

Short-term outcomes of Forrest IIB peptic ulcer bleeding treated with high-dose intravenous nexium following endoscopic intervention and associated factors

VU VAN SON

Vietnam Military Medical University, Vietnam

Abstract

Objective: To describe the short-term outcomes of Forrest IIB peptic ulcer bleeding treated with high-dose intravenous Nexium following endoscopic intervention, and to assess associated factors. **Subjects and method:** A prospective cross-sectional study was conducted on 52 patients with Forrest IIB peptic ulcer bleeding treated with high-dose intravenous Nexium following endoscopic intervention between January 2020 and December 2024. **Result:** This prospective descriptive study included 52 patients with upper gastrointestinal bleeding due to Forrest IIB peptic ulcers, aiming to evaluate clinical characteristics and treatment outcomes. The mean age was 59.6 ± 17.1 years, with a male-to-female ratio of 2.25. A history of NSAID/corticosteroid use was reported in 46.2% of patients. The most common symptoms were hematemesis/melena (76.9%) and epigastric pain (69.2%). The initial hemostasis rate was 96.2%, rebleeding within 7 days occurred in 3.8%, and no 30-day mortality was observed. Univariate regression analysis identified a history of NSAID/corticosteroid use and a Blatchford score ≥ 10 as risk factors for treatment failure. **Conclusion:** Forrest IIB ulcer bleeding remains at risk of rebleeding after endoscopic therapy. A history of NSAID/corticosteroid use and a high Blatchford score are predictors of treatment failure.

Keyword: Peptic ulcer, Forrest IIB, endoscopic intervention

I. Introduction

Forrest IIB peptic ulcer bleeding is a severe gastrointestinal emergency. Recent studies report a post-endoscopic rebleeding rate ranging from 15-20%. Jensen et al. found that Forrest IIB ulcers had a rebleeding rate of 17.6% after endoscopic hemostasis, which was higher than that of Forrest IB ulcers [1]. According to the Forrest classification, lesions classified as FIA (spurting arterial bleeding), FIB (oozing bleeding), and FIIA (visible vessel without active bleeding) are

commonly considered “high-risk stigmata of hemorrhage” due to their high potential for rebleeding, as reported in various studies. The inclusion of both FIA and FIB in the Forrest I group reflects the viewpoint that this group carries a higher rebleeding risk compared to Forrest II (which includes FIIA and FIIB), thereby forming the basis for risk stratification in patients with bleeding peptic ulcers. Several studies also regard adherent clots (FIIB) as a serious warning sign that warrants attention [2], [3].

High-dose intravenous Nexium (esomeprazole) strongly suppresses acid secretion and is recommended in the 2021 ACG guidelines to reduce rebleeding rates [4]. Intravenous proton pump inhibitors (PPIs) have been shown to be

Received: 12/7/2024, Accepted: 22/9/2024

Corresponding author: bsvusonbv109@gmail.com - Vietnam Military Medical University, Vietnam

effective in reducing recurrent bleeding following endoscopic therapy for peptic ulcer bleeding. A randomized trial demonstrated that high-dose intravenous esomeprazole (an 80 mg bolus followed by an 8 mg/hour continuous infusion for 72 hours) significantly reduced rebleeding within 72 hours compared to placebo [5]. In Vietnam, there have been few studies evaluating short-term outcomes of Forrest IIB peptic ulcer bleeding treated with high-dose intravenous Nexium following endoscopic intervention. Therefore, this study was conducted with the following objectives: (1) To describe the short-term treatment outcomes of Forrest IIB peptic ulcer bleeding managed with high-dose intravenous Nexium after endoscopic intervention; and (2) To assess associated factors.

II. Object and Method

2.1. Object

The study was conducted on 52 patients with upper gastrointestinal bleeding due to peptic ulcers, diagnosed by gastrointestinal endoscopy as having Forrest IIB lesions, from January 2022 to December 2024.

