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Gastrointestinal Bleeding: Endoscopic and Pharmacologic Management

Sofia Dimitriou*

Department of Digestive Health, Hellenic Institute of Clinical Medicine, Athens, Greece

Introduction

Gastrointestinal bleeding (GIB) is a significant clinical challenge, encompassing a wide spectrum of conditions requiring prompt and effective management. Current approaches to GIB emphasize a multifaceted strategy involving both endoscopic interventions and pharmacotherapy to achieve hemostasis and prevent recurrence. The critical role of prompt diagnosis and accurate risk stratification is paramount in guiding the selection of appropriate treatment strategies, ensuring optimal patient outcomes. Endoscopic techniques have become the cornerstone of GIB management, offering direct visualization and therapeutic capabilities to address bleeding lesions. These interventions range from mechanical methods like clipping to more invasive thermal and injection therapies, each with specific indications and limitations based on the nature of the bleeding source. Pharmacological interventions, particularly the use of acid suppression agents, play a vital supportive role in the management of GIB. Proton pump inhibitors (PPIs) are widely employed to reduce gastric acidity, thereby promoting ulcer healing and reducing the risk of rebleeding, although their optimal use and duration remain areas of ongoing investigation. Emerging strategies and dedicated research efforts are continuously being explored to further refine GIB management, aiming to improve patient outcomes and mitigate the associated morbidity and mortality. A comprehensive understanding of these endoscopic and pharmacological modalities is essential for clinicians managing patients with GIB. This review aims to synthesize current practices, highlighting key advancements and future directions in this dynamic field of gastroenterology. The integration of evidence-based guidelines and the adoption of innovative technologies are crucial for enhancing the efficacy and safety of GIB treatments. Consideration of the specific characteristics of the bleeding lesion, patient comorbidities, and overall clinical stability is essential for personalized treatment planning.

The effective management of non-variceal upper gastrointestinal bleeding (NVUGIB) relies heavily on endoscopic modalities. These interventions aim to achieve immediate hemostasis and reduce the likelihood of rebleeding, which can significantly impact patient morbidity and mortality. Different endoscopic techniques, including clipping, injection therapy, and combined approaches, have been evaluated for their efficacy in various clinical settings. Real-world data are crucial for understanding the practical application and comparative outcomes of these methods. The selection of the most appropriate endoscopic technique often depends on the specific characteristics of the bleeding lesion, such as size, location, and morphology, as well as patient-specific factors like comorbidities and hemodynamic stability. Combination therapy, utilizing multiple endoscopic modalities, has shown promise in achieving superior hemostasis in certain high-risk patient populations. The continuous evolution of endoscopic technology and techniques seeks to improve the precision and effectiveness of these interventions. Careful assessment of the bleeding source and meticulous application of endoscopic therapies are key to successful outcomes. The development of new devices and refinements in existing techniques are ongoing efforts to optimize NVUGIB management. The integration of advanced imaging and visualization tools further aids in identifying and treating subtle bleeding sources. Adherence to established protocols and guidelines ensures a standardized and evidence-based approach to endoscopic NVUGIB management.

Proton pump inhibitors (PPIs) are integral to the management of acute upper gastrointestinal bleeding (AUGIB), primarily serving as an adjunct to endoscopic therapy. Their role extends to risk stratification and secondary prevention of rebleeding, making them a critical component of the treatment armamentarium. The evidence supporting the use of high-dose intravenous PPIs in specific patient populations, particularly those with actively bleeding lesions or a high risk of rebleeding, is substantial. Optimal dosing regimens and the duration of PPI therapy are subject to ongoing research, with a general consensus favoring their use in conjunction with endoscopic interventions. It is crucial to emphasize that PPIs are not a substitute for effective endoscopic hemostasis but rather complement it by providing a favorable environment for healing and reducing the risk of recurrence. The potential for overuse of PPIs and the importance of judicious prescription practices are also significant considerations in clinical decision-making. Understanding the pharmacokinetic and pharmacodynamic properties of different PPIs can inform therapeutic choices. Continuous monitoring of patient response and adjustment of PPI therapy based on clinical outcomes are essential. The development of novel PPI formulations may offer further advantages in managing AUGIB. The integration of PPI therapy into comprehensive AUGIB management protocols is a standard of care. Careful patient selection for high-dose PPI therapy is critical to maximize benefits and minimize potential adverse effects.

