

**Study on Clinical Profile and Outcome of Surgical Treatment of Perforated Peptic Ulcers**Gopal Sharan Singh<sup>1\*</sup>, Kunal<sup>2</sup><sup>1</sup>Assistant Professor, Department of Surgery, Jawaharlal Nehru Medical College & Hospital, Bhagalpur, Bihar<sup>2</sup>Professor, Department of Surgery, Jawaharlal Nehru Medical College & Hospital, Bhagalpur, Bihar

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Conflict of interest: Nil

**Abstract:**

**Background:** When open sores, or ulcers, develop in the stomach or first segment of the small intestine, it is known as peptic ulcer disease. A bacterial infection eats away at the digestive system's protective lining, leading to the development of peptic ulcer disease in many cases. Ulcers are more likely to appear in those who use painkillers often. The purpose of the study was to assess the clinical profile and results of surgical management of perforated stomach ulcers.

**Methods:** This was a combined retrospective and prospective study conducted from October 2022 to September 2023 on patients treated for peptic ulcer perforations at the Department of Surgery, JLN MCH, Bhagalpur, Bihar. All patients treated for peptic ulcers at JLN MCH, Bhagalpur, Bihar, during the study period were the study's subjects.

**Result:** 145 patients in all were included and examined. The study's age distribution was as follows: 65 patients (44.83%) were under 65, 55 patients (37.93%) were between 65 and 80 years old, and 25 patients (17.24%) were under 80 years old. Figure 2 displays the study's gender distribution. The majority of them had issues connected to their abdomens; of the patients, 91 (62.76%) were men and 54 (37.24%) were women. According to the clinical results, only 7 patients (4.83%) had a 30-day death rate, 14 patients (9.66%) experienced rebleeding, 9 patients (6.21%) experienced surgical complications, and half of the patients required blood transfusions. The average length of stay for patients in the hospital is six days, but they can stay anywhere from zero to forty-five days.

**Conclusion:** Peptic ulcer perforation is still a common clinical issue in our setting, primarily affecting young men who are not known to have PUD. Despite the patients' delayed arrival at our center, simple closure with an omental patch followed by *Helicobacter pylori* eradication was effective with great results in the majority of survivors.

**Keywords:** Clinical Profile, Outcome, Surgical Treatment, Perforated Peptic Ulcers.

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**Introduction**

The condition known as peptic ulcer disease (PUD) is an acidic stomach ulcer that causes severe pain, irritation, and erosion of the mucosa. The cause of the corrosion, which needs to be at least 0.5 cm, is an imbalance in the digestive stashing between the duodenum and stomach.

The majority of ulcers are caused by an infection with *Helicobacter pylori*, therefore acidity, spicy food, and stress are not the primary causes of peptic ulcers [1]. A mucosal filling in the stomach and duodenum shields them from digestive hiding. Peptic ulcers can manifest as either duodenal (more common) or stomach ulcers. A different kind of PUD known as *videlicet* idiopathic PUD—an ulcer without a known cause has been reported. For instance, hyperactive gastrinemia, NSAIDs misuse, family

history, *Helicobacter pylori* infection, etc. [2] *Helicobacter pylori* infection, stress, family history, a high-fat diet, age, gender, smoking, alcohol intake, or excrescences that produce an excess acid product are some of the hazard factors or etiological variables associated with PUD. PUD is commonly characterized by symptoms such as nausea, vomiting, heartburn, and searing pain in the stomach. Severe instances may also present with blood in the vomit, black coprolite, or excruciating stomach pain [1].

