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Laparoscopic Nissen or open technique in gastroesophageal reflux disease management; Systematic Review

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Abstract: **GERD is the most typical disease come across by the gastroenterologist with a 20% occurrence in the adult population. It has actually been categorized as the presence of reflux symptoms without erosions on endoscopic assessment, i.e., nonerosive reflux disease (NERD) or reflux signs with mucosal breaks at endoscopic assessment, i.e., erosive reflux disease (ERD).The aims of this study is evaluating the efficacy, safety and outcome of laparoscopic surgery for GERD in comparison with open surgery, and also determine the risk factors which influence the outcome to identify those patients that are not good candidates for laparoscopic approach. We systematically searched PubMed, Embase, and the Cochrane Library database for articles published up to year of 2016 which compared Laparoscopic Nissen with open surgical procedure for GERD. For the first search, text key words were "laparoscopy" or "laparoscopic Nissen" and "Open anti-reflux surgery" or "fundoplication." The results of this search were combined with the results of a subsequent search using terms "gastroesophageal reflux" or "GERD." The laparoscopic Nissen fundoplication is the basic operation for the surgical treatment of GERD. Partial fundoplications can likewise be performed, especially in cases of underlying esophageal motility conditions, however it has actually been displayed in some research studies to have a greater recurrence rate than the Nissen fundoplication. Other strategies consist of gastrojejunal feeding, gastrostomy, and overall esophagogastric dissociation and have appealing early results in kids. Straightforward postoperative look after fundoplications include early development of diet plan to liquids then pureed and outpatient documents of resolution of signs.**

Keywords: **Laparoscopic Nissen, gastroesophageal.**

1. INTRODUCTION

Gastroesophageal reflux disease (GERD) is When the reflux of gastric contents into the esophagus leads to frustrating signs and/or problems (1,2,3), currently defined as a condition that establishes. GERD is the most typical disease come across by the gastroenterologist with a 20% occurrence in the adult population. It has actually been categorized as the presence of reflux symptoms without erosions on endoscopic assessment, i.e., nonerosive reflux disease (NERD) or reflux signs with mucosal breaks at endoscopic assessment, i.e., erosive reflux disease (ERD) (3). ERD is discovered in approximately 20% of GERD patients and ought to be regarded as the most common complication of GERD instead of its principal manifestation (4).

The pathophysiology of GERD is not due to acid overproduction but rather mechanical dysfunction focused around the lower esophageal sphincter (LES). Furthermore, the pillar of GERD treatment, proton pump inhibitors (PPIs), have actually come under analysis because of uneasy negative effects (5,6). Laparoscopic magnetic sphincter enhancement of the LES has been proposed as an additional surgical alternative. Like Nissen fundoplication, it relies on 360 ° buttressing of the LES, however it might trigger less long-term negative results (7).

Laparoscopic Nissen fundoplication is now thought about the basic surgical approach for treatment of severe gastroesophageal reflux disease (GERD) [8]. GERD is increasingly widespread and costly, and it may impact as much as 20% of the United States population [9]. Dr Rudolf Nissen (1896-1981) explained the first fundoplication in the 1950s for treatment of severe reflux esophagitis. His initial procedure utilized a 360 ° wrap of the fundus of the stomach around the esophagus by plication of both the posterior and anterior walls of the stomach fundus around the lesser curvature (Figure1). Although the standard Nissen fundoplication has actually been customized sometimes, laparoscopic Nissen fundoplication is now considered the standard surgical technique for treatment of GERD [8].

The aims of this study is evaluating the efficacy, safety and outcome of laparoscopic surgery for GERD in comparison with open surgery, and also determine the risk factors which influence the outcome to identify those patients that are not good candidates for laparoscopic approach.

2. METHODOLOGY

Search Strategy and Selection Criteria

We systematically searched PubMed, Embase, and the Cochrane Library database for articles published up to year of 2016 which compared Laparoscopic Nissen with open surgical procedure for GERD. For the first search, text key words were “laparoscopy” or “laparoscopic Nissen” and “Open anti-reflux surgery” or “fundoplication.” The results of this search were combined with the results of a subsequent search using terms “gastroesophageal reflux” or “GERD.” There were no language restrictions. Only human studies that described the design of the randomized controlled trials (RCTs) were considered for inclusion and reviews as well. From the title, abstract or descriptors, the literature search was reviewed independently in triplicate to identify potentially relevant trials for full review. In addition, a manual search of references from reports of clinical trials or review articles was performed to identify relevant trials. From the full text using specific criteria, reviewers independently selected trials for inclusion. There was no disagreement, although it was planned that disagreement would have been resolved by a third-party adjudication.

