

The first laparoscopic Nissen funduplications in Cyprus

Constantine T. Frantzides, M.D., Ph.D., F.A.C.S.
Mark A. Carlson, M.D.
Department of Surgery Medical College of Wisconsin
Milwaukee, Wisconsin USA
Vasilios Makris, M.D., F.R.C.S.
George Potamitis, M.D.
Efthymiou Efthymios

ABSTRACT

The operative and short term results of the first five patients in Cyprus to undergo laparoscopic Nissen fundoplication are presented. All patients had symptomatic gastroesophageal reflux disease requiring chronic medication and had esophagitis on preoperative endoscopy. The average operative time was 3.0 hr (range 2.5 to 4.0). There were no perioperative complications. All patients were discharged home by the second postoperative day, and were back to regular activity within two weeks. In a follow up period of 12 months, there has been no recurrence of reflux symptoms. Laparoscopic Nissen fundoplication is safe and effective management of gastroesophageal reflux disease, and allows short hospitalization and recovery time.

Key words: laparoscopic Nissen fundoplication, gastroesophageal reflux disease, antireflux procedure.

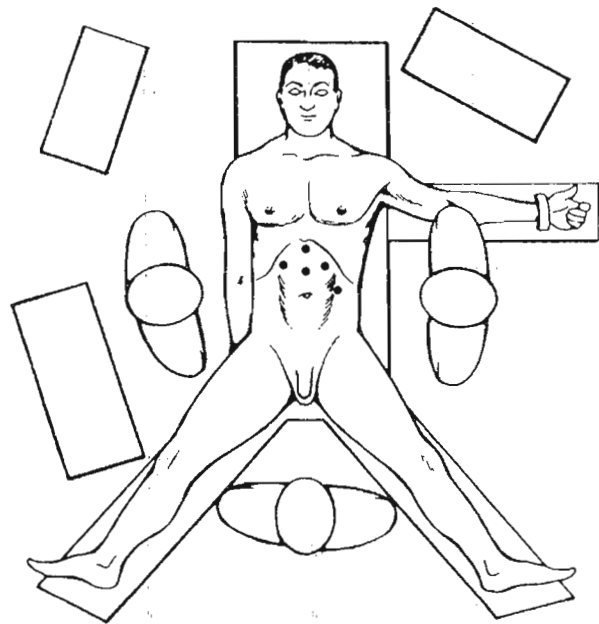
INTRODUCTION

Nissen fundoplication is a proven treatment for symptomatic gastroesophageal reflux disease (GERD).^{1,2,3} Performed by the traditional open technique, Nissen fundoplication requires 1-2 weeks of hospitalization and several months of convalescence.⁴ Laparoscopic Nissen fundoplication has been performed for 4 years.^{5,6} There have been several reports^{4,7,8} which have found open and laparoscopic fundoplication to be equally effective; the latter operation was found to have a shorter hospitalization time. Here we report the tech-

nique and short term results for the first five laparoscopic Nissen funduplications done in Cyprus.

MATERIALS AND METHODS

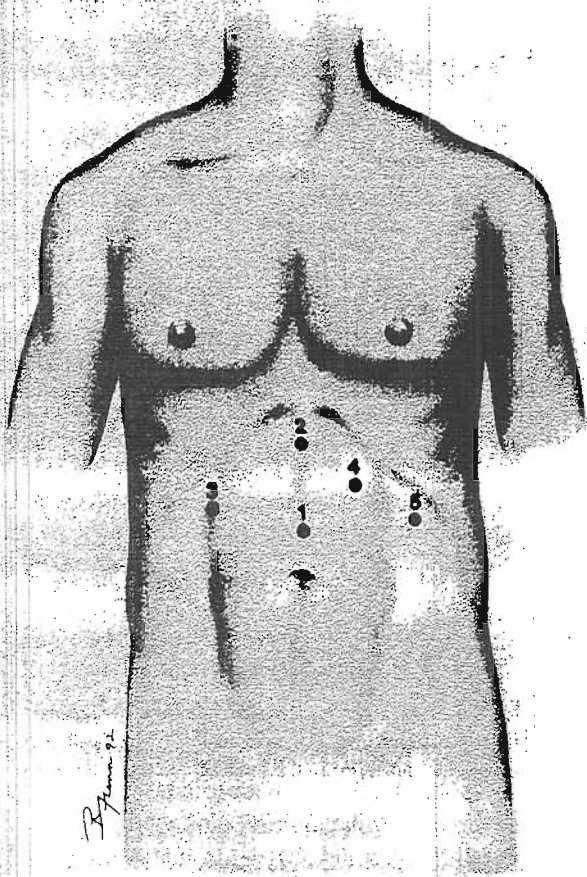
Our technique of laparoscopic Nissen fundoplication has been published previously.⁴ Briefly, under general anesthesia the patient is placed in the low lithotomy position with the surgeon standing in between the legs and assistants at the sides (Figure 1). Five 10mm