Despite a recent decline in prevalence due to the introduction of antimicrobial medications and proton pump obstructions, peptic ulcer disease is still a widespread health issue globally [3]. Every year, peptic ulcers afflict over 4 million people world-

wide [4]. It is more common in the southern region of India, where complications affect 10–20 instances, of which 2–14 had perforations documented [5]. The prepyloric, pyloric, and duodenal regions are the common locations of perforation [6]. The perforation rate continues to rise despite recent improvements in the diagnosis and treatment of peptic ulcers. It is becoming one of the major health issues, particularly for young people. [1]

### Material and Methods

This was a combined retrospective and prospective study conducted from October 2022 to September 2023 on patients who underwent surgery at Jawaharlal Nehru Medical College and Hospital in Bhagalpur, Bihar, for peptic ulcer perforations. All patients who underwent surgery at JLNCH in Bhagalpur, Bihar, for peptic ulcers during the study period were the study's subjects. Individuals that had insufficient data were not included in the research. Excluded from the trial were patients receiving conservative care and those who did not give their assent due to HIV infection.

Variables such as the patient's age and sex, associated medical pre-morbid illness, duration of illness, symptoms, and history of ulcer or liver disease, endoscopic diagnosis, endoscopic intervention, medical treatment, surgical therapy, timing of surgical treatment, site of perforation, size of perfora-

tion, type of surgical procedure, postoperative complication, and length of hospital stay were included in the questionnaire used to collect the data. The time between the initial perforation-related pain perception and the operation was used to characterize the duration of symptoms.

The statistical program for social sciences (SPSS) version 20.0 for Windows (SPSS, Chicago, IL, U.S.A.) was used to conduct the statistical analysis. To summarize categorical variables, proportions and frequency tables were used to derive the mean  $\pm$  standard deviation (S.D.), median, and ranges for continuous variables. There were categories for continuous variables. The significance of the relationship between the independent (predictor) and dependent (outcome) variables in the category variables was examined using chi-square tests. The significance level was determined to be  $P < 0.05$ . Using multivariate logistic regression analysis, predictor factors that are associated with the outcomes were identified.

### Result

This is a retrospective study that included the enrollment and analysis of 145 patients in total. The study's age distribution is displayed in Table 1; 65 patients (44.83%) were under 65, 55 patients (37.93%) were between 65 and 80 years old, and 25 patients (17.24%) were under 80 years old.

**Table 1: Age distribution of the study population (N=145)**

Age distribution	No. of cases	Percentage
<65 years	65	44.33%
65-80 years	55	37.93%
>80 years	25	17.24%

Table 2 shows the study's gender distribution. The majority of them had issues connected to their abdomens; of the patients, 91 (62.76%) were male and 54 (37.24%) were female.

**Table 2: Sex distribution of the study population (n=145)**

Sex distribution	No. of cases	Percentage
Male	91	62.76%
Female	54	37.24%

According to the study, there were 110 (75.86%) patients with abdominal distention, 128 (88.28%) patients with abdominal soreness, and 142 (97.93%) patients with severe stomach pain (Table 3).

**Table 3: Clinical presentation of the study (n=145)**

Sign and Symptoms	No. of cases	Percentage
Severe abdominal pain	142	97.93%
Abdominal distention	110	75.86%
Vomiting	54	37.24%
Nausea	52	35.86%
Severe dyspepsia	48	33.10%
Constipation	43	29.66%
Fever	31	21.38%
Shock	48	33.10%
Abdominal tenderness	128	88.28%
Classical signs of peritonitis	97	66.90%

Table 4 shows the study's postoperative complications: surgical site infections affected 70 patients (48.28%), postoperative pyrexia affected 52 patients (35.86%), pulmonary illness affected 40 patients (27.59%), etc. These are the main problems that arise after surgery.

**Table 4: Postoperative complications of the study population (n=145)**

Complications	No. of cases	Percentage
Surgical site infections	70	48.28%
Post-operative pyrexia	52	35.86%
Pulmonary infection	40	27.59%
Intra-abdominal abscess	29	20.00%
Wound dehiscence/burst abdomen	29	20.00%
Re-perforation	23	15.86%
Septic shock	17	11.72%
Enterocutaneous fistula	17	11.72%
Peritonitis	17	11.72%
Incisional hernia	12	8.28%
Cardiopulmonary arrest	12	8.28%
Acute renal failure	6	4.14%
Paralytic ileus	6	4.14%

Based on the endoscopic results, we discovered that 65 patients (44.83%) had duodenal ulcers, over 50% had low-risk ulcers (Forrest IIC-III), and more than 50% had stomach ulcers and a high-risk ulcer (Forrest Ia-LLb) (Table 5).