Endoscopic treatment of bleeding peptic ulcers is a critical intervention aimed at achieving hemostasis and preventing life-threatening complications. A variety of endoscopic techniques have been developed and refined over time, including the use of endoscopic clips, thermal methods, and injection therapies, often employed in combination. Systematic reviews and meta-analyses of randomized controlled trials are invaluable for comparing the effectiveness of these different approaches in terms of hemostatic success, rebleeding rates, and the need for subsequent surgical intervention. These analyses provide robust evidence to guide clinicians in selecting the most appropriate endoscopic intervention for individual patients presenting with bleeding peptic ulcers. The choice of technique may depend on factors such as ulcer size, depth, location, and the presence of visible stigmata of recent hemorrhage. Advances in endoscopic technology, such as improved clip designs and more effective thermal probes, continue to enhance the efficacy and safety of these procedures. The goal is to achieve rapid and durable hemostasis with minimal risk of complications. Patient selection for endoscopic therapy

is crucial, with certain high-risk features warranting aggressive intervention. The integration of endoscopic findings with clinical assessment allows for optimal treatment planning. Ongoing research aims to identify predictors of treatment success and failure. The development of new hemostatic agents and devices is expected to further improve outcomes in the management of bleeding peptic ulcers.

The management of obscure gastrointestinal bleeding (OGIB) presents unique challenges due to the difficulty in localizing the bleeding source. Pharmacological approaches can play a role in managing these elusive bleeding events, particularly when endoscopic visualization is limited or has been unsuccessful. Medications such as octreotide have been investigated for their potential benefits in controlling bleeding from small bowel sources, where traditional endoscopic techniques may not be readily applicable. The complexity of OGIB necessitates a multidisciplinary approach, often involving the coordinated use of various diagnostic and therapeutic modalities. Interventional radiology techniques, such as angiography and embolization, are also crucial complementary approaches when endoscopic methods fail to identify or control the bleeding. The diagnostic yield of push enteroscopy and deep enteroscopy has improved the ability to visualize and treat small bowel lesions. However, some cases of OGIB may still elude definitive diagnosis and require a tailored management strategy. Research into novel pharmacological agents and improved endoscopic technologies continues to advance the field. The role of genetic predispositions and underlying systemic conditions in contributing to OGIB is also an area of ongoing investigation. Patient-specific factors and the clinical presentation guide the selection of appropriate management strategies. The continuous evaluation of new diagnostic tools and therapeutic interventions is essential for improving outcomes in OGIB.

Guidelines for the endoscopic management of acute lower gastrointestinal bleeding (ALGIB) provide essential recommendations for clinicians to ensure standardized and effective care. These guidelines typically cover crucial aspects of the management process, including diagnostic endoscopy, the identification of specific bleeding sources, and the application of various hemostatic techniques. Common endoscopic interventions for ALGIB include the use of endoscopic clips, thermal coagulation, and banding ligation, with the choice of method depending on the nature and location of the bleeding lesion. The guidelines strongly emphasize the importance of careful patient selection for endoscopic intervention and the need to tailor the approach to the specific bleeding source, whether it be diverticular bleeding, angiodysplasias, or other causes. Adherence to these evidence-based guidelines can significantly improve the success rates of endoscopic therapy and reduce the incidence of rebleeding and complications. The development and dissemination of these guidelines are critical for promoting best practices in the management of ALGIB. Continuous updates to guidelines based on emerging research ensure that clinical care remains at the forefront of medical knowledge. The multidisciplinary nature of ALGIB management, involving gastroenterologists, surgeons, and interventional radiologists, is often highlighted in these recommendations. The goal is to achieve rapid and effective control of bleeding while minimizing patient risk. The implementation of these guidelines contributes to improved patient safety and outcomes. Regular training and education on these guidelines are essential for healthcare professionals.

The optimal use of proton pump inhibitors (PPIs) in the management of severe upper gastrointestinal bleeding (AUGIB) remains a subject of ongoing clinical investigation and debate. While it is generally accepted that PPIs play a crucial role in preventing rebleeding, the question of whether intensive or standard-dose therapy offers superior clinical outcomes has been explored in various study designs. Retrospective studies, such as the one examining intensive versus standard-dose PPI therapy, aim to provide insights into this question by analyzing real-world patient data. These studies contribute to the body of evidence that informs clinical decision-making regarding PPI dosing in critical AUGIB cases. Factors such as the severity of bleeding, the presence of comorbidities, and the specific endoscopic findings can influence the choice of PPI regimen. The ultimate goal is to optimize therapy to reduce rebleeding rates, shorten hospital stays, and improve overall patient prognosis. The development of personalized treatment strategies for severe AUGIB, incorporating both endoscopic interventions and tailored pharmacotherapy, is a key area of focus. Continued research, including prospective randomized controlled trials, is needed to definitively establish the optimal PPI dosing strategy for different patient subgroups. The judicious use of PPIs, balancing potential benefits with the risk of adverse effects, is paramount. The integration of clinical expertise with evidence-based recommendations guides the application of intensive PPI therapy. Patient response to treatment should be closely monitored to ensure optimal outcomes.

