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Reoperation for dysphagia after cardiomyotomy for achalasia

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Abstract

Background: Although laparoscopic cardiomyotomy is considered to be the treatment of choice for achalasia, there is no consensus about how persistent or recurrent dysphagia after myotomy should be treated. In the current study we evaluated our experience with reoperation following previous cardiomyotomy.
Methods: Between 1992 and 2006, 19 patients underwent re-myotomy: 7 for persistent dysphagia, 12 for recurrent dysphagia. Different operative approaches were used, depending on surgeon's preference and the technique used for the first operation.
Results: The mean interval between the cardiomyotomies was 81 months. In 12 patients, the alternative body cavity to that used for the first operation was used for access in the revision operation. This was associated with a shorter operation time. Mean follow-up after the revision operation was 3.6 years. Mean satisfaction score was 7 (out of 10), and 89% of patients had an improvement in symptoms.
Conclusion: Reoperation for persistent or recurrent achalasia achieves a satisfactory outcome in most patients. Using the alternative body cavity to that used in the original procedure facilitates minimal access techniques, and gives easier access to the operative field.

Keywords: Achalasia; Cardiomyotomy; Reoperation; Operation technique

Achalasia is an uncommon esophageal motility disorder characterized by the inability of the lower esophageal sphincter (LES) to relax, and loss of esophageal body peristalsis. The predominant symptoms of dysphagia are secondary to progressive relative obstruction at the gastroesophageal junction. Treatment is directed at lowering the resistance of the LES. In recent years, minimal access approaches to this problem have become the standard of care. Cardiomyotomy via either the laparoscopic or thoracoscopic approach has been shown to be safe and effective, with the laparoscopic approach being the more popular surgical procedure [1–3].

Although laparoscopic myotomy is effective in reducing symptoms in more than 90% of patients, persistent or recurrent symptoms occur in approximately 10% to 20% of cases [3–5]. An incomplete myotomy, dense adhesions, and fibrosis around the gastroesophageal junction, and the addition of a tight fundoplication to the cardiomyotomy have all been reported as causes of failure [1,4]. Either pneumatic balloon dilation or surgical reoperation can be undertaken for these patients. However, only a few published reports have focused on surgical treatment following a failed cardiomyotomy [6–9]. In this study, we evaluated our experience with reoperation, including a re-myotomy, for persistent or recurrent dysphagia after previous cardiomyotomy.

Patients and Methods

From July 1992 to September 2006, 204 patients underwent a laparoscopic cardiomyotomy for achalasia by surgeons from 2 university teaching hospitals in Adelaide, South Australia (Royal Adelaide Hospital and Flinders Medical Centre). The details for each patient (symptoms, preoperative tests, operation details, and follow-up) have been collected prospectively and recorded in a database. From this database, all patients who underwent a reoperation for persistent or recurrent symptoms were identified and included in this study. The patients who underwent their primary surgery elsewhere, but their redo cardiomyotomy in our departments, were also included in the database.

Patients who underwent their original operation in either of our departments underwent preoperative investigation with

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esophageal manometry, barium swallow x-ray, and upper gastrointestinal endoscopy. The preoperative assessment for patients who underwent their first operation elsewhere depended on the preferences of the original surgeon. Work-up for revision surgery similarly included esophageal manometry, barium swallow x-ray, and upper gastrointestinal endoscopy.

The original surgical procedure was undertaken according to the surgeon's preferred technique. This included open and minimal access techniques via an abdominal or thoracic approach. For the procedures undertaken in our departments from 1992 onwards, a laparoscopic approach for the first operation was routine. When an open operation or a thoracoscopic approach had been undertaken previously, the operation had either been performed before 1992, or it had been performed by another surgeon, with the patient subsequently referred to us for revision surgery. The reoperative strategy was determined by the preferences of the operating surgeon. When a laparoscopic abdominal approach was undertaken, the technique used was similar to that described previously [10]. This entailed access via 5 laparoscopic ports, reversal of any previous fundoplication, mobilization of the anterior and lateral aspects of the distal esophagus (but not the posterior esophagus), and removal of the fat pad overlying the anterior cardia. A remyotomy was performed and extended distally from approximately 5 mm below to 5 to 6 cm above the gastroesophageal junction. The adequacy of the myotomy was then checked visually using a gastroscope. Complete opening of the LES, easy passage of the scope and trans-illumination of the mucosa under laparoscopic/thoracoscopic vision with no evidence of intact circular muscle fibers was considered to indicate an adequate myotomy. Subsequently, an anterior 180° partial fundoplication was performed by suturing the anterior fundus to the left and right sides of the esophagus and the right hiatal pillar, and the fundus to the anterior rim of the hiatus. If an open abdominal approach was required, a similar set of steps were undertaken, with access obtained via an upper midline abdominal incision.

