Section: Surgery

Original Research Article

UTILITY OF ROCKALL RISK SCORING SYSTEM IN PATIENTS PRESENTING WITH UPPER GASTROINTESTINAL BLEEDING – A PROSPECTIVE OBSERVATIONAL STUDY

S. Srividhya[1], G. Anbusenthil[2], K.K. Saravanan[3], Neenu T Zacharias[4]

[1]Assistant Professor, Department of General Surgery, Government Medical College, Tiruppur, Tamil Nadu, India
[2]CMO (NFSG), Indira Gandhi Government General Hospital, India.
[3]Associate Professor, Department of General Surgery, Government Medical College, Tiruppur, Tamil Nadu, India
[4]Consultant Surgeon

Received : 18/12/2024
Received in revised form : 03/02/2025
Accepted : 22/02/2025

Keywords:
Upper gastrointestinal bleeding (UGIB), Rockall risk score, Rebleeding prediction, Risk stratification, Prognostic tool.

Corresponding Author:
Dr. B. Mageshwaran,
Email: drbmw01@gmail.com

DOI: 10.47009/jamp.2025.7.3.87

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (3); 458-462

Abstract

Background: Upper gastrointestinal bleeding (UGIB) is a significant medical emergency with high morbidity and mortality, necessitating effective risk stratification for timely intervention. The Rockall risk scoring system, incorporating clinical and endoscopic parameters, predicts outcomes like rebleeding and mortality in UGIB patients. This study evaluates the utility of the Rockall score in predicting clinical outcomes in UGIB patients. **Materials and Methods:** This prospective observational study was conducted over one year (April 2023–April 2024) at Government Medical College, Tiruppur. Fifty patients with UGIB were assessed using clinical history, physical examination, and upper gastrointestinal endoscopy. Management included conservative measures and specific interventions like variceal banding or surgical approaches based on findings. Rockall scores were calculated, and patients were categorized into low-, moderate-, and high-risk groups. Follow-ups at 3, 6, and 12 months assessed rebleeding, hospital stay, and mortality. Data were analyzed using descriptive statistics. **Result:** The majority of participants were male (80%), with 70% reporting alcohol use. Liver failure was the most common comorbidity (66%). Endoscopic findings included Mallory-Weiss lesions (6%) and ulcers with evidence of bleeding in 24%. Rebleeding occurred in 10%, 6%, and 18% of participants at 3, 6, and 12 months, respectively. Higher Rockall scores were significantly associated with rebleeding risk. No mortality was reported during the study period. Rebleeding patterns varied with treatment, with propranolol-only and combination therapies showing differing efficacy. **Conclusion:** The Rockall risk scoring system effectively predicts outcomes in UGIB patients, aiding in risk stratification and guiding management. Incorporating this scoring system in clinical practice enhances decision-making, resource allocation, and patient care in UGIB management.

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is a prevalent and possibly fatal medical emergency that presents considerable obstacles in clinical management.[1] It is characterised as haemorrhage coming from the gastrointestinal system anterior to the ligament of Treitz and may manifest as haematemesis, melena, or a combination of both. The spectrum of upper gastrointestinal bleeding (UGIB) varies from modest self-limiting incidents to severe, life-threatening haemorrhages. Notwithstanding progress in diagnostic and therapeutic techniques, upper gastrointestinal bleeding (UGIB) remains a significant factor in morbidity, death, and healthcare resource consumption.[2-4]

Risk stratification is essential in the management of upper gastrointestinal bleeding (UGIB).[5] Prompt identification of high-risk patients facilitates timely treatments, optimal resource allocation, and enhanced results. Numerous risk assessment systems have been established throughout the years, such as the Rockall, Glasgow-Blatchford, and AIMS65 scores. The Rockall score has acquired recognition for its capacity to combine clinical and endoscopic characteristics, offering a full risk assessment.[6-8]

The Rockall risk rating method aims to forecast the probability of negative outcomes, including rebleeding and death, in patients with upper

