

Clinical Study on Patients with Duodenal Perforation

Bhagwan Raghunath Korde¹, Kapildev Ganeshrao Patil²

¹Associate Professor, Department of Surgery, Parbhani Medical College, Parbhani, Maharashtra

²Assistant Professor, Department of Surgery, Parbhani Medical College, Parbhani, Maharashtra

Received: 18-08-2023 / Revised: 21-09-2023 / Accepted: 26-10-2023

Corresponding author: Dr. Kapildev Ganeshrao Patil

Conflict of interest: Nil

Abstract:

Background: Due to patient delays, surgical delays, and a shortage of antibiotics, perforated duodenal ulcers, the most serious consequence, used to have a high death rate. According to several writers, during the previous three decades, there has been a decrease in the incidence of peptic ulcer illness and perforation. The treatment of peptic ulcer disease has changed, and surgery has become less necessary as a result of advancements in the use of a variety of medications in medical therapy. Males are more likely to experience perforation in their third and fourth decades, and the epidemiological pattern varies globally. The incidence in Western nations is somewhat dropping. Throughout this time, there has been an increase in the age of ulcer perforation patients, with younger patients experiencing a decline in incidence and older patients experiencing an increase in incidence. While the rates of stomach ulcer perforation seem to have remained rather consistent, the majority of this temporal variance may be related to shifting rates of duodenal ulcers in men.

Aim: The aim of the study was to review and study the factors influencing, the outcome of the duodenal perforations.

Material and Method: The Department of Surgery carried out this cross-sectional investigation. The admitting surgeon made the diagnosis of duodenal ulcer perforation based on clinical characteristics, which was supported by radiographic data and limited during the procedure. Surgery was classified as urgent if it was performed within four hours of admission, same day (4–24 hours), or later in the same admission. Fifty cases of duodenal ulcer perforation that were admitted to the Department of Surgery are included in this study. The location and type of operation carried out were included in the operational information. The information will be placed into a proforma together with the patient's course of hospitalization, therapeutic interventions, and demographic information.

Results: Fifty patients in total were examined. With a mean age of 45.68 years, the age ranged from 20 to 50 years. The age range between 41 and 50 years old had the highest prevalence among 50 patients, followed by 21 to 29 years old. There are 46 (92%) men and 5 (8%) women in the current study, with a majority of men. The majority of patients are admitted in less than a day; pre-pyloric ulcers typically manifest in this manner. Two cases of ileal perforations were multiple, whereas duodenal ulcer perforations were single. Smoking is the primary risk factor for ulcer complications brought on by ARDS in 12% of patients (6 patients). Of these patients, 30% experienced wound issues, 2% died (1 patient), and 44% (22 patients) had no complications at all.

Conclusion: Acute abdominal emergencies involving perforations of the duodenum are among the most frequent. Early hospital admission, early diagnosis, timely surgical treatment, and the use of suitable and sufficient antibiotics have all contributed to a decrease in the mortality rate from perforated duodenal ulcers. Patients with duodenal perforation may experience lower morbidity and mortality rates if they smoke, drink alcohol, and change their lifestyle. Acute abdominal emergencies involving perforations of the duodenum are among the most frequent. Peptic ulcer perforation is among the most frequent reasons that need for an urgent laparotomy. Men are more likely to be impacted, with a peak occurrence in their 30s. Pylorus and the duodenum are the most often perforated organs.

Keywords: Duodenal ulcer, Perforation, Clinical profile and post-operative Infection.

