

Review Article

Gastro-esophageal reflux disease: diagnostic and therapeutic approach

Felipe Huerta Dueñas*

Department of Surgery, Hospital de Especialidades, Centro Médico Nacional de Occidente, Instituto Mexicano del Seguro Social, Guadalajara, Jalisco, Mexico

Received: 02 June 2023

Accepted: 17 June 2023

***Correspondence:**

Felipe Huerta Dueñas,

E-mail: felipe.hduenas@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Gastroesophageal reflux disease (GERD) is a chronic condition of the digestive system characterized by the reflux of acidic contents from the stomach into the esophagus. Surgical treatment offers a long-term alternative to medications, providing symptomatic relief and improving the quality of life in many patients. However, the potential risks and complications associated with surgery must be considered, and careful selection of patients is critical.

Keywords: Gastroesophageal reflux disease, Proton pump inhibitors, Fundoplication, Diagnosis, Treatment

INTRODUCTION

Gastroesophageal reflux disease (GERD) is a chronic condition of the digestive system characterized by the reflux of acidic contents from the stomach into the esophagus. It is estimated to affect a large proportion of the population, with an estimated prevalence to be as high as 20% of the population.

GERD can cause bothersome symptoms such as heartburn, acid regurgitation, chest pain, and difficulty swallowing, which significantly affects patients' quality of life.¹

Although GERD is a common condition, its significance lies in the potential long-term associated complications. Continued exposure of the esophagus to gastric acid can lead to the development of esophagitis, an inflammation of the esophageal lining. In more severe cases, Barrett's esophagus can occur, a condition in which the cells of the esophageal lining change and the risk of developing esophageal cancer increases. Therefore, it is essential to properly address the diagnosis and treatment of GERD to prevent the progression of the disease and its complications.²

DEFINITION

GERD is defined as the reflux of gastric contents into the esophagus due to a malfunction of the lower esophageal sphincter (LES) or increased intra-abdominal pressure. The LES is a ring of muscle located at the junction of the esophagus and stomach, whose main function is to prevent stomach contents from returning to the esophagus. In GERD, the LES may be incompetent or relax inadequately, allowing gastric acid to reflux into the esophagus. Features that could modify the adequate function of LES, such as age older than 50 years, obesity, smoking and female sex, have been identified as risk factors for the development of GERD.^{3,4}

DIAGNOSIS

The diagnosis of GERD involves a combination of clinical evaluation, objective testing, and endoscopic findings. Typical symptoms of GERD, such as heartburn and acid regurgitation, are important in the initial evaluation. However, atypical symptoms, such as chronic cough, sore throat, and asthma, should also be considered as they may be associated with gastro-esophageal reflux. Alarm

symptoms include gastrointestinal bleeding or anemia, dysphagia, weight loss and vomiting.^{5,6}

Proton pump inhibitors (PPIs) given once daily for 8 weeks can be used as a diagnostic and therapeutic trial in patients with suspected GERD in the absence of alarm symptoms. In those who have a positive response, PPIs can be discontinued after this period. Those patients who do not respond adequately and those whose symptoms return after PPI suspension should undergo a diagnostic endoscopy after 2-4 weeks off PPIs.^{5,7}

Endoscopy is a fundamental tool to evaluate the esophagus and detect the presence of esophagitis or complications such as Barrett's esophagus. During endoscopy, biopsies may be taken to evaluate for changes in the esophageal mucosa and rule out other conditions.⁸

Endoscopy should be considered as the initial diagnostic approach in those patients with suspected GERD in the presence of alarm symptoms. High grade esophagitis (Los Angeles grade C and D), Barrett's esophagus and esophageal strictures are definitive findings of GERD. Endoscopy should also be considered after PPIs treatment to document mucosal healing.^{5,9}

In addition, esophageal function tests, such as esophageal manometry and esophageal impedance-pH, are used to assess esophageal motor function and the amount of acid reflux. Esophageal manometry measures pressure and muscle movements of the esophagus, which allows to evaluate the functioning of the LES and esophageal motility, but there are no specific findings of GERD in manometry. High-resolution manometry must be considered in all patients before undergoing surgical treatment to rule out motility affections.⁵

Esophageal impedance-pH records episodes of acid and non-acid reflux, providing detailed information about the amount and duration of gastro-esophageal reflux. Reflux monitoring should be performed in all patients off PPIs with suspected GERD when endoscopy does not conclude objective findings. In patients where GERD has previously been confirmed but have suboptimal response to treatment, impedance-pH while on PPIs is suggested to record cases where weak acid reflux is the cause of symptoms.^{5,9}

