



The psychological impact of symptoms related to esophagogastric cancer resection presenting in primary care: A national linked database study

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Abstract

Background: The objective was to evaluate incidence, risk factors and impact of postoperative symptoms following esophagogastric cancer resection in primary care.

Methods: Patients undergoing esophagogastric resection for cancer from 1998 to 2010 with linked records in Clinical Practice Research Data-link, Hospital Episodes Statistics and Office of National Statistics databases were studied. The recording of codes for reflux, dysphagia, dyspepsia, nausea, vomiting, dumping, diarrhea, steatorrhea, appetite loss, weight loss, pain and fatigue were identified up to 12 months postoperatively. Psychiatric morbidity was also examined and its risk evaluated by logistic regression analysis.

Results: Overall, 58.6% (1029/1755) of patients were alive 2 years after surgery. Of these, 41.1% had recorded postoperative symptoms. Reflux, dysphagia, dyspepsia and pain were more frequent following esophagectomy compared with gastrectomy ($p < 0.05$). Complications (OR = 1.40 95%CI 1.00–1.95) and surgical procedure predicted postoperative symptoms ($p < 0.05$). When compared with partial gastrectomy, esophagectomy (OR = 2.03 95%CI 1.26–3.27), total gastrectomy (OR = 2.44 95%CI 1.57–3.79) and esophagogastric resection (OR = 2.66 95%CI 1.85–2.86) were associated with postoperative symptoms ($p < 0.05$). The majority of patients with postoperative psychiatric morbidity had depression or anxiety (98%). Predictors of postoperative depression/anxiety included younger age (OR = 0.97 95%CI 0.96–0.99), complications (OR = 2.40 95%CI 1.51–3.83), psychiatric history (OR = 6.73 95%CI 4.25–10.64) and postoperative symptoms (OR = 1.78 95%CI 1.17–2.71).

Conclusions: Over 40% of patients had symptoms related to esophagogastric cancer resection recorded in primary care, and were associated with an increase in postoperative depression and anxiety.

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Keywords: Esophageal cancer; Gastric cancer; Postoperative symptoms; Primary care

Introduction

In long-term survivors of esophagogastric cancer resection, most aspects of health-related quality of life are substantially worse 6 months after surgery, with no

improvement up to 3 years postoperatively.¹ Patients report significantly poor role and social function, and problems associated with fatigue, diarrhea, appetite loss, nausea and vomiting when compared with age and sex-matched reference populations.²

There is currently no evidence-base to determine best practice for follow-up of patients after esophagogastric cancer resection. Primary care practitioners are often the point of contact when postoperative symptoms persist or arise in the community after hospital discharge. However, the number of patients with postoperative symptoms treated in primary care is not quantified. Understanding the impact of

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esophagogastric cancer resection and the effects of long-term postoperative symptoms is critical for survivorship programs to develop appropriate management strategies with the aim of improving patient quality of life and experience.

Patient-level linkage of routinely collected primary care and hospital administrative data allows for the longitudinal evaluation of morbidity related to hospital treatment encountered in the community.^{3,4} The objectives of this analysis of a large national series of patients undergoing esophagogastric cancer resection were to:

- i) Evaluate the number of patients with symptoms related to surgery who present to primary care,
- ii) Identify predictors for the development of postoperative symptoms, and
- iii) Study the psychological impact of postoperative symptoms on patients by assessing their effects on psychiatric morbidity as a surrogate measure within the dataset of health-related quality of life.

Methods

Database linkage

We have previously described our method of evaluating outcome from surgery using linked primary care and hospital databases.⁵ Briefly, the Clinical Practice Research Datalink (CPRD) contains primary care electronic health records for 8.5% of the UK population. About half of all CPRD practices are linked to inpatient Hospital Episodes Statistics (HES) data, the national hospital administrative database for England. Additionally, 95% of practices also have linkage to death certificate information in the Office of National Statistics (ONS) database. Each patient is given a unique identifier, which allows all episodes within CPRD or HES to be captured throughout the study period.

Only practices with patient-level linkage of CPRD, HES and ONS were included in the study. Database coverage was from 1st April 1997 to 31st March 2012, to allow for the evaluation of esophagogastric cancer resection performed between 1st April 1998 and 31st March 2010, with clinical data available from 12 months preoperatively to identify preoperative comorbidity and 24 months postoperatively to allow for evaluation of patients who were alive at 2 years after surgery. In this group, postoperative symptoms and psychiatric morbidity were identified up to 12 months after surgery.

Study population

Patients who underwent esophagectomy, gastrectomy or a combination of both for primary esophagogastric malignancy were identified in HES as previously described.⁶ Patients over 18 years of age were included if they were coded

for surgical resection by the Classification of Interventions and Procedures from the Office of Population Census and Surveys (OPCS) version 4.4 (OPCS). Procedures were categorized as partial gastrectomy (G28), total gastrectomy (G27), esophagectomy (G02 for total esophagectomy, G03 for partial esophagectomy) or esophagogastrectomy (G01). The latter two procedures (esophagectomy and esophagogastrectomy) were considered as esophagectomy when comparing esophagectomy with gastrectomy. Additionally, only patients in whom the index episode also specified a designated cancer diagnosis coded for by the International Classification of Diseases version 10 (ICD-10) were included in the study (C15 for malignant neoplasms of the esophagus and C16 for malignant neoplasms of the stomach). All codes were independently verified at a local institutional level. National Health Service Health Research Authority (NRES committee London – Westminster) approval was gained for this study (13/LO/1374).

Patient characteristics

Age, gender and comorbidities were derived from HES. Socioeconomic status was derived for each small geographical area from the Index of Multiple Deprivation. The Charlson score was used to determine the level of comorbidity and derived from ICD-10 codes in HES recorded during admission for the index procedure and in previous admissions to hospital.⁷ Weightings for comorbidities were adopted from previously published study of standardized mortality ratios in HES.⁸

Postoperative symptoms

Patients with at least one recording of a symptom in primary care data from the day after surgery to 12 months after surgery were considered to have postoperative symptoms. Postoperative symptoms related to the gastrointestinal tract including reflux, dysphagia, dyspepsia, nausea, vomiting, dumping, steatorrhea, diarrhea, weight loss and loss of appetite were coded in CPRD by medcodes ([Supplementary Table](#)). Medcodes are codes based on the Read clinical coding system for primary care electronic health records developed in the UK, which includes codes for symptoms.⁹ Additionally, general symptoms related to surgery including pain and fatigue were measured in primary care data. It was possible to identify pain that was specifically related to surgery (coded as postoperative) through coding alone. For other symptoms, coding did not specify whether symptoms were related to surgery. The association between surgery and symptoms recorded after the day of surgery was therefore assumed through their chronological relationship. The recording of symptoms signified the presentation of patients to primary care with poor postoperative functional status. The longitudinal nature of CPRD data allowed for the evaluation of the time to presentation of postoperative symptoms in primary care.

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