Annals of COLOPROCTOLOGY

Guideline

Ann Coloproctol 2024;40(4):287-320
pISSN: 2287-9714 • eISSN: 2287-9722
https://doi.org/10.3393/ac.2023.00871.0124

The Italian Unitary Society of Colon-Proctology (Società Italiana Unitaria di Colonproctologia) guidelines for the management of acute and chronic hemorrhoidal disease

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Received: December 11, 2023; Revised: January 19, 2024; Accepted: February 23, 2024
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https://doi.org/10.3393/ac.2023.00871.0124

The aim of these evidence-based guidelines is to present a consensus position from members of the Italian Unitary Society of Colon-Proctology (Società Italiana Unitaria di Colon-Proctologia, SIUCP) on the diagnosis and management of hemorrhoidal disease, with the goal of guiding physicians in the choice of the best treatment option. A panel of experts was charged by the Board of the SIUCP to develop key questions on the main topics related to the management of hemorrhoidal disease and to perform an accurate and comprehensive literature search on each topic, in order to provide evidence-based answers to the questions and to summarize them in statements. All the clinical questions were discussed by the expert panel in multiple rounds through the Delphi approach and, for each statement, a consensus among the experts was reached. The questions were created according to PICO (patients, intervention, comparison, and outcomes) criteria, and the statements were developed adopting the GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) methodology. In cases of grade 1 hemorrhoidal prolapse, outpatient procedures including hemorrhoidal laser procedure and sclerotherapy may be considered the preferred surgical options. For grade 2 prolapse, nonexcisional procedures including outpatient treatments, hemorrhoidal artery ligation and mucopexy, laser hemorrhoidoplasty, the Rafaelo procedure, and stapled hemorrhoidopexy may represent the first-line treatment options, whereas excisional surgery may be considered in selected cases. In cases of grades 3 and 4, stapled hemorrhoidopexy and hemorrhoidectomy may represent the most effective procedures, even if, in the expert panel opinion, stapled hemorrhoidopexy represents the gold-standard treatment for grade 3 hemorrhoidal prolapse.

Keywords: Hemorrhoids; Stapled hemorrhoidopexy; Hemorrhoidopexy; Hemorrhoidal artery ligation and mucopexy; Laser hemorrhoidoplasty

INTRODUCTION

Hemorrhoids are normal anatomical structures consisting of sinusoids situated in the subepithelial space of the anal canal. Typically, they are classified based on their location as either proximal or distal to the dentate line, distinguishing them as internal or external hemorrhoids [1, 2]. The hemorrhoidal tissue is securely anchored within the anal canal by connective and muscle fibers—specifically, the Treitz and Parks ligaments. These ligaments tightly attach the tissue to the internal anal sphincter and the conjoined longitudinal muscle, ensuring that the vascular tissue remains in its proper position [2–6].

The main function of hemorrhoids is to optimize anal continence. During the resting state, the size of the hemorrhoidal cushion enables the complete closure of the anus by filling the 7- to 8-mm gap left by the internal sphincter, thereby contributing to 15%–20% of the baseline anal pressure [7, 8]. Just before defecation, hemorrhoidal tissue contributes to the anal sampling mechanism through its sensory innervation [1–3]. Hemorrhoids play a role in maintaining anal continence by creating a spongy cushion that can rapidly deflate to facilitate stool passage during defecation and then swiftly reinflate to enable the hermetic sealing of the anal canal, thereby preventing fecal soiling immediately after defecation [2, 3].

Hemorrhoidal disease starts with the deterioration of supporting tissue, which causes the hemorrhoidal tissue to lose its physiological fixation to the anal canal and subsequently slide downward. Initially, the slippage of the vascular cushions is confined to the anal canal, but it progressively advances until it permanently prolapses outside the anus.

Regarding the etiology of hemorrhoidal disease, the long-standing theory of varicose veins has been rendered obsolete and proven incorrect, as it has become clear that hemorrhoids and anorectal varices are distinct entities. Furthermore, the incidence of pathological hemorrhoids is not increased in patients with portal hypertension and varices [9, 10]. The etiological theories of vascular hyperplasia (based on similarities between hemorrhoidal tissue and the corpus cavernosum of the penis) [11], increased internal anal sphincter tone [12, 13], and hypervascularization of hemorrhoidal cushions [14] cannot be fully accepted. These theories refer to paraphysiological changes that, although they may play a role in the pathogenesis of hemorrhoidal congestion, could also be considered effects rather than causes of hemorrhoidal disease [3, 12]. According to the widely accepted "sliding anal canal lining" theory proposed by Gass and Adams [15] and promoted by Thomson [16], hemorrhoidal pathology arises when the supporting tissues of the anal cushions deteriorate. This deterioration allows the cushions to slip into the anal canal, which in turn reduces venous return from the sinusoids during defecation and leads to blood stagnation within the cushions. The result is dilatation and congestion of the prolapsed hemorrhoidal plexus [5, 17–19].

The abnormal downward displacement of the vascular cushions is responsible for the main symptoms of hemorrhoidal disease, such as bleeding, perineal irritation, itching, and soiling, as well as its complications, including strangulation and thrombosis [3, 20–

25]. Depending on the severity and timing of symptoms, hemorrhoidal disease can be classified as either acute or chronic. Acute hemorrhoidal disease, also referred to as a "hemorrhoidal crisis," is characterized by persistent bleeding or acute anal pain resulting from hemorrhoidal dilatation, thrombosis, or strangulation. In contrast, the chronic phase of the disease encompasses the periods between acute episodes and is marked by more manageable, mild, or subclinical symptoms.

Patients with prolapsed internal hemorrhoids often report symptoms of obstructed defecation, including excessive straining, a sensation of rectal fullness, and a feeling of incomplete evacuation [3, 10]. The internal hemorrhoidal prolapse is typically classified into 4 grades based on the Goligher classification system. This ranges from grade 1, which is clinically undetectable, to grade 4, where the hemorrhoidal prolapse is permanently external to the anus [26–28].

The "unitary theory of prolapse"

The widely accepted "sliding anal canal lining" theory has certain limitations. In particular, while the connective support of hemorrhoidal tissue deteriorates in all individuals as they age [4–6], not all individuals exhibit hemorrhoidal symptoms, nor are these symptoms exclusive to the elderly. Although the downward displacement of hemorrhoids may explain the pathogenesis of bleeding, thrombosis, and strangulation, the symptoms of obstructed defecation, including mild incontinence, which are often reported by patients with hemorrhoidal prolapse, cannot be readily accounted for by the mere slippage of anal vascular cushions. Finally, the "sliding anal canal lining" theory does not account for the causes of bleeding and obstructed defecation symptoms in patients with mild and clinically undetectable hemorrhoidal prolapse, which corresponds to grade 1 of the Goligher classification.

According to a recently proposed theory, the "unitary theory of prolapse," the downward displacement of hemorrhoids is, in all cases, secondary to an internal rectal prolapse. This condition may lead to rectoanal intussusception, which, through repetitive traction on the hemorrhoidal tissue, causes its congestion and slippage. This process ultimately represents the *primum movens* of the disease [29].

The current theory is not supported by a specific demonstration, although it appears to be corroborated by consistent intraoperative observations of mucosal or full-thickness rectal prolapse in patients with prolapsed hemorrhoids, consistent cinedefecographic findings of rectoanal intussusception [29], a high prevalence of obstructed defecation symptoms [30, 31], and, indirectly, by the relative effectiveness of surgical procedures that target hemorrhoidal disease by pexy or resection of the associated redundant rectal tissue.

METHODS

A panel of experts was charged by the Board of the Italian Unitary Society of Colon-Proctology (Società Italiana Unitaria di Colonproctologia, SIUCP) to develop key questions, according to the PICO (patients, intervention, comparison, outcome) criteria [32, 33], on the main topics related to the diagnosis and treatment of hemorrhoidal prolapse disease. Then, leading specialists in this field, guided by a central coordinator, performed an accurate and comprehensive search on each topic in multiple databases (MEDLINE, Scopus, Embase) in order to provide evidence-based answers to the questions and to summarize them in statements.

The search strategy covered the period ranging from July 1975 to November 2023 and was based on the following keyword combinations: "hemorrhoids and diagnosis," "hemorrhoids and endoscopy," "hemorrhoids and anoscopy," "hemorrhoids and imaging," "hemorrhoids and ultrasound," "hemorrhoids and defecography," "hemorrhoids and magnetic resonance defecography," "hemorrhoids and manometry," "hemorrhoids and treatment," "hemorrhoids and therapy," "hemorrhoids and fiber," "hemorrhoids and sitz baths," "hemorrhoids and phlebotonics," "hemorrhoids and nifedipine," "bleeding hemorrhoids and therapy," "thrombosed external hemorrhoids and therapy," "thrombosed internal hemorrhoids and therapy," hemorrhoidal crisis and therapy," "hemorrhoids and rubber band ligation," "hemorrhoids and sclerotherapy," "hemorrhoids and infrared coagulation," "hemorrhoids and hemorrhoidal artery ligation," "hemorrhoidal artery ligation and mucopexy," "hemorrhoids and anal lifting," "hemorrhoids and recto-anal repair," "hemorrhoids and stapled hemorrhoidopexy," hemorrhoids and stapled haemorrhoidopexy," "hemorrhoids and stapled anopexy," hemorrhoids and stapled hemorrhoidopexy," "hemorrhoids and stapled transanal rectal resection," "hemorrhoids and laser hemorrhoidal procedure," "hemorrhoids and laser hemorrhoidoplasty," "hemorrhoids and radiofrequency ablation," "hemorrhoids and Rafaelo procedure," "hemorrhoids and hemorrhoidectomy," "hemorrhoids and Milligan-Morgan hemorrhoidectomy," "hemorrhoids and Ferguson hemorrhoidectomy," and "hemorrhoids and Whitehead hemorrhoidectomy." For all mentioned keyword combinations, the term "haemorrhoids" was also used in place of "hemorrhoids."

The literature search included case series, observational retrospective or prospective studies, randomized controlled trials, and systematic reviews/meta-analyses. Specifically, out of 684 eligible papers, 98 duplicates were removed, leaving 586 studies to be screened for inclusion. Of these, 185 were excluded because they were case reports, letters to the editor, proceedings, studies without abstracts, or studies addressing an incorrect topic. Of the 401

https://doi.org/10.3393/ac.2023.00871.0124

full-text articles assessed for eligibility, 124 were excluded due to the availability of related studies with higher level evidence. As a result, 277 studies— including case series, observational retrospective and prospective studies, randomized controlled trials, and systematic reviews/meta-analyses—were analyzed to provide evidence-based answers to each key question. In total, the references for this manuscript comprised 298 entries, which included 277 studies from the aforementioned research and 21 additional records consisting of narrative reviews and book chapters that discuss the epidemiology, pathogenesis, and clinical presentation of hemorrhoidal disease.