Endoscopic ultrasound (EUS) has emerged as a valuable tool in the diagnostic and therapeutic armamentarium for gastrointestinal bleeding (GIB), particularly in challenging cases where conventional endoscopic methods are inconclusive. EUS offers a unique advantage by enabling visualization of deeper gastrointestinal wall layers and adjacent structures, thereby facilitating the identification of bleeding sources that might be obscured or missed during standard endoscopy. This enhanced imaging capability is particularly useful in cases of obscure or recurrent bleeding where the etiology remains elusive. Furthermore, EUS is not limited to diagnostic applications; it also encompasses interventional techniques for achieving hemostasis directly at the bleeding site. These interventional EUS procedures, although technically demanding, can offer a minimally invasive option for managing certain types of GIB. The integration of EUS into the diagnostic algorithm for complex GIB cases can significantly improve diagnostic yield and guide subsequent therapeutic decisions. Research continues to explore the full potential of EUS in various GIB scenarios, aiming to optimize its application and expand its therapeutic utility. The development of specialized EUS probes and accessories further enhances its capabilities. Careful patient selection and procedural planning are essential for successful EUS-guided interventions. The role of EUS in combination with other imaging modalities is also being investigated. Advancements in EUS technology are continuously improving its resolution and therapeutic capabilities.

Innovations in endoscopic devices and techniques are continuously shaping the landscape of gastrointestinal bleeding (GIB) management, aiming to improve efficacy and minimize complications. The development of novel endoscopic clips, ligating devices, and hemostatic powders represents significant advancements in the field, offering clinicians a wider array of options for controlling bleeding from various sources. These innovations are driven by the need for more precise, efficient, and safer hemostatic interventions, particularly in challenging anatomical locations or for specific types of lesions. Improved clip designs, for instance, may offer enhanced grasping capabilities and secure closure of bleeding vessels. Ligating devices can provide a non-thermal method for achieving hemostasis, while hemostatic powders can be applied to larger or more diffuse bleeding areas. This ongoing evolution of endoscopic technology holds the potential to further enhance patient outcomes by reducing rebleeding rates, shortening procedure times, and minimizing the need for more invasive treatments. The widespread adoption and integration of these new technologies into clinical practice are crucial for realizing their full impact on GIB management. Continuous research and development in this area are vital for pushing the boundaries of endoscopic hemostasis. Evaluation of the long-term efficacy and safety of these novel devices is ongoing. The training and education of endoscopists on the proper use of these advanced tools are essential for their successful implementation. The ultimate goal is to provide safer and more effective endoscopic solutions for all types of GIB.

Small bowel bleeding poses distinct diagnostic and therapeutic challenges due to the limited accessibility of this segment of the gastrointestinal tract to conventional endoscopic techniques. While the small intestine is a common source of obscure gastrointestinal bleeding, its investigation and management often require special-

ized approaches. Pharmacological management plays a crucial role in addressing bleeding from small bowel sources, particularly when endoscopic visualization is difficult or unsuccessful. Medications such as vasopressin analogs and somatostatin, known for their vasoconstrictive properties, can be employed to help control such bleeding episodes. These agents are often used as a bridge to definitive therapy or in cases where other modalities are not feasible. The limitations of standard upper and lower endoscopy in visualizing the entire small bowel necessitate consideration of alternative techniques, including push enteroscopy, deep enteroscopy, and capsule endoscopy. Interventional radiology techniques, such as angiography and embolization, are also vital adjuncts and often indispensable for controlling actively bleeding small bowel lesions when endoscopic methods fail to achieve hemostasis. The development of new pharmacological agents with improved efficacy and safety profiles for small bowel bleeding is an ongoing area of research. A comprehensive understanding of the various etiologies of small bowel bleeding is essential for guiding therapeutic decisions. Multidisciplinary collaboration between gastroenterologists, interventional radiologists, and surgeons is often required for optimal patient care. The integration of advanced imaging and therapeutic technologies is crucial for improving outcomes in small bowel bleeding.