1. The patient undergoing a laparoscopic Nissen fundoplication is positioned in the low lithotomy position with the surgeon standing between the legs and the assistants at the sides.

Ποικίλα Άρθρα

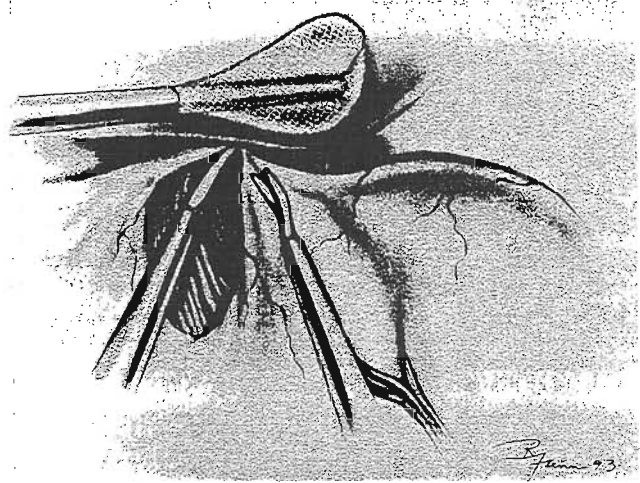
trocars are placed, as shown in Figure 2. The laparoscope is inserted through port 1 (see Figure 2). The left



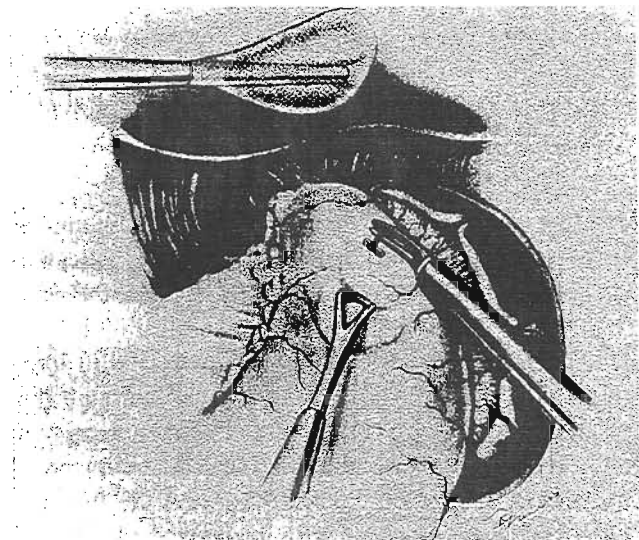
2. To perform laparoscopic fundoplication, five 10 mm trocars are inserted into the abdomen at the positions indicated.

lobe of the liver is retracted medially with an inflatable atraumatic laparoscopic retractor (Soft-Wand, Circon-Cabot, Longhorn PA, USA) inserted through port 2. The stomach is grasped with a laparoscopic Babcock clamp through port 5, and the gastrohepatic omentum is held with a grasper through port 3. With this traction and counter traction, the omentum is incised with either a scissors or hook cautery inserted through port 4 (see Figure 3), and the gastroesophageal junction (GEJ) is exposed.