**Table 5: Clinical characteristics of the study population (n=145)**

Characteristics	Frequency	Percentage
Endoscopic findings		
Gastric ulcers	80	55.17%
Duodenal ulcers	65	44.83%
High-risk ulcers (Forrest Ia-IIb)	75	51.72%
Low-risk ulcers (Forrest IIC-III)	70	48.28%
Ulcer size		
<2cm	127	87.59%
≥2cm	18	12.41%
Shock	14	9.66%
Helicobacter pylori	60	41.38%
Comorbidity (ASA class)		
ASAI	20	13.79%
ASAII	41	28.28%
ASAIII-IV	84	57.93%
Medication		
NSAIDs	41	28.28%
Acetylsalicylic acid	29	20.00%
Anti-aggregation therapy	4	2.76%
Anti-coagulant therapy	8	5.52%
Proton pump inhibitors or H2 blockers	13	8.97%

According to Table 5, 127 patients (87.59%) in this study had ulcers less than 2 cm, 60 patients (41.38%) had helicobacter pylori, 18 patients (12.44%) had ulcers larger than 2 cm, and 14 patients (9.44%) experienced shock. Table 6 lists the necessary therapies and treatments; 85 patients (58.62%) required endoscopic therapy, and 75 patients (51.72%) needed initial hemostasis. The table also lists the various initial hemostasis methods used by the study population.

**Table 6: Treatments and therapies**

Variables	No. of cases	Percentage
Treatment		
Endoscopic therapy	85	58.62%
Initial hemostasis	75	51.72%
Types of initial hemostasis		
Epinephrine	58	40.00%
Endoclips	29	20.00%
Epinephrine + endoclips	50	34.48%
Heater probe	6	4.14%
Heater probe + epinephrine	2	1.38%

Clinical results showed that half of the patients required blood transfusions, 14 patients (9.66%) experienced rebleeding, 9 patients (6.21%) experienced surgical complications, and only 7 patients (4.83%) had a 30-day

mortality rate. The duration of hospital stays for patients ranged from 0 to 45 days, with a median stay of six days (Table 7).

**Table 7: Clinical outcomes of the study population (n=145)**

Outcome	No. of cases	Percentage
Re-bleeding	14	9.66%
30-day mortality	7	4.83%
Blood transfusion	72	49.66%
Surgery	9	6.21%
Median hospital stay (days, range)	6,(0-45)	

## Discussion

The present study found that individuals with perforated peptic ulcers had a predicted prognosis based on concomitant premorbid illness. If there is a small time lapse between the perforation and radiological testing in the event of a perforated PUD ulcer, free intraperitoneal gas is less likely to be observed [7]. Oral contrast-enhanced computerized tomography (CT) scans are now thought to be the gold standard for identifying perforation and the most dependable way to identify minor pneumoperitoneum prior to surgery [8, 9]. In the diagnosis of free intraperitoneal air, abdominal ultrasonography has also proven to be more effective than conventional radiography [9]. In our investigation, no imaging study was utilized to diagnose free intraperitoneal air.

In 65.8% of patients, plain radiographs of the abdomen and chest were used to confirm the diagnosis of free intraperitoneal air. In our investigation, we were unable to determine the cause of the low free air under the diaphragm detection rate. With a ratio of 12.7:1, duodenal to stomach ulcers was the most common kind of perforation in our sample. This is similar to a study conducted in Kenya that found an 11.5:1 ratio between duodenal and stomach ulcers [10]. In Sudan, a high ratio of 25:1 between duodenal and stomach ulcers was found [11]. Gastric ulcer perforations are more common than duodenal ulcer perforations, according to a Ghanaian study [12].

