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Commentary

Current Trends in Endoscopic Management of Upper Gastrointestinal Bleeding

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DESCRIPTION

Upper GastroIntestinal Bleeding (UGIB) remains a critical medical emergency and a common cause of hospital admission worldwide. In high-income countries, despite advances in endoscopic techniques and supportive care, UGIB continues to be associated with significant morbidity, mortality and healthcare costs. Over the past decade, the management of UGIB has evolved significantly, with innovations in endoscopic technology, better risk stratification and a more refined understanding of timing and technique playing pivotal roles in improving patient outcomes.

UGIB is typically categorized as either variceal or non-variceal. The majority of cases are non-variceal, most commonly arising from peptic ulcers, mucosal erosions, or Mallory-Weiss tears. Variceal bleeding, though less common, is associated with more severe complications and is most frequently related to portal hypertension in the setting of chronic liver disease. Regardless of the etiology, early endoscopic intervention remains the cornerstone of management. One of the most significant trends in recent years is the emphasis on early endoscopy, ideally within 24 hours of presentation. Multiple studies have demonstrated that early endoscopic evaluation and treatment are associated with reduced rebleeding, shorter hospital stays and lower mortality. In high-risk patients, particularly those presenting with hemodynamic instability or active bleeding signs, endoscopy within 6 to 12 hours may be warranted. The use of validated risk scoring tools, such as the Glasgow-Blatchford Score (GBS) and Rockall Score, has further enhanced decision-making around the urgency and timing of endoscopy.

From a therapeutic perspective, endoscopic techniques have expanded well beyond traditional injection therapy. Combination therapy, involving injection of epinephrine followed by thermal coagulation or mechanical methods, is now standard for peptic ulcer bleeding. Hemoclips (endoclips) have become widely used due to their ability to achieve immediate mechanical hemostasis with minimal tissue damage. Thermal modalities, such as bipolar electrocoagulation and heater probes, remain effective for achieving coagulation in actively bleeding vessels. More recently, hemostatic powders such as TC-325 (Hemospray) have been introduced as promising adjunctive therapies. These agents can rapidly control diffuse or inaccessible bleeding by forming a mechanical barrier over the bleeding site. They are particularly useful in complex cases, such as bleeding malignancies or in patients on anticoagulation. Although long-term efficacy data are still being gathered, their role as a bridge to definitive therapy is gaining recognition.

In cases of variceal bleeding, Endoscopic Band Ligation (EBL) remains the gold standard for esophageal varices, while cyanoacrylate injection or newer thrombin-based therapies are being used for gastric varices. In high-resource settings, pre-endoscopy use of vasoactive drugs like octreotide, combined with prophylactic antibiotics, has been shown to improve survival in cirrhotic patients with variceal hemorrhage. Moreover, Transjugular Intrahepatic Portosystemic Shunt (TIPS) is increasingly considered early in selected high-risk patients, particularly those who fail initial endoscopic therapy. Another area of advancement is the role of Endoscopic UltraSound (EUS) in managing UGIB. EUS-guided therapy is being explored for bleeding lesions not accessible by conventional endoscopy, such as bleeding from subepithelial tumors, Dieulafoy's lesions, or deep gastric varices. While still largely confined to tertiary centers, these procedures are likely to become more mainstream as expertise grows.

In addition to therapeutic improvements, training and simulation-based learning in endoscopy have improved technical skill acquisition among gastroenterologists. Virtual reality simulators and high-fidelity models allow trainees to gain experience in UGIB scenarios before encountering them in clinical practice, which contributes to improved patient safety and outcomes. Finally, the integration of Artificial Intelligence (AI) in endoscopy is an emerging field with substantial promise. AI algorithms are being developed to detect bleeding sources, guide therapeutic decisions and even predict rebleeding risk based on real-time image analysis. While still in early stages, AI-enhanced endoscopy could revolutionize UGIB management in high-income settings where digital infrastructure and resources are already established.

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CONCLUSION

The landscape of upper gastrointestinal bleeding management has undergone a remarkable transformation, particularly in high-income countries with access to advanced endoscopic tools and multidisciplinary care. Early intervention, innovative therapeutic modalities and the incorporation of digital technologies have collectively improved clinical outcomes and procedural success. Moving forward, continued investment in research, training and technology will be essential to further reduce the burden of UGIB. Personalized, risk-adapted approaches that integrate clinical judgment with real-time diagnostic support are likely to define the next frontier in endoscopic care. For clinicians, staying abreast of these evolving strategies is not only essential for delivering optimal care but also for anticipating the future direction of gastrointestinal medicine.