



Laparoscopic Heller myotomy with Toupet fundoplication for achalasia straightens the esophagus and relieves dysphagia

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Abstract

Background: A standard procedure for the treatment of achalasia remains to be established. We assessed the usefulness of a laparoscopic Heller myotomy with a Toupet fundoplication (LHT).

Methods: LHT was performed in 30 patients (12 men, 18 women; mean age, 41.8 y) who had esophageal achalasia with severe dysphagia. Caution was exercised when the esophagus was pulled downward and straightened. Symptoms and esophageal function were evaluated before and after surgery.

Results: The esophagus was straightened surgically in 22 (88%) of 25 patients with esophageal curvature on preoperative esophagography. The dysphagia score decreased to 1.7 ± 1.2 (mean \pm SD) points from a preoperative value of 10. The lower esophageal sphincter pressure decreased significantly. Two patients (7%) had esophageal diverticula as postoperative sequelae. Pathologic acid reflux was noted in 3 patients (12%).

Conclusions: LHT is a useful procedure for straightening the esophagus, reducing lower esophageal sphincter pressure, and relieving dysphagia in patients with achalasia. © 2006 Excerpta Medica Inc. All rights reserved.

Keywords: Achalasia; Laparoscopic surgery; Heller myotomy; Toupet fundoplication

Esophageal achalasia has been attributed to degeneration of Auerbach's plexus [1,2], but its cause remains unclear. Achalasia is characterized by impaired relaxation of the lower esophageal sphincter (LES). Secondary characteristics include increased LES pressure and the absence of esophageal body peristalsis [3,4]. Consequently, passage through the gastric cardia is impaired, leading to dysphagia. Medical therapy with drugs such as calcium-channel blockers usually cannot control the dysphagia associated with achalasia [4] or achieve cure. In contrast, procedures such as balloon dilatation and Heller myotomy are somewhat effective for dysphagia caused by impaired LES relaxation and increased LES pressure [5–10]. Dilatation typically is performed with the use of a pneumatic dilator under fluoroscopic control [5,6]. At some centers the balloon is introduced directly through an endoscope and the LES is dilated

without fluoroscopic control [7]. However, a major drawback of dilatation is that relief of dysphagia is transient, with many patients requiring repeated dilatation [8]. In contrast, surgical therapy reliably relieves dysphagia and its effect is long lasting. Thus, surgery currently is considered the most effective treatment for achalasia [8,9].

The surgical procedure most commonly used to treat achalasia is the Heller myotomy, in which the muscle layer of the esophagus is incised from the distal esophagus to the proximal stomach [10]. However, 1 study reported that 48% of patients who undergo myotomy alone have gastroesophageal reflux during long-term follow-up evaluation [11]. There is now a general consensus that some type of antireflux procedure should be performed at the time of myotomy to prevent postoperative gastroesophageal reflux. Technically, antireflux procedures are easier to perform via a transabdominal rather than a transthoracic approach. In 1991, Shimi et al [12] introduced the laparoscopic Heller myotomy as a minimally invasive procedure for achalasia. Ancona et al [13] compared a laparoscopic Heller myotomy

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plus Dor fundoplication with the same procedure performed by conventional open surgery. They clearly showed that laparoscopic surgery was less invasive. Subsequently, various modified procedures for laparoscopic Heller myotomy have been reported. Many studies have performed laparoscopic Heller myotomy with an anterior partial fundoplication (Dor fundoplication) as an antireflux procedure [14–16]. However, others have reported that a posterior partial fundoplication (Toupet fundoplication) more effectively controls postoperative symptoms such as dysphagia [17–19]. A standard surgical procedure for the treatment of achalasia, including the use of open or laparoscopic surgery, thus remains a matter of debate. We performed a laparoscopic Heller myotomy with a Toupet fundoplication (LHT) in a series of patients with achalasia to evaluate the safety and usefulness of this procedure.

Methods

Patients

The study group comprised 30 patients (12 men, 18 women; mean age, 41.8 y; range, 23–66 y) with achalasia who underwent LHT at the Department of Surgery at Kitasato University Hospital from October 1997 through October 2003. All patients had severe dysphagia. Achalasia was diagnosed definitively on the basis of impaired relaxation of the LES on esophageal manometry. No patient had a history of surgery, which potentially could cause adhesions in the upper abdomen. Endoscopic dilation was performed before surgery in 20 (67%) of the 30 patients, but symptoms did not resolve or improved only transiently. Surgical treatment thus was performed. The median follow-up period after surgery was 4 years and 3 months (range, 14–86 mo).