When performing reflux monitoring tests, acid exposure time (AET) <4% is considered physiological or normal, while AET >6% is conclusive evidence of pathological reflux. In-between cases with AET 4-6% can be considered abnormal when >80 reflux episodes in 24 hours are present.⁹

TREATMENT

Lifestyle changes that are proven to be associated with better outcomes are the elevation of the head of the bed 15-20 cm, weight loss and avoiding meals at least 3 hours before bedtime. Abstain from eating symptom-triggers

foods such as chocolate, spice, coffee, citrus and fats are also associated with symptoms improvement.^{4,5}

Medical treatment of GERD is based on controlling symptoms and reducing exposure of the esophagus to gastric acid. Proton pump inhibitors are the first-line therapy and work by reducing acid production in the stomach. These medications, such as omeprazole, esomeprazole, and pantoprazole, are administered orally and provide symptomatic relief in most patients. In addition, PPIs help healing esophagitis and reducing the frequency of reflux episodes.¹⁰ PPIs are more likely to induce symptoms relief in patients with erosive esophagitis than in patients with non-erosive reflux disease (approximately 80% and 60% respectively).⁵

PPIs should be given 30-60 minutes before breakfast. The duration of therapy depends on the patient's characteristics and disease. For those with GERD that is not associated to esophagitis or Barrett's esophagus, PPIs should be discontinued to on-demand therapy. For patients with Los Angeles grade C and D esophagitis, indefinite therapy is most appropriate to ensure sustained mucosal healing as recurrence has been documented to be as soon as 2 weeks after discontinuation. When giving maintenance therapy, it must be prescribed at the lowest effective dose. Some adverse effects of long-term PPIs therapy are bacterial gastroenteritis and pneumonia, bone fractures and chronic kidney disease.^{4,5}

In addition to PPIs, prokinetic medications, such as metoclopramide and domperidone, may be used to improve esophageal motility and reduce reflux. These drugs accelerate gastric emptying and strengthen the function of the LES. However, its use is limited to selected cases and caution should be exercised due to possible side effects.¹¹

SURGICAL TREATMENT: TECHNIQUES

Surgical treatment of GERD is considered in patients who have severe symptoms and complications such as Los Angeles grade C and D esophagitis, GERD associated with large hiatal hernias or those who desire a long-term alternative to medication use. Patients with better outcomes after antireflux surgery are those who best respond to PPIs. Laparoscopic fundoplication is the standard and most commonly used surgical technique and involves wrapping the upper part of the stomach around the esophagus, creating a new anti-reflux valve. This surgery strengthens the LES and prevents gastric acid from refluxing into the esophagus. Fundoplication can be performed totally or partially, depending on the individual evaluation of the patient.^{1,5,9}

With fundoplication, relief of symptoms can be up to 90% at 10 years after procedure and 80% on 20 year follow up.¹ Nissen Fundoplication consists of a 360° wrap and is the most widely used technique. Short-term results have shown to be similar to partial fundoplications such as

posterior 270° Toupet and anterior 180° Dor funduplications. Nonetheless, dysphagia and gas-related side effects are shown to be less prevalent in patients who have undergone partial techniques.^{1,5}

During Nissen's fundoplication, the dissection of short gastric vessels and insertion of an endoscopic bougie during wrap confection are associated with a minor incidence of postoperative dysphagia.¹

Magnetic sphincter augmentation (MSA) is a necklace-like device that is placed at the lower esophageal sphincter. Although in terms of symptoms relief MSA is similar to fundoplication there is lack of long term evidence and patients are warned not to undergo magnetic resonance after its placement.^{4,5}

Transoral incisionless fundoplication (TIF) can be implemented in patients with troublesome symptoms who have not mayor indications for laparoscopic fundoplication or do not wish to undergo surgery. Similar to MSA, long-term results are not established.⁵ Roux-en-Y gastric bypass is the best technique for symptoms relief in obese patients. This effect is probably related to weight loss.^{4,12}

DISCUSSION

Management of GERD requires a comprehensive approach that combines accurate diagnosis and individualized treatment. Proper diagnosis of GERD involves evaluating clinical symptoms, performing endoscopic studies, and using esophageal function tests to determine the severity of the disease and rule out other pathologies. Initial treatment should be medical, with the use of proton pump inhibitors to control symptoms and promote healing of esophagitis. However, in refractory cases or with severe complications, the surgical option should be considered.^{4,5,11}

