

**ORIGINAL ARTICLE**DOI: <https://doi.org/10.3329/mediscope.v11i2.76386>**Clinical Outcomes of Patients with Bleeding Peptic Ulcer;
Tertiary Center Experience*****A Sardar¹, MS Islam², PK Dey³, DK Dhali⁴****Abstract**

Background: Bleeding peptic ulcer remains an important cause of morbidity and mortality. Bleeding peptic ulcer (PUB) remains one of the most emergent and potentially fatal medical situations. However, the incidence of bleeding peptic ulcers not associated with *H. pylori* (Hp) infection or NSAID use varies considerably, and recent suggestions that patients with non-*H. pylori*-non-NSAID idiopathic bleeding peptic ulcers have a significantly higher mortality rate than patients with NSAID or *H. pylori* ulcers. **Objective:** The objective of this study was to demonstrate the epidemiological, clinical and endoscopic characteristics of peptic ulcer bleeding (PUB). **Methods:** This was a prospective study of patients who were admitted for peptic ulcers at Khulna Medical College Hospital Khulna, Bangladesh, from January 2021 to December 2021. Data were collected using a pretested and coded questionnaire and analyzed using SPSS computer software. Ethical approval to conduct the study was obtained from relevant authorities before the commencement of the study. **Results:** In this study, a total of 24 patients were included and analyzed. Regarding the age distribution of the study population, 11(45.83%) patients were <65 years of age, 9(37.50%) patients were from the age group 65-80 years and 4(16.67%) patients were aged >80 years. Also, 62.5 percent of patients were female and 37.5 percent were male. Among the study subjects, 14(58.33%) patients were treated by endoscopic therapy and 13(54.17%) patients had initial hemostasis. Initial hemostasis had some types also; 9(37.50%) patients had Epinephrine, 8(33.33%) patients had Epinephrine+endoclips, 5(20.83%) patients had endoclips. **Conclusion:** Three decades after the discovery of Hp, the etiologies of bleeding peptic ulcers are changing. However, diagnosis of Hp infection is still the priority in these patients. Invasive RUT is most frequently used, but this methodology is hampered by a high rate of false-negative results, especially in patients with UGI bleeding.

Keywords: Clinical Outcomes, Patients, Bleeding Peptic Ulcer**Introduction**

Bleeding peptic ulcer (PUB) remains one of the most emergent and potentially fatal medical situations. Even though major advances in diagnostic and therapeutic approaches have been achieved, PUB remains a significant problem and an important cause of morbidity and mortality. The reported mortality rates related to bleeding peptic ulcers in various countries across Europe range from 3.4 to 14 %, and the reason for this difference remains unknown.¹⁻³ With the declining prevalence of *Helicobacter pylori* infection, an increasing proportion of patients with bleeding ulcers

unrelated to *H. pylori* infection or the use of nonsteroidal anti-inflammatory drugs (NSAIDs) including aspirin has been reported.⁴ However, the incidence of bleeding peptic ulcers not associated with *H. pylori* infection or NSAID use varies considerably, and recent suggestions that patients with non-*H. pylori*-non-NSAID⁵ idiopathic bleeding peptic ulcers have a significantly higher mortality rate than patients with NSAID or *H. pylori* ulcers.⁶ The objective of this study was to demonstrate the epidemiological, clinical and endoscopic characteristics of peptic ulcer bleeding (PUB).

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Materials and methods

This prospective study was conducted in Khulna Medical College Hospital, a tertiary healthcare center in Khulna, Bangladesh, from January 2021 to December 2021. The study was approved by the Ethical Review Committee of the hospital. Data were collected prospectively into a database, with patient details stored in a depersonalized manner to protect confidentiality. The following data were collected for each patient: demographic data, signs and characteristics of the bleeding episode, symptoms and history of ulcer or liver disease, coexisting illness, drug use, laboratory results, endoscopic diagnosis including the cause of bleeding, presence of fresh blood/clots or stigmata of recent haemorrhage, endoscopic intervention, medical treatment, re-bleeding incidence, surgical therapy, duration of hospitalization and cause of death. Grading of overall health and comorbidity was performed according to the American Society of Anesthesiology (ASA) classification (grade 1: normal healthy patients; grade 2: mild systemic illness; grade 3: severe, but incapacitating systemic illness; and grade 4: life-threatening illness). Stigmata of recent haemorrhage were defined according to Forrest classification as follows: Forrest Ia, spurting bleeding; Forrest Ib, oozing bleeding; Forrest IIa, non-bleeding visible vessel; Forrest IIb, adherent clot; Forrest IIc, hematin on ulcer base; and Forrest III, clean ulcer base. The size of the ulcer was classified as <2 cm or ≥ 2 cm. The commonly used hemostatic procedures were epinephrine injections (1:10000 solution of epinephrine) and/or mechanical hemostasis with stainless steel hemoclips (Olympus, Japan) and/or thermocoagulation with a heater probe (Olympus, 7F, 20-30 joules). Two biopsy specimens were obtained from the gastric antrum and body in all patients and the presence of *Helicobacter pylori* (*H. pylori*) infection was assessed by histopathologic examination of the specimens using hematoxylin-eosin (HE) stain.

