

Mortality and morbidity risk factors in the surgery of peptic ulcer perforation

Peptik ülser perforasyonlarında mortalite ve morbidite için risk faktörleri

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Abstract

Aim. The efficacy of modern medical treatment has played an important role in decreased incidence and differentiation of the epidemiology of ulcer perforation. But a similar rate of differentiation in mortality and morbidity was not observed. The effect of more simple surgical procedures and the factors associated with mortality and morbidity in ulcer perforation, were the subject of this study. **Methods.** The files of 126 patients who were operated due to peptic ulcer perforation between 1998 and 2005 were analyzed in retrospective manner. Patients were divided into two groups as primary repair group and definitive surgery group. Factors affecting the choice of surgical treatment, perforation etiology, predisposing factors associated with mortality and morbidity rate were evaluated. **Results.** A hundred and fourteen 114 (90.5%) patients were male and 12 (9.5%) of them were female. The mean age was 50.7 (\pm 13.5). Primary repair group included 103 (81.7%) patients whereas definitive surgery group included 23 (18.3%) patients. The overall mortality and morbidity rates in primary repair group and definitive surgery were, 3.9% and 15% respectively. **Conclusion.** Primary repair has re-gained popularity in time. The factors associated with mortality and morbidity were age, concomitant disease, and delayed admission.

Keywords: Urgent surgery, peptic ulcer perforation, acute abdominal pain

Özet

Amaç. Modern tedavi ile medikal peptik ülser perforasyonu insidansının azalmasına ve ülser perforasyonu epidemiyolojisinin değişmesine karşın, perforasyonlara bağlı ölüm oranlarında benzer azalma sağlanamamıştır. Bu çalışmada peptik ülser perforasyonunda gözlenen morbidite ve mortalite ile ilişkili faktörler ve daha basit cerrahi işlemlerin rolü irdelenmiştir. **Yöntem.** Ocak 1998-Aralık 2005 yılları arasında peptik ülser perforasyonu nedeniyle opere edilen 126 hasta, arşiv kayıtlarından retrospektif olarak incelendi. Hastalar, primer tamir ve kesin cerrahi uygulananlar olarak ikiye ayrıldı. Uygulanacak cerrahi tipini etkileyen faktörler, perforasyon etyolojisi, mortalite ve morbiditeyi etkileyen faktörler değerlendirildi. **Bulgular.** Hastaların 114 (%90,5)'ü erkek, 12 (%9,5)'si kadın olup yaş ortalaması 50,7 (\pm 13,5) idi. Hastaların 103 (%81,7)'üne primer sütür, 23 (%18,3)'üne kesin ülser cerrahisi uygulandı. Genel mortalite oranı %3,9, genel morbidite oranı ise %15 idi. Hastaların mortalite ve morbidite ile ilişkili risk faktörlerinin yaş (>60), yandaş hastalığın varlığı ve hastaneye geç başvuru olduğu saptandı **Sonuç.** Peptik ülser perforasyonu cerrahisinde primer tamir zamanla yeniden popüler olmuştur. Hastaneye geç başvuru, yaş, eşlik eden hastalık ve operasyon tipi morbidite ve mortalite ile ilişkili faktörler olarak bulundu.

Anahtar sözcükler: Acil cerrahi, peptik ülser perforasyonu, akut karın ağrısı

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Introduction

The therapeutic options in peptic ulcer disease (PUD), which includes ulcers of the duodenum (DU) and stomach (GU) continues to ameliorate due to the progress in surgical techniques, microbiology, and drug therapy. Not only the proton pump inhibitors and H₂ receptor antagonists entry into clinical use but also the recognition of *Helicobacter pylori* have been caused a dramatic improvement in the medical management of uncomplicated peptic ulcer. To be quite frank about it, surgical approach to uncomplicated PUD has basically disappeared. However, there is a still debate in proper management of complicated PUD and, in particular, those that are perforated [1]. The choice of surgical method may vary in Peptic ulcer perforation (PUP). Peptic ulcer surgery (PUS) has been started by using the same procedure, which is developed and applied for the treatment of gastric cancer by Billroth, and, with the more understanding of the physiology of the digestive system has undergone a big change [2]. Clinical symptoms are always the same, but the other features of the disease and the affected age groups until the present day has changed quite. Nowadays, Primary Suturing and Omental Patch is a frequently selected procedure for PUP [3]. The definitive surgical procedures have undergone many changes in the last half century, and the indications and the complications of each option are well known but declining in the popularity of them is quite obvious [3]. The reason of the perforation of the PU is unclear but smoking, alcohol, NSAID medication and *Helicobacter pylori* infection has been identified as facilitating factors in lots of publications [4-10]. Up to 30% risk of mortality can be seen in surgery for perforated ulcer [11, 12]. Many factors such as age, gender, type of surgery, chronic illness history, drug and alcohol use, duration of perforation, blood pressure, concomitant disease, renal failure and liver cirrhosis have been detected as associated with the morbidity in lots of studies [13, 14].