Methodology for analyzing and formulating statements

From all the included studies, the results concerning the primary and secondary outcomes were extracted, recorded, and compared. The quality and characteristics of each study were analyzed using the GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) methodology [32, 33]. Based on the grading scheme, recommendations were classified as strong (grade 1) or weak (grade 2). This classification depended on the balance among benefits, risks, burdens, and possibly costs, as well as the degree of confidence in the estimates of benefits, risks, and burdens. Based on the characteristics of the included studies, the quality of evidence supporting each recommendation was defined as high, moderate, or low (Table 1). The definitive assignment of the quality of evidence associated with each recommendation was performed by considering the most pertinent studies with the highest quality of evidence, in accordance with the principles of evidence-based medicine. Therefore, RCTs and meta-analyses were given preference. However, in the absence of higher level evidence, observational prospective or retrospective studies were included. In cases where relevant topics had an undetectable quality of evidence due to a lack of pertinent studies, the related statements were based on the expert panel's opinion.

All the clinical questions were discussed by the expert panel in multiple rounds through the Delphi approach [34] and, for each statement, a consensus among the experts was reached. The central coordinator assembled the different answers derived from each round and, with the cooperation of the expert panel, prepared the definitive guidelines, resulting in the present manuscript. All experts contributed to the development of current guidelines, and the manuscript was reviewed and approved by all the authors.

Updates of the guideline

The SIUCP's statutes require all formulated guidelines to be updated every 5 years. The board responsible for SIUCP will commit to appointing a study group tasked with reviewing the literature from the past 5 years. This group will update the pertinent statements and disseminate them to a panel of experts using the Delphi methodology.

Ethics statement

The study protocol and methods were approved by the Institu-

Table 1. Grading of recommendations according to the GRADE system

Grade	Strength of recommendation	Benefit vs. risk	Quality of studies	Implication
1A	Strong (high-quality evidence)	Benefits clearly outweigh risks and burdens or vice versa	RCTs without important limitations or overwhelming evidence from observational studies	Strong recommendation; can apply to most patients in most circumstances without reservation
1B	Strong (moderate-quality evidence)	Benefits clearly outweigh risks and burdens or vice versa	RCTs with important limitations or exceptionally strong evidence from observational studies	Strong recommendation; can apply to most patients in most circumstances without reservation
1C	Strong (low- or very low-quality evidence)	Benefits clearly outweigh risks and burdens or vice versa	Observational studies or case series	Strong recommendation but may change when higher quality evidence becomes available
2A	Weak (high-quality evidence)	Benefits closely balanced with risks and burdens	RCTs without important limitations or overwhelming evidence from observational studies	Weak recommendation; best action may differ depending on circumstances or patients' or societal values
2B	Weak (moderate-quality evidence)	Benefits closely balanced with risks and burdens	RCTs with important limitations or exceptionally strong evidence from observational studies	Weak recommendation; best action may differ depending on circumstances or patients' or societal values
2C	Weak (low- or very low-quality evidence)	Uncertainty in the estimates of benefits, risks, and burdens; benefits, risks, and burdens may be closely balanced	Observational studies or case series	Very weak recommendation; other alternatives may be equally reasonable

GRADE, Grading of Recommendations, Assessment, Development, and Evaluations; RCT, randomized controlled trial.

tional Board of SIUCP (No. 02-2023). Based on the nature of our study, representing a consensus position among experts through the Delphi method, and in compliance with the guidelines specified by the Italian law, approval from the Independent Ethics Committee was not required. The research fell under the category of exempt or noninvasive research, which is not subject to mandatory Independent Ethics Committee oversight. However, the anonymity and confidentiality of our panel members throughout the Delphi process were ensured. All participants were provided with clear information about the study's purpose and procedures, and their voluntary participation was obtained through informed consent. We also ensured strict confidentiality and anonymity during data analysis and result reporting. All participants provided informed consent for publication.

RESULTS

Statement	Strength of recommendation
1. In patients with hemorrhoidal disease, what is the role of endoscopy?	
1-1. In patients with suspected hemorrhoidal disease and inconclusive physical examination findings, anoscopy may be considered to confirm the diagnosis and to exclude other anal pathologies that could cause bleeding, discomfort, and pain.	Expert opinion
1-2. In patients younger than 40 years with hematochezia of probable hemorrhoidal origin who do not have risk factors for colorectal neoplasia, flexible sigmoidoscopy is a reasonable diagnostic option to exclude other causes of bleeding in the preoperative setting.	Weak (2B)
1-3. In patients older than 40 years with hematochezia, as well as in patients with hematochezia and risk factors for colorectal cancer, such as those reporting blood mixed with stools, colonoscopy represents the most appropriate diagnostic tool to evaluate the causes of bleeding.	Strong (1B)
1-4. In patients undergoing colonoscopy and sigmoidoscopy, the endoscopic examination should be completed by anoscopy in order to more accurately detect anal pathologies.	Weak (2B)
2. In patients with hemorrhoidal disease, what is the role of imaging investigations?	
2-1. Due to the scarce available literature, no recommendations can be made regarding the use of imaging studies in patients with hemorrhoidal disease whose primary symptoms are vascular congestion, including bleeding and local discomfort.	-
2-2. In cases where the diagnosis is doubtful, 3-dimensional endoanal ultrasound (3D-EAUS) and/or magnetic resonance imaging (MRI) may be considered to exclude anorectal abscesses or intraparietal masses.	Weak (2B)
2-3. In patients with hemorrhoidal disease who also exhibit symptoms of obstructed defecation, imaging studies such as defecography, cystocolpoproctography, or magnetic resonance defecography may be considered. These investigations can help evaluate any coexisting morphological and functional disorders of the pelvic organs that may be associated with constipation. Such findings should be considered when planning a therapeutic strategy.	Weak (2B)
2-4. In patients with hemorrhoidal disease who also have compromised baseline anal continence, or a history of obstetrical trauma or prior anorectal surgery, EAUS or MRI may be considered for evaluating sphincter defects. This can help identify patients at high risk of postoperative fecal incontinence and assist the surgeon in selecting the most appropriate therapeutic option.	Expert opinion
3. In patients with hemorrhoidal disease, what is the role of functional investigations?	
3-1. Anorectal manometry may be considered in patients with hemorrhoidal disease associated with obstructed defecation symptoms, in order to confirm the clinical suspicion of dyssynergic defecation.	Weak (2B)
3-2. Anorectal manometry may be considered, together with EAUS, in the preoperative workup of patients with impaired baseline anal continence, in order to assess preoperative anorectal function and guide the surgeon in the choice of treatment strategy.	Expert opinion
3-3. The preoperative evaluation of rectal sensitivity in patients with hemorrhoidal disease is particularly worth considering in subjects with expected baseline rectal hypersensitivity, such as those with a history of proctitis, irritable bowel syndrome, or previous rectal surgery, because this subset of patients may show a higher risk of postoperative urge incontinence after stapled hemorrhoidopexy and may be more safely treated with other surgical options.	Expert opinion
4. In patients with hemorrhoidal disease, how, when, and why should nonoperative management be adopted?	
4-1. Conservative treatment, which includes lifestyle measures (adequate water and fiber intake, appropriate bowel habits, and regular physical activity) and pharmacological therapy may improve hemorrhoidal disease symptoms.	Strong (1B)
4-2. In patients with hemorrhoidal disease who continue to experience hard stools despite adopting lifestyle changes, fiber supplements and bulk-forming laxatives may be recommended to reduce straining and to lower the risk of exacerbated bleeding and prolapse.	Strong (1B)
4-3. In the treatment of acute and chronic hemorrhoidal disease, the use of phlebotonics can be recommended. This is associated with a reduced risk of bleeding, pruritus, discharge, and leakage, leading to an overall improvement in symptoms.	Strong (1B)
4-4. In the acute phase of hemorrhoidal disease, the use of sitz baths may be reasonable to induce relaxation of the sphincter muscles and to decrease inflammation and congestion of the vascular cushions.	Expert opinion

https://doi.org/10.3393/ac.2023.00871.0124

Statement	Strength of recommendation
4-5. Conservative treatment can be considered the first-line approach for grades 1 and 2 hemorrhoidal prolapse according to the Goligher classification, and as a temporary bridge to surgical management for grades 3 and 4 hemorrhoidal prolapse, also in accordance with the Goligher classification.	Expert opinion
4-6. In patients with thrombosed or strangulated hemorrhoids, the use of a topical muscle relaxant such as nifedipine 0.3% combined with lidocaine 1.5% may be considered.	Weak (2C)
4-7. Due to the limited literature available, no recommendations can be made regarding the use of nonsteroidal anti-inflammatory drugs, subcutaneous low-molecular-weight heparins, topical steroids, and other topical treatments based on phlebotonics or heparin, even though these treatments are commonly prescribed by proctologists for patients with hemorrhoidal disease in clinical practice.	-
5. In patients with hemorrhoidal disease, what are the indications for operative management	
5-1. In patients with chronic hemorrhoidal disease, operative management may be considered as the treatment of choice for advanced stages of hemorrhoidal prolapse (grades 3 and 4, according to the Goligher classification) and as a second-line therapeutic option, following the failure of conservative measures, for early stages of hemorrhoidal prolapse (grades 1 and 2, according to the Goligher classification).	Expert opinion
5-2. Given the limited literature available, no recommendations can be made regarding the surgical treatment of acute hemorrhoidal disease accompanied by active bleeding.	-
5-3. In patients with acute thrombosed external hemorrhoids, surgical treatment may be considered when symptoms are extremely severe, patient compliance with medical therapy is low, conservative treatments fail, there is intense anal pain resistant to standard analgesics, or the hemorrhoidal mass appears gangrenous. For all other cases, conservative management—including dietary modifications, stool softeners, oral analgesics, sitz baths, and topical application of nifedipine 0.3% with lidocaine 1.5%—should be considered the initial therapeutic strategy.	Expert opinion
5-4. In patients with acute external thrombosed hemorrhoids that are suitable for surgical intervention, the surgical options may include excision or incision of the thrombosed hemorrhoids. The choice of procedure should take into account factors such as the logistical context, available resources, the physician's expertise, the patient's compliance, and the severity of the clinical case. However, excisional surgery under local anesthesia, when feasible, may be considered the preferred first-line option. This is due to its association with better early postoperative symptom relief and a lower recurrence rate when compared to simple incision with clot evacuation.	Weak (2C)
5-5. In patients with acute thrombosed internal hemorrhoids, nonoperative management should be considered as the first-line therapeutic option. This approach includes manual reduction, warm sitz baths, rest, analgesia, phlebotonics, and topical therapy with anal sphincter muscle relaxant drugs. Operative management should be considered a second-line option if conservative measures fail, or as the treatment of choice in cases of hemorrhoidal strangulation complicated by necrosis, gangrene, or sepsis.	Expert opinion
5-6. In patients with acute internal hemorrhoidal thrombosis and strangulation, without complications such as necrosis, gangrene, or sepsis, stapled hemorrhoidopexy may be considered as a surgical option. This procedure is associated with a shorter operation time, less postoperative pain, a reduced hospital stay, and an earlier return to normal activities when compared with conventional surgery.	Weak (2C)
5-7. The surgical procedures performed in an emergency setting for acute hemorrhoidal disease may be associated with specific intraoperative difficulties and a potentially increased risk of complications. Therefore, the use of hemorrhoidopexy or excisional surgery in an emergency setting requires dedicated surgical training, benefits from the surgeon's experience, and is preferably performed in high-volume centers. This approach aims to minimize potential postoperative complications and improve patient outcomes.	Expert opinion
6. In patients with chronic hemorrhoidal disease, what is the role of outpatient treatments?	
6-1. Rubber band ligation (RBL), injection sclerotherapy, and infrared coagulation can alleviate symptoms of hemorrhoidal disease, such as bleeding, and may be considered treatment options for patients with grade 1 or 2 hemorrhoidal prolapse that is unresponsive to medical therapy.	Weak (2B)
6-2. RBL, injection sclerotherapy, and infrared coagulation can be considered treatment options for patients who are unfit for surgery, for those who are unwilling to accept the complications and costs associated with surgical management, and as a bridge to surgical treatment in special cases where deferring surgery may be appropriate.	Expert opinion
7. In patients with chronic hemorrhoidal disease, what is the role of nonexcisional procedures (Doppler-guided hemorrhoidal artery ligation [HAL] and mucopexy)?	
7-1. Among the nonexcisional procedures, HAL and mucopexy can be considered treatment options for patients with hemorrhoidal disease that is not responsive to conservative treatment and is associated with grades 2 and 3 hemorrhoidal prolapse.	Strong (1B)
7-2. Prior to treatment, patients should be thoroughly advised about the potential for worsening long-term outcomes that may necessitate further intervention, the likelihood of minor complications, and the small chance of major complications.	Strong (1C)
7-3. The use of Doppler assistance in HAL appears to offer no advantage in terms of procedural efficacy and may be associated with increased operative time and postoperative pain. In patients with grade 3 hemorrhoidal prolapse, the success rate of the procedure seems to be more influenced by repositioning and securing the hemorrhoidal tissue in the anal canal via suture mucopexy, rather than by ligating the vessels.	Weak (2B)

