# The Study of Clinical-Endoscopic Profile among Patients with Upper Gastrointestinal Bleeding Attending the Tertiary Care Center

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## ABSTRACT

**Background**

Upper gastrointestinal bleeding is one of the common medical emergency which is associated with significant mortality. Any source of bleeding proximal to the suspensory ligament of duodenum constitutes the etiology for upper gastrointestinal bleeding. It usually presents with blood in vomitus and black tarry stool (malena).

**Objective**

To correlate the clinical-endoscopic profile of patients with upper gastrointestinal bleeding, discuss the significant etiologies associated with the medical condition and assess the Rockall Score risk of those patients.

**Method**

A descriptive cross sectional study was conducted from August 2024 to January 2025 at Nepal Medical College and Teaching Hospital. A total of 170 patients with upper gastrointestinal bleeding were enrolled in the study using convenient sampling method. The data on socio-demographic, clinical profile and endoscopic characteristic were collected. The statistical analysis was done using SPSS version 16.

**Result**

Out of 170 patients, majority of the patients were male and fell under the age group of greater than 40 years of age. Nearly most of the patients were clinically diagnosed with chronic liver disease and peptic ulcer disease. After performing an endoscopy, we had found that large esophageal varices were the most common cause of upper gastrointestinal bleeding followed by an ulcer. Most of the patients fell under moderate risk score (three to seven) of Rockall Scoring system.

**Conclusion**

An upper gastrointestinal bleeding is one of the medical emergency that requires immediate management. A scoring system like Rockall is very useful to calculate future risk after an episode of bleeding.

## KEY WORDS

*Endoscopy, Nepal, Rockall score system, Upper gastrointestinal bleeding*

## INTRODUCTION

The gastrointestinal bleeding falls under two broad headings depending on the source of bleeding which are upper and lower gastrointestinal bleeding. An anatomic landmark which is the ligament of Treitz also called as the suspensory ligament of the duodenum separates the upper and lower bleeding sources. This ligament functions to suspend the duodenojejunal flexure from the retroperitoneum.[1] The classical presentation of upper gastrointestinal bleeding includes haematemesis which is red with clots if the bleeding is rapid or profuse and black (coffee grounds) when the bleeding is less severe. Similarly, malena which is the passage of black tarry stools containing altered blood is also a feature of upper gastrointestinal bleeding.[2]

Acute upper gastrointestinal bleeding (AUGIB) is a common medical emergency with incidence estimated to range from 50 - 150 cases per 100,000 population associated with a significant rate of mortality of five to ten percent based on western data analysis.[3,4]

Our study aims to correlate the clinical- endoscopic profile of those patients who have been diagnosed with AUGIB and further elaborate the significant etiologies associated with AUGIB. We also aim to use the Rockall Scoring system to interpret the future risk in those patients who had an episode of AUGIB.

## METHODS

The study was a hospital based cross sectional study carried out from august 2024 to January 2025 in patients who had symptoms of upper gastrointestinal bleeding to correlate the clinical and endoscopic profile in the patients visiting the inpatient department of internal medicine at Nepal Medical College and Teaching Hospital, Attarkhel, Gokarneswor Municipality-8, Kathmandu. The ethical clearance was taken from Nepal Medical College Institutional Review Committee NMC-IRC with a reference number: 04-081/082. The convenient sampling method was employed with self-made questionnaires and the data was filled up in the profoma along with the detailed history taken from the patients. The sample size was 170 which was calculated using the formula:

$Z^2pq/d^2$

Z=1.96

P prevalence of ugi bleed 25

Q=1-p=75

D=margin of error 6.5

The diagnosed or admitted patients with symptoms of upper gastrointestinal bleeding undergoing an upper gastrointestinal endoscopy with or without symptomatic treatment and the patients above the year of 18 were included in the study. The patients who were unfit to undergo an endoscopy and those who were less than 18 years of age were excluded from the study.

A structural profoma was used to collect the socio-demographic, clinical and endoscopic profile of the patients. Participants falling under inclusion criteria will be asked questions by investigators and obtained information will be entered in pre-structured data collection form. All cases of upper gastrointestinal bleeding presented with hematemesis or malena will be enrolled and blood parameters checked as per the proforma. The endoscopic procedure will be done once the patient is stable and the cause of bleed will be identified. The Rockall score will be identified for the severity of gastrointestinal bleed.

