Alimentary satisfaction, gastrointestinal symptoms, and quality of life 10 or more years after esophagectomy with gastric pull-up

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Objective: The aim of this study was to evaluate alimentary satisfaction, gastrointestinal symptoms, and quality of life ≥10 years after esophagectomy with gastric pull-up.

Methods: Patients who had undergone esophagectomy with gastric pull-up before 2003 were interviewed regarding their alimentary function and completed the Gastrointestinal Quality of Life and RAND short-form, 36-item, questionnaires.

Results: We identified 67 long-term survivors after esophagectomy and gastric pull-up. Of these, 40 were located, and all agreed to participate. The median age was 75 years, and the median follow-up period was 12 years (interquartile range, 10-19). Most patients (88%) had no dysphagia, 90% were able to eat ≥3 meals/day, and 93% finished ≥50% of a typical meal. The mean alimentary comfort rating was 9 of 10. Dumping, diarrhea ≥3 times/day, or regurgitation occurred in 33% of patients. Six patients (15%) had aspiration episodes requiring hospitalization. The median weight loss after surgery was 26 lbs, and the current median body mass index was 25 kg/m^2. Only 2 patients were underweight (body mass index, <18.5 kg/m^2). The median Gastrointestinal Quality of Life score was 2.9 of 4. The RAND scores were at the population mean in 1 category (physical function) and above the normal mean in the remaining 7 categories.

Conclusions: Long-term nutritional status, quality of life, and satisfaction with eating were excellent after esophagectomy with gastric pull-up. Gastrointestinal side effects were common, but serious complications such as aspiration were uncommon. Pessimism regarding the long-term ability to enjoy a meal and live with a good quality of life after esophagectomy is unwarranted. (J Thorac Cardiovasc Surg 2014;147:909-14)

Esophageal cancer is a lethal disease, which often leads to pessimism on the part of treating physicians and patients.[1] Esophagectomy with gastric pull-up, either alone for early disease or after neoadjuvant therapy for patients with more extensive locoregional disease, is potentially curative. However, the morbidity of the procedure and the uncertainty about postesophagectomy quality of life has led patients to consider alternative options. Esophagectomy has been shown to have a significant negative effect on physical fitness and health-related quality of life (HRQL), with only minor recovery 6 months to 3 years after the procedure.[2-6] Furthermore, dysphagia, anastomotic strictures, dumping, and diarrhea have been common early after esophagectomy.[7] Little is known, however, about the recovery of gastrointestinal function and long-term quality of life after esophagectomy. The aim of the present study was to evaluate alimentary satisfaction, gastrointestinal symptoms, and quality of life ≥10 years after esophagectomy with gastric pull-up.

METHODS

Patients

A retrospective chart review was performed to identify all patients who had undergone esophagectomy with gastric pull-up from 1993 to 2002. The Social Security Death Index website was queried to identify the surviving patients. An exhaustive search was performed to locate the patients' current contact information. The patients were contacted by telephone and interviewed regarding their alimentary satisfaction and reflux symptoms. They were also asked to complete the Gastrointestinal Quality of Life Index (GIQLI) and RAND Medical Outcomes Study short-form, 36-item (SF-36) questionnaire. The date and results of their last endoscopy (if not done at our center) were requested. The demographic and operative information, symptoms (past and present), acid suppression medication usage, endoscopic findings, and quality of life information were recorded in a database. The institutional review board of the University of Southern California approved this study.

Assessment of Alimentary Satisfaction and Gastrointestinal Symptoms

Telephone interviews were conducted by a single investigator using a standard format (Table 1). The patients were asked to rate their overall alimentary tract comfort on a scale from 0 to 10. A score of 0 indicated that their current alimentary function was intolerable, and a score of 10 indicated that they were completely satisfied and could not ask for anything better.

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Abbreviations and Acronyms
GIQLI = Gastrointestinal Quality of Life Index
HRQL = health-related quality of life
IQR = interquartile range
SF-36 = RAND Medical Outcomes Study short-form, 36-item

Assessment of Quality of Life

The GIQLI is a measure of the quality of life for patients with gastrointestinal disease.[8] It is a validated 36-item survey. Each question is scored from 0 to 4, with higher scores denoting better function. The survey includes 5 domains of questions (core symptoms, physical dysfunction, psychological dysfunction, social dysfunction, and disease-specific dysfunction). The score for each domain is the patient's average score for those questions. The overall score ranges from 0 to 144.