Statement	Strength of recommendation
8. In patients with chronic hemorrhoidal disease, what is the role of nonexcisional procedures (i.e., stapled hemorrhoidopexy)?	
8-1. Stapled hemorrhoidopexy may be considered as a treatment option in patients with hemorrhoidal disease that is unresponsive to medical therapy and is associated with grades 2 to 4 hemorrhoidal prolapse.	Strong (1A)
8-2. Stapled hemorrhoidopexy may be considered a surgical option, particularly in patients with hemorrhoidal disease who also experience symptoms of obstructed defecation.	Expert opinion
8-3. Among the various devices available for stapled hemorrhoidopexy, new generation staplers may provide the option to select the most appropriate surgical technique and adjust the amount of tissue excision based on the extent of the prolapse.	Expert opinion
8-4. The use of next generation devices for stapled hemorrhoidopexy could result in better long-term outcomes and a reduced rate of complications.	Weak (2C)
8-5. All patients eligible for stapled hemorrhoidopexy should receive a detailed informed consent document that explains the benefits and risks associated with the surgical procedure.	Expert opinion
9. In patients with chronic hemorrhoidal disease, what is the role of emerging technologies?	
9-1. Hemorrhoidal laser procedure (HeLP) may represent a valuable treatment option, particularly for patients with low-grade (grade 1) bleeding hemorrhoidal prolapse. It potentially offers the advantage of not necessitating general or spinal anesthesia.	Weak (2C)
9-2. Laser hemorrhoidoplasty (LHP) and the Rafaelo procedure (radiofrequency ablation of hemorrhoids under local anesthetic) may be considered as treatment options for patients with hemorrhoidal disease that is unresponsive to conservative treatment and is associated with grades 2 and 3 hemorrhoidal prolapse.	Weak (2C)
9-3. Prior to treatment, patients should be carefully advised about the possibility of worsening long-term outcomes that may necessitate further intervention, and they should be informed about the potential for minor complications.	Expert opinion
10. In patients with chronic hemorrhoidal disease, what is the role of excisional procedures?	
10-1. Hemorrhoidectomy may be considered as a treatment option in patients with high-grade hemorrhoidal prolapse (grades 3 and 4), especially in those with combined grade 4 prolapse and external pathological hemorrhoids.	Strong (1A)
10-2. Patients undergoing hemorrhoidectomy should receive a detailed informed consent document that explains the long-term benefits in comparison to the early postoperative drawbacks, as well as the potential short- and long-term complications.	Expert opinion
10-3. Hemorrhoidectomy should be considered as a treatment option for patients with recurrent high-grade hemorrhoidal prolapse following nonexcisional procedures.	Expert opinion
10-4. Open and closed hemorrhoidectomy show similar outcomes, although closed hemorrhoidectomy has been associated with a reduced risk of bleeding and more rapid healing.	Strong (1A)
10-5. The use of a harmonic scalpel or radiofrequency devices for hemorrhoidectomy may be associated with a shorter operative time, reduced intraoperative blood loss, and less postoperative pain compared to conventional surgery.	Strong (1B)

Question 1. In patients with hemorrhoidal disease, what is the role of endoscopy?

Statement 1-1.
In patients with suspected hemorrhoidal disease and inconclusive physical examination findings, anoscopy may be considered to confirm the diagnosis and to exclude other anal pathologies that could cause bleeding, discomfort, and pain.
Expert opinion

Statement 1-2.
In patients younger than 40 years with hematochezia of probable hemorrhoidal origin who do not have risk factors for colorectal neoplasia, flexible sigmoidoscopy is a reasonable diagnostic option to exclude other causes of bleeding in the preoperative setting.
Weak recommendation (grade 2B) based on moderate-quality evidence

Statement 1-3.
In patients older than 40 years with hematochezia, as well as in patients with hematochezia and risk factors for colorectal cancer, such as those reporting blood mixed with stools, colonoscopy represents the most appropriate diagnostic tool to evaluate the causes of bleeding.
Strong recommendation (grade 1B) based on moderate-quality evidence

Statement 1-4.
In patients undergoing colonoscopy and sigmoidoscopy, the endoscopic examination should be completed by anoscopy in order to more accurately detect anal pathologies.
Weak recommendation (grade 2B) based on moderate-quality evidence

In patients with suspected hemorrhoidal disease, anoscopy is commonly performed alongside a physical examination to increase diagnostic accuracy and to rule out other potential causes of anal discomfort, bleeding, and pain, such as fissures, fistulas,

https://doi.org/10.3393/ac.2023.00871.0124

and sexually transmitted diseases [1, 2, 10]. However, no study has compared the diagnostic accuracy of physical examination to anoscopy in patients presenting with hematochezia. As a result, no recommendations can be made regarding the use of anoscopy in patients with a clear diagnosis of hemorrhoidal disease based on physical examination alone. Conversely, if the physical examination is inconclusive and the diagnosis is doubtful, the supplementary use of anoscopy could be reasonable.

In patients with hematochezia of probable hemorrhoidal origin, clinicians must consider how to exclude other potential causes of rectal bleeding, especially in younger patients who lack risk factors for colorectal neoplasia. Indeed, although colonoscopy is the most accurate test for detecting the causes of bleeding and is the most effective screening tool for preventing deaths from colorectal cancer [35], several retrospective and prospective studies have shown that patients under 40 years of age have a significantly lower prevalence of colonic neoplasms compared to older individuals.

Additionally, the most common pathologic lesions in this younger demographic are typically found in the left colon. These findings suggest that flexible sigmoidoscopy is a reasonable diagnostic alternative for young patients presenting with minor hematochezia when not accompanied by neoplasia risk factors. Such risk factors include a family history of colorectal carcinoma, progressive colonic symptoms (such as abdominal pain and changes in bowel habits), weight loss, iron deficiency anemia, and a history of colon surgery for neoplastic lesions, as well as the presence of blood mixed with stool [36–46]. It is important to note that both colonoscopy and sigmoidoscopy should be complemented by a thorough examination of the anus using anoscopy or videoanoscopy. These methods have been shown to be more accurate in identifying anal pathologies compared to endoscopic retroflexion and direct withdrawal, as demonstrated by both prospective and retrospective studies [47–49].

Question 2. In patients with hemorrhoidal disease, what is the role of imaging investigations?

Statement 2-1.
Due to the scarce available literature, no recommendations can be made regarding the use of imaging studies in patients with hemorrhoidal disease whose primary symptoms are vascular congestion, including bleeding and local discomfort.

Statement 2-2.
In cases where the diagnosis is doubtful, 3-dimensional endoanal ultrasound (3D-EAUS) and/or magnetic resonance imaging (MRI) may be considered to exclude anorectal abscesses or intraparietal masses.
Weak recommendation (grade 2B) based on moderate-quality evidence

Statement 2-3.
In patients with hemorrhoidal disease who also exhibit symptoms of obstructed defecation, imaging studies such as defecography, cystocolpoproctography, or magnetic resonance defecography may be considered. These investigations can help evaluate any coexisting morphological and functional disorders of the pelvic organs that may be associated with constipation. Such findings should be considered when planning a therapeutic strategy.
Weak recommendation (grade 2B) based on moderate-quality evidence

Statement 2-4.
In patients with hemorrhoidal disease who also have compromised baseline anal continence, or a history of obstetrical trauma or prior anorectal surgery, EAUS or MRI may be considered for evaluating sphincter defects. This can help identify patients at high risk of postoperative fecal incontinence and assist the surgeon in selecting the most appropriate therapeutic option.
Expert opinion

The literature on the role of imaging investigations in patients with bleeding hemorrhoidal disease is scarce. Therefore, no relevant recommendations can be made.

If the diagnosis is unclear, or in the presence of an associated anorectal mass, imaging investigations such as 3D-EAUS and/or MRI may be considered in order to exclude anorectal abscesses and cancer [50–53].

In patients with hemorrhoidal disease who also exhibit symptoms of obstructed defecation, clinicians should consider the possibility of a more complex disorder involving the pelvic organs [54, 55]. Imaging studies, such as defecography, cystocolpoproctography, or magnetic resonance defecography, can be instrumental in detecting anatomic abnormalities, including rectocele, enterocele, and internal intussusception, as well as concomitant genital prolapse. These studies may also raise suspicion for functional disorders such as dyssynergic defecation, which can be associated with constipation. Identifying these conditions is crucial for determining the appropriate therapeutic strategy for this patient population [56–61].

Transperineal ultrasound and echodefecography have demonstrated high diagnostic accuracy for detecting pelvic floor dysfunctions. However, their utilization is constrained by limited availability and the need for specialized operator expertise [62, 63]. Despite these limitations, they may be particularly beneficial for fertile women due to the absence of ionizing radiation. In the preoperative evaluation of patients with hemorrhoidal disease who also have impaired baseline anal incontinence, a history of obstetrical trauma, or prior anorectal surgery, 3D-EAUS and, as an alternative, MRI, can be valuable and sensitive tools for detecting sphincter defects. This information can guide surgeons in selecting the most appropriate

therapeutic approach [64–68]. However, the literature is deficient in well-conducted, large prospective studies that compare postoperative functional outcomes between patients with and without sphincter defects [69, 70]. Therefore, the evidence supporting the utility of preoperative endoanal ultrasound is limited.

Question 3. In patients with hemorrhoidal disease, what is the role of functional investigations?