3. RESULTS AND DISCUSSION

Laparoscopic vs open technique for GERD

A laparoscopic, transabdominal method is chosen for the large bulk of patients undergoing anti-reflux surgical treatment. Seldom, open and transthoracic abdominal methods are required and may be thought about for patients undergoing revision of their former anti-reflux operations [10]. Reoperation surgery usually can be carried out laparoscopically. Perioperative morbidity was found to be significantly lower (65%) after laparoscopic compared with open fundoplication [11]. Laparoscopic fundoplication is associated with longer personnel times but shorter medical facility stays [12]. In turn, conversion rates to open surgery were less than 5%(12). Laparoscopic fundoplication is preferred over open surgery because it is connected with much shorter hospital stay, reduced pain, postoperative wound infections and stomach wall hernia development [12]. Additionally, using the laparoscopic approach, surgeons have the advantage of seeing all the hiatal structures in a magnified fashion. In a 10-year randomized trial comparing LNF to traditional Nissen fundoplication (CNF or open method), it was kept in mind that twice as many patients needed reoperation after CNF, including a much higher number of incisional hernia corrections. The 10-year efficiency of LNF and CNF is comparable in terms of enhancement of GERD symptoms, PPI use, quality of life, and unbiased reflux control seen on impendance research studies. Therefore, the long-term arise from this trial lend level 1 assistance to using LNF as the surgical procedure of option for GERD [13]. Despite the type of fundoplication performed, the goal of the operation is the same: Re-create and bring back the regular physiologic functionality of the LES, reconstruction of the hiatus when essential and repair work of any hiatal hernia if present.

Laparoscopic Nissen procedure

Surgery for GERD was first carried out in 1956, but because of the advancement of reliable medical therapy, and the fairly smaller varieties of patients affected, surgical treatment was not widely performed between 1960 and 1990. In 1991, laparoscopic Nissen fundoplication was reported [26]. The advantages of laparoscopic antireflux surgical treatment resemble those reported after other laparoscopic procedures, such as cholecystectomy. These include a brief (one night) medical facility stay, a earlier go back to work and normal activities (two weeks), and less complications such as atelectasis, pneumonia, splenic injury, and fewer incisional hernias.

The Nissen fundoplication has actually developed to become the basic operation for the surgical treatment of GERD in adults and children [27]. Nissen explained the procedure as a 360-degree gastric fundoplication around the distal esophagus for a distance of 4-5 centimeters. This supplied strong control of reflux but was related to many adverse effects that encouraged adjustments to the procedure. These modifications included utilizing just the stomach fundus to surround the esophagus and limiting the length of the fundoplication to 1 to 2 centimeters [23]. The important action to performing both a laparoscopic and open fundoplication can be discovered

Perioperative morbidity was discovered to be considerably lower (65%) after laparoscopic compared with open fundoplication [11]. Laparoscopic fundoplication is associated with longer operative times but much shorter healthcare facility stays [12]. Laparoscopic fundoplication (**Figure 1**) is preferred over open surgical treatment due to the fact that it is associated with shorter health center stay, reduced pain, postoperative wound infections and abdominal wall hernia formation [12].

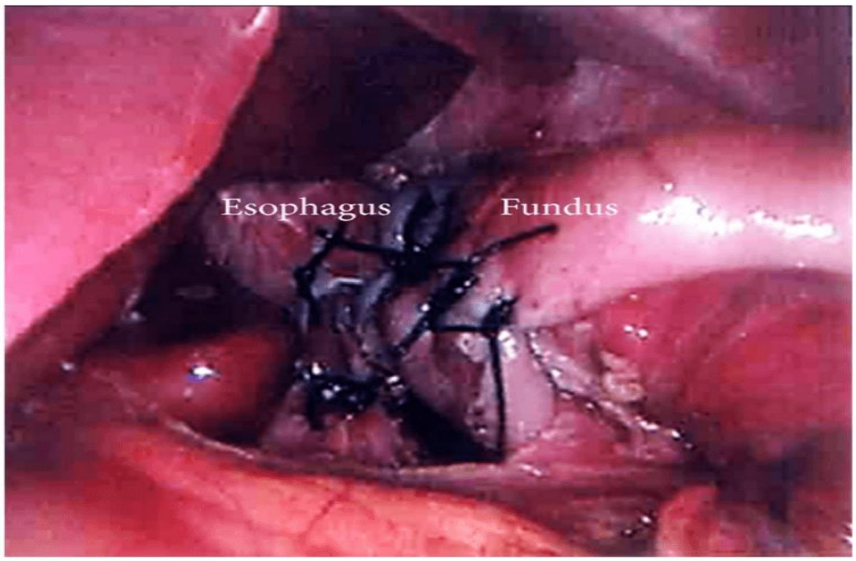

Figure 1: Laparoscopic Nissen fundoplication technique. Completed 360° fundoplication.

