Long-term Outcome of Laparoscopic Heller-Dor Surgery for Esophageal Achalasia: Possible Detrimental Role of Previous Endoscopic Treatment

Giuseppe Portale, M.D., Mario Costantini, M.D., Christian Rizzetto, M.D., Emanuela Guirroli, M.D., Martina Ceolin, M.D., Renato Salvador, M.D., Ermanno Ancona, M.D., F.A.C.S., Giovanni Zaninotto, M.D., F.A.C.S.

Laparoscopic Heller myotomy has recently emerged as the treatment of choice for esophageal achalasia. Previous unsuccessful treatments (pneumatic dilations or botulinum toxin [BT] injections) can make surgery more difficult, causing a higher risk of mucosal perforation and jeopardizing the outcome. The study goal was to evaluate the effects of prior endoscopic treatments on laparoscopic Heller myotomy.

Between January 1992 and February 2005, 248 patients (130 males and 118 females; median age, 43 years) underwent a laparoscopic Heller-Dor operation for achalasia: 203 underwent primary surgery (group A), 19 had been previously treated with pneumatic dilations (group B), and 26 had BT injections (alone [22] or with dilations [4] (group C). Median duration of the operation and rate of intraoperative mucosal lesions were not different in the three groups. Median follow-up was 41 months. The 5-year actuarial of control of dysphagia was similar in groups A (86%) and B (94%), whereas only 75% of group C patients were symptom free at 5 years ($P = 0.02$). On logistic regression analysis, prior treatment with two BT injections or BT combined with dilation was associated with poor outcome of surgery. Further, dilations for surgical failure patients were effective in 80% of group A but in only 33% of group B or C patients. Heller-Dor surgery is safe and effective as a primary or a second-line treatment (after pneumatic dilations or BT injections) for achalasia. However, long-term results seem less satisfactory in patients previously treated with BT. (J GASTROINTEST SURG 2005;9:1332–1339) © 2005 The Society for Surgery of the Alimentary Tract

KEY WORDS: Esophageal achalasia, laparoscopic surgery, Heller myotomy, pneumatic dilation, Botox injection

Esophageal achalasia is a primary motor disorder characterized by a virtually absent peristalsis of the esophageal body and incomplete relaxation of the lower esophageal sphincter (LES). Although the primary pathophysiologic defect has been identified, that is, the loss of inhibitory ganglion cells and persistence of cholineretic stimuli, the etiology of achalasia is not entirely clear and its treatment remains controversial. All therapies are palliative and designed to reduce the LES resting pressure by paralyzing the muscle with botulinum toxin (BT) injection or by stretching and/or disrupting the LES muscle fibers with endoscopic balloon dilations or surgical myotomy. In the past decade, the development of videoendoscopic techniques has rekindled interest in the surgical management of this disease. Laparoscopic myotomy of the distal esophagus and gastric cardia with a partial anterior fundoplication (the Heller-Dor procedure) is becoming the treatment of choice for patients with esophageal achalasia at most centers, subject to the preferences of the physician or surgeon consulted and local availability of expertise. The small number of patients and limited advantage of myotomy over dilation make it very difficult to recruit enough patients to perform adequate randomized clinical trials to establish the optimal treatment, so there are patients, still, referred for surgery only after unsuccessful endoscopic treatment with pneumatic dilations and/or BT injection(s). It has been suggested...
that preoperative treatments may induce histopathologic changes at the gastroesophageal junction, making surgery more difficult, with a higher risk of mucosal perforation and a less satisfactory outcome. The aim of this study was to evaluate the effects of prior endoscopic treatment on the outcome of laparoscopic Heller-Dor operation for achalasia.

MATERIAL AND METHODS
Patient Population
Between January 1992 and February 2005, 248 patients with a diagnosis of primary achalasia underwent laparoscopic Heller-Dor myotomy of the distal esophagus and gastric cardia at our department. They included 130 males and 118 females with a median age at diagnosis of 43 years (range, 11–80 years). Surgery was the primary treatment for 203 patients (group A), while 45 had already been treated endoscopically elsewhere, with one to four pneumatic dilations in 19 patients (group B) and BT injections in 26 patients (group C, BT alone in 22 cases, associated with dilations in 4).

Preoperative Work-up
The diagnosis of primary achalasia was based on clinical history, barium swallow, endoscopy, and esophageal manometry. Clinical data were prospectively collected by means of a symptom questionnaire and scored according to severity and frequency. The symptom score for dysphagia, regurgitation, and chest pain was calculated by combining the frequency (0–5) and severity (0–6) of each symptom; the highest possible score was 33. Surgery was considered as having failed when the patient’s symptom score exceeded the tenth percentile of the pretreatment score. A barium swallow study was obtained in each patient before and 1 month after surgery (in more recent years, a “timed” barium swallow was used). The maximum esophageal diameter was measured at the site of the barium air level in the standard anteroposterior image. Stationary esophageal manometry was performed before and 6 months after surgery, and whenever the patient had recurrent symptoms, using a pneumohydraulic perfusion system and standard techniques. Twenty-four-hour pH monitoring was performed only after surgery to assess any abnormal gastroesophageal reflux, positioning a glass electrode 5 cm above the upper border of the LES, according to the standard procedure used at our laboratory and described elsewhere. Traces from patients with abnormal reflux on computerized analysis were carefully reviewed to distinguish true episodes of gastroesophageal reflux from false reflux resulting from stasis. Upper gastrointestinal endoscopy was used to rule out any malignancies before surgery and to evaluate any reflux esophagitis afterward.

Surgery
All patients had the same operation, introduced in 1992 and little changed since, described in detail elsewhere. Briefly, only the anterior part of the esophagus was dissected, the anterior vagus nerve was identified, and a 6- to 8-cm-long myotomy was performed, extending 1–1.5 cm on the gastric side. A 30-mm Rigiflex balloon (Microvasive, Boston, MA) was positioned endoscopically at cardia level, gently inflated, and deflated with 40–60 ml of air during the myotomy. This facilitated the identification of the circular fibers, which were stretched and then cut or torn apart. Minimal bleeding from the submucosal vessels was easily controlled by inflating the balloon, thus reducing the need for cautery. An anterior partial fundoplication (180°) according to the Dor technique completed the procedure. Three stitches on each side were used to suture the gastric wall to the edges of the myotomy. All the operations were performed by four staff surgeons.

Postoperative Course
To rule out perforation, a swallow test with a water-soluble contrast (Gastrografin; Schering, Berlin, Germany) was obtained on postoperative day 1. The nasogastric tube was removed and patients were asked to drink for the next 12 hours, to remain on a soft diet for 10–15 days, and then to return to a normal diet. The hospital stay depended on the distance of the patient’s home from the hospital: they were discharged on postoperative day 2 if they lived within 1 hour’s drive from the hospital and on postoperative day 4 if they lived farther away.

Follow-up
Patients were followed by the operating surgeon. They were asked to come to the outpatient clinic 1, 6, and 12 months after surgery. A barium swallow was obtained at the first follow-up visit; manometry and pH-monitoring were performed immediately before the second checkup, when a second symptom assessment was obtained. Endoscopy was performed 12 months after surgery to check for complications (esophagitis) and then recommended every 24 months to rule out any neoplastic degeneration. If patients failed to show up for 12 months or longer,