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Original Article

An Evaluation of our Current Approach to Gastroesophageal Reflux Disease and the Results of Anti-Reflux Surgery

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ABSTRACT

Objective: To describe our current approach to gastroesophageal disease and evaluate results of anti-reflux surgery.

Methods: Seventy patients who underwent a laparoscopic Nissen fundoplication (LNF) procedure between January 2015 and December 2017 were included in the present study. The clinical results of patients who underwent this anti-reflux procedure were evaluated retrospectively based on hospital data.

Results: Thirty-four female (48.5%) and 36 male (51.5%) patients with a median age of 45 years (20–84 years) were evaluated. Fourteen patients (29%) underwent surgery for gastroesophageal reflux, and 56 (80%) patients for reflux+hiatal hernia. The median duration of complaints prior to surgery was 16 months (6–96 months). The median length of follow-up was 18 months (10–45 months). The clinical results were rated very good in 55 (78.6%) patients, good in 9 (12.9%), moderate in 6 cases (8.5%) and poor in 6 cases (8.5%).

Conclusion: LNF may be considered a safe and effective surgical procedure, with appropriate preoperative evaluation, the right indications, and suitable surgical technique.

INTRODUCTION

Gastroesophageal reflux disease (GERD) is more frequently observed in developed countries and affects 20% of the population in the West; the prevalence parallels the increase in obesity.[1] GERD is defined as symptoms or histological changes in the esophagus resulting from a backflow of gastroduodenal content into the esophagus.[2] These patients typically exhibit symptoms such as heartburn, regurgitation, and dysphagia, but may also have atypical symptoms, including a chronic cough, laryngitis, hoarseness, or asthma.

The main aim of GERD treatment is to eliminate the complaints of the patient and improve the quality of life, as well as to prevent the development of potential complications, such as bleeding, esophageal stenosis, Barrett's esophagus, or adenocarcinoma. Lifestyle changes and proton pump inhibitor (PPI) treatment are effective in relieving the symptoms in most of these patients. However, patients with symptoms that cannot be controlled with PPI therapy, those with non-acid reflux symptoms receiving PPI treatment, cases with symptomatic large hiatal hernia, noncompliance with medical treatment, difficulty due to the cost of medical treatment, side effects as a result of medical treatment, or symptomatic young patients who do not wish to continue PPI treatment for the rest of their life are candidates for surgery.

Laparoscopic Nissen fundoplication (LNF) performed with appropriate preoperative preparation, accurate indications, and the suitable surgical technique has been shown to be safe and effective in controlling patient symptoms.[3] The aim of this study was to describe our approach to GERD and evaluate results of anti-reflux surgery.

MATERIAL AND METHODS

In all, 70 patients who underwent LNF between January 2015 and December 2017 were included in the study. The data of the patients were collected from the hospital records system and patient files and were analyzed retrospectively. Patients younger than 18 years of age were excluded. Demographic data, surgical indications, operative time, peroperative complications, and postoperative complications were evaluated.

All of the patients had received medical treatment before deciding to pursue surgery. The surgical decision was made according to the patient's history, the results of endoscopy, esophageal manometry, and esophageal pH analysis. On the first postoperative day, the patients

were started on a liquid diet, and patients who had no complaints were discharged on the second day. The data of the control examinations conducted with patients on the postoperative 10th day, 1st month, and 6th month were evaluated. At follow-up visits, the patients were asked whether they had experienced heartburn, regurgitation, difficulty in swallowing, or gas-bloat syndrome.

The patients were contacted by phone to evaluate their satisfaction level: Patients without any complaints or need for drug use were rated as very good, those who had a slight complaint but without the need for pain medication were classified as good, patients who could control their symptoms using medication were considered moderate, and patients who had no change in complaints postoperatively were grouped as poor.

Surgical technique

Laparoscopic fundoplication is the preferred surgical procedure in GERD cases, and LNF surgery is performed in our clinic. Patients are placed in a reverse Trendelenburg position with the legs separated. The operation is performed using a total of 5 ports. The first step of the surgical procedure is retraction of the gastrohepatic ligament, and exposure of the right crural nerve and posterior vagus nerve. The peritoneal structures and the phrenoesophageal ligament on the anterior surface of the esophagus are then cut to expose the anterior vagus and left crural nerve. Mediastinal dissection is performed to release the distal esophagus and short gastric vessels are dissected to provide for tension-free fundoplication. The next step is to create a posterior esophageal window. The hiatal aperture is narrowed with nonabsorbable sutures placed in the crura, and if necessary, a large hiatal hernia may be repaired using mesh. Optimally, a 360-degree floppy Nissen fundoplication procedure is performed before termination of the procedure.

