



Management of Gastroparesis in the Setting of Gastroesophageal Reflux Disease

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Background

Gastroparesis is defined as decreased gastric motility due to sensorimotor dysfunction in the stomach that results in delayed gastric emptying in the absence of a mechanical obstruction [1]. Gastroesophageal reflux disease (GERD) is a condition in which reflux of gastric contents into the esophagus and extra-esophageal tissues results in discomforting symptoms and sometimes local tissue damage [2, 3]. GERD has been extensively described in the literature and has been well-identified as and proven to be an effective mode of treatment. However, the presence of both GERD and gastroparesis in the same patient is not as common; it is less well studied and poses a difficult task for patient management, one that to date continues to be a topic of much discussion.

Clinical Presentation

Gastroparesis in the setting of GERD has been noted to be present in as much as 30% of patients with GERD [4–6]. It is thought that the more residual food content in the stomach is, the greater the persistent postprandial gastric distention is that is generated. Gastric distention results in lower esophageal sphincter relaxation and, in turn, potentially pathologic acid reflux [6]. In addition, the more food content in the stomach is, the more material available is to contribute to the gastric refluxate [6]. Symptoms that characterize gastroparesis include severe bloating, epigastric fullness, nausea, and vomiting. The classic symptoms of

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GERD may overlap with those of delayed gastric emptying. These include heart-burn and regurgitation, but many patients also describe bloating and abdominal discomfort [6].

The typical diagnostic evaluation for a patient in whom both GERD and delayed gastric emptying is suspected includes an esophogram and/or upper GI X-ray, which includes runoff into the duodenum, a 24-hour pH study usually performed off medication to objectively document the presence or absence of pathologic GERD, esophageal high-resolution manometry to assess for esophageal motility, an endoscopy to rule out obstructing lesions and other GE junction pathology (including malignancy) and a nuclear medicine gastric emptying study. Typical diagnostic findings of gastroparesis include retained food on EGD, delayed transit on UGI, and gastric retention of more than 10% at four hours on gastric emptying scan (or $T_{1/2} > 150$ minutes) [1, 7].

It is important to note that gastric emptying studies tend to be unreliable in patients with a large paraesophageal hernia (PEH) and therefore are of little utility. For patients with large primary PEH, we recommend performing a PEH repair and fundoplication without pyloroplasty and then following clinically.

Patients who present with recurrent reflux symptoms that persist beyond six months postoperatively first need to be evaluated for failure of the previous hiatal hernia repair, whether it be hernia recurrence, an overly tight fundoplication or cruroplasty, disruption of the fundoplication, or otherwise. Complete reevaluation, including imaging, endoscopy, and physiologic studies such as manometry and pH testing if no anatomic abnormality is visualized radiographically or endoscopically, should first be performed. If all of these appear normal, then a gastric emptying study may be of value if the symptoms include nausea and vomiting, bloating, and/or early satiety. If the patient has evidence of reflux in the setting of delayed gastric emptying, the delay in gastric emptying needs to be addressed either operatively or nonoperatively utilizing the surgeon's judgement based on the patient's overall clinical and operative history and taking into account the number of prior fundoplication attempts. Surgical options include pyloroplasty alone if there is no recurrent hiatal hernia, reoperative hiatal hernia repair, or resectional therapy.

Management

Other causes of gastric dysmotility, such as malignancy, opioid use, or chronic constipation, have been ruled out in patients with an abnormal gastric emptying study; maximization of nonoperative therapy is preferred in this case. Nonoperative management consists of dietary modifications, careful medication review with elimination of drugs that could potentially result in or exacerbate delay, weight loss, H₂ blockers or proton-pump inhibitors, and motility agents [8]. However, patients who are refractory to nonoperative management can be considered for surgical intervention. Refractory gastroparesis is defined as persistent symptoms despite medical therapy, inability to maintain adequate oral nutrition, and frequent emergency room visits and/or hospitalizations [8, 9].

The first step in our proposed decision tree (Fig. 9.1) is to determine if the patient with pathologic reflux and gastroparesis also has morbid obesity (BMI > 35). If so, they should be considered for bariatric surgery, specifically a Roux-en-Y gastric bypass. The evidence supporting this procedure and required preoperative evaluation are discussed in Chap. 10.

For patients without morbid obesity, the next decision point is determining the presence and size of a hiatal hernia. In patients with gastroparesis and GERD who only have a small type I hiatal hernia, the severity of gastroparesis needs to be determined based on gastric emptying study. Severity of delay is based on the four-hour retention value of the gastric emptying study: mild, 11–15% retention; moderate, 16–35% retention; and severe, >35% retention [9, 10]. For those with mild delayed gastric emptying, fundoplication alone may be sufficient and appropriate.

