Minimally Invasive Surgery for Achalasia: A 10-Year Experience

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Minimally invasive esophagomyotomy for achalasia has become the preferred surgical treatment; the employment of a concomitant fundoplication with the myotomy is controversial. Here we report a retrospective analysis of 53 patients with achalasia treated with laparoscopic Heller myotomy; fundoplication was used in all patients except one, and 48 of the fundoplications were complete (floppy Nissen). There were no deaths or reoperations, and minor complications occurred in three patients. Good-to-excellent long-term results were obtained in 92% of the subjects (median follow-up 3 years). Two cases (4%) of persistent postoperative dysphagia were documented, one of which was treated with dilatation. Postoperative reflux occurred in five patients, four of whom did not receive a complete fundoplication; these patients were well controlled with medical therapy. We suggest that esophageal achalasia may be successfully treated with laparoscopic Heller myotomy and floppy Nissen fundoplication with an acceptable rate of postoperative dysphagia. (J GASTROINTEST SURG 2004;8:18–23) © 2004 The Society for Surgery of the Alimentary Tract

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Achalasia, the most common motility disorder of the esophagus, has an incidence of 0.5 to 1 per 100,000.1–3 The etiology of achalasia may involve autoimmunity and/or viral infection, but this is controversial.4–6 Heller described the successful surgical treatment of chronic cardiospasm in 1913.7 His anterior and posterior cardiomyotomy technique was modified in 1923 by Zaaier8 to include a single anterior myotomy. Since then, standard surgical treatment for achalasia has been this modified Heller myotomy performed through the abdomen or chest.9 Heller myotomy is successful in 85% to 90% of patients with achalasia, which compares favorably with nonoperative treatment.10–13 A minimally invasive approach to Heller myotomy became standard in the 1990s.9,14,15 We began treating achalasia with minimally invasive Heller myotomy in 1992; this is a 10-year retrospective report of 53 consecutive patients treated with this procedure.

PATIENTS AND METHODS

Between January 1992 and August 2002, data were collected on patients who underwent laparoscopic Heller myotomy for esophageal achalasia, under the supervision of one of us (C.T.F.). Routine preoperative evaluation included a history and physical examination, esophagogastroduodenoscopy, manometry, and barium esophagram. Manometry was used...
to confirm the diagnosis of achalasia (i.e., presence of lower esophageal dysfunction). The barium esophagram (real-time fluoroscopic) was used as a semi-quantitative measure of esophageal peristalsis. Traditionally achalasia has been associated with absence of peristalsis in the esophageal body. Because the pathophysiology of achalasia involves the lower esophageal sphincter, however, peristalsis in the esophageal body can still be present, even in advanced cases of achalasia. Mild-to-moderate dysmotility was defined as zero to one peristaltic waves and severe dysmotility was defined as two or more peristaltic waves in the esophageal body during the course of the barium study. This fluoroscopic assessment of esophageal peristalsis provided an indicator of preoperative disease severity.

The technique of laparoscopic Heller myotomy has been well described; briefly, a 6 to 7 cm myotomy on the anterior cardia (extending to the distal esophagus) was performed with an insulated hook electrocautery after mobilization of the gastroesophageal junction. The insulated hook cautery device (product under development) consisted of a conventional hook cautery with insulation covering the outer edge of the hook. This arrangement limits the application of electrical energy to the tissue, which is caught within the inner edge of the hook, minimizing any collateral injury to tissue that may inadvertently contact the outer edge of the hook. The myotomy is performed over the tapered tip of a 50 F lighted esophageal bougie (Fig. 1). After completion of the myotomy, the bougie is advanced so that the 50 F circumference is appropriately placed at the level of the gastroesophageal junction. The fundoplication is then performed with the bougie in proper position.

Either a floppy Nissen or a Toupet (posterior 270-degree) fundoplication was performed after the myotomy; the pertinent details of the Nissen fundoplication are given here. Division of the short gastric vessels is routine. The distal esophagus is mobilized downward so that 4 to 5 cm is intra-abdominal without tension. The esophageal hiatus is closed around the esophagus (with the 50 F bougie in place) using interrupted 2-0 polyester sutures if necessary. The fundus is carefully identified to avoid creating a wrap with the body of the stomach. The wrap is constructed using three 2-0 polyester sutures with the 50 F bougie in place and is 2 cm long when completed. The cephalad wrap stitch anchors the wrap to the diaphragm; none of the stitches incorporate the esophagus. The completed fundoplication is tested for laxity by inserting a 10 mm instrument alongside the esophagus. If the wrap is not loose, it is taken down and reconstructed.

Routine postoperative visits were scheduled at 1 week, 1 month, 3 months, and yearly after surgery; if a visit was not possible, the patient was contacted by phone. Each patient was questioned specifically about dysphagia, heartburn, and regurgitation. Routine postoperative testing included a barium esophagram within the first 3 months after the operation. Postoperative manometry and endoscopy were performed at the discretion of the referring gastroenterologist. Postoperative outcome was scored according to the method of Visick, who described a method of classifying postgastrectomy outcome based on patients’ symptoms. We have modified this scoring system to apply to our series and simply refer to the system as the modified Visick, or m-Visick. An excellent result (m-Visick I) was defined as the patient with rare (once per week or less) to no episodes of dysphagia or gastroesophageal reflux; these patients typically did not take medications for esophageal symptoms. A good outcome (m-Visick II) was defined as occasional episodes (several times per week) of dysphagia and/or reflux that may have required medication. A fair result (m-Visick III) was defined as more frequent symptoms controlled with (daily or nearly-daily) medical treatment. Unsatisfactory outcome and/or treatment failure (m-Visick IV) was defined as symptoms that were poorly controlled with medication and/or any patient undergoing reoperation.

RESULTS

All of the patients (n = 53; 37 men and 16 women; mean age 48 [range 21 to 75] years) in this series had preoperative dysphagia. The diagnosis, evaluation, and any endoscopic therapy for achalasia were performed by each patient’s gastroenterologist prior to the surgical referral. Routine preoperative barium

Fig. 1. Esophagomyotomy with lighted bougie in place.