Description

Gastrointestinal bleeding (GIB) is a prevalent and potentially life-threatening condition that necessitates prompt and effective management strategies. The current therapeutic landscape for GIB is characterized by a sophisticated interplay between endoscopic interventions and pharmacotherapy, both of which are crucial for achieving hemostasis and preventing recurrent bleeding episodes. Central to the successful management of GIB is the principle of early and accurate diagnosis coupled with a thorough risk stratification of the patient. These initial steps are pivotal in guiding the subsequent treatment decisions, ensuring that the chosen interventions are tailored to the specific clinical context. Endoscopic interventions form the bedrock of GIB management, offering direct visualization of the bleeding site and the ability to apply targeted therapies. Key endoscopic techniques discussed in the literature include the use of mechanical devices like clips, thermal methods that employ heat to cauterize bleeding vessels, and injection therapies that introduce hemostatic agents directly into the bleeding lesion. Each of these techniques has its specific indications, contraindications, and limitations, requiring careful consideration by the endoscopist. Pharmacological interventions, particularly the use of acid suppression agents, play a significant adjunctive role in GIB management. Proton pump inhibitors (PPIs) are widely utilized to reduce gastric acid production, which not only aids in the healing of lesions but also helps to prevent rebleeding. The optimal dosing and duration of PPI therapy remain subjects of ongoing research and clinical debate. Emerging strategies and dedicated research efforts are continuously exploring novel approaches to further improve patient outcomes and reduce the morbidity and mortality associated with GIB. The synthesis of current practices and future directions in GIB management is essential for advancing the field.

The efficacy of various endoscopic modalities employed for the management of non-variceal upper gastrointestinal bleeding (NVUGIB) has been a subject of extensive investigation, particularly within real-world clinical settings. Studies comparing the outcomes of different endoscopic interventions, such as clipping, injection therapy, and the synergistic application of combined methods, aim to elucidate their respective contributions to achieving hemostasis and preventing rebleeding. The findings from such comparative analyses often underscore the potential advantages of combination therapy, suggesting that it may yield superior outcomes in specific patient groups, particularly those deemed to be at higher risk for adverse events. This highlights the critical importance of a personalized approach to selecting the appropriate endoscopic technique, taking into account both the characteristics of the bleeding lesion and the individual patient's clinical profile. The continuous evolution of endoscopic technology and techniques seeks to refine these interventions, offering improved precision and efficacy. The judicious application of these endoscopic tools, guided by a thorough understanding of their strengths and limitations, is paramount. Ongoing research aims to further optimize the selection and application of endoscopic therapies for NVUGIB. The integration of advanced imaging capabilities within endoscopic devices can further enhance the visualization and treatment of bleeding sources. Adherence to evidence-based guidelines and protocols ensures a standardized approach to NVUGIB management.

The role of proton pump inhibitors (PPIs) in the therapeutic landscape of acute upper gastrointestinal bleeding (AUGIB) is multifaceted, extending beyond simple acid suppression to encompass risk stratification and the critical secondary prevention of rebleeding. A substantial body of evidence supports the use of high-dose intravenous PPIs, particularly in patients presenting with severe bleeding or those at high risk of recurrence. The optimal dosing regimens and the appropriate duration of PPI therapy are areas that continue to be refined through clinical research. It is imperative to emphasize that PPIs are considered an adjunct to, rather than a replacement for, effective endoscopic hemostasis. While PPIs create a favorable environment for healing and reduce the risk of rebleeding, they do not address the primary bleeding source itself. Concerns regarding the potential for overuse of PPIs and the importance of judicious prescription practices are also significant considerations in clinical decision-making. The careful selection of patients who would benefit most from high-dose PPI therapy is crucial to maximize therapeutic benefit while minimizing potential adverse effects. Continuous monitoring of patient response and adjustment of therapy based on clinical outcomes are essential. The development of new formulations and delivery methods for PPIs may offer further advantages in managing AUGIB. The integration of PPI therapy into comprehensive AUGIB management protocols is a cornerstone of modern gastroenterological practice.

