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*RESEARCH ARTICLE*

# ENDOSCOPIC INTERVENTIONAL MANAGEMENT USING ADRENALINE-NORMAL SALINE INJECTION FOR ACTIVELY BLEEDING PEPTIC ULCERS IN SOUTH KASHMIR, INDIA

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## Abstract

**Aim:** To determine the efficacy of endoscopic Normal Saline Adrenaline (NSA) injection therapy in actively bleeding peptic ulcer disease patients of southern Kashmir.

**Methods:** All those patients who presented with upper GI bleed (UGB) Malena/hematemesis or both underwent early upper GI endoscopy after stabilization. Those patients who had actively bleeding peptic ulcers(gastric/duodenal) were enrolled in this study. They were injected 10-15ml of 1:10000 adrenaline diluted in normal saline around the 3mm of bleeding ulcer, including ulcer base. Modified Forrest classification was used for assessment and management purposes. Patients with variceal bleed were excluded from the study.

**Results:** There were 136 actively bleeding Peptic Ulcer patients (84 males, 52 females) in the age group of 18-65years. 96 (70.58%) patients had duodenal Ulcer (DU), whereas 40 (29.42%) patients had Gastric Ulcer (GU). Primary hemostasis was achieved in 98.53% of patients with endoscopic injection therapy. One patient was an elderly male with Forrest IA duodenal ulcer who underwent emergency gastrojejunostomy because of underlying large vessel hemorrhage, which could not be controlled by the endoscopic obliteration method. Another patient with Forrest IB, who failed with obliteration twice, responded to endoscopic clipping. Rebleeding was observed in 12 (8.82%) patients. There was no mortality in this study.

**Conclusion:** Endoscopic injection therapy is a simple, cheap, safe, and highly effective first-line treatment for a non-variceal upper GI bleed procedure. It avoids urgent emergency surgical interventions and related complications, thus reducing these patients' mortality and morbidity.



## Introduction:

PUD is a very common GIT disorder[1]. It is a cosmopolitan disease, and hemorrhage is the most frequent and severe complication of PUD[2,3,4]. Hemorrhage, observed in 25% of these patients, is the presenting symptom in 15-29% of cases [5,6]. Upper GI bleeding is a common cause of hospitalization with an approximate incidence of 100 per 100000 adults per year[7]. Mortality from bleeding PUD is still high, 3.5-10% in high-risk groups[3,6,7], especially among hospitalized and elderly patients due to a high rate of comorbidity. PUD is highly endemic in Kashmir Valley, having a point prevalence of 4.7%[8]. A large number of PUD patients complicated by UGIB are admitted frequently in the

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hospitals across the valley. Unique food habits associated with spicy foods, salt-tea, low socioeconomic conditions, prolonged turmoil, and political instability are proposed etiological factors for the high prevalence of PUD in the region[8,9]. The majority of the population being Muslims, the incidence of UGIB in PUD patients increases during and after the holy month of Ramadan when Muslims fast from dawn to supper for one month [10,11]. Endoscopy is an excellent tool for diagnosing PUD and providing therapeutic management of UGIB. Endoscopy also helps in accurately assessing the bleeding site and severity of bleeding, thus helping to select the proper treatment of these patients. The various procedure techniques used through endoscopy are mono and bipolar coagulation, thermal coagulation, laser photocoagulation, clips, and local bleeding obliteration by adrenaline injection. If applied meticulously, endoscopic therapy has been shown to control bleeding and reduce the rate of rebleeding, mortality, emergency surgery, transfusion requirements, and hospital costs [12]. In this context, we carried out this study to assess the efficacy of endoscopic NSA injection therapy in UGIB patients of south Kashmir.