Statement 3-1.
Anorectal manometry may be considered in patients with hemorrhoidal disease associated with obstructed defecation symptoms, in order to confirm the clinical suspicion of dyssynergic defecation.
Weak recommendation (grade 2B) based on moderate-quality evidence

Statement 3-2.
Anorectal manometry may be considered, together with EAUS, in the preoperative workup of patients with impaired baseline anal continence, in order to assess preoperative anorectal function and guide the surgeon in the choice of treatment strategy.
Expert opinion

Statement 3-3.
The preoperative evaluation of rectal sensitivity in patients with hemorrhoidal disease is particularly worth considering in subjects with expected baseline rectal hypersensitivity, such as those with a history of proctitis, irritable bowel syndrome, or previous rectal surgery, because this subset of patients may show a higher risk of postoperative urge incontinence after stapled hemorrhoidopexy and may be more safely treated with other surgical options.
Expert opinion

Although elevated anal resting pressure is often observed in patients with pathological hemorrhoids, anorectal manometry is not routinely performed for diagnostic purposes and is not considered a first-line examination for hemorrhoidal disease [71, 72].

In patients presenting with associated symptoms of obstructed defecation, anorectal manometry may confirm the clinical suspicion of dyssynergic defecation [73, 74] or may show a decreased rectal propulsive force, especially in subjects with excessive descent of the perineum [55, 75, 76].

Few studies have investigated the alterations in anorectal function and manometric parameters following hemorrhoidectomy [69, 70, 77–79]. While some researchers have observed a decrease in anal resting and squeeze pressures in patients who have undergone excisional surgery compared to their preoperative measurements and to those who have undergone hemorrhoidopexy, the manometric readings in individuals with postoperative anal continence impairment were found to be similar to those with normal postoperative continence and to healthy subjects. This similarity suggests that the reduction in anal resting and squeeze pressures alone may not fully account for the changes in anal continence observed after hemorrhoidectomy.

Furthermore, no single study has compared the postoperative functional outcomes in patients undergoing hemorrhoidectomy based on whether they had normal or abnormal anal resting or squeeze pressure preoperatively. As a result, the use of preoperative anorectal manometry is not well-supported by the current literature, even though it may be considered as part of the preoperative evaluation for patients with baseline impaired continence. This assessment can help determine the patient's preoperative anorectal function and assist the surgeon in selecting the most appropriate treatment strategy.

Regarding the impact of stapled hemorrhoidopexy on anorectal physiology, the most commonly reported postprocedural manometric findings are decreased rectal compliance and sensory thresholds. These changes are widely considered to be the pathogenic mechanisms underlying postoperative urge incontinence [70, 80–83].

These findings appear to indirectly support the use of preoperative anorectal manometry, particularly in individuals with a history of irritable bowel syndrome, proctitis, and previous rectal surgery. These conditions often present with heightened baseline rectal sensitivity, which may in turn be associated with an elevated risk of postoperative urge incontinence following the stapled procedure.

Question 4. In patients with hemorrhoidal disease, how, when, and why should nonoperative management be adopted?

Statement 4-1.
Conservative treatment, which includes lifestyle measures (adequate water and fiber intake, appropriate bowel habits, and regular physical activity) and pharmacological therapy may improve hemorrhoidal disease symptoms.
Strong recommendation (grade 1B) based on moderate-quality evidence

Statement 4-2.
In patients with hemorrhoidal disease who continue to experience hard stools despite adopting lifestyle changes, fiber supplements and bulk-forming laxatives may be recommended to reduce straining and to lower the risk of exacerbated bleeding and prolapse.
Strong recommendation (grade 1B) based on moderate-quality evidence

Statement 4-3.
In the treatment of acute and chronic hemorrhoidal disease, the use of phlebotonics can be recommended. This is associated with a reduced risk of bleeding, pruritus, discharge, and leakage, leading to an overall improvement in symptoms.
Strong recommendation (grade 1B) based on moderate-quality evidence

https://doi.org/10.3393/ac.2023.00871.0124

Statement 4-4.
In the acute phase of hemorrhoidal disease, the use of sitz baths may be reasonable to induce relaxation of the sphincter muscles and to decrease inflammation and congestion of the vascular cushions.
Expert opinion

Statement 4-5.
Conservative treatment can be considered the first-line approach for grades 1 and 2 hemorrhoidal prolapse according to the Goligher classification, and as a temporary bridge to surgical management for grades 3 and 4 hemorrhoidal prolapse, also in accordance with the Goligher classification.
Expert opinion

Statement 4-6.
In patients with thrombosed or strangulated hemorrhoids, the use of a topical muscle relaxant such as nifedipine 0.3% combined with lidocaine 1.5% may be considered.
Weak recommendation (grade 2C) based on low-quality evidence

Statement 4-7.
Due to the limited literature available, no recommendations can be made regarding the use of nonsteroidal anti-inflammatory drugs, subcutaneous low-molecular-weight heparins, topical steroids, and other topical treatments based on phlebotonics or heparin, even though these treatments are commonly prescribed by proctologists for patients with hemorrhoidal disease in clinical practice.

Given that hemorrhoidal disease is secondary to the prolapse of vascular cushions, nonoperative management may solely aim to alleviate symptoms and prevent prolapse, rather than offering a definitive treatment based on the etiopathogenesis of the disease [1, 2, 10, 17].

Generally, the term "medical therapy" can take on different meanings based on the severity of hemorrhoidal prolapse and the clinical context. It represents the first-line treatment for low-grade hemorrhoidal prolapse (grades 1 and 2 according to the Goligher classification), serves as a palliative symptomatic treatment and a bridge to surgical management for more severe prolapse (grades 3 and 4 according to the Goligher classification), and may be considered an alternative to surgery in specific cases of acute hemorrhoidal disease complicated by thrombosis or strangulation [84]. The medical treatment of hemorrhoidal disease includes lifestyle measures and pharmacological therapy.

Although no randomized controlled trials have evaluated the role of lifestyle measures in the conservative treatment of hemorrhoidal disease, dietary changes—such as adequate water and fiber intake—along with appropriate bowel habits, which include avoiding straining and limiting time spent on the toilet, as well as regular physical activity, are commonly recommended in clinical practice for patients with symptoms of hemorrhoidal disease [84–87].

Furthermore, a Cochrane review that encompassed 7 randomized trials with a total of 378 patients found that fiber supplements have a beneficial effect in reducing bleeding and the recurrence of hemorrhoids. The relative risks (RRs) for bleeding and recurrence were 0.47 and 0.50, respectively. However, the supplements did not show a significant effect on prolapse, pain, or itching [88].

Pharmacological therapy for hemorrhoidal disease may be systemic or topical. The mainstay of systemic pharmacological therapy for hemorrhoidal disease is the use of phlebotonics. This diverse group of drugs is effective in both acute and chronic cases, as it works to fortify the walls of blood vessels, enhance lymphatic drainage, and regulate capillary permeability. In a Cochrane review and meta-analysis, phlebotonics demonstrated significantly favorable effects on pruritus (odds ratio [OR], 0.23), bleeding (OR, 0.12), discharge and leakage (OR, 0.12), and overall symptom improvement (OR, 15.99) [89, 90]. In 3 trials, adjunctive treatment with vasoactive drugs following diathermic hemorrhoidectomy was associated with a reduced risk of bleeding, improved pain management, and alleviation of itching and tenesmus, as well as a shorter healing time [91–93]. This contrasts with similar treatment after hemorrhoidopexy, which did not demonstrate any benefits, likely due to the baseline mild postoperative pain related to the positioning of stapled sutures above the sensitive area of the anal canal [94].

The use of subcutaneous low-molecular-weight heparins in the treatment of thrombosed hemorrhoids is a common practice among proctologists, aimed at achieving thrombolysis and improving venous drainage. However, this practice is not adequately supported by the literature [84].

Regarding topical treatment, sitz baths are commonly prescribed to induce relaxation of the sphincter muscles through the thermosphincteric reflex, and to decrease inflammation and congestion of vascular cushions in the acute phase of hemorrhoidal disease [95–97]. However, the literature lacks significant data supporting this practice [98], and the optimal temperature for sitz baths to control symptoms is not known [99].

Numerous topical ointments containing anesthetics, steroids, emollients, and/or antiseptic agents are commercially available and widely used in clinical practice. However, prolonged use of these topical products can lead to allergic reactions or sensitization [100, 101]. Moreover, there is a lack of robust scientific evidence regarding their long-term efficacy, and consequently, their actual utility in the treatment of hemorrhoidal disease remains uncertain.

The role of topical antithrombotic therapy in the management of hemorrhoidal disease remains a subject of debate. While a

small study that evaluated the efficacy of topical heparin in acute hemorrhoids reported significant improvement in symptoms and healing [102], current literature provides insufficient data to support recommendations for this therapy [103].

Topical therapy using anal sphincter muscle relaxants may play a significant role in the treatment of thrombosed external hemorrhoids. This was demonstrated in a randomized controlled trial that compared 50 patients treated with a topical ointment containing 0.3% nifedipine and 1.5% lidocaine, applied every 12 hours for 2 weeks, to 48 patients who received only a topical 1.5% lidocaine ointment. The results showed a significantly higher resolution rate after 14 days of therapy in the nifedipine group than in the control group (92.0% vs. 45.8%), with no systemic side effects observed [104].

Similarly, a prospective study demonstrated favorable outcomes with the use of topical nitrates in the treatment of thrombosed hemorrhoids, although the frequent occurrence of headaches limited their widespread use [105].

Question 5. In patients with hemorrhoidal disease, what are the indications for operative management?

Statement 5-1.
In patients with chronic hemorrhoidal disease, operative management may be considered as the treatment of choice for advanced stages of hemorrhoidal prolapse (grades 3 and 4, according to the Goligher classification) and as a second-line therapeutic option, following the failure of conservative measures, for early stages of hemorrhoidal prolapse (grades 1 and 2, according to the Goligher classification).
Expert opinion

Statement 5-2.
Given the limited literature available, no recommendations can be made regarding the surgical treatment of acute hemorrhoidal disease accompanied by active bleeding.

