



Quality of life and predictors of long-term outcome in patients undergoing open Nissen fundoplication for chronic gastroesophageal reflux

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Abstract

Background: Long-term outcome of antireflux operations as well as pre- and postoperative parameters able to predict their clinical results are still controversial. The aim of the present study was to evaluate long-term quality of life of patients undergoing open fundoplication for chronic GERD and to investigate pre- and early postoperative functional parameters possibly related to persistence or recurrence of symptoms.

Methods: A cohort of 25 patients who underwent open Nissen fundoplications was reviewed for an evaluation of long-term residual symptoms and quality of life at an average follow-up of more than 10 years. Clinical evaluation was performed by using a symptom-specific score (DeMeester's score), 3 health-related quality of life scores, a GERD-specific (GERD-HRQL score) score, and 2 generic scores (SF-36) evaluating physical and psychological well-being. Subjective satisfaction grade of the patients was also investigated. In addition, a univariate analysis is provided, according to the long-term presence or absence of residual symptoms (120.6-month follow-up), taking into account pre- and postoperative (6-month follow-up) data of endoscopy, 24-hour pH monitoring, stationary manometry, and gastric-emptying test.

Results: Persistence or recurrence of GERD-specific symptoms (heartburn and regurgitation) were reported by 8 patients (32%); 2 patients (8%) were reoperated on for persistent dysphagia, whereas 17 patients (68%) were asymptomatic. GERD-HRQL and SF-36 scores displayed significant postoperative improvement, which continued in long-term follow-up. Twenty patients (80%) had repeat fundoplication. Among tested parameters, only postoperative mean supine esophageal clearance and gastric emptying half-time, although on average improved significantly after the antireflux procedure, differed significantly in long-term asymptomatic and symptomatic subgroups. In long-term asymptomatic patients, postoperative (6 month) mean supine esophageal clearance was 0.8 ± 0.3 minutes ($P = .011$) and 2.4 ± 0.2 minutes in symptomatic patients. Postoperative (6 month) mean gastric emptying half-time of long-term asymptomatic patients was 93.3 ± 8.9 minutes, whereas in symptomatic patients it was 127.5 ± 14.3 minutes ($P = .047$).

Conclusions: Patients undergoing Nissen fundoplication had a satisfactory long-term quality of life. Clinical results did not deteriorate over time and showed to be related to postoperative esophageal clearance and gastric emptying, which could be regarded as early postoperative predictors of long-term clinical outcome. © 2006 Excerpta Medica Inc. All rights reserved.

Keywords: Fundoplication; Quality of life; Long-term outcome

Results of endoscopy, esophageal manometry, and 24-hour pH monitoring indicate that both laparoscopic and open Nissen fundoplication are able to control chronic gastroesophageal reflux [1–3]. Nonetheless, a significant proportion of gastroesophageal reflux disease (GERD) patients remain symptomatic or develop new symptoms after this antireflux operation whose clinical results and long-term effectiveness are not yet entirely predictable [4].

Perhaps, much depends on the way postsurgical results are viewed and what parameters are used as predictors of long-term outcome. Recently, quality of life scores have taken a prominent role in evaluating antireflux procedures [5–7], even though they have shown to be less sensitive than traditional symptom scores in measuring the effects of treatment in GERD patients [8]. Some patterns of esophagogastric motility, even if commonly missed or underestimated in pre- and postoperative evaluation, could be of value in predicting long-term persistence or recurrence of GERD symptoms.

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The primary aim of the present study was to evaluate long-term quality of life of patients who have undergone Nissen fundoplication and to investigate whether and what pre- and early postoperative functional parameters were related to long-term persistence or recurrence of symptoms.

Patients and Methods

Between January 1987 and December 1994, 258 patients complaining of GERD symptoms were referred to our institution. Among them, 40 (15.5%) underwent open Nissen fundoplication. We reviewed their charts in order to reconsider pre- and early postoperative data and to invite them for a clinical evaluation focused on residual symptoms and quality of life.

Study group

Out of the 40 patients we contacted via telephone, 25 (62.5%) were available for follow-up (study group). Among the 15 patients who were not available for the study, 4 were not found, 10 refused to get hospitalized for reasons unrelated to their health, and 1 died from causes unrelated to either GERD or surgical treatment. Characteristics of the study group and patients not available for the study are reported in Table 1.