## Materials and Methods:

This is a single-centre retrospective study conducted from 2015-2021in the endoscopy laboratory of Mirza Mohammad Afzal Beigh Memorial Hospital (MMABMH), now affiliated with Government Medical College, Anantnag (since March 2019).136 patients (males 84, females 52) who had actively bleeding peptic ulcers and had undergone endoscopic obliteration of bleeding by injecting 10-15ml of 1:10000 adrenaline solution using normal saline as a diluent and using 3-6 injections around the bleeding peptic ulcer were included in this study. Medical records of these patients were used for collecting data regarding age, sex, presentation, hemodynamic status, type of bleeding lesion, the volume of adrenaline injected, failure to achieve hemostasis, rebleeding, repeat endoscopy, repeat injections, transfusion requirement during admission and surgery performed if any. The endoscopic findings were also traced from these records. The active bleeding was defined as a spurting vessel and active oozing (Forrest classification) [13-17]. Testing for H. Pylori was not performed routinely because of the need for emergency endoscopic interventions. The standard endoscopic procedure involved the injection of 5-20 ml of 1:10000 adrenaline in aliquots of 0.5-1.0 ml into the base of an ulcer which achieves hemostasis through a combination of tissue compression and vasoconstriction. Before the procedure, well-informed and written consent was obtained from every patient and/or their first-degree relative. Early endoscopy was performed using the Olympus GIF-1050 endoscope (Fig.1). Patients with variceal bleeding, malignant gastric ulcer, non-cooperative patients, or those who did not give written consent were excluded from this study.

**Figure 1**

## Results:

This study comprised 136 patients males 84 (61.76%), females 52 (38.23%) in the age group of 18-65 years. The various other characteristics of these patients are given in table 1.

**Table 1** Characteristics of patients who underwent endoscopic obliteration therapy.

| **Patients(n=136)** | **No (%)** |
|---|---|
| Males | 84(61.76) |
| Females | 52(38.24) |
| **Etiology of bleeding** | |
| Duodenal ulcer | 96(70.58) |
| Gastric Ulcer | 40(29.42) |
| **Clinical Presentation** | |
| Hematemesis | 17(12.50%) |
| Malena | 82(60.29%) |

| | |
|---|---|
| Both (hematemesis plus Melena) | 37(27.20%) |
| Hypotension(90/70mmhg) | |
| Shock (BP< 90/70mmhg) | 33(24.26%) |
| | 21(15.44%) |
| **Outcome** | |
| Rebleeding | 18(13.23) |
| Repeat injection | 13(9.5%) |
| Surgery | 1(0.74) |
| Death | 0 |

Duodenal and gastric ulcers constituted the primary bleeding lesions (70.58% and 38.24%, respectively), requiring endoscopic injection. Active bleeding in the form of spurt and active oozing was observed in 62 patients (44.11%) and 22 patients (16.17%), respectively. 35 patients (25.73%) had an adherent clot and 17 patients (12.5%) had a non-bleeding visible vessel at the time of endoscopy, as shown in figure 2. The bleeding stopped in 98.53% of patients after endoscopic therapy.

Primary failure to achieve hemostasis was observed in two patients (1.47%). One patient who had a spurting vessel underwent emergency gastrojejunostomy. Whereas another one with an adherent clot bleeding was stopped with the application of hemoclips after the failure of the second attempt of injection therapy.

The overall rebleeding was seen in 12 patients (8.82%).9 patients (75%) of these underwent repeat endoscopy. Among these, 8 (66.66%) patients required repeat endoscopy injections to control bleeding. The remaining patient had stopped bleeding by the time of the second endoscopy and did not reveal any endoscopic stigma that would necessitate further injection. The rates of rebleeding according to endoscopic stigmata were 46.15% in patients showing Spurting vessel, 25% for active ooze, 16.66% for a visible vessel, and 8.33% for an adherent clot. (Table 2) Patients with active spurting vessels on endoscopy had a higher risk of rebleeding, the need for repeat injection therapy and surgical intervention. ($P<0.01$).

None of our patients had any major complications related to the procedure of endoscopic obliteration.13 patients (9.55%) complained of mild abdominal pain after the procedure, which did not require any treatment, and there was no mortality in this study.