Statistical analysis

Continuous variables with normal distribution are presented as mean±SD, and those with non-normal distribution as median (interquartile range, IQR). Categorical variables are presented as frequencies (%).

RESULTS

The study population consisted of 34 female (48.5%) and 36 male (51.5%) patients. The median age was 43 years (20–84 years). Fourteen patients (20%) were operated on for GERD and 56 (80%) for GERD+hiatus hernia (Table 1). All of the patients had complaints of retrosternal burning and regurgitation. The median duration of the complaints was 16 months (6–96 months). All of the patients underwent endoscopy and pH value measurement before the operation, and 42 (60%) patients underwent manometric testing.

Conversion to open surgery was not required in any patient, and no peroperative mortality was observed. The median postoperative period of follow-up was 18 months (10–45 months).

Table 1. Demographic characteristics, and clinical, and surgical findings

	n (%)
Gender	
Female	34 (48.5)
Male	36 (51.5)
Age (years)	45 (20–79)
Duration of symptoms (months)	16 (6–96)
Surgical indication	
GERD	14 (20)
GERD + hiatal hernia	56 (80)
Median operative time (minutes)	75 (45–135)
Median hospitalization period (days)	2 (1–3)

GERD: Gastroesophageal reflux disease.

Nine patients (12.8%) had dysphagia during the early postoperative period, and a control endoscopy was performed. In 6 cases, the gastroscope was inserted smoothly and comfortably, and the symptoms of these patients were relieved with symptomatic treatment. Balloon dilatation was performed in the remaining 3 patients as a result of difficulty navigating the gastroscope through the distal esophagus. In 2 of these patients, the first attempt at dilatation was successful; however, despite repeated dilatations, the complaints of the third patient did not resolve, so a reoperation was performed. It was observed that the sutures placed in the crura constricted the distal esophagus, so 1 of the sutures was removed. The patient's complaints resolved during follow-up.

In a telephone evaluation of the clinical results of the patients, 55 (78.6%) cases were rated as very good, 9 (12.9%) as good, and 6 (8.5%) as moderate. Among the 6 (8.5%) patients with a lower level of satisfaction, 2 had a large hiatal hernia, 3 had a low response to PPI, and 1 had a body mass index (BMI) of 39 kg/m^2.

DISCUSSION

GERD is usually a chronic disorder that requires long-term medical treatment and impairs quality of life. PPI, which is the most preferred drug treatment, changes the pH of the gastric fluid and the characteristic content of the reflux, but does not reduce the reflux.[4] Therefore, patient complaints of heartburn generally decrease, but regurgitation and respiratory complaints may continue.

It has been demonstrated that there is a risk of hypomagnesemia due to long-term use of PPI, as well as increased risk of B12 vitamin deficiency, osteoporosis, *Clostridium difficile* infection, and community-acquired pneumonia.[5] In contrast to medical treatment, anti-reflux surgery achieves lower esophageal sphincter pressure and prevents esophageal backflow of the stomach contents. Diagnosis of GERD usually cannot be made accurately based

solely on the complaints of the patients as the symptoms are heterogeneous and not specific to this disease; there are significant similarities to the symptoms of other gastrointestinal diseases.[6–8]

In a study of 822 patients with the initial diagnosis of GERD based on their assessments of symptoms, Patti et al.[9] found that 247 (30%) patients had a normal reflux score on an esophageal pH test. Therefore, when surgical treatment is considered in GERD cases, an objective esophagus test indicating the presence of reflux should be performed. The consensus is that a preoperative endoscopy, esophageal manometry, and esophageal pH testing are necessary for the evaluation of GERD.[10] Endoscopy is the first test to confirm GERD, but it is also required to exclude other pathologies, such as eosinophilic esophagitis, gastritis, peptic ulcer, benign stricture, and cancer.[11] Esophageal manometry is used to assess motility disorders, such as achalasia and esophageal function, and to localize the probe accurately for pH imaging.[12,13] Outpatient pH monitoring is considered the optimal test for the diagnosis of GERD. It objectively determines pathological acid exposure, and associates specific symptoms with reflux attacks. Patients using histamine type 2 receptor blockers or PPI drugs were recommended to stop use 3, and 7 days before this test, respectively.[14] In our study, all of the patients underwent upper endoscopy and esophageal pH monitoring, and 60% of them underwent esophageal manometric testing.

Anti-reflux surgery is a good option for patients who have GERD and do not want to or cannot observe long-term medical treatment due to compliance problems or cost, or those who have complications related to PPI treatment and who have only partial symptomatic relief with medical treatment.