ISSN (O): 2687-5365; ISSN (P): 2753-6556

gastrointestinal bleeding (UGIB). It encompasses both pre-endoscopic and endoscopic elements, integrating variables such as age, shock, comorbidities, and endoscopic observations. The Rockall score classifies patients into low-, moderate and high-risk categories, assisting clinicians in making evidence-based decisions about patient care, including the necessity for rigorous surveillance, therapeutic treatments, and discharge planning.[9-12]

Numerous studies have shown the predictive accuracy of the Rockall score across various demographics and therapeutic environments. It has been demonstrated to have a substantial correlation with outcomes including rebleeding, death, and the necessity for endoscopic treatments. The efficacy of the Rockall score may fluctuate depending on patient demographics, the cause of upper gastrointestinal bleeding (UGIB), and the accessibility of healthcare services. These variances underscore the necessity for more study to evaluate its efficacy across diverse contexts and demographics.[13-16]

This prospective observational study aims to evaluate the effectiveness of the Rockall risk scoring system in predicting outcomes in patients presenting with UGIB. Specifically, the study seeks to validate its use in stratifying risk, guiding clinical decisions, and improving patient outcomes. By analyzing the relationship between Rockall scores and clinical outcomes such as rebleeding, hospital stay, and mortality, this study hopes to provide insights into its practical utility in resource-limited settings.

Ultimately, the findings of this study aim to contribute to the growing body of evidence supporting the use of the Rockall scoring system as a reliable prognostic tool. Its integration into routine clinical practice has the potential to standardize risk assessment, enhance patient care, and reduce the burden of UGIB on healthcare systems.

Objectives:

The aim of the study is to evaluate the effectiveness of Rockall scoring system for prediction of outcomes after an incidence of upper gastrointestinal bleeding. The objective of the study is to validate Rockall risk scoring system to predict outcomes after upper gastrointestinal bleed and to consider usage of Rockall scoring parameter as a prognostic tool in upper gastrointestinal bleed.

MATERIALS AND METHODS

This prospective observational study was conducted to evaluate patients presenting with upper gastrointestinal bleeding. The study was carried out in the Department of Surgery at Government Medical College, Tiruppur, over a one-year period from April 2023 to April 2024. All patients admitted with upper gastrointestinal bleeding during this time frame were considered for inclusion in the study.

The study population comprised patients who met specific inclusion and exclusion criteria. Inclusion criteria consisted of all patients admitted with upper gastrointestinal bleeding. Exclusion criteria included unstable patients requiring emergency surgery, patients found to have malignancy during endoscopic evaluation, those who could not be reached during follow-up, and patients unwilling to participate in the study.

A minimum of 50 patients were considered for the study. All patients presenting with upper gastrointestinal bleeding were evaluated using a comprehensive approach, including clinical history, physical examination, diagnostic investigations, and upper gastrointestinal endoscopy (UGIscopy). Initial management included conservative measures such as intravenous fluids and proton pump inhibitors (PPIs). Hemodynamically stable patients with UGI scopy findings of varices were treated with variceal banding, while those with duodenal ulcers or other conditions were managed with appropriate surgical or medical interventions. Hemodynamically unstable patients were taken up for laparotomy.

The patients were followed up after 3 months, 6 months, and 1 year to assess clinical outcomes. Follow-up evaluations included clinical history and physical examinations to monitor recovery and detect any recurrence of symptoms.

Data collection involved the use of a structured proforma, where personal details, disease condition and management of the patients were documented. Ethical clearance was obtained from the Institutional Ethical Committee. Informed written consent was obtained from the study participants. The study ensured confidentiality of participant information and adhered to ethical research practices. There were no conflicts of interest, and no external sponsorships or funding were involved. All collected data were entered into Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics such as frequencies and percentages were used to summarize the data. Appropriate tables and charts were used.