With a 50 French Maloney dilator in the esophagus, the area posterior to the GEJ is bluntly dissected until the spleen is visualized. With a babcock clamp in port 3 providing traction, the short gastric vessels are then clipped and ligated through port 4 (see Figure 4). A laparoscope with a 30 degree view angle facilitates this portion of the procedure. If a hiatal hernia is pre-



3. The left lobe of the liver is retracted medially with an inflatable atraumatic laparoscopic retractor. A laparoscopic Babcock clamp is applied to the stomach to provide counter traction, and the gastrohepatic omentum is incised to expose the gastroesophageal junction.

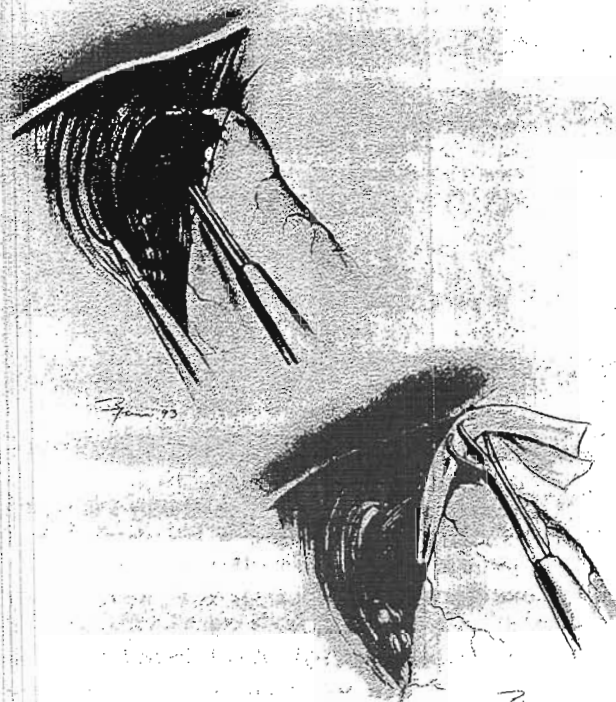


4. The short gastric vessels are clipped and ligated to mobilize the fundus of the stomach.

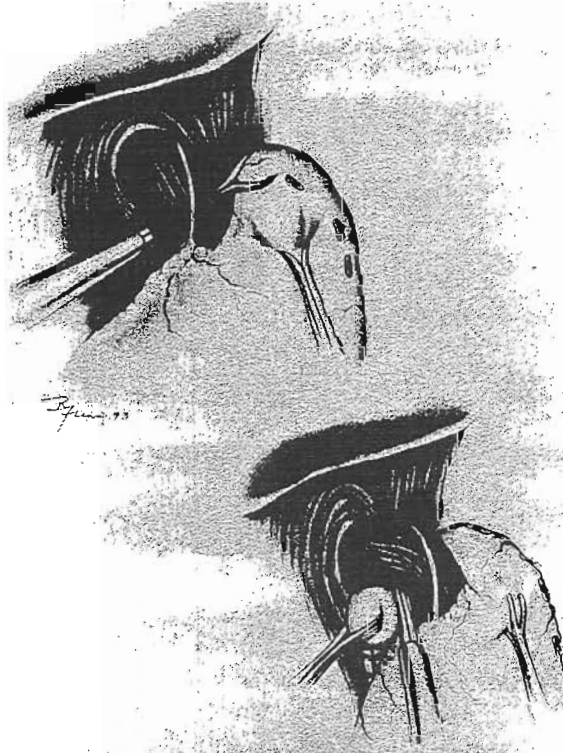
sent, the stomach may be reduced into the abdomen with gentle traction applied by Babcock clamps. If the patient has an enlarged esophageal hiatus, a posterior cruroplasty may be performed at this point using interrupted sutures of 2-0 braided polyester (through port 4), as shown in Figure 5.