Inclusion Criteria

Patients with upper gastrointestinal bleeding due to peptic ulcers, diagnosed based on clinical presentation and endoscopic findings consistent with Forrest IIB lesions.

Presence of clinical symptoms caused by pancreatic pseudocysts such as abdominal pain, abdominal mass, nausea, vomiting, early satiety, indigestion, fever, jaundice, and weight loss.

Patients who agreed to participate in the study.

Exclusion Criteria

Patients with peptic ulcer-related gastrointestinal bleeding who had severe hemostatic disorders (e.g., thrombocytopenia).

Cases of gastrointestinal bleeding due to peptic ulcers accompanied by complications such as perforation; hemorrhagic gastritis or duodenitis; or bleeding gastric cancer.

Patients who did not consent to participate in the study.

2.2. Method

Study Design

This was a descriptive cross-sectional study combined with a prospective interventional design, without a control group, and followed a longitudinal monitoring approach.

Sampling Method

A purposive convenient sampling method was used. Patients with gastrointestinal bleeding due to peptic ulcers diagnosed by endoscopy and classified as high risk of bleeding according to the Forrest IIB classification, from January 2020 to December 2024, were selected based on inclusion and exclusion criteria. The study collected data from 52 patients.

Data Collection and Analysis Methods

Research Indicators:

Patient characteristics including age, gender, medical history, comorbidities, and clinical features.

Treatment outcomes: short-term treatment results and their association with certain factors.

Data Analysis

Data were analyzed using SPSS version 22.0. Quantitative variables were presented as mean and standard deviation. Qualitative variables were expressed as percentages. The T-test was used to assess differences between two mean values. A p-value <0.05 was considered statistically significant.

2.3. Research Ethic

The study was conducted in accordance with the ethical review process of the Hospital's Biomedical Research Ethics Committee and was carried out only after receiving approval from the Committee, as well as authorization from the Hospital's leadership and relevant departmental authorities. All research data were kept confidential and used solely for scientific research purposes..

III. Results

Table 1. General Characteristics of the Study Patients

Characteristics		Number (n)	Percentage (%)
Gender (Male/Female ratio)		36/16(2,25)	
Mean age (min-max)		59,6±17,1 (18-88)	
Medical history	Peptic ulcer disease	12	23,1
	NSAID/Corticosteroid use	24	46,2
	Anticoagulant use	4	7,7
Comorbidities	Cardiovascular disease	6	11.5
	Chronic kidney disease	4	7.7
	Musculoskeletal/trauma	19	36.5
	Postoperative status	13	25.0
	None reported	13	25.0

Comment: Table 1 presents the general characteristics of 52 study patients. The male-to-female ratio was 2.25, and the mean age was 59.6 - 17.1 years. The most common history was NSAID/corticosteroid use (46.2%), followed by peptic ulcer disease (23.1%) and anticoagulant use (7.7%). The most prevalent comorbidities were musculoskeletal/trauma-related conditions (36.5%) and postoperative status (25.0%).

Table 2. Clinical Characteristics of Patients with Upper GI Bleeding due to Forrest IIB Peptic Ulcers (n = 52)

Clinical Symptoms	Number (n)	Percentage (%)
Hematemesis and/or melena	40	76,9
Epigastric pain	36	69,2
Altered mental status	2	3,8
Hemorrhagic shock	6	11,5
Blood transfusion rate	40	76,9
Mean Blatchford score (points)	9,4 ± 3,6	

Comment: The most common clinical manifestations were hematemesis/melena (76.9%) and epigastric pain (69.2%). The blood transfusion rate was 76.9%, and the average Blatchford score was 9.4 ± 3.6, indicating a relatively severe bleeding condition.

