Long-term Results of Conventional Myotomy in Patients With Achalasia: A Prospective 20-Year Analysis

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Myotomy has proved to be an efficient primary therapy in patients with achalasia, especially in younger patients (<40 years of age). The results of laparoscopic myotomy cannot be finally assessed, on account of the shorter postoperative follow-up. Thus, there are considerable data regarding intermediate-term outcomes after laparoscopic myotomy. The aim of our study was a 20-year analysis of the conventional cardiomyotomy as the underlying basis assessing the results of minimal-invasive surgery. Within 20 years (September 1985 through September 2005), 161 operations for achalasia were performed in our clinic. Enrolled in this study were 108 patients with a conventional, transabdominal myotomy in combination with an anterior semifundoplication (Dor procedure) and a minimal follow-up of 6 months. All patients were prospectively followed and, in addition to radiologic and manometric examinations of the esophagus, the patients were asked for their clinical symptoms by structured interviews in 2-year intervals. The median age at the time of surgery was 44.5 (range, 14–78) years, and 72.2% of the patients were males. The median length of the preoperative symptoms was 3 years (3 months to 50 years), and the postoperative follow-up was 55 (range, 6–206) months. In 70 (64.8%) patients, a pneumatic dilation had been performed. The preoperative Eckardt score of 6 (range, 2–12) could be reduced to 1 (range, 0–4) after myotomy ($P < 0.0001$). Consequently, with 97.2% of all patients, a good-to-excellent result was achieved in the long-term follow-up, corresponding to a clinical stage I-II. Postoperatively, 69 patients (63.9%) gained weight. The radiologically measured maximum diameter of the esophagus decreased from preoperatively 45 (range, 20–75) mm to postoperatively 30 (range, 20–60) mm, while the minimum diameter of the cardia increased from 3.4 (range, 1–10) mm to 10 (range, 5–15) mm. The resting pressure of the lower esophageal sphincter could be reduced from 28.4 (range, 9.4–56.0) mm Hg to 8.6 (range, 3.0–22.5) mm Hg. Conventional myotomy leads in the long run with high efficiency to an improvement of the symptoms evident in achalasia. These results may be regarded as the basis for assessment of the minimal-invasive procedure. (J GASTROINTEST SURG 2006;10:1400–1408)

KEY WORDS: Achalasia, conventional myotomy, prospective 20-year analysis, basis for assessing the laparoscopic procedure

Currently, only two therapeutic options—pneumatic dilation and cardiomyotomy—are known to yield a lasting improvement of symptoms in patients with achalasia. Myotomy has emerged as the primary surgical treatment, particularly in younger patients (<40 years). Although laparoscopic myotomy is increasingly being used, an accurate assessment of the results after this surgical technique is not yet possible, due to the still relatively short follow-up periods. An evaluation of the surgical outcome and postoperative symptoms after laparoscopic myotomy reported in the literature is further complicated by the absence of a uniform scoring system used by different studies to determine the severity degree of achalasia, in particular also with regard to the relationship between the development of postoperative reflux and the achieved resting pressure of the lower esophageal sphincter (LES).

The long-term findings after conventional open cardiomyotomy documented by this study, carried out at a single institution over a 20-year period using a standardized score, as well as radiographic and

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manometric follow-up studies, may therefore be regarded as a basis for the assessment of the minimal invasive procedure.

PATIENTS AND METHODS

Patients

Over a period of 20 years (September 1985 through September 2005), 161 surgical interventions were performed in patients with achalasia at the Department of General and Abdominal Surgery of the Johannes Gutenberg-University Mainz. The diagnosis was established on the basis of manometric, endoscopic, and radiographic findings. Enrolled in the present study, which included a minimum follow-up period of 6 months postoperatively, were 108 patients scheduled to undergo conventional open transabdominal myotomy in combination with an anterior Dor semifundoplication performed by the same surgeon (T.J.). Also considered were re-operations after prior myotomy with an inadequate therapeutic result and persistent high resting pressure of the LES (re-myotomy in 12 patients corresponding to 13 prior interventions: 12 laparoscopic and 1 open procedure). Excluded from the study were patients with esophagectomy for decompensated end-stage achalasia and patients with laparoscopic myotomy. The patients were followed prospectively and queried at 6 months postoperatively as well as at 24-month intervals thereafter by the treating gastroenterologist (V.F.E.) on the basis of a structured interview regarding their clinical symptoms, in addition to undergoing manometric and radiographic follow-up examinations at these time points. The patients were followed until the time of their death or up to the end of the study period; a final checkup was carried out in 2005. At this time, six of the patients were lost to follow-up because they had moved and their place of residence was unknown. Ten patients died during the follow-up period from extraesophageal disorders.

Median age of the patients at the time of operation ranged at 44.5 (range, 14–78) years, and 72.2% of the patients were males.

METHODS

Specific individual patient consent was obtained for this study, for the administration of questionnaires as well as for the technical studies performed preoperatively and postoperatively.

Symptoms

The Eckardt symptom score was used for the documentation of clinical symptoms at the time of the initial examination and in the course of the follow-up period.[1] In addition to the symptom score, the patients were queried postoperatively regarding the presence of gastroesophageal reflux. An endoscopic examination was carried out in patients with clinical suspicion of reflux esophagitis. A symptom score of 3 or fewer points over a minimum period of 6 months was regarded as clinical remission.

Manometric Studies

All patients were examined using a capillary perfusion system according to the method described earlier.[1] Further to the initial resting pressure and relaxation of the LES, contraction amplitudes of the tubular esophageal body were determined after 10 wet swallows. The absence of peristalsis in the esophageal body, a hypertensive, nonrelaxing LES, and simultaneous or repetitive contractions served as the manometric criteria in the diagnosis of achalasia. Patients with constriction or tortuous configuration of the distal esophagus that did not permit insertion of the manometry catheter were excluded from further evaluation, due to the fact that only data on esophageal body motility were available.

Radiographic Studies

Radiographic studies were carried out with the patient in a lying, semiupright, or upright position. Measurements of the maximum diameter of the esophageal body and the narrowest point of the gastroesophageal junction were thus obtained.

Pneumatic Dilation

Pneumatic dilations were performed by the treating gastroenterologist (V.F.E.) using a Browne-McHardy dilator. The balloon tip of the dilator was placed at the gastroesophageal junction and then filled to maximum capacity of the balloon. The pressure thus achieved ranged from 6 to 12 psi and was maintained for approximately 2 minutes, depending upon the tolerance level of the patient.

Surgical Therapy

The surgical procedures (conventional open, transabdominal myotomy in combination with an anterior Dor semifundoplication) were performed in all patients by the same surgeon (T.J.).[2] The minimum length of the myotomy was 6 to 7 cm and extended distally approximately 1.5 to 2 cm onto the anterior gastric wall. The wrap was fixed by a two-row suture line laterally to the myotomy, and its length corresponded to the length of the myotomy in order to cover the whole myotomy.