Patients with the greatest success in anti-reflux surgery have been patients with typical reflux symptoms and good response to PPI treatment in the preoperative evaluation.[15]

After anti-reflux surgery, there may be abdominal distention, too much gas accumulation in the stomach, and an inability to burp.[16] Although prokinetics have been reported to reduce these complaints, there is no single, effective method of resolving these complaints.[17]

In almost all patients, transient dysphagia is seen during the early postoperative period. Prolonged dysphagia is rare and should raise suspicion in terms of a problem with the surgical technique. Use of the stomach body instead of the stomach fundus for fundoplication, a length of fundoplication greater than 2.5 cm, the narrowing of the hiatal opening, and tightening of the dressing can cause long-term dysphagia.[18] Endoscopic dilatation is the initial treatment for patients with postoperative dysphagia. However, patients with unsuccessful dilatation may require reoperation.[19]

In our study, 9 patients (12.8%) experienced dysphagia during the early postoperative period. In 6 of these patients, gastroscope passage was comfortable, and the symptoms of the patients resolved with symptomatic treatment. Balloon dilatation was performed for the other 3 patients due to difficulty passing the gastroscope through the distal esophagus. Sufficient dilatation was achieved in 2 of these patients with one attempt. However, despite repeated dilatation efforts, the complaints of 1 patient continued and reoperation was performed. The sutures placed in the crura were seen to constrict the distal esophagus, so 1 of these sutures was removed. The patient's complaints resolved during follow-up.

In studies reporting on periods of 10 to 20 years, excellent long-term reflux control and symptomatic relief were seen in 80% to 94% of the patients after laparoscopic total fundoplication.[20–22] Karabulut et al.[23] reported successful results in 90% of study patients. In our study, with a median follow-up of 18 months, 91.5% of the patients had no need to use postoperative medication. In a randomized trial evaluating the results after anti-reflux surgery, patients with a preoperative large hiatal hernia and a BMI greater than 35 kg/m^2 were found to be associated with poorer outcomes and a poor response to PPI therapy.[24] In our study, the 8.5% of patients who had a lower rate of satisfaction were also found to have had a large hiatal hernia, low response to PPI treatment, or a high BMI.

LNF is a safe and effective method to control the symptoms of GERD patients when there is adequate preoperative preparation, accurate indications for the procedure, and proper surgical technique.

Ethics Committee Approval

Approved by the local ethics committee.

Informed Consent

Retrospective study.

Peer-review

Internally peer-reviewed.

Authorship Contributions

Concept: S.K., O.A.; Design: S.K., O.A.; Data collection &/or processing: S.K., O.A.; Analysis and/or interpretation: S.K.; Literature search: S.K., O.A.; Writing: S.K., O.A.; Critical review: H.F.K, N.B.

Conflict of Interest

None declared.

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Kliniğimizde Gastroözofageal Reflü Hastalığına Güncel Yaklaşımın ve Uygulanan Anti-Reflü Cerrahisinin Sonuçlarının Değerlendirmesi

Amaç: Gastroözofageal reflü hastalığına (GÖRH) güncel yaklaşımın ve kliniğimizde yaptığımız anti-reflü cerrahisinin sonuçlarını değerlendirmektir.

Gereç ve Yöntem: Kliniğimizde Ocak 2015–Aralık 2017 tarihleri arasında laparoskopik Nissen funduplikasyon (LNF) yaptığımız 70 hasta çalışmaya alındı. Hastalara ait bilgiler hastane otomasyon sisteminden ve hasta dosyalarından geriye dönük olarak incelendi. Anti-reflü ameliyatı yapılan hastaların fonksiyonel sonuçları değerlendirildi.

Bulgular: Hastaların 34'ü kadın (%48.5), 36'sı erkek (%51.5) idi. Yaş ortancası 45 (20–79) idi. Hastaların 14'ü (%20) gastroözofageal reflü nedeniyle, 56'sı (%80) gastroözofageal reflü+hiatus fıtığı nedeniyle ameliyat edildi. Hastaların şikayetlerinin ortanca süresi 16 ay (6–96) idi. Ortanca takip süresi 18 ay (10–45) idi. Anti-reflü ameliyatı yapılan hastaların klinik sonuçları; 55 (%78.6) hastada "çok iyi", 9 (%12.9) hastada "iyi", 6 (%8.5) hastada ise "orta" olarak değerlendirildi.

Sonuç: Laparoskopik Nissen funduplikasyon GÖRH'da yeterli ameliyat öncesi çalışma, doğru endikasyon ve doğru cerrahi teknik ile hastaların semptomlarını kontrol etmede güvenli ve etkilidir.

Anahtar Sözcükler: Gastroözofagial reflü hastalığı; hiatus fıtığı; Nissen funduplikasyonu.