Laparoscopic fundoplication has been shown to be a safe and effective technique in the treatment of GERD. It provides long-term symptomatic relief and improves patients' quality of life. However, careful selection of patients is required to identify those who will benefit most from surgery. In addition, it is important to inform patients about possible complications associated with surgery, such as dysphagia and recurrent reflux, and select the most appropriate technique for each case and the surgeon's expertise.^{1,12}

CONCLUSION

In the discussion of the results, it should be taken into account that the choice of treatment (medical or surgical) should be based on an individualized evaluation of each patient. Collaboration between the primary care physician, gastroenterologist, and surgeon is critical to achieving the best outcomes. Long-term studies and adequate follow-up of patients are needed to assess long-term efficacy and

detect possible late complications. GERD is a common gastrointestinal disease that can have a significant impact on patients' quality of life. A proper diagnostic approach, including clinical evaluation, endoscopy, and esophageal function testing, is essential to establishing an effective treatment plan. Medical treatment with proton pump inhibitors is the first line of management and is usually effective in controlling symptoms and promoting the healing of esophagitis. However, in selected cases, surgical treatment, such as laparoscopic fundoplication, may be necessary for those patients with refractory symptoms or severe complications. Surgical treatment offers a long-term alternative to the use of medications, providing symptomatic relief and improving the quality of life in many patients. However, the potential risks and complications associated with surgery must be considered, and careful selection of patients is critical. Long-term follow-up is required to assess response to treatment and detect possible late complications. Ultimately, successful management of GERD requires a comprehensive approach and individualized decision-making to achieve the best outcomes for each patient.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Frazzoni M, Piccoli M, Conigliaro R, Frazzoni L, Melotti G. Laparoscopic fundoplication for gastroesophageal reflux disease. *World J Gastroenterol*. 2014;20(39):14272-9.
2. Sharma P, Shaheen NJ, Katzka D, Bergman JJGHM. AGA Clinical Practice Update on Endoscopic Treatment of Barrett's Esophagus With Dysplasia and/or Early Cancer: Expert Review. *Gastroenterology*. 2020;158(3):760-9.
3. Siboni S, Bonavina L, Rogers BD, Egan C, Savarino E, Gyawali CP, et al. Effect of Increased Intra-abdominal Pressure on the Esophagogastric Junction: A Systematic Review. *J Clin Gastroenterol*. 2022;56(10):821-30.
4. Fass R. Gastroesophageal Reflux Disease. *N Engl J Med*. 2022;387(13):1207-16.
5. Katz PO, Dunbar KB, Schnoll-Sussman FH, Greer KB, Yadlapati R, Spechler SJ. ACG Clinical Guideline for the Diagnosis and Management of Gastroesophageal Reflux Disease. *Am J Gastroenterol*. 2022;117(1):27-56.
6. Durazzo M, Lupi G, Cicerchia F, Ferro A, Barutta F, Beccuti G, et al. Extra-Esophageal Presentation of Gastroesophageal Reflux Disease: 2020 Update. *J Clin Med*. 2020;9(8):2559.
7. Rettura F, Bronzini F, Campigotto M, Lambiase C, Pancetti A, Berti G, et al. Refractory Gastroesophageal Reflux Disease: A Management Update. *Front Med (Lausanne)*. 2021;8:765061.
8. Bapaye J, Triadafilopoulos G, Iyer PG. Screening for Barrett's Esophagus. *The AFS Textbook of Foregut*

- Disease. Cham: Springer International Publishing; 2023.
9. Gyawali CP, Kahrilas PJ, Savarino E, Zerbib F, Mion F, Smout AJPM, et al. Modern diagnosis of GERD: the Lyon Consensus. *Gut*. 2018;67(7):1351-62.
 10. Fox M, Gyawali CP. Dietary factors involved in GERD management. *Best Pract Res Clin Gastroenterol*. 2023;62-63:101826.
 11. Sintusek P, Mutalib M, Thapar N. Gastroesophageal reflux disease in children: What's new right now? *World J Gastrointest Endosc*. 2023;15(3):84-102.
 12. Smith CR, Gardner JT, Vaughn LH, Kelly RJ, Whipple OC. Nissen Fundoplication-Preserving Laparoscopic Sleeve Gastrectomy. *Am Surg*. 2019;85(2):173-6.

Cite this article as: Dueñas FH. Gastro-esophageal reflux disease: diagnostic and therapeutic approach. *Int Surg J* 2023;10:1254-7.