

Outcomes of On-Site Emergency Endoscopy in Non-Transportable Patients with Gastrointestinal Bleeding

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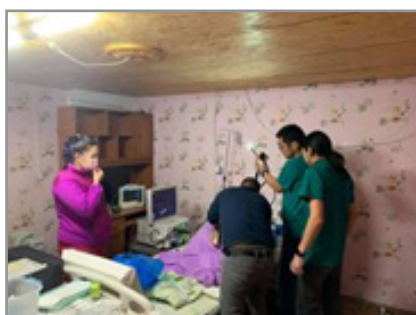
Background

Gastrointestinal (GI) bleeding is a significant global health concern, most frequently originating from the upper GI tract. Timely endoscopic intervention remains the cornerstone of both diagnosis and management. However, delivering such care is particularly challenging in countries with vast geographical territories and limited medical infrastructure. In Mongolia, rural populations often reside far from urban healthcare centers, and critically ill or non-transportable patients in remote areas frequently lack access to emergency endoscopic services. This study aimed to evaluate the outcomes of mobile, on-site emergency

endoscopy in such patients and to assess the feasibility, effectiveness, and clinical impact of this intervention.

Methods

Since early 2019, our mobile endoscopy team has conducted 928 emergency visits to patients across 15 provinces (aimags) and 6 districts in Mongolia. These visits included cases of GI bleeding, foreign body removal, and urgent diagnostic evaluations. All procedures were performed using portable endoscopic equipment in accordance with standard emergency protocols. This report specifically analyzes 691 cases involving GI bleeding, focusing on the source of bleeding, treatment outcomes, and mortality.



Some settlements are located 1,600 km away from the capital city, which creates difficulties not only in healthcare delivery but also in infrastructure

Local Care: When working locally, we even performed endoscopy in patients' homes to diagnose bleeding.

Training: Regular Endoscopy Training Is Being Conducted in Local and District Hospitals, And the Situation Is Improving Day by Day.

Results

Of the 796 GI bleeding cases, 82% involved upper GI bleeding, while 7% involved lower GI bleeding. The most common source

was esophageal varices (64%), followed by fundal varices (11%) and gastric ulcers (21%). Endoscopic hemostasis was successfully achieved in 98% of cases. Despite the clinical severity and delays

in some interventions, 15 patients died within 24 hours, 4 patients died within 48 hours resulting in a mortality rate of 1.9%. The primary causes of death included complications related to chronic liver disease, ongoing hemorrhage, hemodynamic instability, and multiple organ failure.

All 19 deaths (100%) occurred in patients with variceal bleeding. In contrast, there were no deaths among non-variceal bleeding

cases. This association was statistically significant ($p = 0.015$), suggesting that variceal bleeding was a major determinant of mortality in our cohort. Of the 19 deaths observed, 15 (79%) occurred in patients from Ulaanbaatar, while only 4 (21%) occurred in patients from rural areas. This difference was statistically significant ($p = 0.0012$), suggesting that urban patients experienced higher mortality rates, despite the overall success of interventions in rural areas.

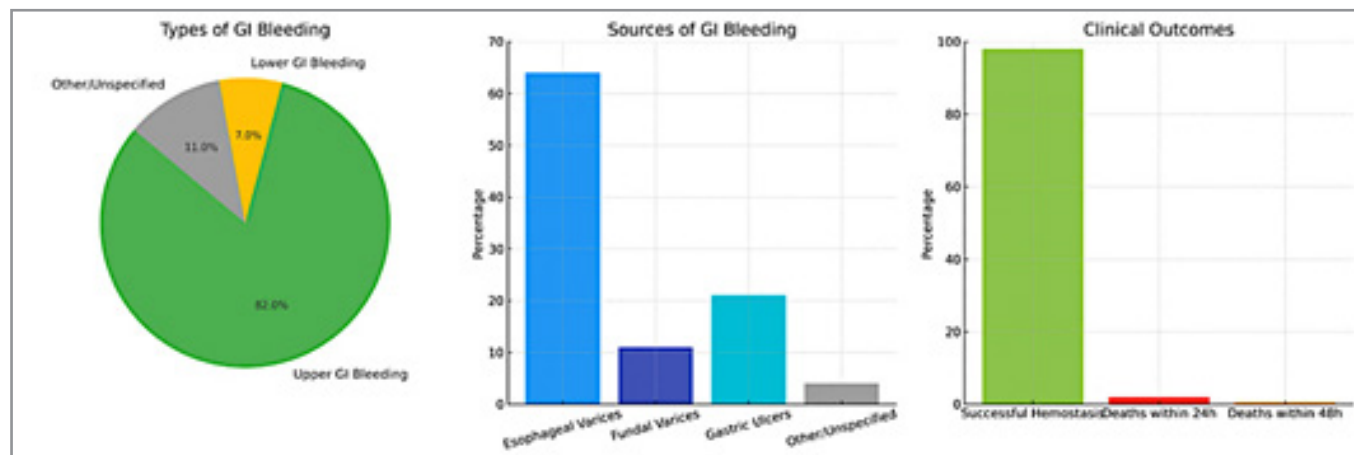


Figure 1: Distribution of Types, Sources, and Clinical Outcomes of GI Bleeding in Non-Transportable Patients Undergoing On-Site Emergency Endoscopy

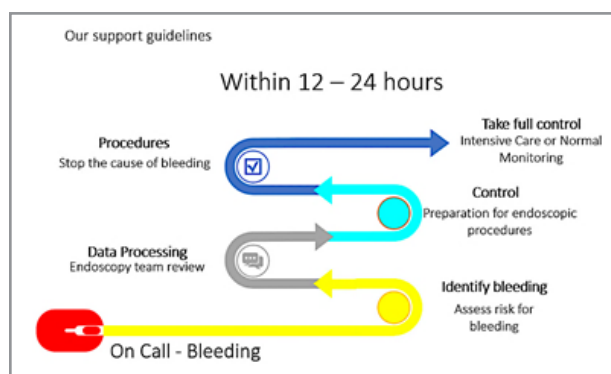
Conclusions

Mobile, on-site emergency endoscopy is a highly effective and feasible approach for managing GI bleeding in non-transportable patients. Our findings highlight that early diagnosis and timely endoscopic intervention significantly reduce mortality, decrease the need for inter-facility transfers, and lower overall healthcare costs.

We advocate for the development of a national integrated emergency endoscopy network to ensure equitable access to life-sav-

ing procedures throughout rural Mongolia. Public investment is essential to support mobile infrastructure, centralized data systems, and fair reimbursement policies across all healthcare levels. Additionally, establishing precise clinical criteria for emergency care and aligning treatment protocols with disease progression will further enhance patient outcomes and the efficiency of the healthcare system [1-5].

Our general call-time model aims to ensure arrival within 12 hours of the bleeding event, whenever possible.



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