Surgical procedure

Patients were given nothing to eat or were given a liquid diet 1 to 2 days before surgery to eliminate solid food residue from the esophagus. Laxatives or enemas were used to promote defecation. Surgery was performed under general anesthesia. As shown in Fig. 1, a total of 5 trocars were placed in the upper abdomen, and pneumoperitoneum was created at a pressure of 8 mm Hg. The region around the abdominal esophagus was stripped to expose the left and right crura of the diaphragm. Then the anterior trunk of the vagal nerve was identified and preserved. Next, the esophagus was raised anteriorly, and a window was made in the posterior aspect of the esophagus to permit passage of the wrap used for fundoplication. The posterior trunk of the vagal nerve was preserved. Two or 3 short gastric vessels were divided with laparoscopic coagulating shears to mobilize the gastric fundus for fundoplication. Next, preparations were made for a Heller myotomy. A piece of cotton tape was passed through the window in the posterior aspect of the esophagus and

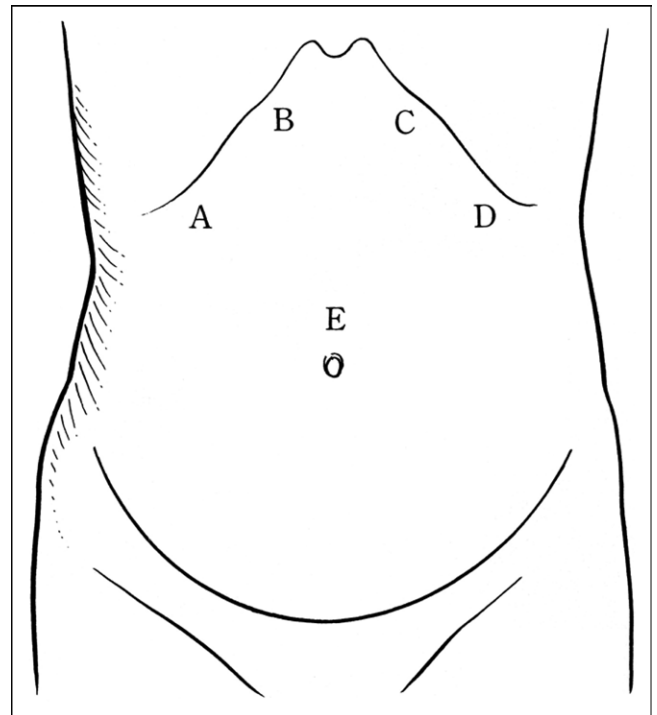


Fig. 1. Positions for placement of trocars for a laparoscopic Heller myotomy with a Toupet fundoplication (LHT). A 5-mm trocar and a snake-shaped retractor for retracting the liver (A), a 5-mm trocar and a forceps held in the surgeon's left hand (B), a 12-mm trocar and a forceps held in the surgeon's right hand (C), a 5-mm trocar and a forceps held by an assistant (D), and a 12-mm trocar and a laparoscope (oblique-viewing rigid scope) (E).

pulled caudally. First, the lower esophagus was pulled downward and a Heller myotomy was performed. While exercising caution not to damage the mucosa, the myotomy was extended 5 to 6 cm proximally from the gastroesophageal junction with the use of a hook cautery in the incision mode or laparoscopic coagulating shears. The myotomy then was extended 2 cm distally from the gastroesophageal junction (Fig. 2). Second, a Toupet fundoplication was performed as an antireflux procedure. The greater curvature of the gastric fundus was grasped with a grasping forceps that had been passed through the window in the posterior aspect of the esophagus. The stomach was pulled to the right along the dorsal aspect of the esophagus, and preparations were made for wrapping. The wrap was confirmed to be mobile and loose, exerting no tension on the cardia. The abdominal esophagus was confirmed to be stripped adequately toward the mediastinum. Then the esophagus was pulled downward and straightened. The wrap was sutured to the right crus of the diaphragm with two 3-0 polypropylene sutures (Prolene; Ethicon, Inc., Somerville, NJ). The wrap on the right side of the esophagus was sutured to the right cut edge of the muscularis with 3 interrupted sutures. The wrap on the left side of the esophagus was sutured to the left cut edge of the muscularis with 3 interrupted sutures. Finally, the wrap was sutured to the left crus of the diaphragm, completing a 270° posterior partial fundoplication (Toupet

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