Statement 5-3.
In patients with acute thrombosed external hemorrhoids, surgical treatment may be considered when symptoms are extremely severe, patient compliance with medical therapy is low, conservative treatments fail, there is intense anal pain resistant to standard analgesics, or the hemorrhoidal mass appears gangrenous. For all other cases, conservative management—including dietary modifications, stool softeners, oral analgesics, sitz baths, and topical application of nifedipine 0.3% with lidocaine 1.5%—should be considered the initial therapeutic strategy.
Expert opinion

Statement 5-4.
In patients with acute external thrombosed hemorrhoids that are suitable for surgical intervention, the surgical options may include excision or incision of the thrombosed hemorrhoids. The choice of procedure should take into account factors such as the logistical context, available resources, the physician's expertise, the patient's compliance, and the severity of the clinical case. However, excisional surgery under local anesthesia, when feasible, may be considered the preferred first-line option. This is due to its association with better early postoperative symptom relief and a lower recurrence rate when compared to simple incision with clot evacuation.
Weak recommendation (grade 2C) based on low-quality evidence

Statement 5-5.
In patients with acute thrombosed internal hemorrhoids, nonoperative management should be considered as the first-line therapeutic option. This approach includes manual reduction, warm sitz baths, rest, analgesia, phlebotonics, and topical therapy with anal sphincter muscle relaxant drugs. Operative management should be considered a second-line option if conservative measures fail, or as the treatment of choice in cases of hemorrhoidal strangulation complicated by necrosis, gangrene, or sepsis.
Expert opinion

Statement 5-6.
In patients with acute internal hemorrhoidal thrombosis and strangulation, without complications such as necrosis, gangrene, or sepsis, stapled hemorrhoidopexy may be considered as a surgical option. This procedure is associated with a shorter operation time, less postoperative pain, a reduced hospital stay, and an earlier return to normal activities when compared with conventional surgery.
Weak recommendation (grade 2C) based on low-quality evidence

Statement 5-7.
The surgical procedures performed in an emergency setting for acute hemorrhoidal disease may be associated with specific intraoperative difficulties and a potentially increased risk of complications. Therefore, the use of hemorrhoidopexy or excisional surgery in an emergency setting requires dedicated surgical training, benefits from the surgeon's experience, and is preferably performed in high-volume centers. This approach aims to minimize potential postoperative complications and improve patient outcomes.
Expert opinion

The nature of hemorrhoidal disease is rooted in the structural and anatomical alterations of the supporting tissue in the anal cushions. This leads to downward slippage and subsequent blood stagnation, as well as dilatation and congestion of the hemorrhoidal plexus.

Therefore, in the context of chronic disease, conservative measures may alleviate symptoms, but for severe grades of hemorrhoidal prolapse (grades 3 and 4, according to the Goligher classification), surgery is often the treatment of choice. Conversely, in the early stages of hemorrhoidal disease (grades 1 and 2, according to the Goligher classification), first-line medical treatments are typically recommended initially, with operative management

https://doi.org/10.3393/ac.2023.00871.0124

reserved for instances where conservative measures fail.

However, in the context of acute hemorrhoidal disease, the indications for surgery are less clear and more confusing. Regarding the management of acute hemorrhoidal disease with persistent bleeding, the current literature lacks studies that specifically address the indications for and timing of surgery. Consequently, no recommendations can be made concerning surgical indications for patients with this particular clinical condition. Focusing on external thrombosed hemorrhoids, few studies have compared operative with nonoperative management, yielding questionable results. Specifically, a randomized controlled trial that compared the topical application of 0.2% nitroglycerin with incisional and excisional surgery found that, at day 4 postoperatively, patients who underwent excisional surgery experienced the best pain control, while those who underwent the incisional procedure experienced the worst. However, at the 1-month follow-up, there was no difference in symptom relief between the groups [106].

Although a retrospective study found that surgery for thrombosed hemorrhoids was associated with faster symptom resolution (3.9 vs. 24 days, $P < 0.0001$) and a lower recurrence rate (6.3% vs. 25.4%, $P < 0.0001$) compared to conservative treatment, the latter did not include topical nifedipine or nitrates. Furthermore, no study has compared surgical treatment with topical nifedipine in the management of thrombosed external hemorrhoids.

Concerning the timing of surgery, while some authors have recommended surgical intervention if symptoms persist for 48 to 72 hours [107–109], no single study has specifically addressed this issue. Furthermore, there is no evidence in the published literature to suggest that conservative treatment is preferentially indicated for cases where symptoms have only recently emerged.

Regarding the type of surgical approach, a recent multicenter, prospective study demonstrated a higher success rate in patients undergoing in-office thrombectomy compared to those having local excision (86.8% vs. 67.2%, $P = 0.054$) [110]. Conversely, a randomized controlled trial indicated that patients who underwent excisional surgery experienced better symptom relief early postoperatively and a significantly lower recurrence rate at the 1-year follow-up ($P < 0.05$) compared to those who had incisional surgery or used topical nitrates [106]. Furthermore, a large retrospective study involving 340 patients who underwent excision of thrombosed external hemorrhoids under local anesthesia revealed the procedure's feasibility, safety, and effectiveness. The study reported that 98% of patients were satisfied with the outpatient treatment, and 79% found local anesthesia to be acceptable for subsequent excisions [111].

No single study has evaluated the role of stapled hemorrhoidopexy in patients with acute isolated external thrombosed hemorrhoids; therefore, no recommendations can be made regarding the use of this technique in this particular context. In conclusion, concerning the management of external thrombosed hemorrhoids, in agreement with other authors [23], and considering the limited and ambiguous data from current literature, as well as the natural course of the condition with spontaneous resolution typically occurring within 7 to 10 days [109], the expert panel considered it more appropriate to base the decision for conservative or operative treatment not on the duration of symptoms but on the specific clinical characteristics observed at the time of evaluation. Surgical intervention is reserved for cases with severe symptoms, low patient compliance with medical therapy, failure of conservative treatment, intense anal pain resistant to standard analgesics, or when the hemorrhoidal mass appears gangrenous. Regarding the choice of surgical technique, excisional surgery may be regarded as the first-line option due to its association with better early postoperative symptom relief and a lower recurrence rate. Additionally, excisional surgery typically prevents the development of postoperative skin tags, which are common following a radial incision with clot evacuation. However, according to expert opinion, other factors should be considered when choosing between incisional and excisional surgery, including the logistical context, available resources, the physician's expertise, patient compliance, and the severity of the clinical case.

Compared to external hemorrhoidal thrombosis, acute thrombosed prolapsed internal hemorrhoids constitute a more severe pathological condition. They are associated with a debilitating and protracted clinical course, and if left untreated, they can progress to serious complications such as local necrosis, gangrene, and sepsis. These complications arise as a result of the sudden entrapment of prolapsing internal hemorrhoids outside the anus by the sphincter mechanism, leading to hemorrhoidal strangulation [23, 109].

The nonoperative management of acute thrombosed prolapsed internal hemorrhoids can include manual reduction, warm sitz baths, rest, analgesics, and phlebotonics. This may be combined with the topical application of hypertonic agents such as sugar, honey, or glucose solution, as well as topical therapy with anal sphincter muscle relaxant drugs. These approaches may lead to symptom resolution in a significant percentage of patients. However, there is a high recurrence rate, which often necessitates subsequent surgery [112–114].

The operative management of hemorrhoids in an emergency setting, involving excisional surgical procedures such as Milligan-Morgan or Ferguson hemorrhoidectomies, has been shown in several studies to have postoperative complications and long-term results similar to those managed in an elective setting [115–

119]. However, this approach can be challenging due to the inflamed and edematous state of the hemorrhoidal cushions. This condition complicates the selection of the appropriate amount of tissue to excise and hinders the intraoperative identification of the anal sphincter. Consequently, there is an increased risk of potential sphincter damage and anal stenosis, particularly if mucosal bridges are not adequately preserved [109]. Interestingly, 4 prospective studies have evaluated the outcome of stapled hemorrhoidopexy in patients with acute thrombosed prolapsed internal hemorrhoids. Among these, 2 randomized trials with a small sample size (maximum of 40 patients per arm) and some limitations compared stapled hemorrhoidopexy/hemorrhoidectomy with conventional hemorrhoidectomy in this patient group. The findings indicated that the stapled procedure resulted in shorter operation times, less postoperative pain, shorter hospital stays, and an earlier return to normal activities [120–123].

Question 6. In patients with chronic hemorrhoidal disease, what is the role of outpatient treatments?

Statement 6-1.
Rubber band ligation (RBL), injection sclerotherapy, and infrared coagulation can alleviate symptoms of hemorrhoidal disease, such as bleeding, and may be considered treatment options for patients with grade 1 or 2 hemorrhoidal prolapse that is unresponsive to medical therapy.
Weak recommendation (grade 2B) based on moderate-quality evidence

Statement 6-2.
RBL, injection sclerotherapy, and infrared coagulation can be considered treatment options for patients who are unfit for surgery, for those who are unwilling to accept the complications and costs associated with surgical management, and as a bridge to surgical treatment in special cases where deferring surgery may be appropriate.
Expert opinion

Rubber band ligation

RBL is a quick and generally well-tolerated technique, owing to its application in an area lacking somatic sensitivity. However, it demonstrates variable success rates and a considerable risk of recurrence that may necessitate further intervention.

In a randomized controlled trial comparing HAL in 185 patients to RBL in 187 patients for the management of symptomatic grades 1 and 2 hemorrhoids, RBL was associated with lower postoperative pain and a higher recurrence rate at the 1-year follow-up. Specifically, 49% of patients treated with RBL reported recurrent hemorrhoidal symptoms, and 32% required an additional procedure, which in the majority of cases was a repeat of the RBL [124].

The effectiveness of RBL for different grades of hemorrhoidal prolapse was evaluated by a Cochrane review. The review found no significant difference in outcomes between RBL and excisional hemorrhoidectomy for grade 2 hemorrhoidal prolapse (1 trial, 32 patients; RR, 1.07; 95% confidence interval [CI], 0.94 to 1.21; $P=0.32$). However, it did show the superiority of excisional hemorrhoidectomy for grade 3 prolapse (2 trials, 116 patients; RR, 1.23; 95% CI, 1.04 to 1.45; $P=0.01$), with fewer patients requiring re-treatment after excisional hemorrhoidectomy (3 trials; RR, 0.20; 95% CI, 0.09 to 0.40; $P<0.00001$) [125]. In contrast, a large retrospective study that included 750 consecutive patients with grades 2 and 3 hemorrhoids undergoing RBL reported a success rate of 93% and a recurrence rate of 11% at a 2-year follow-up. This study found no significant difference ($P=0.31$) in outcomes between patients with different grades of prolapse [126].

Regarding the safety of the procedure, while most cases report only minor complications such as thrombosis, bleeding, and pain [112], there have been some rare but severe complications following RBL. These include liver abscess, endocarditis, gastrointestinal hemorrhage, perineal sepsis, and death [127–130].

To decrease the perioperative risk of bleeding, RBL is typically contraindicated in patients on anticoagulant medications. Nevertheless, certain studies have indicated that the risk of bleeding is not significantly elevated in patients undergoing anticoagulation therapy [131, 132].

Sclerotherapy

Sclerotherapy involves the injection of sclerosing agents such as 5% phenol in oil, aluminum potassium sulfate and tannic acid (ALTA), 50% dextrose water, and polidocanol 3% in oil or foam. These agents are injected into the submucosa above the dentate line at the base of each hemorrhoidal pile. This process leads to the obliteration of the vascular support and results in scarring, fibrosis, and the fixation of the hemorrhoidal tissue.

The available data on the efficacy of the procedure are limited due to the small sample sizes of the trials, the varying severity of treated hemorrhoidal prolapse, the heterogeneity of evaluated sclerosant agents, and the short-term follow-up of the studies [133–144]. The only randomized controlled trial with a 48-month follow-up that compared sclerotherapy using 5% phenol in oil with RBL reported success rates of approximately 20% and 40%, respectively [135].