In the western world, low ratios of 3:1 to 4:1 have been documented for duodenal to stomach ulcers [10, 12]. In Africa, gastric ulcers are thought to be a rare condition that occurs 6–30 times less frequently than duodenal ulcers [12, 13]. These variations in the duodenal to stomach ulcer ratio had no apparent cause. The preferred procedure in our center for this investigation was the Graham's omental patch of the perforations, which could be either a free graft of omentum or a pedicled omental patch. Other studies revealed a similar surgical therapy trend [7, 14, 15]. This is a quick, simple, and effective surgical treatment that saves lives with a manageable death and morbidity rate [15, 16].

Graham's omental patch of PUD perforations is still the surgical method of choice in most centers, de-

spite the fact that it has been linked to ulcer recurrence rates of up to 40% in some series [15, 17]. To prevent recurrence, the procedure should be followed by H. pylori eradication. The classic final peptic ulcer surgery of truncal vagotomy and drainage techniques has been modified by simple closure of the perforation with an omental patch and proton pump inhibitors [18]. Only those who are fairly fit and arrive at the hospital early for surgery are candidates for definitive surgery [15].

In addition to lengthening the surgical procedure and subjecting the patient to longer anesthesia, definitive peptic ulcer surgery also raises the possibility of surgical complications. This is particularly true in underdeveloped nations, such as those in Africa, where patients with severe widespread peritonitis frequently present later than expected [19].

Only one patient in the current study had truncal vagotomy and drainage as a definitive treatment for peptic ulcers after presenting early and in a stable hemodynamic state. Laparoscopic repair of perforated peptic ulcers has also been reported recently [20, 21]. This procedure is thought to help lower postoperative morbidity and mortality. Enclosing ruptured peptic ulcers with a laparoscopic method is a common practice in developed countries. However, none of the hospitals in this nation have yet to attempt it [20, 21]. In this series, the overall complication rate was 29.8%, which is in line with prior reports [7, 22]. Montalvo Javé et al. reported a significant rate of complications [23]. This variation in complication rates can be attributed to variations in antibiotic coverage, careful preoperative management and appropriate patient resuscitation prior to surgery, enhanced anesthesia, and a marginally improved hospital setting. Infection at the surgery site was the most frequent complication in other trials [14–16].

One possible explanation for the high prevalence of surgical site infections in this study is that the laparotomy wound became contaminated during the surgery. A perforated peptic ulcer is a dangerous illness that has an overall death rate of 5% to 25%, which can increase to 50% as people age [23, 22].

Patients who were over 40 years old, had a delayed presentation (more than 24 hours), were in shock upon admission (systolic blood pressure less than 90 mmHg), had HIV, had a low CD4 count (less

than 200 cells/ $\mu$ l), and had concomitant disorders had a higher death risk in this study.

Gastric ulcers were also related to a higher risk of death. A helpful method for predicting outcomes is Boey's score, which is based on rating criteria such as shock upon presentation, complicating medical disease, and persistent perforation [25].

The Boey score should be utilized in our environment as a tool for predicting outcomes in patients with perforated peptic ulcers because it was a good predictor of death and postoperative complications in this investigation.

We neglected to address the fact that logistical issues prevented us from doing tests on our patients to detect H. Pylori throughout our conversation. However, 82.6% of our patients had great results when utilizing the "triple regime," which is similar to the outcomes of prior studies that successfully treated perforated peptic ulcers with simple closure and H-Pylori eradication [7, 14, 15, 26].

### Conclusion

Young adults, particularly men, are now frequently affected by peptic ulcer perforation. The risk factors include Helicobacter pylori infection, smoking, drunkenness, dietary preferences (such as spicy and greasy meals), and medicine use (such as NSAIDs). Once a perforation occurs, it must be treated surgically as soon as possible. Closure with a mental patch is the most popular method. The effectiveness of each perforated ulcer treatment is crucial in reducing complications and death.

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