When a thoracoscopic approach was undertaken, the patient was positioned fully prone, and access was obtained via 3 or 4 ports that were inserted between the ribs of the left posterior chest. The lower left lateral and posterior esophagus was then exposed, and the left hiatal pillar was identified. The distal extent of dissection extended through the esophageal hiatus to the posterior aspect of the cardia. If a previous anterior partial fundoplication had been performed, this was left intact, as the dissection was confined to the postero-lateral esophagus, so that dissection was in a tissue plane that had not been dissected previously. The myotomy was then performed. This extended distally from approximately 5 mm below to at least 5 to 6 cm above the gastroesophageal junction, and proximally even as far as the aortic arch if required. If an open thoracic approach was required, a similar set of steps were undertaken but with access obtained via a left postero-lateral thoracotomy incision.

After reoperation, a structured questionnaire was sent out to all patients 3 months, 6 months, and 1 year after the operation, and yearly thereafter. If patients did not return the questionnaire, a second questionnaire was mailed out. If this was not returned, an attempt was made to interview the patient by telephone, using the same questionnaire. Patients were asked to indicate the presence or absence of the following symptoms: dysphagia, painful swallowing, chest pain, heartburn, regurgitation, and cough, and to indicate the frequency of any symptoms (scale = never, once a month, few times a week, and daily). Overall satisfaction with the outcome of the procedure was also determined using a visual analog scale (0 = totally dissatisfied; 10 = totally satisfied). Patients were also asked whether they thought they had made the correct decision to have a revision operation. A 24-hour pH study, esophageal manometry, and endoscopy were not routinely scheduled during follow-up. They were only performed when clinically indicated.

SPSS for Windows (version 12.0.1; SPSS Inc, Chicago, IL) was used for statistical analysis of the data. Student *t* tests and nonparametric tests (Mann-Whitney and Wilcoxon) were used to compare groups, as applicable. Differences were considered to be significant if $P < .05$. The Kaplan-Meier method was used to calculate the chance of recurrent dysphagia after reoperation over time.

Results

Between November 1997 and June 2006, 19 patients underwent a reoperation for achalasia. Eight of these patients were referred to us following primary surgery at another location. There were 6 women and 13 men, and the mean age at surgery was 48 years (range, 22–73). All primary operations involved a single myotomy through either the thorax or abdomen (Table 1). Six of the patients underwent additional endoscopic interventions after their first myotomy operation (5 pneumatic dilatations, 1 botulinum toxin injection), but these procedures failed to relieve symptoms of dysphagia.

Seven of the patients had persistent dysphagia following their primary surgery; 3 had no improvement (all underwent laparoscopic myotomy without anterior fundoplication), and 4 had minor improvement in dysphagia after the first myotomy (all laparoscopic myotomy with anterior fundo-

Table 1
Operative details

Variable	Patients (N)
Primary surgery technique	
Laparoscopic myotomy + anterior fundoplication	10
Laparoscopic myotomy without anterior fundoplication	3
Thoracoscopic myotomy without anterior fundoplication	2
Myotomy via thoracotomy without anterior fundoplication	4
Reoperative surgery technique	
Laparoscopic myotomy + anterior fundoplication	11
Laparoscopic myotomy without anterior fundoplication	1
Myotomy via laparotomy without anterior fundoplication	1
Thoracoscopic myotomy without anterior fundoplication	4
Myotomy via thoracotomy without anterior fundoplication	2
Interval between first and second operation	
Mean 81 mo (range, 1–276 mo)	19
Median 60 mo	19
Operative time	
Mean 104 min (range, 40–180 min)	19
Cause of failure (multiple causes possible)	
Scar tissue at gastroesophageal junction	12
Incomplete myotomy	8
Diverticulum	1
No anatomical abnormality found	3