The data was analysed using SPSS version 16. For descriptive analysis: frequency, percentage and for further analysis: Chi square test was used as statistical tool

## RESULTS

Out of 170 participants in the study who had symptoms of upper gastrointestinal bleeding, 112 (65.90%) were male and the remaining 58 (34.10%) were female as shown in figure 1. The participants were further tallied based on the history they provided and the physical examination findings. The majority of the patients, 116 (68.2%) fell under the age group of greater than 40 years which is shown below in table 1.

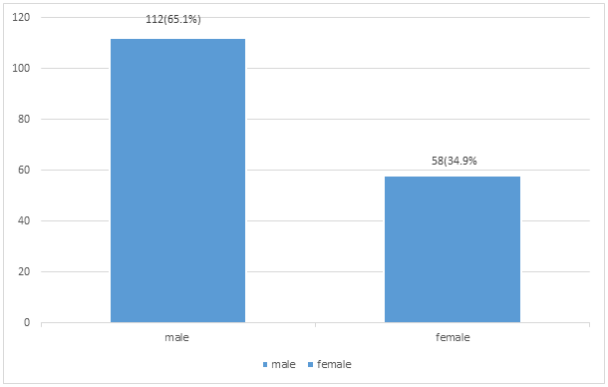


**Figure 1. Sex wise distribution of study population (n=170)**

**Table 1. Age group distribution of patients enrolled in the study**

| Age Group | Frequency | Percentage (%) |
|---|---|---|
| < 25 years | 24 | 14.1 |
| 25 - 40 years | 30 | 17.6 |
| > 40 years | 116 | 68.2 |
| Total | 170 | 100.0 |

Out of 170 patients in the study, 151 (88.80%) individuals presented to our institution with symptoms of bleeding vomitus. 144 (84.70%) individuals who had complained of having black stool (melena). Furthermore, on inquiring smoking and alcohol consumption, 102 (60%) and 129

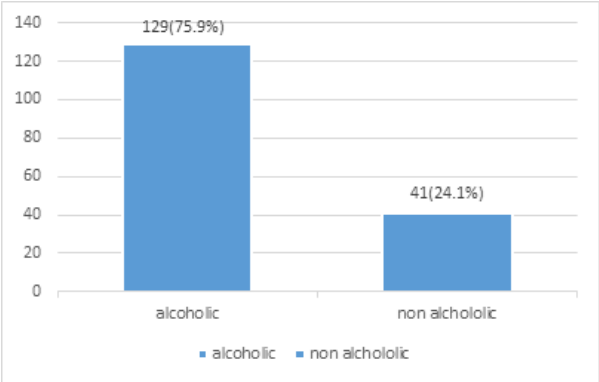


**Figure 2.** **Distribution of patient according to alcohol intake**

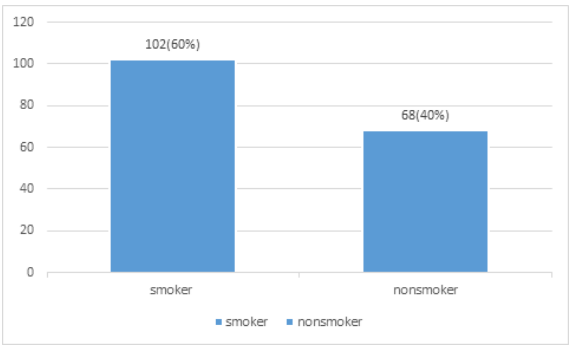


**Figure 3.** **Distribution of patient according to smoking**

(75.90%) responders reported of currently smoking and consuming alcohol respectively shown in figure 2 and 3 with the majority of these patients being above the age of 40 years. Fifty-one individuals who were above the age of 40 years of age had both smoked and drank alcohol on a regular daily basis.

Based on these information, a primary clinical diagnosis was made of which majority of patients i.e. 80 patients (47.10%) were diagnosed as Chronic Liver Disease (CLD) followed by 69 patients (40.60%) diagnosed as Peptic Ulcer Disease (PUD). Interestingly, 17 patients were diagnosed with cancer. This is further illustrated below in table 2. Seventy-six participants (44.70%) had no coexisting co-morbid conditions. However, 55 participants (32.40%) had coexisting diagnosis of liver failure as a co-morbid condition.