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Introduction

An imbalance between the protective systems of the gastroduodenal mucosa and the destructive agents, especially stomach acid and pepsin, results in duodenal ulcers. Duodenal ulcers do not always

occur in the presence of hyperacidity. Ulceration is the outcome of mucosal defenses against pepsin and stomach acid failing. [1] One of the most frequent and deadly side effects of a persistent

duodenal ulcer is a perforation. The death rate is exceedingly significant if an early diagnosis and active surgical therapy are not achieved. After intestinal obstruction alone, it is the most frequent cause of death from surgical abdominal crises. [2] Duodenal ulcers are ulcers that occur in the upper portion of the small intestine. Some patients aren't even conscious that they have ulcers. Some people have pain in the abdomen and heartburn. If an ulcer breaks through the stomach or bleeds profusely, it can become extremely dangerous (also known as a hemorrhage). An imbalance between the protective systems of the gastroduodenal mucosa and the destructive agents, especially stomach acid and pepsin, results in duodenal ulcers. Duodenal ulcers do not always occur in the presence of hyperacidity. Ulceration is the outcome of mucosal defenses against pepsin and stomach acid failing. [1]

About 4 million Americans suffer from duodenal and stomach peptic ulcers, with 350,000 new cases being identified annually. Peptic ulcer disease causes about 180,000 hospital admissions each year and nearly 5,000 fatalities. [3] Five to ten percent of people who have duodenal ulcers go on to get perforations.4 Because of early identification and treatment, the mortality rate from perforated duodenal ulcers has decreased from 40% to less than 10% at this time. The proverb "anterior ulcers perforate, posterior ulcers bleed" still holds true because the duodenum's perforating ulcers are found anteriorly.

It is extremely frequent throughout India, with a higher frequency among South Indians than among North Indians. [5,6] Ten to twenty percent of these individuals experience complications, and two to fourteen percent of the ulcers will rupture. [7,8] The second most frequent ulcer-related consequence is perforation. In the initial decades of the 1900s, there was a significant rise in the incidence of ulcer perforations, with middle-aged men experiencing an epidemic of ulcers located in their duodenum. [9,10]

The incidence of ulcer perforations is steady or declining in the modern era, and the majority of patients are elderly men and women. Prepyloric and pyloric perforations are just as common as duodenal perforations. [10,11] In contrast, mortality is linked to comorbidities, advanced age, and NSAID or steroid use. Patient age, the location of the ulcer, the delay in treatment, any coexisting conditions, preoperative shock, and the kind of anesthetic utilized all affect mortality. Most of the factors are correlated; for example, waiting longer to receive treatment appears to raise mortality. One of the most prevalent structural gastrointestinal tract problems is peptic ulcer. Although they are mostly found in the duodenum and stomach, they have also been observed to appear in other parts of

the gastrointestinal tract. The defect must extend to the muscularis mucosa and encompass the entire thickness of the mucosa in order to be classified as a chronic peptic ulcer. [12]

Common side effects of peptic ulcers include bleeding, perforation, and fibrosis, which, in the case of a duodenal ulcer, might result in stenosis. Despite the high prevalence of chronic duodenal ulcers in the local population, little noteworthy research has been done to far to determine the incidence and clinical characteristics of this condition in this group. While the rates of stomach ulcer perforation seem to have remained rather consistent, the majority of this temporal variance may be related to shifting rates of duodenal ulcers in men. The demographic distribution of peptic ulcers, clinical manifestations of peptic ulcer perforation, the site of perforation and the most successful treatment strategy were all assessed in this study, along with the management of peptic ulcer complications.

Material and Methods

The Department of Surgery carried out this cross-sectional investigation. The admitting surgeon made the diagnosis of duodenal ulcer perforation based on clinical characteristics, which was supported by radiographic data and limited during the procedure. Surgery was classified as urgent if it was performed within four hours of admission, same day (4–24 hours), or later in the same admission. Fifty cases of duodenal ulcer perforation that were admitted to the Department of Surgery are included in this study. The location and type of operation carried out were included in the operational information.

Clinical examination, biochemical studies, diagnostic imaging, therapeutic, and clinical history. The information will be placed into a proforma together with the patient's course of hospitalization, therapeutic interventions, and demographic information. Clinical characteristics, investigations, surgical procedures carried out, postoperative morbidity and mortality, and results were all studied. The study's fifty plus cases were admitted as emergencies, and once the patients were stable, a thorough medical history was obtained. Prioritizing stabilization over taking a patient's history was done for critically ill patients.