RESULTS

Regarding age distribution, 2 participants (4.0%) were aged less than 30 years, 10 participants (20.0%) were between 31 and 40 years, 16 participants (32.0%) were between 41 and 50 years, 11 participants (22.0%) were between 51 and 60 years, and 11 participants (22.0%) were above 60 years of age. In terms of gender, 40 participants (80.0%) were male, while 10 participants (20.0%) were female. Alcohol intake was reported by 35 participants (70.0%), whereas 15 participants (30.0%) reported no alcohol intake. The comorbidity profile revealed that 2 participants (4.0%) had cardiac failure, 0 participants (0.0%) had respiratory failure, cerebrovascular accidents (CVA), or renal failure, while 33 participants (66.0%) had liver failure. None of the participants (0.0%) had disseminated malignancy, and 16 participants (32.0%) had no major comorbidities. [Table 1 & Figure 1,2]

Endoscopic findings among the study participants revealed that 3 participants (6.0%) were diagnosed with Mallory-Weiss lesions, 1 participant (2.0%) had

ISSN (O): 2687-5365; ISSN (P): 2753-6556

gastrointestinal malignancy, and the remaining 46 participants (92.0%) were classified under other diagnoses. [Table 2]

Evidence of bleeding among the study participants showed that 6 participants (12.0%) had a dark spot on an ulcer, 5 participants (10.0%) had an adherent clot, and 1 participant (2.0%) exhibited an arterial jet. No participants (0.0%) had stigmata, oozing, red wale marks, cherry red spots, hematocystic spots, or a white nipple sign. The majority of participants, 38 (76.0%), had no evidence of bleeding. [Table 3]

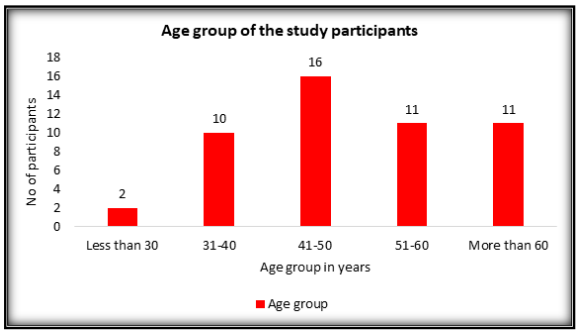

Figure 1: Age group of the study participants

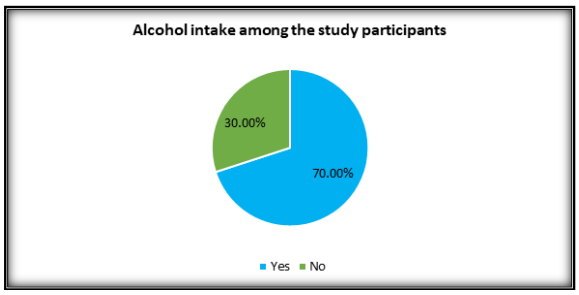

Figure 2: Alcohol intake among the study participants

The incidence of rebleeding among the study participants was observed at different time intervals. Within 3 months, 5 participants (10.0%) experienced rebleeding, while 3 participants (6.0%) experienced it within 6 months. Rebleeding was reported in 9 participants (18.0%) over the course of 1 year. There were no deaths reported (0.0%) due to rebleeding during the study period. In total, 17 participants (34.0%) experienced rebleeding. [Table 4 & Figure 3]

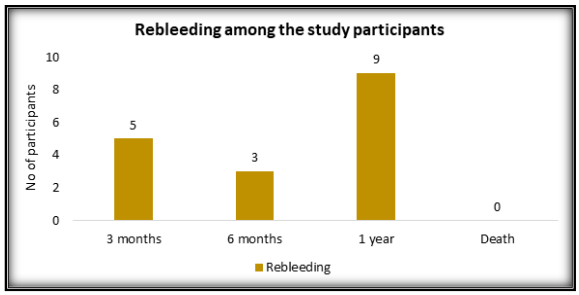

Figure 3: Rebleeding among the study participants

The distribution of Rockall scores among participants experiencing rebleeding at 3, 6, and 12 months showed varying patterns. At 3 months, 1 participant had a Rockall score of 1, 3 participants had a score of 4, and 1 participant had a score of 5, with no participants scoring 2, 3, 6, or 7. At 6 months, 1 participant had a Rockall score of 3, 2 participants had a score of 6, and 1 participant had a score of 7, with no participants scoring 1, 2, 4, or 5. At 12 months, 1 participant each had Rockall scores of 2, 3, and 6, while 3 participants each had scores of 4 and 5, with no participants scoring 1 or 7. [Table 5]