Laparoscopic antireflux surgery is technically tough and should be carried out only by surgeons with great training and with high experience in advanced laparoscopic surgical strategy. There are 2 types of fundoplications that are most commonly carried out: Nissen (**Figure2**) and Toupet Fundoplications. The Nissen operation includes covering the fundus totally around the esophagus, producing a brief, loose wrap. In the Toupet operation, the fundus is covered only part of the way around the esophagus, producing a short, even looser wrap. The kind of operation is picked based on the seriousness of reflux and problems involved, along with the function of the esophagus. While the Toupet results in less difficulty with gas bloat syndrome and swallowing, the Nissen treatment is the most effective for controlling reflux. The Toupet is normally best for patients whose reflux is less serious. The latter is utilized in the small percent of patients who have extreme dysmotility of the esophageal body. The mortality of laparoscopic procedure is basically absolutely no, and the morbidity is around 5%, which is less than after open surgical treatment. The conversion rate to an open surgical technique is less than 2%.

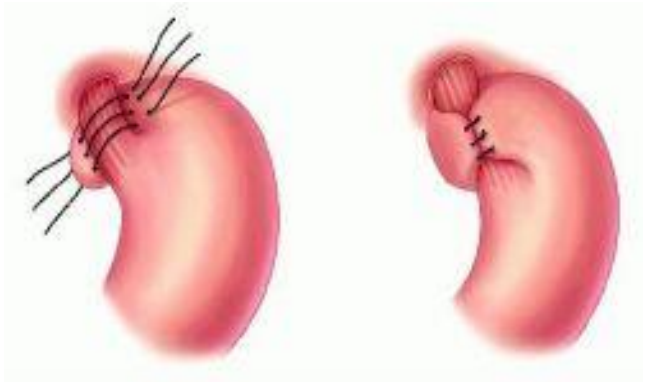

Figure 2: Nissen fundoplication for control of gastroesophageal reflux.

There has been considerable debate about the relative efficacies of antireflux surgical treatment and medical treatment. A systematic evaluation [14] concluded that the two treatment techniques were of similar effectiveness. A few of the literature recommends that long-term results from antireflux surgical treatment might transcend to those of medical treatment [15,16].

Guidelines from the American College of Gastroenterology (ACG) indicate that "surgical therapy is as effective as medical therapy for carefully picked patients with chronic GERD when carried out by a knowledgeable surgeon" [17]. In properly chosen patients, laparoscopic reflux surgery may be more affordable than lifelong medical treatment [18,19].

Laparoscopic Nissen fundoplication may have advantages over the traditional open method, including improved cosmesis, lowered morbidity, shorter healthcare facility stays, decreased breathing complications, and faster healing [20,21]. However, the laparoscopic approach might be connected with longer operating times [21]. With respect to subjective symptoms, long-term outcomes after laparoscopic Nissen fundoplication are comparable to those after open surgical treatment [22,23,24]. Currently, the laparoscopic approach is favored over an open approach unless it is specifically contraindicated.

One trial [25] which was consisted of in this study compared total and partial responders (classified by patient-reported symptom relief on a VAS prior to and after laparoscopic fundoplication (LF) [25]. Sign ratings were examined by patients rating five GERD signs, with each sign scored as a product of severity and frequency. In spite of comparable baseline sign scores throughout PPI abstaining [complete responders: 33.7 (n = 274); partial responders: 34.3 (n = 445)], the partial responders experienced significantly less sign relief during PPI treatment prior to LF than total responders (13.2 and 22.6, respectively), and also 6 mo, 2 years and 5 years after laparoscopic fundoplication (values not shown). This study also reported a greater rate of postoperative PPI use in partial responders than in complete responders (16.0% and 11.0%, respectively, at 5 years), although this distinction was not statistically significant [25].

4. CONCLUSION

The laparoscopic Nissen fundoplication is the basic operation for the surgical treatment of GERD. Partial fundoplications can likewise be performed, especially in cases of underlying esophageal motility conditions, however it has actually been displayed in some research studies to have a greater recurrence rate than the Nissen fundoplication. Other strategies consist of gastrojejunal feeding, gastrostomy, and overall esophagogastric dissociation and have appealing early results in kids. Straightforward postoperative look after fundoplications include early development of diet plan to liquids then pureed and outpatient documents of resolution of signs. Issues of surgery include both short-term (intraoperative, postop dysphagia, and hyperflatulence) and long term (stopped working fundoplication). The knowing curve for antireflux surgical treatment is approximated to be in between 20 and 50 cases but continues to extend as the cosmetic surgeon is referred more complex cases. In the case of stopped working fundoplication, a "redo" procedure is safe and suitable in the hands of an experienced cosmetic surgeon.

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