For patients with severe gastroparesis, GERD, and a small hiatal hernia, pyloroplasty in conjunction with a hiatal hernia repair and fundoplication has been recommended [11, 12]. In Masqusi and Velanovich’s study, patients with symptomatic GERD and objective findings by physiologic testing were offered antireflux surgery; a total of 369 patients underwent antireflux surgery, of which 9.5% who had delayed gastric emptying (defined as $T_{1/2} > 120$ minutes) underwent pyloroplasty. Of those undergoing pyloroplasty, 80% reported significant improvement of bloating [12]. There is currently no consensus on the threshold at which to add pyloroplasty to a fundoplication for moderately delayed emptying. In our experience, antireflux operation alone for moderate delayed emptying has been successful and does not preempt pyloroplasty in the future, should it become necessary.

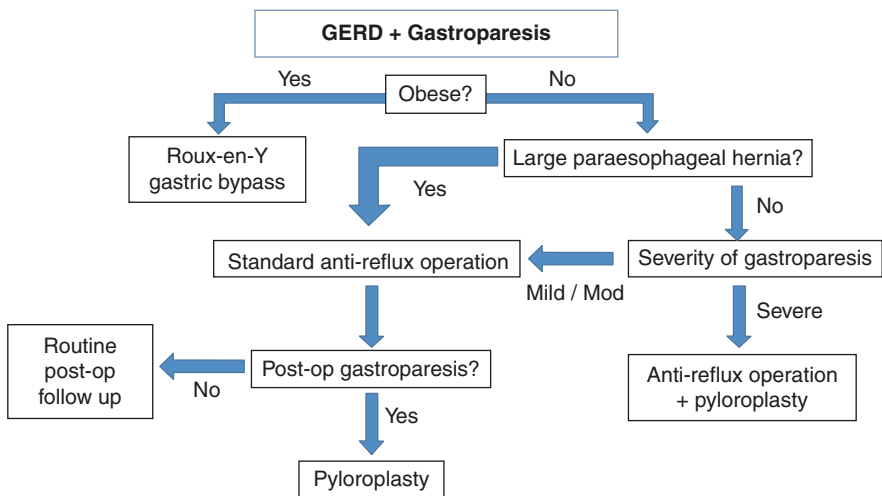


Fig. 9.1 Algorithm for surgical management of GERD in the setting of gastroparesis

For patients with large hiatal hernias or paraesophageal hernias with delay in gastric emptying on a nuclear medicine study, we recommend performing a standard antireflux operation. Given that the stomach has been severely displaced into the chest, an aspect of gastric atony is present in patients with chronic paraesophageal hernias. Therefore, the recommendation is to first perform a paraesophageal hernia repair in standard fashion. Frequently, the repositioning of the stomach back into the abdomen, along with straightening the orientation of the stomach, is sufficient to treat any delayed gastric emptying (especially given the inaccuracy of a gastric emptying study in patients with paraesophageal hernias). We offer Nissen fundoplication to patients with normal esophageal body motility, whereas a Toupet fundoplication is offered to those with poor motility due to concerns that a full 360° wrap may increase the occurrence of dysphagia; however, many studies have demonstrated that Nissen fundoplication does not increase the occurrence of dysphagia in patients with poor motility [13, 14]. Some surgeons prefer Toupet in the setting of delayed gastric emptying due to concerns about postoperative gas bloat.

It is also important to note that postoperative gastroparesis may also present after antireflux procedures in patients with large paraesophageal hernia and without preoperative gastroparesis. Nonoperative management of postoperative gastroparesis is recommended; however, if unsuccessful, pyloroplasty may be necessary [12]. Nonoperative management includes identifying trigger food and diet modifications accordingly, laxatives, prosecretory and promotility agents, antibiotics, behavior and psychotherapy, and/or alternative therapies (e.g., simethicone, charcoal, etc.) [8]. Refractory postfundoplication gastroparesis is defined as ongoing nausea, vomiting, bloating, and/or abdominal pain [8, 9]. Some studies have shown resolution of postfundoplication gastroparesis of about 90% at one year after surgery; therefore, if symptoms are refractory at one year after fundoplication, it is reasonable to consider performing a pyloroplasty [15–18]. However, important factors to consider in deciding on the timing of pyloroplasty include the severity of symptoms and the effects on quality of life.

Conclusion

Gastroparesis alone is a very challenging clinical problem with variable success rates with the management options that are currently available. When a patient presents with gastroesophageal reflux disease in concert with gastroparesis, this increases the complexity of management. In patients with morbid obesity who have both gastroparesis and GERD, the recommendation is to pursue gastric bypass surgery. For those without morbid obesity, the degree of delay in gastric emptying determines whether a simultaneous pyloroplasty should be performed. It is important to remember that gastric emptying studies can be inaccurate in patients with large paraesophageal hernias, and the size of the hernia should be taken into account when determining whether or not to perform a pyloroplasty at the same time as primary antireflux surgery. Ultimately, this continues to be a difficult clinical problem that requires careful assessment of the patient preoperatively.

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