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Paper

Surgical therapy of peptic ulcers in the 21st century: more common than you think

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Abstract

Background: The frequency of surgery for peptic ulcer disease (PUD) has decreased dramatically during the last 3 decades. The purpose of this study was to characterize the Veteran patients undergoing surgery for peptic ulcer disease in a modern series and to examine the effect of *H. plylori* status on surgical outcome and recurrence of PUD.

Methods: An Institutional Review Board–approved retrospective review of all patients undergoing operations for peptic ulcer disease during a 66-month period at a single Veterans Administration medical center was performed. Patient records were examined for demographics, medication use, *Helicobacter pylori* status, operative details, and surgical outcomes.

Results: From January 1999 to July 2004, 43 of 128 upper gastrointestinal operations were performed for PUD. Thirty-five operations (81%) were performed for bleeding or perforated ulcers, and 26 (60%) patients had no history of PUD. The mean age was 60 years, and 66% of patients were American Society of Anesthesiologists (ASA) class 3 or 4; 47% were *Helicobacter pylori* positive, and 54% used nonsteroidal anti-inflammatory (NSAID) medication. Hospital mortality was 23%. By univariate analysis, emergent surgery, higher ASA status, *H. pylori* status, and absence of a history of ulcer disease were risk factors for mortality ($P < .05$). Only 36% underwent definitive ulcer surgery. With a median follow-up of 18 months, there has been only 1 single recurrence (3%).

Conclusions: PUD still accounts for 33% of all gastroduodenal surgery performed in a Veterans Administration medical center. The majority of these operations are emergent operations in high-risk patients. In this era of effective acid suppression and *H. pylori* treatment, definitive ulcer surgery in the emergent setting may not be necessary. © 2005 Excerpta Medica Inc. All rights reserved.

Keywords: *Helicobacter pylori*; Nonsteroidal anti-inflammatory drugs; Peptic ulcer disease; Surgery

Peptic ulcer disease (PUD) was the major indication for gastroduodenal surgery during the 1950s though the 1970s. However, by the 1980s, the number of operations performed for PUD began to decrease substantially. Multiple investigators have shown 50% to 80% decreases in operations for PUD in the United States and Europe during this time period [1–4]. This decrease in surgical procedures has occurred primarily as a result of the near-complete disappearance of elective surgery for PUD [2]. In fact, during the last 10 to 15 years, there has been evidence that the number of perforated and bleeding ulcers may be increasing [5].

These changes in the epidemiology of complicated PUD are caused by a number of forces. The development of effective gastric acid–reducing medication first with H_2-receptor antagonists in the 1970s, and then proton-pump inhibitors in the 1980s have been linked by others to a rapid decrease in the need for ulcer surgery [6,7]. Another medical development decreasing the prevalence of PUD has been our increased understanding of the role of *Helicobacter pylori* infestation on the pathogenesis and recurrence of peptic ulceration [8]. The forces counteracting the general decrease in complicated PUD are the ageing of the population and the increased use of aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs) in western populations. The increased incidence of PUD and its complications with age has been well documented and has been suggested as one of

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Table 1
Patient characteristics and comorbidities

Patient No.	43
Age (y) (mean ± SD)	60 ± 11.3
ASA status (Mean ± SD)	3 ± 0.8
Duration of follow-up (median, range)	18 months (0–60)
Comorbidities	
% chronic obstructive pulmonary disease	21 (9)
% coronary artery disease	30 (13)
% diabetes	19 (8)
% chronic kidney disease (Cr >2.0)	14 (6)
% tobacco use	86 (37)

ASA = American Society of Anesthesiologists; Cr = creatinine.

the reasons for the increase in ulcer bleeding and perforation noted during the last decade [5]. In addition, NSAID use has been increasing in developed countries and has been strongly linked to the development of ulcers and their complications [9].

Patients served by the department of Veterans Affairs hospitals are predominantly elderly men with a significant burden of chronic medical illness. The purpose of this study was to examine the characteristics of patients in this high-risk ulcer population undergoing surgery in a modern series to identify predictors of surgical mortality in patients undergoing ulcer surgery and to examine the effects of *H. pylori* status and NSAID use on ulcer recurrence after surgery.

Patients and Methods

A retrospective, Institutional Review Board-approved, single Veterans Administration (VA) tertiary care institution–based study was performed to identify all patients who had undergone gastroduodenal operations between January 1, 1999, and June 30, 2004. The surgical package was searched for all patients undergoing operations with CPT codes for gastroduodenal procedures: 43501, 43610-1, 43621, 43631-3, 43635, 43640-1, 43810, 43820, 43840, 43870, and 44602-3. The medical records of all identified patients, including surgical pathology records, were reviewed to identify those patients for treatment of peptic ulcer. This search yielded 128 patients, 43 of whom had a diagnosis of PUD, 3 who had a diagnosis of perforated gastric cancer, and 82 with other benign and malignant diagnoses. The 43 patients with the diagnosis of PUD formed the study population.

Additional patient information that was collected for analysis included age, indication for surgery, operation performed, comorbid medical conditions, ulcer risk factors (personal history of PUD, arthritis, and *H. pylori* status), use of ulcer-predisposing medications, use of proton-pump inhibitors or H_2-receptor antagonists, history of tobacco and/or alcohol use, hospital length of stay, duration of follow-up, ulcer recurrence, and whether the patient was alive at the end of the study period.

The following definitions were used in this study: Chronic kidney disease was defined as serum creatinine >2.0 mg/dL; NSAID use included daily intake of >81 mg aspirin or nonaspirin NSAID; ulcer recurrence was defined as a visit to a gastroenterology or surgical clinic with signs and symptoms of PUD or evidence of a peptic ulcer on upper gastrointestinal endoscopy, on upper gastrointestinal contrast study, or at operation.

In addition to descriptive statistics, univariate analyses were also performed. To compare differences in frequency of categorical variable between patients who died of ulcer disease and survivors, Pearson Chi-square was performed. Continuous variables were compared using the Student *t* test. Multivariate comparisons were not performed because of the small sample size. All statistical analysis was performed using SPSS 11.0 software (SPSS, Chicago, IL).

Results

During the 66-month study period, approximately 8 operations/y were performed for PUD, with a low of 3 operations in 2000 and a high of 11 operations in 2001. More than 80% of the operations were performed in the emergent or urgent setting for either perforation of a peptic ulcer or for a bleeding ulcer that could not be controlled on upper GI therapeutic endoscopy. Importantly, the operations for PUD represented approximately one third of all of gastroduodenal operations performed at our institution during the study period.

The mean age of patients operated on for PUD was 60 years, and the majority of the patients had a significant burden of comorbid disease (Table 1). The mean American Society of Anesthesiologists (ASA) class of patients undergoing operation was 3, and 66% of the patients were either ASA class 3 or 4. Only 40% of the patients had a documented history of peptic ulcer disease before their index operation, but almost all of the patients had multiple risk factors for PUD (Table 2). Eighty-six percent of patients were active smokers, and 67% were regular alcohol consumers. Forty-seven percent of patients were documented to be *H. pylori* positive. *H. pylori* status was unknown in 19% of the patients, generally because they died in the perioperative period before their *H. pylori* status could be determined. A majority of the patients, 53%, were regular users

Table 2
Ulcer risk factors

% with history of arthritis (n)	28 (12)
% with history of PU (n)	40 (17)
% *H. pylori* positive (n)	47 (20)
% with NSAID use at presentation (%)	54 (23)
% with tobacco use	86 (37)
% with alcohol use	67 (29)

NSAID = nonsteroidal anti-inflammatory; PUD = peptic ulcer disease.

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