Rebleeding during follow-up and after intervention showed variation across different treatment approaches. At 3 months, rebleeding was reported in 2 participants treated with propranolol only, 1 participant treated with both propranolol and banding, and 1 participant in the "others" category. No rebleeding occurred after banding alone during this period. At 6 months, rebleeding was observed in 1 participant treated with both propranolol and banding. At 12 months, rebleeding was seen in 3 participants treated with propranolol only, 3 participants treated with both propranolol and banding, and 1 participant each in the banding-only and "others" categories. [Table 6]

Table 1: Demographic Characteristics, Alcohol Intake, and Comorbidity Profile of Study Participants.

Variable		Frequency (n = 50)	Percentage (in %)
Age	Less than 30	2	4.0
	31-40	10	20.0
	41-50	16	32.0
	51-60	11	22.0
	More than 60	11	22.0
Gender	Male	40	80.0
	Female	10	20.0
Alcohol intake	Yes	35	70.0
	No	15	30.0
Comorbidity	Cardiac failure	2	4.0
	Respiratory failure	0	0.0
	CVA	0	0.0
	Renal failure	0	0.0
	Liver failure	33	66.0
	Disseminated malignancy	0	0.0
	No Major comorbidity	16	32.0

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 2: Endoscopic Diagnosis of Study Participants

Endoscopic diagnosis	Frequency	Percentage
Mallory Weiss lesion	3	6.0
GI malignancy	1	2.0
All other diagnosis	46	92.0

Table 3: Endoscopic Evidence of Bleeding Among Study Participants

Evidence of bleeding	Frequency	Percentage
Stigmata	0	0.0
Dark spot-on ulcer	6	12.0
Adherent clot	5	10.0
Oozing	0	0.0
Arterial jet	1	2.0
Red wale marks	0	0.0
Cherry red spot	0	0.0
Hematocystic spots	0	0.0
White nipple sign	0	0.0
None	38	76.0

Table 4: Incidence of Rebleeding and Associated Outcomes Among Study Participants

Rebleeding	Frequency	Percentage
3 months	5	10.0
6 months	3	6.0
1 year	9	18.0
Death	0	0.0
Total	17	34.0

Table 5: Rockall score of Rebleed at 3, 6, 12 months

Rockall score	1	2	3	4	5	6	7
3 months	1	0	0	3	1	0	0
6 months	0	0	1	0	0	2	1
12 months	0	1	1	3	3	1	0

Table 6: Frequency of Rebleeding During Follow-Up and After Intervention at 3, 6, and 12 Months

Intervention	3 months	6 months	12 months
Propranolol only	2	-	3
Banding only	-	-	1
Both	1	1	3
Others	1	-	1

DISCUSSION

In this study, the majority of participants were aged between 41–50 years (32.0%), with a male predominance (80.0%). This aligns with Singh et al,[3] who reported a mean age of 52.19 ± 6.65 years and a male-to-female ratio of 4.78:1. Similarly, Bhattacharyya et al,[6] noted a mean age of 70.16 ± 6.01 years, predominantly males (72.4%). Shilpakar et al,[7] found a similar trend, with males constituting 78.9% of their study. The findings suggest that upper gastrointestinal bleeding (UGIB) predominantly affects middle-aged to elderly males, possibly due to lifestyle factors, comorbidities, and higher alcohol consumption rates.