Factors affecting the choice of surgical treatment, perforation etiology, predisposing factors associated with mortality and morbidity rate were evaluated in this retrospective study.

Material and method

The clinical records of 126 patients who were operated due to peptic ulcer perforation between January 1998 and December 2005 were analyzed retrospectively. Patients underwent two types of operation, one group of them was repaired with primary suturing, and the definitive surgery was performed in the other group. The definitive surgical procedures were bilateral truncal vagotomy and drainage or resection. Malignant gastric ulcer perforations were excluded. The shift in the choice of operation type in time was evaluated. The risk factors such as smoking, alcohol and nonsteroidal anti-inflammatory drug use, history of chronic ulcer disease which could be associated with the etiology were evaluated in all patients. Patients were treated with H₂-receptor blockers or proton pump inhibitor for two months and beside clarithromycin + amoxicillin for 15 days, after the surgery. Gastroscopy at the end of this period was suggested for the control. However, control and long-term outcomes of patients could not be accessed. The risk factors that could be associated with mortality and morbidity such as smoking, alcohol and nonsteroidal anti-inflammatory drug use, history of chronic ulcer and the presence of hypotension at the admission were evaluated in univariety and multivariety manner. Postoperative morbidities were examined in order of frequency. Arithmetic data were expressed as mean \pm standard deviation and average in groups. Statistical analysis was performed with the Statistical Package for the Social Sciences for Windows (SPSS version 12.0, Chicago, IL, USA). Forward Stepwise Logistic Regression method with chi-square test, and Mann-Whitney U test, were used for comparison of groups. A value of $p < 0,05$ was considered statistically significant.

Results

Between January 1998 and December 2005, 126 patients were operated due to PUP. Among these patients, 103 (81.7%) were performed by primary suture, 23 (18.3%) were performed definitive ulcer surgery. Primary suture was detected as the preferred procedure in patients with PUP. The type of operation was analyzed between 1998 and 2005 annually; an increase was observed in the preference of primary repair, and, a decrease was detected in the preference of definitive surgery (Figure 1). Definitive surgical rates were found as 35.3% in 1998, 42.8% in 1999, 20% in 2000 and 2001, 5.3% in 2002, 9% in 2003, 7.6% in 2004% and %7.6 in 2005.

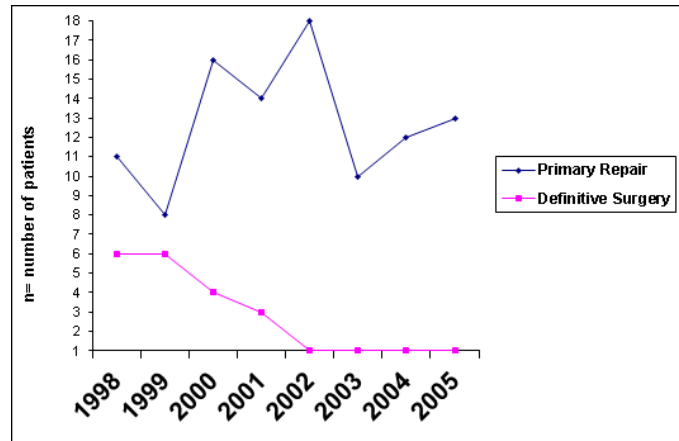


Figure 1. Number of surgical procedures in peptic ulcer perforation between 1998 and 2005.

Overall hospital mortality rate was five (3.9%), four (3.8%) of them underwent primary repair, one (4.7%) of them underwent definitive surgery; whereas there was no statistical difference between surgical options ($p > 0.05$) (Figure 2).

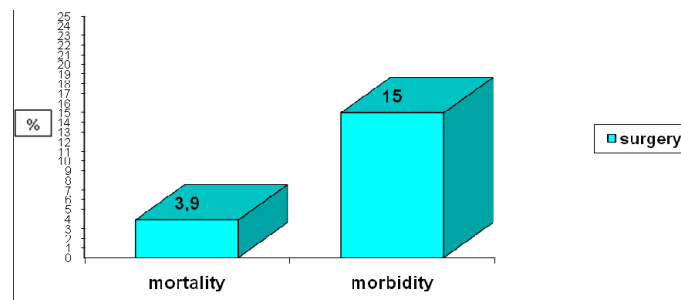


Figure 2. Mortality and morbidity rates of patients.