Bleeding peptic ulcers represent a significant cause of upper gastrointestinal bleeding, and their endoscopic treatment is a critical intervention aimed at achieving hemostasis and preventing serious complications. A spectrum of endoscopic techniques has been developed and refined for this purpose, including the application of endoscopic clips, thermal coagulation methods, and injection therapies, often used in combination. Systematic reviews and meta-analyses of randomized controlled trials are indispensable in evaluating and comparing the effectiveness of these various approaches. These rigorous analytical methods provide valuable insights into their performance regarding hemostatic success rates, the incidence of rebleeding, and the need for subsequent surgical intervention. Such evidence-based evaluations are crucial for clinicians when selecting the most appropriate endoscopic intervention for an individual patient with a bleeding peptic ulcer. The choice of technique is typically guided by factors such as the size, depth, and location of the ulcer, as well as the presence of visible stigmata of recent hemorrhage. Advances in endoscopic technology, including improved clip designs and more effective thermal probes, continue to enhance the safety and efficacy of these procedures. The primary goal remains to achieve rapid and durable hemostasis with minimal risk of adverse events. Patient selection for endoscopic therapy is paramount, with certain high-risk features necessitating aggressive intervention.

Obscure gastrointestinal bleeding (OGIB) presents a unique set of diagnostic and therapeutic challenges due to the difficulty in precisely localizing the bleeding source. In such scenarios, pharmacological approaches can play a significant role in the management of these elusive bleeding events, especially when conventional endoscopic visualization has proven to be limited or unsuccessful. Medications such as octreotide, known for its ability to reduce splanchnic blood flow, have been investigated for their potential benefits in controlling bleeding from small bowel sources, where traditional endoscopic techniques may not be readily appli-

cable. The inherent complexity of OGIB often necessitates a multidisciplinary approach, integrating various diagnostic and therapeutic modalities. Interventional radiology techniques, including angiography and embolization, serve as critical complementary strategies when endoscopic methods fail to identify or control the bleeding source. These interventions can provide a lifeline for patients with persistent or severe OGIB. Research into novel pharmacological agents and improved endoscopic technologies continues to drive progress in this specialized area of gastroenterology. The continuous evaluation of new diagnostic tools and therapeutic interventions is essential for improving patient outcomes in OGIB.

Guidelines developed by professional societies, such as the American Society for Gastrointestinal Endoscopy, offer crucial recommendations for the endoscopic management of acute lower gastrointestinal bleeding (ALGIB). These comprehensive guidelines typically address essential aspects of care, including the performance of diagnostic endoscopy, the accurate identification of specific bleeding sources, and the judicious application of various endoscopic hemostatic techniques. Commonly employed endoscopic interventions for ALGIB include the use of endoscopic clips to secure bleeding vessels, thermal coagulation methods to cauterize tissue, and banding ligation to constrict bleeding sites. The selection of the most appropriate technique is often dictated by the nature, size, and location of the bleeding lesion. These guidelines strongly emphasize the importance of careful patient selection for endoscopic intervention and the necessity of tailoring the approach to the specific bleeding source, whether it originates from diverticula, angiodysplasias, or other causes. Adherence to these evidence-based recommendations can significantly enhance the success rates of endoscopic therapy and contribute to reducing the incidence of rebleeding and associated complications. The ongoing development and dissemination of these guidelines are critical for promoting best practices in the management of ALGIB.

The optimal management of severe upper gastrointestinal bleeding (AUGIB) is a complex clinical scenario where the role and dosage of proton pump inhibitors (PPIs) continue to be a subject of investigation. While PPIs are widely recognized for their ability to reduce acid secretion and thereby promote healing and decrease rebleeding rates, the question of whether intensive versus standard-dose therapy yields superior clinical outcomes remains an area of active research. Retrospective studies, such as the one examining intensive versus standard-dose PPI therapy for severe AUGIB, aim to provide valuable insights by analyzing data from real-world patient populations. These studies contribute to the ongoing discussion regarding the most appropriate PPI regimen for critically ill patients with severe bleeding. Factors influencing this decision often include the severity of the bleeding, the presence of comorbidities, and the specific endoscopic findings. The ultimate goal is to optimize therapeutic strategies to minimize rebleeding, shorten hospital stays, and improve overall patient prognosis. The development of personalized treatment approaches for severe AUGIB, integrating endoscopic interventions with tailored pharmacotherapy, represents a key focus in current research efforts. Continued high-quality research is essential to definitively establish optimal PPI dosing strategies.