**Table 2.** **Clinical Diagnosis among patients with Upper gastrointestinal bleeding.**

| Clinical Diagnosis | Frequency | Percentage (%) |
|---|---|---|
| Chronic Liver Disease | 80 | 47.1 |
| Peptic Ulcer Disease | 69 | 40.6 |
| Cancer | 17 | 10.0 |
| Non-Alcoholic Fatty Liver Dis-ease (NAFLD) | 2 | 1.2 |
| Non Cirrhotic Portal Hyperten-sion (NCPTH) | 2 | 1.2 |
| Total | 170 | 100.0 |

Based on these findings an esophagogastroduodenoscopy was performed to further narrow down the diagnosis. The results of the test have been tabulated below in table 3.

**Table 3.** **Endoscopic findings among the patients with upper gastrointestinal bleeding**

| Endoscopic Diagnosis | Frequency | Percentage (%) |
|---|---|---|
| Large Esophageal Varices | 48 | 28.2 |
| Ulcer | 44 | 25.9 |
| Small Varices | 25 | 14.7 |
| Erosive Gastritis | 14 | 8.2 |
| Gastric Carcinoma | 11 | 6.5 |
| Esophageal Carcinoma | 7 | 4.1 |
| Esophagitis | 6 | 3.5 |
| Esophageal Ulcer and Erosive gastritis | 3 | 1.8 |
| Mallory Weiss Tear | 3 | 1.8 |
| Mallory Weiss Tear with Gastric Ulcer | 3 | 1.8 |
| Ulcer and Varices | 3 | 1.8 |
| Portal gastropathy | 1 | 0.6 |
| Esophagitis with gastric ulcer | 1 | 0.6 |
| LA B Esophagitis with congestive mucosa | 1 | 0.6 |
| Total | 170 | 100.0 |

The duration of hospital stay among the 170 participants was also inquired where 133 patients had a duration of stay of less than equal to five days and the remaining 37 patients had a stay of greater than five days. Out of those who were admitted, 37 patients had received blood transfusion as a course of their management for upper gastrointestinal bleeding. During the course of hospital stay appropriate management was initiated and the vast majority 137 patients (80.60%) were discharged. However, 13 patients were referred to a higher care center for further management and unfortunately 20 patients (11.8%) had expired during the course of our study probably due to several complications associated with upper gastrointestinal bleeding or due to their existing co-morbid conditions.

The Rockall Score was implemented to interpret the adverse outcomes among those patients who had an episode of upper gastrointestinal bleeding. The Rockall's criteria of patient's age, hemodynamic profile, evidence of bleeding, endoscopic diagnosis and co-morbid conditions were employed and the final interpretation was made which is shown below in table 4.

**Table 4.** **Implementation Rockall Score to find out the future adverse outcome among the patients with upper gastrointestinal bleeding.**

| Rockall Score | Frequency | Percentage (%) |
|---|---|---|
| < 3 | 69 | 40.6 |
| 3-7 | 97 | 57.1 |
| > 7 | 4 | 2.4 |
| Total | 170 | 100.0 |

On further exploration, Rockall Score of the patients was correlated with the duration of hospital stay which is shown in the tabulated form in table 5 below with a p value of < 0.001.

**Table 5. Rockall Score correlated with the duration of hospital stay among the patients.**

| Rockall score | Duration of stay (days) | | | p-value |
|---|---|---|---|---|
| | ≤ 5 | > 5 | total | |
| < 3 | 68 | 1 | 69 | <0.001 |
| 3 - 7 | 63 | 34 | 97 | |
| > 7 | 2 | 2 | 4 | |
| | 133 | 37 | 170 | |

Among 20 of those patients who had expired, 16 individuals had Rockall Score of three to seven and four individuals had Rockall score of greater than seven.

## DISCUSSIONS

The overall prevalence of AUGIB varies among different population groups, developing and developed countries. A prospective study conducted by Rockall et al. in the United Kingdom where the incidence of Acute upper gastrointestinal bleeding (AUGIB) was estimated to be 103/100,000 per year with an overall mortality rate estimated to be 14%.[5]

Broadly the aetiology of AUGIB can be divided into non-variceal and variceal bleeding which is because of a variance in the prognosis and management strategies among them.[6] Peptic ulcer diseases and esophageal-gastric varices secondary to chronic liver disease are the commonest cause of severe AUGIB. This is followed by erosive esophagitis, gastritis, portal hypertensive gastropathy, angiodysplasia, mass/ lesions (polyps or cancer) and Mallory-Weiss syndrome.[7,8]