A Babcock clamp is inserted through port 3 and is passed behind the GEJ to grasp the fundus of the stom-

Ποικίλα Άρθρα



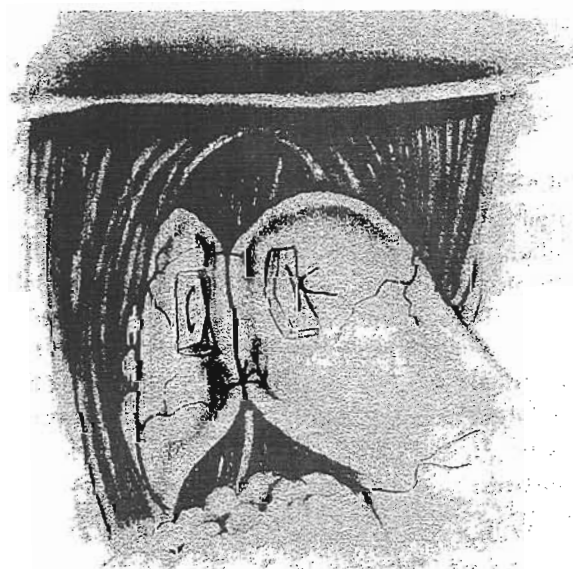
5. If the patient has a large defect in the esophageal hiatus, a posterior cruroplasty may be performed using interrupted sutures of 2-0 braided polyester. A Babcock clamp inserted through port 3 provides the necessary lift on the esophagus.



6. A Babcock clamp is passed behind the gastroesophageal junction to grasp the fundus of the stomach. The fundus is pulled posteriorly to the junction to create the wrap.

ach (see Figure 6). The posterior vagus is kept applied to the esophagus, and is included in the fundoplication. The fundus is pulled behind the GEJ to create the wrap. With the Maloney in place, the fundoplication is completed by suturing the fundus on to itself with interrupted sutures of 2-0 braided polyester (through port 4), as shown in Figure 7. The diaphragm is incorporated into the most cephalad stitch to prevent slippage of the wrap. The trocars are removed, and the fascia of ports 1, 4, and 5 is closed with interrupted sutures of 0 braided nylon. The dermis is closed with intracuticular 3-0 polyglactin.

Postoperatively a nasogastric tube is not used. The patient is allowed liquids (no carbonated beverages) the evening of the operation, and soft food is given in the morning. Any discomfort from the incisions is managed with oral analgesics. Antireflux medication is not given. If the patient is feeling well enough, discharge is possible on postoperative day 1; otherwise discharge is planned for postoperative day 2.



7. The fundoplication is completed by suturing the fundus on to itself with interrupted sutures of 2-0 braided polyester (with or without teflon pledgets). A 50 French Maloney dilator is in the esophagus at this point.

RESULTS

Fundoplication was performed on five patients (three men, two women) with an average age of 51 (range 34-64). All patients had severe GERD with a chief symptom of heartburn, and all were taking antireflux medication chronically. All patients underwent esophagogastroduodenoscopy (EGD) preoperatively, and all were found to have erosive esophagitis. Three of the patients had a hiatal hernia, as demonstrated on preoperative barium contrast study. None of the patients had any previous abdominal operation.

The average operative time was 3.0 hr (range 2.5-4.0 hr). There were no intraoperative or postoperative complications. Heartburn was not present postoperatively, and did not recur in the 12 month follow up period. None of the patients had taken antireflux medication postoperatively. All patients were back at their preoperative level of activity within two weeks of the operation. A follow up EGD performed 3-6 months postoperatively revealed resolution of esophagitis in all patients. The patients characterized the result of the operation as good to excellent.

CONCLUSIONS

We have described the technique and outcome of the first five laparoscopic Nissen funduplications in Cyprus. Laparoscopic fundoplication provides safe and effective treatment of GERD, but without the disadvantages of open operation (that is, long incision, severe postoperative pain, and prolonged hospitalization and recovery time). It has been our experience and the experience of others^{6,7} that patient satisfaction is high with this procedure; we have observed the same result in Cyprus. We feel that laparoscopic Nissen fundoplication should be the operative treatment of choice for GERD, and that open operation should be reserved for difficult cases.