Clinical history was obtained pertaining to fever, discomfort, vomiting, distension of the abdomen, constipation, and therapy received before admission. We detected the presence of free air, guarding, discomfort, hydration, and abdominal distension. A comprehensive analysis was conducted. Preoperative fluid resuscitation was used for all fundamental investigations, and electrolyte and antibiotic cover were administered. The omental patch closure, basic two-layered

closure, bilateral flank drain, and resection and anastomosis were performed. Following surgery, the perforation site, any problems, and the treatment's result were documented. Thirty days were spent monitoring the patients.

Inclusion criteria:

- Patients presented with duodenal ulcer perforation were included, irrespective of age, sex, or ethnicity.

Exclusion criteria:

- Perforation in the gastrointestinal tract other than duodenum.
- Traumatic perforation.
- Pregnant patients.
- Patients not willing to participate in the study.

Statistical Analysis

The observations of the study were recorded in the database program SPSS (IBM) version 21.

Descriptive statistics like mean, percentages, and proportions were used to analyze the association between duodenal ulcer perforation and socio-demographic variables like age, sex, occupation, etc. using the Pearson chi-square test.

Result

Altogether 50 patients were studied. The age ranged between 20 to 50 years with a mean age of 45.68 years. Among 50 patient's highest incidence was found between 41- and 50 years followed by 21-29 years. In present study consists of 46 (92%) males and 5 (8%) females with male predominance.

Table 1: Details noted in patients with duodenal ulcer

Time Intervals	NumberPatients	Percentage
< 12 hrs.	11	22
12 to 24 hrs.	16	32
24 to 48 hrs.	9	18
> 48 hrs.	14	28
Site of Perforation		
Pre-Pyloric	29	58
Antrum	16	32
Body	3	6
Body - through andthrough	2	4
Number of perforations		
Single	46	92
Multiple	4	8
Pre disposing factors		
Smoking	30	60
Alcohol	29	58
NSAIDS	21	42

Pre-pyloric ulcers typically present as ulcers during the first 12 to 24 hours after admission for the majority of patients. Two cases of ideal perforations were multiple, whereas duodenal ulcer perforations were single. Smoking is the primary risk factor for ulcer complications brought on by ARDS in 12% of patients (6 patients). Of these patients, 30% experienced wound issues, 2% died (1 patient), and 44% (22 patients) had no complications at all.

Table 2: History of ulcers with perforated and air under diaphragm in patients

History of peptic ulcer	Numbercases	Percentages
Present	28	56
Absent	22	44
Air Under Diaphragm		
Air present	40	80
Air absent	10	20

Peptic ulcers were seen in 56% of the individuals in this study. Eighty percent of patients had air under their diaphragms on their X-rays. Duodenal ulcer perforations were shown to be significantly more common during surgery than pre-pyloric and stomach perforations. Surgical closure with an omental patch was the most often used technique, particularly for the repair of duodenal perforations. Giant perforations in individuals with duodenal

ulcer perforations also required gastrojejunostomy. Two-layered sutures were typically used to treat patients with stomach perforations.

Discussion

One kind of peptic ulcer illness that affects the duodenum's lining is called a duodenal ulcer. Hospitalization and prompt therapy are necessary for duodenal perforation, a common surgical

emergency resulting from a duodenal ulcer. Although it is still a surgical emergency, perforated duodenal ulcers rarely cause fatalities these days. Based on a study of data from 50 cases with perforated duodenal ulcers, a debate is presented. One kind of peptic ulcer illness that affects the duodenum's lining is called a duodenal ulcer. PUD, or duodenal ulcer disease, is a global health concern due to its high rates of morbidity, death, and economic loss. Peptic ulcer disease has been less commonplace worldwide in recent years. Notwithstanding the advancements in endoscopic facilities, H. pylori eradication, and proton pump inhibitor introduction in the diagnosis and treatment of peptic ulcer disease, complications like peptic ulcer perforation continue to pose a significant healthcare challenge.