The SF-36 was designed to characterize a person's view of their health and quality of life.[9] It evaluates 8 areas, including physical functioning, bodily pain, limitations due to physical health problems, limitations due to personal or emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions. This version has been adapted from the Medical Outcome Study and is published by RAND. Items are scored on a scale from 0 to 100, with higher scores denoting better function. The scores in the same areas are then averaged to create 8 scale scores.

Every effort was made to obtain complete information for each question. When the questionnaires were incomplete, the patients were interviewed again in an attempt to acquire the missing responses. The scores from the GIQLI and RAND SF-36 were compared with published normal US population values.[8-10]

Statistical Analysis

The data were analyzed using the mean and median values. The median values are reported with the interquartile range (IQR), and the mean values are reported with the range and/or standard deviation. The Pearson product-moment correlation coefficient was calculated to analyze the temporal relationship between the postoperative duration, symptomatic outcome, and quality of life. In the event that the information for a question was unavailable, the missing responses were omitted, and the weighting for that questionnaire was adjusted.

RESULTS

A total of 398 patients had undergone esophagectomy with gastric pull-up during the study period. Of these, 67 were confirmed to be alive, and 40 were located (36 men and 4 women). All 40 agreed to participate. The median age at esophagectomy was 61 years (IQR, 48-81), and the current median age at the follow-up point was 75 years (IQR, 58-92). The indication for esophagectomy was cancer in 39 patients and benign disease in 1. Of the 40 patients, 8 had undergone neoadjuvant chemotherapy without radiotherapy and 3 patients had undergone adjuvant chemotherapy. The final pathologic stage for the 40 patients is listed in Table 2. The esophagectomy approach was transthoracic en bloc in 24 and transhiatal in 16 patients. In all patients, the graft was positioned in the posterior mediastinum, and a cervical esophagogastrostomy constructed. A pyloroplasty was performed in all but 1 patient, who underwent vagal-sparing esophagectomy.

The median follow-up period was 12 years (IQR, 10-19). Most patients (88%) had no dysphagia, 90% were able to eat ≥3 meals/day, and 93% could finish ≥50% of a typical meal (Figure 1). The mean rating of alimentary comfort was 9 on a 10-point scale (range, 5.5-10); 38% were completely satisfied with a score of 10 of 10, and 2 rated their satisfaction at 5.5 (Table 3). All patients had made dietary modifications to avoid problematic foods. The most commonly avoided food was sweet dairy products such as ice cream and milkshakes. The most common gastrointestinal symptoms were early satiety (50%), dumping (33%), diarrhea >3 times/day (30%), and regurgitation (30%). Chronic cough was present in 10%, and 25% had intermittent episodes of dyspnea. Detailed information on dumping symptoms and acid suppression medication use was available from 31 patients. The frequency of dumping is shown in Figure 2. Acid suppression medications, most commonly a proton pump inhibitor, were used by 74% of the patients.

All but 1 patient slept on a wedge pillow or hospital bed. Most patients, on occasion, had an episode of nocturnal aspiration after they had slid down or rolled off their wedge pillow. These events had often been followed by 48 hours of flu-like symptoms. Aspiration requiring hospitalization occurred in 6 patients (15%), and all had ≥3 hospitalizations in the past year alone. At least 1 dilatation for an anastomotic stricture was necessary in 12 patients (30%), but no patient required dilatation at the follow-up point. The median postoperative weight loss was 26 lbs. The median body mass index (BMI) at the time of surgery was 28 kg/m^2, and the median BMI at follow-up was 25 kg/m^2. All but 2 patients weighed less than their preoperative weight, but only 2 patients were underweight by World Health Organization standards (BMI, <18.5 kg/m^2). The percentage of patients who were overweight decreased after surgery, with 54% of patients in the normal BMI range compared with 14% preoperatively. The BMI distribution is listed in Table 4. No patient required supplemental tube feeding or was using nutritional supplementation to maintain their weight at the follow-up point.

The median and mean cumulative GIQLI score for all domains was 104 (IQR, 76.5-120) and 88.7 ± 41.1, respectively. The GIQLI subdomain scores are shown in Figure 3. The highest median scores were for social functioning (3.8) and gastrointestinal disease-specific symptoms (3.3), and the lowest score was for physical functioning (1.9).

The SF-36 quality of life scores were at the population mean for 1 category (physical function) and were greater than the mean for the remaining 7 (role limitation due to physical health, role limitation due to emotional health, energy/fatigue, emotional well-being, social functioning, pain, and general health; Figure 4). No relationship was