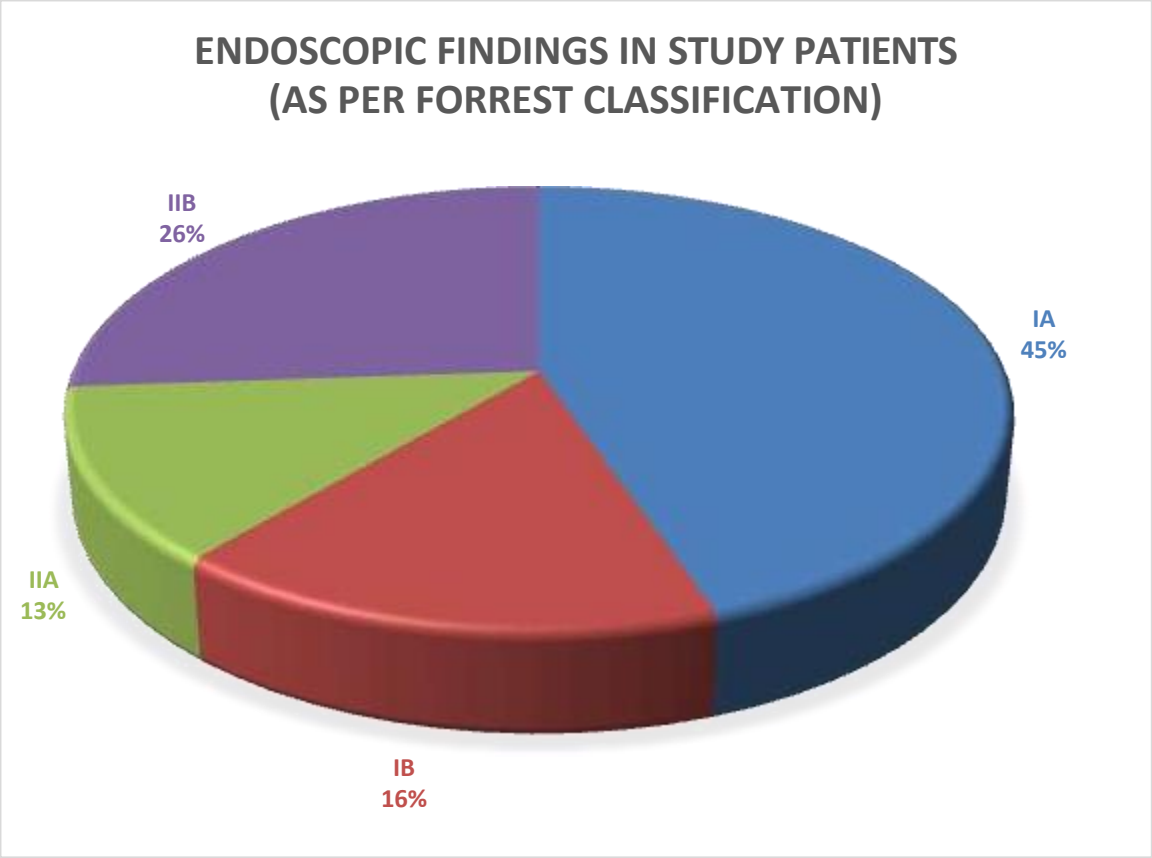
Using those patients who refused endoscopic intervention or those who were non-cooperative for endoscopic intervention (18 patients) served as controls, it was observed that the frequency of blood transfusions and hospital stay was significantly higher in these patients than those who underwent the endoscopic interventional procedure.