Pre-, postoperative, and long-term clinical assessments

Clinical evaluation comprised preoperative, postoperative (6-month follow-up), and long-term (120.6-month follow-up) data collection. Reflux symptoms were scored according to DeMeester et al [8]. Quality of life investigations included GERD–health-related quality of life (HRQL) score [7] and SF-36 evaluation of physical (SF36-ISF) and psychological (SF36-ISM) well-being [9]. To reconstruct preoperative and postoperative GERD-HRQL and SF36 scores, patients were questioned and their charts carefully reviewed. Long-term satisfaction of the patients was also investigated by using a grading scale (very satisfied, satisfied, indifferent, dissatisfied, and very dissatisfied). Patients were asked whether they would consider fundoplication again as a comprehensive judgement of the previous surgical treatment and its long-term effects.

Pre- and postoperative esophageal 24-hour pH recording

According to a technique previously described by Johnson and DeMeester [10], 24-hour esophageal pH-metry was performed in all patients before and 6 months after the operation. With a 24-hour pharmacologic washout, patients were admitted to our ward, but neither restriction nor standardization of the in-hospital diet was adopted. We used invariantly glass electrodes (Ingold, Zurich, Switzerland), calibrated in pH 1 and 7 solutions (Merk, Darmstadt, Germany) and introduced through the nose under local anesthesia (lidocaine spray 15%).

Positioning of the probe at 5 cm above the lower esophageal sphincter (LES) was usually verified through the step-up technique under fluoroscopic control [11]. Manometric detection of the LES was necessary in a few cases. Measurements of pH were stored by a portable data logger (Proxima, Synectics, Stockholm, Sweden) and elaborated by a computerized program (Gastrosoft, Inc, Irving, TX).

Among the pH-metric measures, total esophageal acid exposure time up to 6% had a determining role in defining pathologic reflux. As a special parameter, the so-called supine mean esophageal clearance (SMEC) was also taken into account, calculated by the ratio between total supine reflux time and total number of supine reflux episodes. Its value, expressing mean duration (minutes) of all reflux episodes occurring in 24 hours is independent from the number of reflux episodes and not affected by variability of upright and supine position times.

Pre- and postoperative esophageal manometry

Stationary esophageal manometry, after 24-hour pharmacologic washout, was performed with the patients in supine position, before the operation and 6 months after the operation. We used a 4-port catheter (internal diameter 0.8 mm) with openings arranged 5 cm apart introduced through the mouth. A water-infusion system according to Arndorfer et al [12] was calibrated at 0.5 mL/min and connected to external pressure transducers (Statham P23 Db; Statham Gould, Valley View, OH). After the catheter entered the stomach, LES was identified through the station–pull-through technique [13], with catheter withdrawals of 0.5 cm every 5 seconds. The data were recorded with a port positioned into the stomach, a port positioned at the respiratory inversion point of the LES, and 2 ports at 5 and 10 cm above LES, respectively. Patients were given 10 boluses of 5 mL of water every 5 seconds. A polygraphic registration of data (Sensormedics, San Diego, CA) was used.

Table 1
Patients' characteristics

	Evaluated (study group)	Not evaluated
N	25 (62.5%)	15 (37.5%)
Male/female ratio	0.7	0.6
Mean age at operation	43.8 ± 15.1	45.2 ± 10.5
Mean age at long-term follow-up	54.3 ± 15.4	58.7 ± 10.2
Associated pathologies (%)		
Sliding hernia	16 (64)	7 (46.6)
Duodenal ulcer	2 (8)	1 (6.6)
Barrett's esophagus	1 (4)	—
Cholelithiasis	3 (12)	2 (13.3)
Wilkie's syndrome	1 (4)	—
Associated surgical procedures (%)		
Cholecystectomy	3 (12)	2 (13.3)
Selective vagotomy plus pyloroplasty	2 (8)	1 (6.6)
Duodeno-jejunostomy	1 (4)	—
Time from the operation (mo)	120.6 (87–180)	110.2 (80–190)

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