Thorsen et al.2011 [13] in their study found a men and women ratio of 1:1.42 with a slight women predominance which is contradictory to our and other author's findings of men predominance. It was concluded that this may be due to regional variations. Everett et al.1953 [14] in their study of 136 patients observed that two-thirds of patients in the study belonged to the age group 30–60 which is in concordance with the findings of our study. Bansod et al. 2014 [15] also had similar observations with the huge majority of patients falling between 21 and 50 years of age. Everett et al.1953 [14] are probably because of a lack of awareness and education among our population. Additionally, the fact that paramedical or earthquake personnel are typically the first medical professionals these impoverished people encounter causes delays in diagnosis and appropriate referral. Svanes 1995 [10] was of the opinion that Smoking seems to be a risk factor of major importance for ulcer perforation. The danger was multiplied by ten for both men and women who smoked. According to estimates, 77% of ulcer perforations in the under-75 age range may be caused by smoking. Everett et al.1953 [14] observed that 43% of patients with peptic ulcer perforation were alcoholics. It was noted in our study that a good portion of the patients had a history of abusing NSAIDs, and the majority of them were either smokers, alcoholics, or both. These concurred with other writers that significant etiological variables include drunkenness, smoking, and NSAID misuse.

This can be brought on by an increase in the risk factors for complications from peptic ulcers. On average, approximately 2-10% of individuals with peptic ulcers experience peptic ulcer perforation, a dangerous consequence. [5–8] The overall mortality rate for peptic ulcer perforation is 10%, while some writers report fatality rates ranging from 1.3% to 20%. As a potentially fatal consequence of peptic ulcer disease, it requires immediate treatment, fast resuscitation, and

adequate surgical care to prevent morbidity and death. According to reports, the pattern of perforated PUD varies from place to place according on the sociodemographic and environmental conditions that are prevalent at the time. In developing nations, the majority of patients are male, they tend to be younger, they often present late, and smoking is strongly linked to these conditions. Ingestion of ulcerogenic drugs is common and patients are often older in the West.

Smitha S Sharma et al. 2006 [16] in the study of peptic ulcer perforation found an association between smoking and peptic ulcer perforation in 28 percent of patients, while 72 percent of patients were nonsmokers. ABMA Hannan et al.2005 [17] showed that 13 percent of patients had NSAIDs used, whereas 87 percent were not taking NSAIDs. Phillip L Chalya et al.2011 [18] in their study of peptic ulcer perforation, 64 percent of patients were smokers and 36 percent were nonsmokers. Fifteen percent of the patients did not drink, and eighty-five percent were alcoholics. Of the patients, 10% had previously used NSAIDs, whereas 90% had not. Montalvo-Jave et al.2011 [19] This difference in complication rates can be explained by differences in antibiotic coverage, meticulous preoperative care and proper resuscitation of the patients before operation, improved anesthesia, and a somewhat better hospital environment.

Risk factors include advanced age, shock prior to surgery, sepsis following surgery, and delayed presentation and procedure. The age of the patients and the result are significantly correlated. The patient's increased age substantially raises their probability of dying. Nonetheless, it was not discovered that pre-operative shock was substantially linked to death. With recent developments in critical care, patients who present with preoperative shock can be revived, so their prognosis is unaffected. [20]

Conclusion:

Acute abdominal emergencies involving perforations of the duodenum are among the most frequent. Early hospital admission, early diagnosis, timely surgical treatment, and the use of suitable and sufficient antibiotics have all contributed to a decrease in the mortality rate from perforated duodenal ulcers. Patients with duodenal perforation may experience lower morbidity and mortality rates if they smoke, drink alcohol, and change their lifestyle. Acute abdominal emergencies involving perforations of the duodenum are among the most frequent. Peptic ulcer perforation is among the most frequent reasons that need for an urgent laparotomy. Men are more likely to be impacted, with a peak occurrence in their 30s. Pylorus and the duodenum are the most often perforated organs. Despite the patients' delayed presentation, simple

closure with an omental patch worked well in the majority of cases. Early surgery reduces mortality and is essential to effective treatment.

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