Alcohol intake was reported in 70.0% of participants in this study, comparable to Singh et al,[3] where chronic alcohol intake was a leading risk factor for UGIB. Kataria et al,[3] also highlighted alcohol-induced portal hypertension as the most common cause of UGIB. Regarding comorbidities, 66.0% of participants in this study had liver failure, consistent with Ndam et al,[8] who identified portal hypertension in 34.7% of cases. Dewan et al,[5] similarly emphasized the role of comorbidities, with liver disease being a significant contributor to rebleeding and mortality.

In the present study, Mallory-Weiss lesions and gastrointestinal malignancies were relatively rare (6.0% and 2.0%, respectively), while the majority of participants (92.0%) had other diagnoses, possibly reflecting a higher prevalence of variceal bleeding and related conditions. This observation correlates with Singh et al,[3] where esophageal varices were the most common endoscopic finding (65.3%), followed by peptic ulcer disease (25.2%). Similarly, Shilpakar et al,[7] reported esophageal varices as the leading cause of UGIB (31.6%), consistent with findings from Sharma et al9 where variceal bleeding was predominant (45.7%).

Rebleeding was observed in 34.0% of participants during the study period, with rates of 10.0%, 6.0%, and 18.0% at 3 months, 6 months, and 1 year, respectively. This is higher compared to Dewan et al5 who reported a rebleeding rate of 8%, and Bhattacharyya et al,[6] where 12.93% experienced rebleeding. The variation may be attributed to differences in study populations, treatment protocols, and follow-up durations. Additionally, the association between high Rockall scores and rebleeding risk observed in this study is consistent

ISSN (O): 2687-5365; ISSN (P): 2753-6556

with findings from Ndam et al,[8] where a Rockall score ≥ 5 was significantly associated with rebleeding ($p = 0.001$).

The Rockall score was validated as a predictive tool for outcomes in UGIB, with higher scores correlating with increased risks of rebleeding and mortality. This finding is supported by Dewan et al,[5] who demonstrated that a complete Rockall score > 5 significantly predicted rebleeding ($p = 0.001$). Sharma et al,[9] found that the complete Rockall score outperformed the clinical score in predicting rebleeding and mortality in non-variceal bleeding. Similarly, Kataria et al,[3] reported that higher Rockall scores were associated with increased hospital stays, rebleeding, and therapeutic interventions. These studies collectively reinforce the utility of the Rockall scoring system as a reliable prognostic tool in UGIB management.

Rebleeding rates varied across treatment modalities in this study, with propranolol and banding combinations showing a higher incidence of rebleeding at 12 months. This is consistent with Sharma et al,[9] who noted that interventions targeting variceal bleeding were associated with varied outcomes depending on the severity of liver disease and initial bleed volume. Dewan et al,[5] emphasized that early intervention and optimized treatment significantly reduced rebleeding and mortality rates, highlighting the importance of tailored therapeutic strategies.

This study was conducted in a single tertiary care center, which may limit the generalizability of the findings to other settings. Additionally, the lack of long-term follow-up for all participants restricts the assessment of outcomes beyond one year.

CONCLUSION

This study validates the utility of the Rockall risk scoring system as an effective prognostic tool for predicting outcomes in patients with upper gastrointestinal bleeding. Higher Rockall scores were significantly associated with increased risks of rebleeding and poor outcomes, emphasizing its role in risk stratification and guiding early therapeutic interventions. Incorporating the Rockall score into clinical practice can improve decision-making, optimize resource allocation, and enhance patient management in acute UGIB settings.