Endoscopic ultrasound (EUS) has proven to be an invaluable adjunctive modality in the diagnosis and management of gastrointestinal bleeding (GIB), particularly in cases where conventional endoscopic methods have yielded inconclusive results. EUS offers a distinct advantage by enabling visualization of deeper layers of the gastrointestinal wall and adjacent structures, thereby facilitating the identification of bleeding sources that might be otherwise obscured or overlooked during standard endoscopy. This enhanced imaging capability is particularly beneficial in the evaluation of obscure or recurrent bleeding where the etiology remains elusive. Beyond its diagnostic utility, EUS also encompasses interventional techniques for achieving hemostasis directly at the bleeding site. These interventional EUS procedures, while technically demanding, can offer a minimally invasive option for managing certain types of GIB. The integration of EUS into the diagnostic algorithm for complex GIB cases can significantly improve diagnostic yield and guide subsequent therapeutic decisions. Ongoing research continues to explore the full potential of EUS in various GIB scenarios, aiming to optimize its application and expand its therapeutic capabilities. The development of specialized EUS probes further enhances its diagnostic and therapeutic applications.

Innovations in endoscopic devices and techniques are continually advancing the field of gastrointestinal bleeding (GIB) management, with a focus on enhancing efficacy and minimizing complications. The development of novel endoscopic clips, ligating devices, and hemostatic powders represents significant progress, providing clinicians with a broader range of options for controlling bleeding from diverse sources. These advancements are driven by the pursuit of more precise, efficient, and safer hemostatic interventions, especially for lesions located in challenging anatomical regions or presenting with complex characteristics. Improved clip designs, for instance, may offer enhanced grasping capabilities and more secure closure of bleeding vessels. Ligating devices provide a non-thermal method for achieving hemostasis, while hemostatic powders can be effectively applied to larger or more diffuse bleeding areas. This ongoing evolution of endoscopic technology holds substantial potential to further improve patient outcomes by reducing rebleeding rates, shortening procedure times, and decreasing the need for more invasive treatments. The widespread adoption and integration of these novel technologies into routine clinical practice are crucial for realizing their full impact on GIB management. Continuous research and development are essential for pushing the boundaries of endoscopic hemostasis.

Bleeding originating from the small bowel presents a unique set of diagnostic and therapeutic challenges due to the limited accessibility of this gastrointestinal segment to standard endoscopic techniques. Pharmacological management plays a crucial role in addressing bleeding from small bowel sources, particularly when endoscopic visualization is difficult or has proven unsuccessful. Medications such as vasopressin analogs and somatostatin, known for their vasoconstrictive properties, can be employed to help control such bleeding episodes. These agents are often used as a bridge to definitive therapy or in cases where other modalities are not feasible. The inherent limitations of conventional upper and lower endoscopy in fully visualizing the small bowel necessitate consideration of alternative techniques, including push enteroscopy, deep enteroscopy, and capsule endoscopy. Interventional radiology techniques, such as angiography and embolization, are also vital adjuncts and often indispensable for controlling actively bleeding small bowel lesions when endoscopic methods fail to achieve hemostasis. The development of new pharmacological agents with improved efficacy and safety profiles for small bowel bleeding is an ongoing area of research. A comprehensive understanding of the diverse etiologies of small bowel bleeding is essential for guiding therapeutic decisions effectively.

Conclusion

Current management of gastrointestinal bleeding (GIB) relies on a combination of endoscopic interventions and pharmacotherapy. Prompt diagnosis and risk stratification are crucial for guiding treatment decisions. Endoscopic techniques like clipping, thermal methods, and injection therapies are used for hemostasis, with their indications and limitations varying. Proton pump inhibitors (PPIs) are vital for acid suppression and preventing rebleeding, though optimal use is still studied. Emerging strategies aim to improve patient outcomes. Comparative studies evaluate different endoscopic modalities for non-variceal upper GIB, suggesting combination therapy may be superior in high-risk patients. PPIs are adjunctive to endoscopic therapy for acute upper GIB, with evidence supporting high-dose use for risk stratification and prevention of rebleeding. Endoscopic treatment of bleeding peptic ulcers utilizes various techniques, with meta-analyses informing opti-

mal choices. Obscure GIB management may involve medications like octreotide and interventional radiology when endoscopy is limited. Guidelines exist for endoscopic management of acute lower GIB, emphasizing tailored approaches. Research continues on intensive vs. standard-dose PPIs for severe upper GIB. Endoscopic ultrasound (EUS) aids in diagnosing and managing GIB when conventional endoscopy fails. Innovations in endoscopic devices, like new clips and powders, aim to enhance hemostasis. Pharmacological management is key for small bowel bleeding, often supplemented by interventional radiology.

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Conflict of Interest

None.

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Address for Correspondence: Sofia, Dimitriou, Department of Digestive Health, Hellenic Institute of Clinical Medicine, Athens, Greece , E-mail: s.dimitriou@hicm.gr

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