A retrospective study done by Manko et al. from the data collected between the year 2017 to 2019, where out of total of 144 patients who had upper gastrointestinal bleeding, the majority were male and most of the respondents were in their 40s.[9] Regarding the etiologies, their study reported the majority of cases were due to esophageal varices followed by gastritis, duodenitis. This is similar to our study. Our study reported that majority of the individuals with upper gastrointestinal bleeding were above the age of 40 years and were clinically diagnosed as having chronic liver disease followed by peptic ulcer disease. This was further supported after doing an upper gastrointestinal endoscopy where 48 patients, 28.20% had a large esophageal varices secondary to chronic liver disease and 44 patient i.e 25.90% had an ulcer. Total of 18 case bleeding was because of carcinoma around 10% with 11 cases of gastric carcinoma and 7 cases of esophageal carcinoma following an endoscopy. All cancer patients were above the age of 40 years. one of the striking feature of the study was the age of presentation for the upper gi bleed. Out of 170 case, 24 people were age less than 25 (14.10%) and 30 case were age 25-40 (17.6%). Combining the two, 54 people (31.70) were age less than 40 years which is quite young and most of them had history to either smoking or alcohol or both. These data are alarming as can lead to fatal outcome in very young age.

Several other literatures have reported similar etiologies where out of all the causes variceal bleeding and peptic ulcer disease have been reported as most common etiologies to upper gastrointestinal bleeding.[10-12] A prospective study done by Dewan et al. in the gastroenterology unit of College of Medical Sciences and Teaching Hospital, Bharatpur, Nepal between 2012 to2013, showed male predominance with the most common endoscopic finding of esophageal varices (47.5%), followed by PUD.[13] This is also strikingly similar to our study.

However, in about 10-15% of the patients the sources of bleeding cannot be identified either by the lesion being obscured by blood clot or the lesion being healed at the time of endoscopy.[8]

One of the highlighted challenges in the management of upper gastrointestinal bleeding is the identification of patients who are at likely risk of rebleeding and death. On the other hand, it is also important to identify those individuals who are suitable for discharge from the hospital. Several risk scores have been formulated to identify patients who are likely to have a lower or higher risk of poorer outcomes.[14] The most commonly used system for upper gastrointestinal bleeding is Rockall score which was developed in 1996.[5] This score was developed to assess the risk of death following presentation with upper gastrointestinal bleeding and it incorporates the patient's age, hemodynamic characteristics, co-morbidities and endoscopic findings. The score can be calculated before and after endoscopy but the post endoscopy score carries a better accurate risk assessment. The factors associated with poorer outcomes of AUGIB is comorbidity, which the Rockall score incorporates.[14] The patients with the score of 0 are to be considered for non-admission or early discharge but if the score is above 0 there is significant risk of mortality, so further endoscopy is to be considered for full assessment of rebleeding risk.[15-17]

In our present study, we have used the Rockall score of less than three (low risk), three to seven (moderate risk) and greater than seven (high risk). The majority of the patients (97 patients) fell under the moderate risk assessment after assessing them using this scoring system. Out of 170 patients, only 4 patients had a high risk Rockall score of greater than 7 and unfortunately all 4 individuals had expired during the course of hospital management. Hence, our study further strengthens the fact that a higher Rockall score is associated with significant risk of mortality.

Furthermore, we have also correlated the scoring system's scores with the duration of hospital stay among the patients. The patients who had a low risk score (less than three) had less duration of hospital stay (≤ 5 days). This implies a lower risk score patients were early managed and discharged. On the contrary, patients having a higher risk score of more than three were subjected to stay longer in our institution for further workup and management. Those with co morbid condition and with the feature of alcohol withdrawal symptoms, Rock all score were ineffective in predicting the duration of the stay as there were longer duration of stay with alcohol withdrawal symptom more than 5 days even with low or moderate rockall score.

One of the limitation of our study is that we could not correlate the Rockall Score risk and duration of hospital stay for the patients who had endoscopic diagnosis of cancer. These patients were referred to a higher oncology center for further management hence their duration of hospital stay was less than 5 days. This was a single centre cross-sectional observational study which is not representative of the entire general population. as such conditions vary among the individuals due to socio-cultural, economic and demographic aspects.

## CONCLUSION

Upper gastrointestinal bleeding is one of the common medical emergencies requiring immediate hospitalization and prompt management strategies. Despite having advanced diagnostic and therapeutic endoscopic procedures for the subsequent management of AUGIB, it still has a significant mortality rate. A scoring system like Rockall allows for early identification of those patients who are at future risk of rebleeding and death. Our study also supports that a higher Rockall score carries higher chances of future complications and mortality. A proper utilization of such scoring system will allow physicians to navigate further towards the management of upper gastrointestinal bleeding.

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