The reported short-term success rates of injection sclerotherapy are generally satisfactory, with variations ranging from 20% to 92% depending on the severity of hemorrhoidal prolapse and the sclerosant agent used. The best outcomes are typically seen in the treatment of grades 1 and 2 prolapses, particularly when using 3% polidocanol foam or aluminum potassium sulfate and ALTA

https://doi.org/10.3393/ac.2023.00871.0124

[133–144]. Before initiating treatment, patients must be informed that repeated sessions or re-treatment may be necessary in more than 50% of cases, which is more frequent than with RBL [136, 137, 145, 146].

According to a systematic review and meta-analysis, sclerotherapy is associated with lower rates of bleeding control and prolapse management when compared with RBL, with success rates of 66.4% for sclerotherapy versus 93.1% for RBL (RR, 1.34; 95% CI, 1.12 to 1.60) and 78.7% for sclerotherapy versus 89.1% for RBL (RR, 1.17; 95% CI, 1.02 to 1.34). However, the risk of postprocedural pain was significantly lower following sclerotherapy, at 14% compared to 24% for RBL (RR, 0.58; 95% CI, 0.44 to 0.76) [147].

A recent meta-analysis, which included 10 studies (3 comparative and 7 single-arm) and 4 abstracts (2 comparative and 2 single-arm), specifically compared polidocanol sclerotherapy with RBL for the treatment of symptomatic grades 1 to 3 internal hemorrhoids. The findings suggest that polidocanol sclerotherapy may be linked to a higher therapeutic success rate. However, the review's conclusions were significantly constrained by the limited number of studies included and the small sample size of the patients analyzed [148].

Concerning the safety of sclerotherapy, while the majority of cases report only minor complications such as mild pain, bleeding, prostatitis, and mucosal ulceration [134, 138], there have also been descriptions of rare but major complications. These include impotence, fistula formation, severe acute liver injury, abdominal compartment syndrome, and fatal necrotizing fasciitis [149–153].

Infrared coagulation

Infrared coagulation induces protein coagulation and necrosis within hemorrhoids through the targeted application of infrared waves.

The few available pertinent studies suggest that, compared to earlier outpatient treatments, the success rates are comparable, but with a reduced incidence of complications. The most common surgical sequela is postprocedural pain, which has been reported in 16% to 100% of patients [154–159]. However, the reported success rates for treating hemorrhoidal prolapse decline as the severity of the condition increases, with a success rate of 78% for grade 1 hemorrhoidal prolapse, but only 22% for grade 3. Additionally, more than 1/4 of patients may require a subsequent procedure [157]. Moreover, only the short-term outcomes have been assessed by current studies, and the long-term efficacy of the procedure remains unclear.

Given the lack of long-term outcome results, the frequent need for re-intervention, and the reported rarity of major complications, the expert panel issued a weak recommendation regarding the use of outpatient techniques in patients with hemorrhoidal disease. However, based on expert opinion, outpatient procedures could play a significant role in patients who are not suitable candidates for surgery, those who are unwilling to accept the complications and costs associated with surgical management, and, in line with other authors, as a bridge to surgical treatment in special circumstances where deferring surgery may be appropriate [160].

Question 7. In patients with chronic hemorrhoidal disease, what is the role of nonexcisional procedures (Doppler-guided hemorrhoidal artery ligation [HAL] and mucopexy)?

Statement 7-1.
Among the nonexcisional procedures, HAL and mucopexy can be considered treatment options for patients with hemorrhoidal disease that is not responsive to conservative treatment and is associated with grades 2 and 3 hemorrhoidal prolapse.
Strong recommendation (grade 1B) based on moderate-quality evidence

Statement 7-2.
Prior to treatment, patients should be thoroughly advised about the potential for worsening long-term outcomes that may necessitate further intervention, the likelihood of minor complications, and the small chance of major complications.
Strong recommendation (grade 1C) based on low-quality evidence

Statement 7-3.
The use of Doppler assistance in HAL appears to offer no advantage in terms of procedural efficacy and may be associated with increased operative time and postoperative pain. In patients with grade 3 hemorrhoidal prolapse, the success rate of the procedure seems to be more influenced by repositioning and securing the hemorrhoidal tissue in the anal canal via suture mucopexy, rather than by ligating the vessels.
Weak recommendation (grade 2B) based on moderate-quality evidence

First proposed by Morinaga et al. [161] in 1995, HAL is based on the pathogenetic theory of "hemorrhoidal hypervascularization" [14]. The procedure aims to reduce bleeding and congestion in hemorrhoidal tissue by interrupting the local blood supply through Doppler-guided ligation of the terminal branches of the superior hemorrhoidal artery.

After the first reports demonstrated effective short-term bleeding control but inadequate containment of hemorrhoidal prolapse, particularly in patients with grades 3 and 4 prolapse [162–167], the technique was modified to include a suture mucopexy. This modification aimed to secure the redundant hemorrhoidal tissue to the rectal wall and better contain the prolapse, thus achieving what is referred to as "rectoanal repair," or "anal lifting" [168–171].

Shortly thereafter, 5 randomized controlled trials, albeit with some limitations, called into question the utility of Doppler assis-

tance in ligating hemorrhoidal vessels. Specifically, these studies compared the effectiveness of isolated vessel ligation to suture-fixation mucopexy (Table 2) [171–175]. Based on these studies, in patients with grades 2 and 3 hemorrhoidal prolapse, the use of Doppler assistance either alone in HAL or prior to hemorrhoidal mucopexy does not appear to offer any advantage in terms of efficacy. Additionally, it is associated with increased postoperative pain and is considered a time-consuming procedure [171, 172]. Furthermore, in patients with grade 3 hemorrhoidal prolapse, the suture-fixation mucopexy technique, when compared to isolated Doppler-guided HAL, demonstrates comparable short-term outcomes for bleeding and prolapse control ($P > 0.05$). It also shows better mid-term outcomes, with significantly fewer recurrences of prolapse at 24 months (2.3% vs. 19.0%, $P = 0.030$) [173, 174]. Interestingly, in these patients, transperineal contrast-enhanced ultrasound assessment of the anorectal vascular plexus at 1 and 6 months of postoperative follow-up revealed no significant changes compared to the preoperative scan [173].

The available literature collectively demonstrates satisfactory short-term outcomes for HAL plus mucopexy, with no significant difference in symptom scores compared to hemorrhoidectomy [176]. The success rate varies between 74% and 92.4% at a 1-year follow-up, based on several retrospective studies [177, 178].

Three small sample, randomized controlled trials compared HAL plus mucopexy with open hemorrhoidectomy. The results indicated that HAL plus mucopexy was associated with shorter operating times, fewer postoperative complications, reduced postoperative pain, shorter hospital stays, earlier first bowel movements, and quicker returns to work for patients undergoing non-excisional surgery [179–181]. Regarding the effectiveness of the procedure, although 1 study reported similar patient satisfaction at 1 and 24 postoperative months using a 4-point scale (3 vs. 4 and 4 vs. 4, $P > 0.05$) [179], the other 2 studies found that at the 1-year follow-up, there was a reduction in soiling only after hemorrhoidectomy. Additionally, there was a tendency for more patients to have remaining grade 2 hemorrhoids in the ligation plus mucopexy group ($P = 0.06$) [181].

In 2 randomized controlled trials [182, 183], HAL plus mucopexy was compared to stapled hemorrhoidopexy and found to have a longer mean operating time (44 ± 16 minutes vs. 30 ± 14 minutes, $P < 0.001$). However, it was associated with less postoperative pain, as measured on a visual analog scale immediately postoperative (2.2 vs. 2.8, $P = 0.03$) and at 2 weeks (1.3 vs. 1.9, $P = 0.013$), and a shorter duration of sick leave (12.3 days vs. 14.8 days, $P = 0.045$). Additionally, patients who underwent HAL plus mucopexy had a lower risk of experiencing anal urgency at 3 months postsurgery ($P = 0.006$). At the 1-year follow-up, however, there was a higher incidence of residual grade 3 hemorrhoidal prolapse (15% vs. 5%) and a higher reoperation rate (8% vs. 4%), indicating a potential for less effective anatomical correction and an increased risk of recurrence.

Only a few retrospective studies have addressed the long-term

Table 2. Doppler-guided HAL versus HAL alone with or without a mucopexy procedure: the results of 5 randomized controlled trials

Study	Study size	Prolapse grade	Technique	Follow-up (mo)	Main result
Gupta et al. [172] (2011)	48	3	Doppler-guided HAL plus mucopexy vs. HAL without Doppler plus mucopexy	12	Similar hemorrhoid recurrence ($P = 0.939$) Significantly longer operative time ($P < 0.003$) and higher postoperative pain score ($P < 0.002$) in the Doppler group
Schuurman et al. [171] (2012)	82	2, 3	HAL with Doppler vs. HAL without Doppler	6	No significant difference in symptom improvement ($P > 0.05$) More complications in the Doppler group ($P < 0.0005$)
Aigner et al. [173] (2016)	40	3	Doppler-guided HAL plus mucopexy vs. mucopexy alone (without previous separate HAL with a "z-stitch")	12	No significant difference in hemorrhoid recurrence ($P = 0.274$)
Zhai et al. [174] (2016)	100	3	Doppler-guided HAL vs. suture-fixation mucopexy	24	No significant difference in bleeding ($P = 0.45$) and prolapse recurrence ($P = 1.00$) at 12 mo; Significant difference in prolapse recurrence at 24 mo in the Doppler group ($P = 0.030$)
Alemrajabi et al. [175] (2023)	36	3, 4	Doppler-guided HAL plus mucopexy vs. HAL without Doppler plus mucopexy	3	No significant difference in hemorrhoidal recurrence ($P = 0.486$)

HAL, hemorrhoidal artery ligation.

https://doi.org/10.3393/ac.2023.00871.0124

outcomes of HAL plus mucopexy [178, 184–186]. These studies have demonstrated less favorable results compared to the short-term, reporting recurrent bleeding in 21% of cases [178] and recurrent or persistent prolapse in up to 35% of patients [184]. The worst outcomes were observed in patients with grades 3 and 4 hemorrhoidal prolapse [185], and more than half of the recurrences required re-intervention [184, 186].

Regarding the safety of the procedure, isolated dearterialization appears to be linked with minimal postoperative symptoms, including tolerable discomfort and infrequent pain [187].

Combined dearterialization and mucopexy have been associated with postoperative tenesmus and severe pain lasting several days in approximately 38% and 10% of cases, respectively. Hemorrhoidal thrombosis occurs in 8% of cases, urinary retention in about 10% of patients, and more rarely, anal fissure and temporary fecal urgency are observed [175–185, 187]. It is important to note that postoperative tenesmus and pain are transient and do not result in persistent fecal urgency or chronic pelvic pain [175–185, 187].

Although extremely rare, serious life-threatening complications have been described following dearterialization and mucopexy, such as rectal perforation [188, 189] and pelvic cellulitis with extensive fascial necrosis. These complications can be further complicated by septic shock and peritonitis, necessitating urgent laparotomy, debridement, drainage, and the creation of a diverting colostomy [190–193].