**Table 2:** Endoscopic Stigmata and patient outcome.

| **FORREST CLASS** | | **Number (%)** | **Rebleeding no (%)** | **Repeat Injection no (%)** | **Surgery No (%)** |
|---|---|---|---|---|---|
| **Class** | **Description** | | | | |
| IA | Spurting Vessel | 62(45.58) | 6(46.15) * | 5(8.06) * | 1*(1.61) |
| IB | Active ooze | 22(16.18) | 3(25) | 1(4.54) | 0 |
| IIA | Visible vessel | 17(12.50) | 2(16.66) | 1(5.88) | 0 |
| IIB | Adherent Clot | 35(25.74) | 1(8.33) | 1(2.85) | 0 |
| | **Total** | **136 (100)** | **12(8.82)** | **8(5.88)** | **1(0.73)** |

* Significant correlation observed between spurting vessel on endoscopy and the probability of rebleeding, repeat injection, and surgery requirement ($p<0.01$).

**Figure 2:** Endoscopic Findings In Study Patients.




## Discussion:

Peptic ulcer disease is highly endemic in our area with a point prevalence of 4.7%. Haemorrhage (Upper GI bleed) is the most common complication of PUD. A large number of these upper GI bleeders are admitted in hospitals as emergencies with hypotension or shock, especially during the Muslim fasting month of Ramadhan[1- 8,11.] The endoscopic obliteration of bleeding peptic ulcers is presently considered as the treatment of choice[3,16,17.] It is not only safe, cost-effective, well-tolerated, and technically simple but also effective in reducing morbidity and mortality as compared to surgery[18,19]. Although complications like necrosis (stomach, duodenum, or pancreas), perforation, or induction of rebleed have been reported in the literature, these are actually rare complications[3,18]. The effectiveness of this procedure in controlling the bleeding from ulcers was 98.53% which is at par with various global studies. Only two patients required surgery and other bleeding controlling procedures due to failure of endoscopic obliteration procedure. Asaki et al[. 2] reported similar results from a multicenter study from Japan. Similar observations have also been reported from Hirao et al.[20], where less than 1% of bleeding peptic ulcers required surgery. There was a rebleeding in 8.82% in our study, which is on par with observations of Steele.et.al[21] who have reported rebleeding in 11% of his patients, but Foster et al.[5] have reported a higher incidence of bleeding of 42% in their patients. Our study showed that patients showing spurting vessels on endoscopy had a higher incidence of rebleeding and more chances of surgery. There is also a trend for repeat endoscopy and further attempts to achieve hemostasis through endoscopic therapy whenever there is rebleeding. This study's minimal use of surgical interventions may also reflect the increasing use of endoscopic treatment in these patients to achieve hemostasis. None of our patients who underwent repeat injections required surgical intervention. Similar observations have been reported by Park S J et.al[22].

The global literature does not suggest any significant differences between different methods of endoscopic therapy for stopping the bleeding in peptic ulcers. Still, many centres currently employ a combination of injection and heater probe treatment which has shown more effective results than either modality alone for bleeding ulcers.[23]There was no

mortality in this study and all the patients who underwent endoscopic obliteration procedure were discharged within 4-5 days. Similar results have been shown by Oxner et al. [24]

## Conclusion:

Thus, we conclude that the endoscopic obliteration procedure for bleeding peptic ulcer disease is a safe and highly effective method besides being economical. It avoids urgent emergency surgical interventions, thereby reducing the mortality and morbidity in patients. It also reduces the various complications associated with bleeding peptic ulcers. It minimizes the frequency and requirement of blood transfusions and thus avoids transfusion-associated adverse reactions.

**Summary**

All non-variceal upper gastrointestinal bleeding patients should undergo initial endoscopy and endoscopic therapy if indicated by the endoscopic stigmata of recent bleeding. High-dose proton pump inhibiter therapy should be initiated on admission as it has been shown to reduce the incidence of rebleeding after endoscopic therapy. Endoscopic therapy can be repeated if high-risk stigmata remain and also if there is rebleeding. All the patients should receive anti H.pylori treatment after the endoscopic intervention when the patient is discharged in a stable condition to reduce chances of rebleeding, especially in regions with a high prevalence of H.pylori associated peptic ulcer disease.

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