Experienced laparoscopists believe that the degree of difficulty with a laparoscopic fundoplication is higher than it is with the more common laparoscopic procedure, cholecystectomy. We recommend that any surgeon who wishes to perform laparoscopic fundoplication first obtains proper training in the technique. This would involve experience in the animal lab followed by tutelage under a surgeon experienced in the operation.

Heartburn occurs daily in an estimated 7% of the general (U.S.) population.⁹ The symptoms of the majority of these patients can be controlled medically. A minority will not succeed with medical management, and traditionally fundoplication then is indicated.

Lately, however, there has been an increase in the incidence of adenocarcinoma of the esophagus.¹⁰ There has been a concern that this is secondary to chronic reflux of gastric and duodenal contents into the esophagus.^{11,12} Acid reduction therapy will not effect the alkaline component of reflux, so this would continue to be a source of chronic injury to the esophageal mucosa, possibly leading to neoplasia. A properly performed laparoscopic fundoplication would eliminate all reflux with minimal discomfort to the patient. With the accumulation of the above data, we now are recommending laparoscopic fundoplication in the patient with GERD who has esophagitis, who otherwise would require lifelong antireflux medication, and who has no contraindication to operation.

REFERENCES

1. Grande L, Toledo-Pimentel V, Manterola C, Lacima G, Ros E, Garcia-Valdecasas JC, Fuster J, Visa J, Pera C: Value of Nissen fundoplication in patients with gastroesophageal reflux judged by long-term symptom control. *Br J Surg* 1994; 81: 548-550.
2. Luostarinen M, Isolauri J, Laitinen J, Koskinen M, Keyrilainen O, Markkula H, Lehtinen E, Uusitalo A: Fate of Nissen fundoplication after 20 years: a clinical endoscopic, and functional analysis. *Gut* 1993;34:1015-1020.
3. Dunnington GL, DeMeester TR: Outcome effect of adherence to operative principles of Nissen fundoplication by multiple surgeons: the Department of Veterans Affairs Gastroesophageal Reflux Disease Study Group. *Am J Surg* 1993;166:654-657.
4. Franzides CT, Carlson MA: Laparoscopic versus conventional fundoplication. *J Laparoendosc Surg* 1995;5:137-143.
5. Hinder RA, Stuckenhof HE, Filipi CJ: Laparoscopic Nissen fundoplication. In Frantzides CT (ed.), *Laparoscopic and Thoracoscopic Surgery*. Mosby Year-Book Inc., 1994.
6. McKernan JB, Champion JK: Laparoscopic antireflux surgery. *Am Surg* 1995;61:530-536.
7. Rattner DW, Brooks DC: Patient satisfaction following laparoscopic and open antireflux surgery. *Arch Surg* 1995;130:289-294.
8. Peters JH, Hiembucher J, Kauer WKH, Incarboni F, Bremner CG, DeMeester TR: Clinical and physiologic comparison of laparoscopic and open Nissen fundoplication. *J Am Coll Surg* 1995;180:385-393.
9. Nebel OT, Fomes MF, Castell DO: Symptomatic gastroesophageal reflux: incidence and precipitating factors. *Am J Dig Dis* 1976;21:953-956.
10. Blot WJ, Denesa SS, Kneller RW, Fraumeni JF Jr: Rising incidence of adenocarcinoma of the esophagus and gastric cardia. *JA,MA* 1991; 265:1287-1289.
11. Kauer WKH, Peters JH, DeMeester TR, Ireland AP, Bremner CG, Hagen JA: Mixed reflux of gastric and duodenal juices is more harmful to the esophagus than gastric juice alone: the need for surgical therapy re-emphasized. *Ann Surg* 1995; 222:525-533.
12. Vaezi MF, Richter JE: Synergism of acid and duodenogastroesophageal reflux in complicated Barrett's esophagus. *Surgery* 1995; 117: 699-704.