In conclusion, considering the satisfactory short-term outcomes, the relative safety, and the low morbidity associated with the procedure, the expert panel has issued a strong recommendation for the use of HAL plus mucopexy in the treatment of hemorrhoidal disease that is poorly responsive to medical therapy. It is important that patients are fully informed about the potential for worsening long-term results that may necessitate further intervention, the likelihood of minor complications, and the small risk of major complications. It is noteworthy that, according to the available literature, Doppler assistance does not significantly improve the outcomes of mucopexy. Repositioning the hemorrhoidal tissue back into the anal canal is believed to be the critical factor for successful treatment.

Question 8. In patients with chronic hemorrhoidal disease, what is the role of nonexcisional procedures (i.e., stapled hemorrhoidopexy)?

Statement 8-1.
Stapled hemorrhoidopexy may be considered as a treatment option in patients with hemorrhoidal disease that is unresponsive to medical therapy and is associated with grades 2 to 4 hemorrhoidal prolapse.
Strong recommendation (grade 1A) based on high-quality evidence

Statement 8-2.
Stapled hemorrhoidopexy may be considered a surgical option, particularly in patients with hemorrhoidal disease who also experience symptoms of obstructed defecation.
Expert opinion

Statement 8-3.
Among the various devices available for stapled hemorrhoidopexy, new generation staplers may provide the option to select the most appropriate surgical technique and adjust the amount of tissue excision based on the extent of the prolapse.
Expert opinion

Statement 8-4.
The use of next generation devices for stapled hemorrhoidopexy could result in better long-term outcomes and a reduced rate of complications.
Weak recommendation (grade 2C) based on low-quality evidence

Statement 8-5.
All patients eligible for stapled hemorrhoidopexy should receive a detailed informed consent document that explains the benefits and risks associated with the surgical procedure.
Expert opinion

Stapled hemorrhoidopexy aims to reduce the hemorrhoidal prolapse and restore the original position of hemorrhoidal tissue by employing a stapler-assisted resection of the associated internal rectal prolapse. Proposed by Longo [194] in 1998, the procedure initially described as a circular mucosectomy is commonly known as "stapled hemorrhoidopexy." It is distinct from the stapled transanal rectal resection (STARR), which involves a full-thickness excision of the rectum. However, since the histopathological evaluation of specimens typically reveals the presence of the muscolaris propria [195–198], this surgical procedure actually represents a more extensive resection of the rectal wall and the term "stapled hemorrhoidopexy" is more appropriate [198].

As originally described [29, 194], the technique involves placing a single purse-string suture approximately 5 cm above the dentate line. This is followed by resection of the internal rectal prolapse using a circular stapler (PPH-01 or PPH-03, Ethicon Endo-Surgery Inc) with a diameter of 33 mm and a case volume of 15.5 cm^3. The result is a suture line positioned at least 3 cm above the dentate line in an area devoid of somatic innervation.

According to a review of 25 randomized controlled trials that compared stapled hemorrhoidopexy with hemorrhoidectomy, involving 1,918 patients and follow-up periods ranging from 1 to 62 months [199–223], stapled hemorrhoidopexy was associated with several short-term benefits [224]. These included reduced operating time (weighted mean difference, – 11.35 minutes; $P=0.006$), earlier return of bowel function (weighted mean difference, –9.91 hours; $P<0.00001$), shorter hospital stays (weighted mean differ-

ence, −1.07 days; P = 0.0004), quicker functional recovery with less time off work (weighted mean difference, −8.45 days; P < 0.00001), and less postoperative pain (indicated by a 42.3% reduction in pain scores at rest and during defecation, and a 37.6% reduction in analgesic requirements). The overall complication rate was comparable between the 2 methods (stapled, 20.2% vs. conventional, 25.2%; P = 0.06), and patient satisfaction was significantly higher with stapled hemorrhoidopexy than with conventional hemorrhoidectomy (OR, 2.33; P = 0.003).

The short-term benefits of stapled hemorrhoidopexy have been confirmed by a recent review of 38 randomized controlled trials conducted between January 1998 and January 2019. This review compared the surgical outcomes of stapled hemorrhoidopexy with those of open hemorrhoidectomy [225].

Regarding efficacy, the review by Tjandra and Chan [224] observed a nonsignificant increase in hemorrhoid recurrence at 1 year or more following the stapled procedure compared to conventional surgery (5.7% vs. 1%; OR, 3.48; P = 0.02). However, the overall incidence of recurrent hemorrhoidal symptoms was similar between the 2 methods (stapled, 25.3% vs. conventional, 18.7%; P = 0.07). Despite this, the higher long-term recurrence rate associated with the stapled procedure, relative to conventional surgery, has been confirmed by subsequent trials [226] and 3 meta-analyses [227–229].

Several studies have addressed the very long-term outcomes of stapled hemorrhoidopexy, documenting patient clinical outcomes at various follow-up intervals ranging from 5 to 16 years postsurgery [229–235]. In these studies, the recurrence rate varied from 16% to 47.3%, with the most significant deterioration in results occurring after 10 years from the surgical procedure. Nonetheless, the reported patient satisfaction rates were substantial, ranging from 62.3% to 89.7% [230–236].

The limited capacity of the stapler casing has been suggested as a potential cause of failure in stapled hemorrhoidopexy, particularly when dealing with large internal rectal prolapse, as it may lead to incomplete resection of the prolapsed tissue [237–241]. The development of high-volume staplers has confirmed the substantial benefits of performing more extensive excision of prolapsed tissue in patients with hemorrhoidal diseases associated with large internal rectal prolapse [242, 243]. The new generation of high-volume staplers assessed for hemorrhoidal disease includes the TST STARR Plus model (Touchstone International Medical Science Co Ltd), which features a housing volume exceeding 35 cm^3 and an open case that permits direct visualization of the resectable prolapse [244], and the CPH34 HV model (Frankenman International Ltd), which has a housing volume of 25 cm^3 and a transparent case [245, 246]. A large multicenter observational study involving 621 patients with grades 3 and 4 hemorrhoidal prolapse who underwent stapled hemorrhoidopexy with the CPH34 stapler revealed residual hemorrhoidal disease in 1.8% of cases and recurrence in 1.9% at the 12-month follow-up. These rates are significantly lower compared to those associated with the conventional procedure using the PPH stapler [247].

The long-term outcomes of stapled hemorrhoidopexy performed using the Transtar STARR Plus device in patients with large internal rectal prolapse (exceeding half of the anal dilator) associated with hemorrhoidal disease were evaluated by 2 multicenter retrospective studies. These studies reported recurrence rates of 5.2% at a 48-month follow-up [248] and 5.1% at a median follow-up of 70.5 months (range, 60 to 84 months) [236]. The short- and long-term effectiveness of stapled hemorrhoidopexy with high-volume stapler devices for hemorrhoidal disease are compared in Table 3 [236, 247, 248].

Concerning the safety of the procedure, stapled hemorrhoidopexy may be associated with both major and minor complications. Notably, the majority of these complications have been reported outside of large prospective randomized trials. This suggests that clinical outcomes may be improved if surgical procedures are conducted in high-volume centers.

Similar to complications associated with office-based proce-

Table 3. Short- and long-term effectiveness of stapled hemorrhoidopexy with high-volume stapler devices for hemorrhoidal disease: the results of 3 retrospective studies

Study	Type of study	Study size	Prolapse grade	Stapler device	Follow-up (mo)	Primary outcome
Reboa et al. [247] (2016)	Multicenter, retrospective	621	3, 4	CPH34 HV[a]	12	Residual hemorrhoidal prolapse, 1.8% Recurrent hemorrhoidal prolapse, 1.9%
Wei et al. [248] (2022)	Single-center, retrospective	125	3	TST STARR Plus[b]	57.3[c]	Recurrence rate, 5.2%
Sturiale et al. [236] (2023)	Single-center, retrospective	59	2–4	TST STARR Plus[b]	70.5[c]	Recurrence rate, 5.1%

[a]Frankenman International Ltd. [b]Touchstone International Medical Science Co Ltd. [c]Median.

https://doi.org/10.3393/ac.2023.00871.0124

dures, HAL, and mucopexy, there have been reports of extremely rare but life-threatening complications following stapled hemorrhoidopexy, such as rectal perforation or obliteration, anastomotic failure, sepsis, severe extrarectal bleeding, and large hematomas. Additionally, other rare but major procedure-specific complications have been documented, including rectovaginal fistulas and chronic pelvic pain. A significant number of complications were reported during the initial period of experience with transanal stapler surgery. These may be mitigated by employing meticulous techniques, ensuring adequate surgical training, and leveraging surgical expertise [244]. Notably, in studies evaluating stapled hemorrhoidopexy using the latest devices, there were no reported cases of rectal perforation, sepsis, or rectovaginal fistula [236, 244–248].

Minor complications include early bleeding, pain, anastomotic stenosis, and fecal urgency. Bleeding has been reported in the immediate postoperative period with a median incidence of 7.5%, although only 1% of cases necessitate re-treatment [249, 250]. Pain after stapled hemorrhoidopexy is less common and less severe compared to conventional hemorrhoidectomy [224, 225]. However, it can occasionally progress to chronic pelvic pain. The pathogenesis of this syndrome may involve the retention of staples with the incorporation of smooth muscle in the doughnut, as well as decreased rectal mobility. This is supported by the observation that symptom improvement often follows the removal of staples or excision of the staple line [251, 252]. Anastomotic stenosis is a rare complication, accounting for about 1% of cases. It may be secondary to anastomotic breakdown or hematoma, especially following a full-thickness rectal resection. This condition can often be successfully managed with dilation [247, 251]. Fecal urgency is the most frequent minor complication after stapled hemorrhoidopexy, with an incidence rate varying from 0% to 25% (median, 8%) [253]. Although it is considered a minor complication that does not affect survival rates, fecal urgency can be a significant source of discomfort for patients and can have a substantial impact on their quality of life. However, in the vast majority of instances, it is merely an early and transient postoperative issue with a favorable prognosis, resolving completely in nearly 100% of cases within 6 to 12 months of follow-up [236, 244, 247, 248]. In a large prospective series of 452 patients undergoing stapled hemorrhoidopexy, the incidence of fecal urge incontinence was 13.5% at 1 month postprocedure. This rate decreased to 4% at 6 months and further declined to 2.9% at the 24-month follow-up [254]. The reduced rectal capacity and heightened sensitivity following hemorrhoidopexy have been proposed as pathogenetic mechanisms contributing to fecal urgency. Consequently, it is recommended to avoid stapled hemorrhoidopexy in patients who exhibit increased rectal sensitivity at baseline, as determined by preoperative anorectal manometry findings [70, 80–83, 251, 255, 256].

In conclusion, based on the extensive literature available, stapled hemorrhoidopexy, when compared with conventional hemorrhoidectomy, demonstrates numerous early postoperative advantages, along with satisfactory short-term outcomes, adequate long-term results, and acceptable postoperative morbidity. For these reasons, the expert panel has issued a strong recommendation in favor of stapled hemorrhoidopexy. Careful patient selection and the use of new generation devices appear to improve long-term outcomes and reduce the rate of complications.

Question 9. In patients with chronic hemorrhoidal disease, what is the role of emerging technologies?

