ordering pH tests as part of preoperative workup, surgeons prefer to conduct these tests when patients are off proton pump inhibitor therapy, although different surgeons may prefer different types of pH tests. The 3 pH tests generally available include the dual-probe 24-hr wire catheter pH test, which is the standard test; the Bravo probe, which is a 48-hr study that uses a single radio

transmitter probe; and the pH impedance test, which is typically a 24-hr study that provides information on nonacid reflux events in addition to acid reflux events. In general, I think that for most patients, the dual-probe pH test (the traditional test) is the ideal choice, and I reserve the pH impedance test and/or the Bravo probe for specific situations.

Finally, the upper gastrointestinal (UGI) series is also useful for providing anatomic information; in particular, its most useful role is in the definition of a hiatal hernia. Although a hiatal hernia can be identified on upper endoscopy or high-resolution esophageal manometry, the exact anatomic configuration and size of the hiatal hernia is best defined by a barium UGI series. However, in my opinion, a UGI series is not necessary for many patients. I reserve this test for patients who are suspected of having a large hiatal hernia (to determine whether it is indeed a paraesophageal hernia), patients who have already failed an antireflux procedure, and patients who are experiencing recurrent symptoms after an antireflux procedure. However, there is no universal agreement on the use of a UGI series in these patients; many surgeons obtain a UGI series as part of their routine preoperative evaluation.

#### **G&H** What is the usual order of these tests?

**RT** I generally feel that the upper endoscopy should be performed first. As previously mentioned, if there is concern for a large hiatal hernia, a UGI series may be a good next step. The UGI series would also be important if a patient had a failed antireflux procedure in order to define the mechanism of failure. Esophageal manometry and pH testing are typically performed last and together because localization of the distance between the nares and the upper border of the lower esophageal sphincter is provided by manometry, which helps position the pH catheter. In addition, these studies are typically done by the same laboratory.

#### **G&H** Is there a role for the use of radiographs or nuclear studies in these patients?

**RT** In a patient with severe dysphagia whose findings on upper endoscopy suggest a form of extrinsic compression on the esophageal lumen, a computed tomography (CT) scan can be helpful for further evaluation. In my opinion, if there are any findings that are confusing on upper endoscopy, it can be beneficial to perform a CT scan. There are occasionally patients in whom a gastric emptying study may be performed, but that is somewhat arbitrary; there are no clear indications for this study in preoperative evaluation for antireflux surgery.

#### **G&H** Is wireless pH testing as effective as traditional dual-probe pH testing when evaluating patients for antireflux surgery?

**RT** Wireless pH testing is performed with the Bravo probe, which has advantages and disadvantages in this particular workup, in my opinion. Traditional pH data and their interpretation are based on the dual probe, which remains the gold standard. The wireless pH capsule occasionally has problems with signal dropout, which can limit some of these studies. However, I think that wireless pH testing has significant advantages in terms of its longer duration and its patient tolerance. This test provides 48 hours of data as opposed to standard pH testing, which typically provides only 24 hours of data. I typically use the standard dual-probe pH test in patients with classic reflux symptoms unless they are unable to tolerate the wire, in which case I use the wireless probe. In addition, if a patient's findings are highly suggestive of reflux but the patient has normal dual-probe study results, I often order a 48-hr wireless probe study to determine whether the wire probe obtained an accurate picture of esophageal acid exposure.

#### **G&H** Is patient refusal or discomfort an issue with any of these tests?

**RT** Patient intolerance can be a factor in both pH testing and esophageal manometry. Although esophageal manometry, particularly high-resolution manometry, takes only approximately 10–15 minutes to perform (which is one of its advantages), approximately 2–3% of patients are intolerant of the procedure (which is an important limitation). If a patient will not tolerate manometry, he or she most likely will not tolerate the wire probe pH procedure as well. That being said, if a patient is able to undergo manometry but has difficulty with it, that may be another reason to use the wireless probe for pH testing; thus, the patient's reaction to manometry can help providers in the decision-making process.

#### **G&H** How often do preoperative test findings alter surgical decisions? Should the operation be tailored to the degree of hypomotility?

**RT** In my opinion, this issue has been well examined in the literature over the past 10 years. Patients with ineffective esophageal motility (ie, <80% of progressive peristaltic waves of adequate amplitude) will typically do just as well as patients with normal peristalsis after an antireflux procedure, such as a Nissen fundoplication; thus, in general, the finding of ineffective esophageal motility will not alter the operative plan. However, patients with aperistalsis (ie,

no peristaltic activity), such as patients with scleroderma esophagus, tend to have significantly more dysphagia 1 year after an antireflux procedure compared with patients with ineffective esophageal motility or normal peristalsis. Therefore, those patients are considered for a partial antireflux procedure (such as a Toupet fundoplication) as opposed to a full Nissen fundoplication; or, those patients may not undergo antireflux surgery at all.

The other group of patients who have been examined in this area consists of patients who have classic reflux symptoms and other signs of reflux yet normal pH study and endoscopy findings, including those with no objective evidence of esophagitis or Barrett esophagus on endoscopy. It has been shown that these patients tend to have less benefit or a lower success rate with an antireflux procedure. A subset of these patients likely suffers from esophageal hypersensitivity. These patients tend not to do as well with an antireflux procedure. Thus, in such cases, esophageal test findings can modify the operative plan very significantly.

#### **G&H** How are patients usually treated if their preoperative test findings do not indicate the need for antireflux surgery?

**RT** If there is no surgical option, we must work with the gastroenterologist to manage the patient. For those patients in whom esophageal hypersensitivity is suspected, some will respond to treatment with agents such as tricyclic antidepressants. Often, such patients will not have a very dramatic response (or any response at all) to proton pump inhibitor therapy, which can be a clue that acid reflux is not the problem. Because esophageal hypersensitivity may play a role in these patients, my next step would usually be to test this possibility; pH impedance testing may play a role here if a positive symptom correlation is observed with nonacid reflux events.

#### **G&H** In patients whose preoperative test findings indicate the need for antireflux surgery, how effective is this treatment option?

**RT** The long-term success rate of antireflux surgery has varied in the literature, but, overall, the longest-term studies of laparoscopic antireflux surgery have found at least a 25% rate of symptom recurrence over 10–12 years. That being said, the overall initial success rate is approximately 90% for treatment of typical reflux symptoms (ie, heartburn, regurgitation, and dysphagia). For atypical

reflux symptoms (ie, cough, hoarseness, and noncardiac chest pain), the success rate is 60–80%, at least initially. Symptom recurrence may result from a variety of causes, often an anatomic failure of the operation, such as dehiscence of the fundoplication or herniation of an intact fundoplication wrap through the hiatus.

#### **G&H** Is there still a need to develop new tests to evaluate patients more thoroughly prior to antireflux surgery?

**RT** I think that we can always improve our assessment. We are still looking for the magic bullet that will tell us which patients will do well after antireflux surgery and which patients will have more severe side effects, such as dysphagia and gas bloating (which all patients experience to some extent for a brief time after their procedure). At one time, manometry with impedance testing was thought to be a significant advance toward achieving this goal; however, the associated data suggested that the technique was not any better than what was already being used (ie, manometry alone) to predict postoperative dysphagia in patients who underwent testing prior to and after their antireflux procedure. Thus, there is still room for improvement. High-resolution esophageal manometry, and the evolution of our interpretation of this technique, holds some promise. In addition, there is some ongoing research with the functional lumen imaging probe, which helps measure the distensibility of the esophagogastric junction and may give us more guidance from a biomechanical perspective.

#### **Suggested Reading**

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