In all patients the average hospital stay was 9 ± 1.2 days, and, there was no difference between primary repair group (8 ± 4.3 days) and definitive surgery group (9 ± 2.1 days) ($p > 0.05$). Pulmonary complications and wound complications were detected as the most common causes of morbidity. History of risk factors that may cause perforation of ulcer patients were examined and 81 patients (64.2%) were found to be at least one of these risk factors. Patients with concomitant diseases were analyzed in the current hospital admission. 25.2% of patients undergoing primary repair patients (26 patients), 30.4% of patients undergoing definitive surgery patients (7 patients) had at least one comorbid disease (Table 1). All the factors thought to be associated with morbidity is evaluated in table 1, by multivariate and univariate analysis. All the clinical features of the patients is summarised on the table 1.

Table 1. Clinical features of the patients.

	n	%
Patients	126	
Mean age±sd	50.7(±13.5)	
Male	114	90.5
Female	12	9.5
Chronic history of ulcer disease	28	22.2
NSAID-steroid-alcohol	62	49.2
>24 h Time of admission	23	18.2
<90 mm Hg Blood Pressure	10	7.9
Location		
Pyloroduodenal	115	91.2
Gastric	11	8.8
Presence of coexisting diseases	33	26.1
DM	17	13.4
COPD	9	7.1
CHD/CHF	5	3.9
HT	19	15
Malignancy (non-gastric)	1	0.07

DM: Diabetes mellitus, **COPD:** Chronic obstructive pulmonary disease, **CHD:** Coronary heart disease, **CHF:** Congestive heart failure **HT:** Hypertension
n: Number of patients, **sd:** Standart deviation

Discussion

Elective surgery of peptic ulcers has decreased and with the introduction of H2-receptor blockers and proton pump inhibitors in to treatment. But the incidence of perforation and mortality rates has showed little change [15]. The surgical methods for the treatment of peptic ulcer perforations are many and varied. Primary repair re-gained popularity because of the effectiveness of medical therapies in PUD [16]. A trend of increasing in primary repair, and, a gradually reduction in definitive surgery were also detected in the recent years of our study (Figure 1). Age, gender, type of surgery, chronic disease, drug and alcohol use, duration of perforation, blood pressure, concomitant disease, renal failure and liver cirrhosis have been detected as the factors associated with the morbidity in lots of publications [13, 14]. Similarly, age, operation type and duration of perforation were found as the most important factors leads to morbidity in the present trial ($p < 0.05$). Also, the morbidity increases in patients 9.8 times in older 60 years of age, 3.0 times in the implementation of definitive surgery, 3.8 times in late admission more than 24 hours. Gender, comorbid disease, history of chronic ulcer, NSAID-alcohol-smoking were not associated with morbidity ($p > 0.05$). The risk of mortality in perforated ulcer surgery can be rise up to 30% [11, 12]. In our series, mortality was observed in only five patients (3.9%) and no difference was detected between surgical groups. This rate of mortality is acceptable and compatible with the literature. It is obvious that being in an older age usually causes more concomitant diseases and an increase in mortality rate. The detection of lower rate of mortality in our study can be explained by the conditions of the patients that they have, because only 18.2% of the subjects were older than 60 years old and 26.2% of the subjects were suffered from a concomitant disease. The elapsed time between the time of admission to hospital and the Perforation has been reported as another risk factor for mortality in the literature [17, 18]. In our study only 3.9% of patients were detected as late admission (after 24 hours) to the hospital. The age-mortality relationship was examined by considering of being younger or older than 60 years. Mortality was seen only in patients over than 60 years. Mortality was seen in patients with late admission when the time-mortality relationship was examined. The relationship between mortality and concomitant diseases were examined and the correlation was obvious. The majority of patients admitted to our hospital because of peptic ulcer perforation were under the age of 60. Primary suture is an operation gradually increasing

in popularity. More than 24 hours late admission to hospital, to be greater than 60 years of age and type of operation was found to be factors associated with morbidity and mortality. PUP remains an important cause of morbidity in the modern era. Thus, particularly in geriatric patients needs to be followed up carefully in the postoperative period.

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