All data were presented in a suitable table or graph according to relevance. A description of each table and graph was given to understand them clearly. All statistical analysis was performed using the statistical package for social science (SPSS) program for Microsoft Windows.

Results

In this prospective study, a total of 24 patients were included and analyzed. Table 01 shows the age distribution of the study population; 11(45.83%) patients were <65 years of age, 9(37.50%) patients

were from the age group 65-80 years and 4(16.67%) patients were aged >80 years. Also, 62.5 percent of patients were female and 37.5 percent were male (Figure 01).

Table 01: Age distribution of the study population (N=24).

Age (years)	Frequency	Percentage
<65	11	45.83
65-80	9	37.50
>80	4	16.67

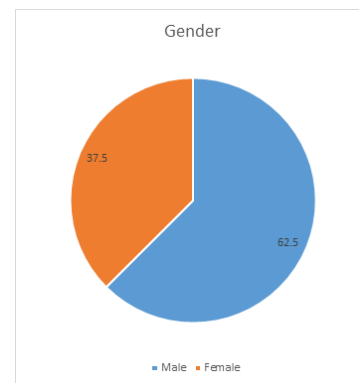


Figure 01: Gender distribution of the study population (N=24)

The endoscopic characteristics of the study are described in Table 02 where the Hb level median is 93.9 under the limit (26-182), 13(54.17%) patients had a gastric ulcer, half of the population had a high-risk ulcer and 10(41.67%) patients had a duodenal ulcer. By measuring the ulcer size 21(87.50%) patients had <2 cm ulcers and 10(41.67%) patients had *H. pylori*. According to comorbidity, more than 50% of patients had ASA III-IV, 7(29.17%) patients had ASA-II and only three patients had ASA-I. From the medication part, around 30% of patients had NSAIDs.

Table 02: The endoscopic characteristics of patients at study entry.

Traits	Frequency	Percentage
Hb level median	93.9 (26-182)	
Findings at endoscopy		
Gastric ulcers	13	54.17
Duodenal ulcers	10	41.67
High-risk ulcers (Forrest Ia-IIb)	12	50.00
Ulcer size		
<2cm	21	87.50
≥ 2 cm	3	12.50
Shock	2	8.33
<i>Helicobacter pylori</i>	10	41.67

Traits	Frequency	Percentage
Comorbidity (ASA class)		
ASA I	3	12.50
ASA II	7	29.17
ASA III-IV	14	58.33
Medication		
NSAIDs	7	29.17
Acetylsalicylic acid	5	20.83
Antiaggregation therapy	1	4.17
Anticoagulant therapy	1	4.17
Proton pump inhibitors or H2 blockers	2	8.33

Table 03 shows the endoscopic therapy; 14(58.33%) patients were treated by endoscopic therapy and 13(54.17%) patients had initial hemostasis. Initial hemostasis has some types also; 9(37.50%) patients had Epinephrine, 8(33.33%) patients had Epinephrine+endoclips, 5(20.83%) patients had endoclips and one patient had a heater probe and heater probe with epinephrine.

Table 03: Endoscopic therapy

Traits	Frequency	Percentage
Treatment		
Endoscopic therapy	14	58.33
Initial hemostasis	13	54.17
Types of initial hemostasis		
Epinephrine	9	37.50
Endoclips	5	20.83
Epinephrine + endoclips	8	33.33
Heater probe	1	4.17
Heater probe + epinephrine	1	4.17

Table 04 shows the clinical outcomes; 50 percent of patients needed a blood transfusion, 2 patients needed re-bleeding same 2 patients had surgery and only one patient died within 30 days of follow-up.