Table 3. Short-Term Treatment Outcomes

Outcome	Number (n)	Percentage (%)
Initial successful hemostasis	50	96,2
Rebleeding within 7 days	2	3,8
Required blood transfusion	40	76,9

Outcome	Number (n)	Percentage (%)
30-day mortality due to bleeding	0	0
PPI-related complications (e.g., diarrhea, headache)	1	1,9
Mean blood units transfused (350 ml/unit)	2,1 ± 0,8 units	
Mean length of hospital stay (days)	5,2 ± 1,8 days	

Comment: Table 3 shows short-term treatment outcomes. The initial hemostasis success rate was 96.2%, rebleeding within 7 days was 3.8%, and no deaths were recorded within 30 days. On average, each patient received 2.1 ± 0.8 units of blood, and the mean hospital stay was 5.2 ± 1.8 days. Rates of mortality and PPI-related complications were low.

Table 4. Univariate Regression Analysis

Factor	OR	95% CI	p-value
Gender (Male vs. Female)	1,32	0,46 - 3,74	0,614
Age ≥ 60	1,75	0,61 - 5,02	0,291
History of peptic ulcer	1,89	0,53 - 6,75	0,321
NSAID/Corticosteroid use	2,50	1,02 - 6,15	0,045
Anticoagulant use	0,75	0,14 - 4,08	0,725
Cardiovascular disease	2,10	0,47 - 9,45	0,324
Chronic kidney disease	1,50	0,26 - 8,64	0,641
Musculoskeletal/trauma	1,25	0,43 - 3,60	0,674
Postoperative status	1,80	0,58 - 5,60	0,315
Hematemesis/melena	2,10	0,71 - 6,24	0,187
Epigastric pain	1,45	0,53 - 3,98	0,467
Altered mental status	2,50	0,12 - 50,00	0,596
Hemorrhagic shock	3,00	0,58 - 15,51	0,189
Blatchford score ≥ 10	3,20	1,10 - 9,42	0,033

Comment: Univariate regression analysis revealed that NSAID/corticosteroid use (OR = 2.50; 95% CI: 1.02-6.15; $p = 0.045$) and a Blatchford score ≥ 10 (OR = 3.20; 95% CI: 1.10–9.42; $p = 0.033$) were significant risk factors for treatment failure. Other factors such as age ≥ 60 , male gender, history of peptic ulcer, cardiovascular or renal disease, postoperative status, and hemorrhagic shock were not statistically significant.

IV. Discussion

In this study, the general characteristics of 52 patients with gastrointestinal bleeding due to peptic ulcer classified as Forrest IIB showed a predominance of males, with a male-to-female ratio of 2.25 and a mean age of 59.6 ± 17.1 years. This result aligns with previous studies, such as that of Laine and Jensen [3], which reported that complicated peptic ulcer disease is more common in males, with a mean age around 60 years. A history of NSAID/corticosteroid use was the most common risk factor (46.2%), followed by peptic ulcer disease (23.1%) and anticoagulant use

(7.7%). These proportions are consistent with the literature, in which NSAIDs are identified as a leading risk factor for ulceration and gastrointestinal bleeding [5]. Common comorbidities included musculoskeletal disease/trauma (36.5%) and post-surgical status (25.0%), indicating that the patient group tended to be elderly with multiple comorbidities, which may affect treatment and prognosis.

Regarding clinical characteristics (Table 2), the main symptoms were hematemesis and/or melena (76.9%), epigastric pain (69.2%), and a blood transfusion rate of 76.9%. The mean Blatchford score was 9.4 ± 3.6 , reflecting the severity of bleeding. Compared to the study by Sung et al. [5], the clinical presentation rates were similar; however, the Blatchford score in this study was higher, possibly because the subjects belonged to the Forrest IIB group, which has a higher risk of bleeding. The rate of hemorrhagic shock was 11.5%, consistent with findings from studies conducted in Asia [6].