REFERENCES

1. Khan F, Gupta AC, Giri R, Kumar V. Modified Rockall score: a predictor for outcome in patients presenting with upper gastrointestinal bleed. International Journal of Research in Medical Sciences. 2023 Jun;11(6):2032.
2. Singh N, Pahuja Jr H, Kumar V, Popli BP, Kumar S. The Clinical and Endoscopic Profiles of Patients With Upper Gastrointestinal Bleeding (UGIB) and the Role of the Rockall Scoring System in Predicting Adverse Outcomes. Cureus. 2023 Jun;15(6).
3. Kataria S, Joseph L, Goel S, Singhal PS, Grover R, Aggarwal R. Rockall score in Upper Gastrointestinal Bleeding: Risk stratification and prognostic outcome. International Journal of Medical Reviews and Case Reports. 2023 Jun 8;7(2):7.
4. Renukaprasad AK, Narayanaswamy S, Vinay R. A comparative analysis of risk scoring systems in predicting clinical outcomes in upper gastrointestinal bleed. Cureus. 2022 Jul;14(7).
5. Dewan KR, Patowary BS, Bhattarai S, Shrestha G. Complete Rockall score in predicting outcomes in acute upper gastrointestinal bleeding. Journal of College of Medical Sciences-Nepal. 2018 Dec 30;14(4):178-83.
6. Bhattacharyya A, Das SL. Complete Rockall Score in Predicting Outcomes of Elderly Patients with Acute Non-Variceal Upper Gastrointestinal Bleeding: A Tertiary Care Study. Assam Journal of Internal Medicine. 2021 Jul 1;11(2):37-41.
7. Shilpakar O, Prasad PN, Maharjan RK. Analysis of Clinical Rockall Score in patients with Acute Upper Gastrointestinal Bleeding in the Emergency Services of a Tertiary Hospital. Nepal Medical Journal. 2018 Aug 21;1(01):31-6.
8. Ndam AW, Mete MA, Djapa GR, Nga B, Ndjifoum MC, Kowo M, Andoulo FA. The prognostic significance of the Rockall score evaluation in patients admitted for upper gastrointestinal bleeding in Yaoundé (Cameroon). Nigerian Journal of Gastroenterology and Hepatology. 2023 Jul 1;15(2):33-7.
9. Sharma V, Jeyaraman P, Rana SS, Gupta R, Malhotra S, Bhalla A, Bhasin DK. Utility of clinical and complete Rockall score in Indian patients with upper gastrointestinal bleeding. Tropical Gastroenterology. 2017 Jun 8;37(4):276-82.
10. Khalaf AF, Bayati SA. Acute Upper Gastrointestinal Bleeding Risk Stratification Using Complete Rockall Score. Iraqi Postgraduate Medical Journal. 2022;21(1):89-95.
11. Kozai L, Tan A, Nebrejas K, Nishimura Y. Comparative diagnostic utility of Rockall and Glasgow-Blatchford scores in non-variceal upper gastrointestinal bleeding: a systematic review and meta-analysis. European Journal of Gastroenterology & Hepatology. 2025 Feb 1;37(2):161-6.
12. Prasad NR, Ali SM, Ganapathy V, Sreenath GS, Kumar SS. Acute upper gastrointestinal bleeding in a tertiary care hospital in South India-have we improved the outcomes?. Tropical Gastroenterology. 2017 Jun 5;37(3):168-76.
13. Upadhyaya S, Pathania M, Dhar M, Upadhyaya A. Clinical and Endoscopic profile of geriatric patients with upper gastrointestinal bleeding at a tertiary care centre. Journal of the Indian Academy of Geriatrics. 2023 Jul 1;19(3).
14. Bozkurt MA, Peker KD, Unsal MG, Yırgın H, Kahraman I, Alış H. The Importance of Rockall scoring system for upper gastrointestinal bleeding in long-term follow-up. Indian Journal of Surgery. 2017 Jun;79:188-91.
15. Sachan A, Dhibar DP, Bhalla A, Prakash A, Taneja S, Sharma V. Comparison of non-endoscopic scores for the prediction of outcomes in patients of upper gastrointestinal bleed in an emergency of a tertiary care referral hospital: A prospective cohort study. Arquivos de Gastroenterologia. 2021 Dec 10;58(04):534-40.
16. Han DP, Gou CQ, Ren XM. Predictive utility of the Rockall scoring system in patients suffering from acute nonvariceal upper gastrointestinal hemorrhage. World Journal of Gastrointestinal Surgery. 2024 Aug 27;16(8):2620.

ISSN (O): 2687-5365; ISSN (P): 2753-6556