Table 04: Clinical outcomes of the study.

Outcome	Frequency	Percentage
Re-bleeding	2	8.33
30-day mortality	1	4.17
Blood transfusion	12	50.00
Surgery	2	8.33
Median hospital stay (days, range)	0-45	

Discussion

There has been a significant decline in the incidence of PUB and its complications since the introduction of PPIs and H. pylori eradication therapy. A lower incidence was observed in Sweden from 1987 to 2004

in both men and women, and one study conducted in the Netherlands found a decline from 61/100,000 to 48/100,000 per year from 1993 to 2000.⁷ In Germany and the United Kingdom, the incidence of PUB has remained unchanged, but the average patient age has increased.^{8,9} In Zagreb County, Croatia, the incidence of UGIB and PUB did not significantly change from 2008 to 2012. This can be explained by the lower prevalence of H. pylori infection and increased use of drugs that affect the cytoprotective function of the gastric mucosa (NSAIDs and acetylsalicylic acid), which has also been shown in other studies.¹⁰

The average patient age in this study was higher than 65 years. In one study, Van Leerdam found that 70% of patients with UGIB were older than 60 years and 40% had several life-threatening diseases, and in another one Van Leerdam et al. reported that about 50% of patients with PUB were taking NSAIDs and acetylsalicylic acid, with only 12% of them taking PPI as protection.^{7,11} H. pylori infection was diagnosed in 40% of patients and was found more frequently in patients with bleeding duodenal ulcers. In one prospective study conducted in the Netherlands, H. pylori testing was performed in 65% of patients with 43% having positive findings, while a German study found that 56% of patients with PUB were H. pylori-positive.^{8,12} Gralnek et al. found that PUB made up 28% to 59% of all UGIB. Half of the patients were categorized as high-risk ulcer patients (Forrest Ia, Ib, IIa and IIb).¹³

In a study by Bratanic et al., around 30% of patients were described as high-risk.¹⁴ In our study, PUB represented about 40% of all non-variceal UGIB and bleeding gastric ulcers were found more frequently than bleeding duodenal ulcers. Re-bleeding after endoscopic treatment with endoclips or endoclips/diluted epinephrine occurred in 10% of patients and 5.9% of them required surgical intervention. The risk of recurrent bleeding was increased in patients with shock, actively bleeding ulcers, and ulcers larger than 2 cm in diameter. Our results are consistent with the results from other tertiary centers, and despite all endoscopic methods for hemostasis available, acute recurrent haemorrhage is still common, occurring in 10% to 28% of cases.^{15,16}

We reported a total 30-day mortality of 5.2%. Only 10% of patients died because of bleeding out, while others died from other comorbidities. Mortality was increased in patients with shock, recurrent bleeding ulcers larger than 2 cm in diameter, and moderate to severe comorbidities (ASA \geq 3). Almost 60% of patients with PUB presented with moderate to severe comorbidities (ASA III and IV). When considering other studies,

Marmo et al. report a PUB mortality rate of 4% to 5% in one prospective study.¹⁷ Van Leerdam et al. showed that 40% of patients who died because of UIGB had one or several life-threatening comorbidities.⁷ Marmo et al. showed that in the first 24 hours of hospitalization, less than 30% of all patients died.¹⁷ Villauneva et al. compared the efficacy of a restrictive transfusion strategy (target hemoglobin 7-9 g/dL) with that of a liberal transfusion strategy (target hemoglobin 9-11 g/dL) in patients with acute gastrointestinal bleeding, finding that the probability of survival at 6 weeks was higher in the restrictive-strategy group.¹⁸ This was also observed in a subgroup analysis of patients with PUB. Other authors also suggest better patient outcomes when the restrictive red blood cell transfusion strategy is used.¹⁹⁻²² In our study, half of the patients received red blood cell transfusions, with a median of 2.2 units.

Limitations of the study

The limitations of this study included diverse medical staff being involved in endoscopic evaluation and treatment, resulting in inter-observer variability in endoscopic evaluation and treatment. Furthermore, this was conducted in a tertiary center only.

Conclusion and recommendations

Three decades after the discovery of Hp, the etiologies of bleeding peptic ulcers are changing. However, diagnosis of Hp infection is still the priority in these patients. Invasive RUT is most frequently used, but this methodology is hampered by a high rate of false-negative results, especially in patients with UGI bleeding.

Funding: No external funding sources were involved in this study.

Conflict of interest: None declared

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