Short-term treatment outcomes showed that the initial hemostasis success rate was 96.2%, the rebleeding rate within 7 days was 3.8%, and no mortality was recorded within 30 days (Table 3). Compared to the study by Jensen et al. [3], the rebleeding rate in this study was lower than the previously reported 7-10% for Forrest IIB, indicating relatively good efficacy of endoscopic intervention combined with high-dose PPI therapy. On average, each patient received 2.1 ± 0.8 units of blood transfusion, and the mean hospital stay was 5.2 ± 1.8 days comparable to studies using similar treatment protocols [7].

Univariate regression analysis (Table 4) identified two statistically significant factors associated with increased risk of treatment failure: a history of NSAID/corticosteroid use (OR = 2.50; $p = 0.045$) and a Blatchford score ≥ 10 (OR = 3.20; $p = 0.033$). This is consistent with previous literature in which NSAID use is a

major risk factor for ulceration and recurrent bleeding [5], and a high Blatchford score is indicative of significant blood loss and the likelihood of requiring intervention [8]. Other factors such as age, gender, history of ulcer, comorbidities, and clinical symptoms showed no clear association with treatment failure, as also noted in multicenter studies [9].

Additionally, the Forrest classification remains a valuable tool in risk stratification for patients with bleeding ulcers. However, some recent studies have questioned whether Forrest IIA (visible vessel) may pose a lower rebleeding risk than Forrest IB (oozing bleeding) [3]. Nonetheless, in the present study, patients in the Forrest IIB group were actively treated with endoscopic intervention and high-dose intravenous PPIs, resulting in favorable short-term outcomes.

V. Conclusion

The study indicates that gastrointestinal bleeding due to Forrest IIB peptic ulcers is commonly observed in elderly male patients, with a high proportion having a history of NSAID/corticosteroid use. The main clinical symptoms include hematemesis and melena, and a high mean Blatchford score reflects the severity of the condition. Treatment with endoscopic intervention combined with PPI therapy achieves a high hemostasis rate, with low rates of rebleeding and complications. Univariate regression analysis identified a Blatchford score ≥ 10 and a history of NSAID/corticosteroid use as prognostic factors for treatment failure.

References

1. Jensen D.M., Eklund S., Persson T. et al. (2017). Reassessment of Rebleeding Risk of Forrest IB (Oozing) Peptic Ulcer Bleeding in a Large International Randomized Trial. *American Journal of Gastroenterology*, 112(3), 441-446.

2. Forrest John A.H., Finlayson N.D.C., Shearman D.J.C. (1974). Endoscopy in gastrointestinal bleeding. *The Lancet*, 304(7877), 394-397.
3. Laine L., Jensen D.M. (2012). Management of Patients With Ulcer Bleeding. *Official journal of the American College of Gastroenterology | ACG*, 107(3), 345.
4. ACG Guidelines ACG. American College of Gastroenterology, <<https://gi.org/guidelines/>>, accessed: 17/04/2025.
5. Sung J.J.Y., Barkun A., Kuipers E.J. (2009). Intravenous Esomeprazole for Prevention of Recurrent Peptic Ulcer Bleeding. *Ann Intern Med*, 150(7), 455-464.
6. Laursen, S.B. (2016). Risk Factors for Rebleeding in Peptic Ulcer Bleeding: A Second Look at Second-Look Endoscopy. *Dig Dis Sci* 61, 332-333. <https://doi.org/10.1007/s10620-015-3919-y>.
7. Barkun A.N., Bardou M., Kuipers E.J. et al (2010). International consensus recommendations on the management of patients with nonvariceal upper gastrointestinal bleeding. *Ann Intern Med*, 152(2), 101-113.
8. Blatchford O., Murray W.R., Blatchford M. (2000). A risk score to predict need for treatment for upper-gastrointestinal haemorrhage. *Lancet*, 356(9238), 1318-1321.
9. Holster I.L., Kuipers E.J. (2011). Update on the Endoscopic Management of Peptic Ulcer Bleeding. *Curr Gastroenterol Rep*, 13(6), 525-531.