Statement 9-1.
Hemorrhoidal laser procedure (HeLP) may represent a valuable treatment option, particularly for patients with low-grade (grade 1) bleeding hemorrhoidal prolapse. It potentially offers the advantage of not necessitating general or spinal anesthesia.
Weak recommendation (grade 2C) based on low-quality evidence

Statement 9-2.
Laser hemorrhoidoplasty (LHP) and the Rafaelo procedure (radiofrequency ablation of hemorrhoids under local anesthetic) may be considered as treatment options for patients with hemorrhoidal disease that is unresponsive to conservative treatment and is associated with grades 2 and 3 hemorrhoidal prolapse.
Weak recommendation (grade 2C) based on low-quality evidence

Statement 9-3.
Prior to treatment, patients should be carefully advised about the possibility of worsening long-term outcomes that may necessitate further intervention, and they should be informed about the potential for minor complications.
Expert opinion

Hemorrhoidal laser procedure

HeLP is an emerging nonexcisional treatment that utilizes Doppler-guided application of laser energy at a 980 nm wavelength. This energy is directed at the terminal branches of the superior hemorrhoidal artery, inducing shrinkage to a depth of up to 4 mm and resulting in reduced blood flow [257, 258]. The procedure can also be performed under topical anesthesia or without any anesthesia and may include mucopexy [259, 260].

According to the available literature, the procedure demonstrates satisfactory short-term outcomes for grades 2 and 3 hemorrhoidal prolapse, with a recurrence of symptoms ranging from 10% to 20%. Additionally, it is associated with a low morbidity rate. The primary postoperative complications include bleeding, which occurs in approximately 2.2% of patients, and mild pain. However,

there has been a reported case of a postoperative rectal hematoma that necessitated the creation of a diverting stoma [257–261].

To date, the literature lacks studies concerning the mid- and long-term outcomes of this procedure. In light of the limited studies available, HeLP may be a valuable treatment option, particularly for patients with bleeding low-grade (grade 1) hemorrhoidal prolapse. This approach potentially offers the advantage of not requiring general or spinal anesthesia.

Laser hemorrhoidoplasty

LHP is an emerging nonexcisional procedure that utilizes a 1,470-nm diode laser to target vascular piles. This application results in the shrinkage of hemorrhoidal tissues to a depth of approximately 5 mm [262].

Compared to conventional excisional procedures, LHP has been associated with a shorter operative time, reduced postoperative pain, a quicker return to daily activities, and easier wound management [262–265]. According to a recent systematic review and meta-analysis of 12 studies, which compared LHP with Milligan-Morgan hemorrhoidectomy across 1,756 patients with grades 2 to 4 hemorrhoidal prolapse, LHP demonstrated a shorter operative time ($P<0.00001$), a reduced length of hospital stay ($P=0.0005$), a lower risk of urinary retention ($P=0.005$), a decreased risk of anal stenosis ($P=0.0004$), and lower 24-hour postoperative visual analog scale scores for pain ($P<0.00001$) [266]. Overall, LHP's safety profile was favorable, with no life-threatening adverse events reported. When compared with hemorrhoidectomy, LHP was associated with a lower risk of postoperative short- and mid-term complications. However, as might be expected given that LHP induces thrombosis, there was a significantly higher risk of developing acute thrombosis, with an RR of 5.50 (95% CI, 1.24 to 24.41; $P=0.02$).

Concerning efficacy, the short-term success rate of LHP has been reported as satisfactory, with complete resolution of symptoms in approximately 70% of cases [255]. However, only a few studies have addressed the mid- and long-term outcomes of the procedure. These studies indicate a considerable deterioration of results, with recurrence rates of 21.6% at 2 years and 39% at 5 years of follow-up [267, 268].

In a prospective series of 162 patients who underwent LHP, those with grade 4 hemorrhoidal prolapse were found to have a higher risk of postoperative bleeding (OR, 6.98; 95% CI, 1.68 to 28.7; $P=0.006$), 30-day readmission (OR, 5.82; 95% CI, 1.27 to 25.1; $P=0.018$), and recurrence of hemorrhoids (OR, 11.4; 95% CI, 1.18 to 116; $P=0.028$) [269].

Rafaelo procedure

The Rafaelo procedure (radiofrequency ablation of hemorrhoids under local anesthetic) is an emerging nonexcisional surgical option for the treatment of internal hemorrhoids using radiofrequency thermocoagulation.

According to a recent systematic review and meta-analysis of 6 nonrandomized studies involving 327 patients, the procedure demonstrated a satisfactory short-term success rate coupled with an acceptable morbidity rate [270]. Specifically, the rates of reoperation and recurrence were 1.8% (95% CI, 0.3% to 3.4%) and 4.8% (95% CI, 1.2% to 8.4%), respectively. In contrast, the rates of method approval and patient satisfaction were high, at 89.1% (95% CI, 81.7% to 96.6%) and 95% (95% CI, 89.8% to 100%), respectively. Short-term complications included bleeding (7.5%; 95% CI, 2.5% to 12.5%), thrombosis (2.2%; 95% CI, 0.4% to 4.8%), and pain (1.6%; 95% CI, 0.2% to 3.3%) [269]. It is important to note that the conclusions of this review are significantly constrained by the low level of evidence from the included studies. Therefore, further randomized controlled trials are necessary to define the role of the Rafaelo procedure clearly in the treatment of hemorrhoidal disease.

As with LHP, only a few have studies addressed the mid-term outcomes of the procedure. These studies reported a progressive deterioration of results, with a 2-year recurrence rate varying from 13.7% to 21.5% [271, 272]. To date, long-term results of Rafaelo procedure for hemorrhoidal disease are not available.

Question 10. In patients with chronic hemorrhoidal disease, what is the role of excisional procedures?

Statement 10-1.
Hemorrhoidectomy may be considered as a treatment option in patients with high-grade hemorrhoidal prolapse (grades 3 and 4), especially in those with combined grade 4 prolapse and external pathological hemorrhoids.
Strong recommendation (grade 1A) based on high-quality evidence

Statement 10-2.
Patients undergoing hemorrhoidectomy should receive a detailed informed consent document that explains the long-term benefits in comparison to the early postoperative drawbacks, as well as the potential short- and long-term complications.
Expert opinion

Statement 10.3.
Hemorrhoidectomy should be considered as a treatment option for patients with recurrent high-grade hemorrhoidal prolapse following nonexcisional procedures.
Expert opinion

https://doi.org/10.3393/ac.2023.00871.0124

Statement 10-4.
Open and closed hemorrhoidectomy show similar outcomes, although closed hemorrhoidectomy has been associated with a reduced risk of bleeding and more rapid healing.
Strong recommendation (grade 1A) based on high-quality evidence

Statement 10-5.
The use of a harmonic scalpel or radiofrequency devices for hemorrhoidectomy may be associated with a shorter operative time, reduced intraoperative blood loss, and less postoperative pain compared to conventional surgery.
Strong recommendation (grade 1B) based on moderate-quality evidence

Hemorrhoidectomy aims to ligate the vascular pedicles and excise the enlarged hemorrhoidal tissue both external and internal to the anal canal. This operation can be carried out using several techniques, such as the Milligan-Morgan open excision, the Ferguson closed hemorrhoidectomy, the Parks submucosal excision, and the Whitehead circumferential hemorrhoidectomy [273, 274].

The efficacy of open hemorrhoidectomy, especially in the treatment of high-grade hemorrhoidal prolapse (grades 3 and 4), has been confirmed by numerous systematic reviews, randomized controlled trials, and comparative and observational studies previously mentioned. These studies have demonstrated a higher overall success rate for open hemorrhoidectomy compared to RBL [125, 126] and HAL with mucopexy [179, 181]. Furthermore, when compared to stapled hemorrhoidopexy, open hemorrhoidectomy has shown a similar short-term success rate [224] and more stable outcomes over time, particularly at very long-term follow-up [227–236]. However, conventional excisional surgery has shown fewer benefits in terms of bowel function, hospital stay, functional recovery, time off work, return to normal activities, wound healing, postoperative pain, analgesic requirements, postoperative bleeding, wound complications, constipation, and pruritus. These factors often result in lower overall patient satisfaction [125, 126, 179, 181, 227–236].

According to 2 systematic reviews and meta-analyses, open and closed hemorrhoidectomies appear to yield similar outcomes. The primary distinctions are a shorter operative time associated with the open approach, and a reduced risk of bleeding and quicker healing following closed hemorrhoidectomy [275, 276].

Hemorrhoidectomy can be performed using not only traditional instrumentation and diathermy but also various dedicated devices. These include bipolar diathermy [277], the harmonic scalpel (which utilizes ultrasonic technology) [278, 279], and radiofrequency devices [280]. These devices appear to offer minimal collateral thermal spread and limited tissue charring, resulting in more precise cutting and reduced thermal-related damage to the surrounding soft tissue.

According to a recent meta-analysis, LigaSure hemorrhoidectomy, compared to closed hemorrhoidectomy, was associated with significantly lower pain (OR, −2.09; 95% CI, −2.18 to −2.01; $Z = 48.76$; $P < 0.00001$), shorter operative times (OR, −15.12; 95% CI, −20.85 to −9.40; $Z = 5.18$; $P < 0.00001$), and lower volumes of blood loss during the operation (OR, −18.52; 95% CI, − 26.13 to −10.90; $Z = 4.77$; $P < 0.00001$). However, the length of hospital stay and the complication rate, which includes bleeding, urinary retention, anal fissure and stenosis, difficulty defecating, and anal incontinence, were similar [281]. These findings were substantially confirmed by another meta-analysis that compared LigaSure hemorrhoidectomy with conventional surgery [282]. According to a Cochrane review, pain and analgesic requirements were lower during the first 7 days after a LigaSure hemorrhoidectomy compared to those following conventional excision. However, this difference was no longer apparent by day 14 [283, 284]. Similar to LigaSure hemorrhoidectomy, a meta-analysis found that harmonic scalpel hemorrhoidectomy was associated with less postoperative pain and a quicker return to work when compared with traditional surgery [278].

Conventional hemorrhoidectomy may be associated with early and late complications. Postoperative pain is a significant concern, as it tends to be more severe and frequent compared to nonexcisional procedures [125, 126, 179, 181, 227–236]. Postoperative bleeding is a relatively common complication, with an incidence ranging from 4% to 25% across various cases [203, 204, 208, 285–288]. Acute urinary retention is a frequent postoperative complication following hemorrhoid surgery, with estimated incidences ranging from 0% to 34% after open hemorrhoidectomy and from 0% to 22% after stapled hemorrhoidopexy [209, 268, 289, 290]. No significant differences in incidence have been observed between these procedures [289], suggesting that postoperative pain may play a minimal role in the development of this complication [216]. Similar to nonexcisional procedures, there have been rare reports of serious sepsis with catastrophic consequences following conventional hemorrhoidectomy [127, 291]. Anal stenosis following hemorrhoidectomy has an incidence rate between 0% and 6% [292]. It is often associated with the excision of extensive portions of the anoderm and hemorrhoidal or rectal mucosa, without preserving sufficient mucocutaneous bridges. This can result in scarring and the gradual development of a chronic stricture [274].

Fecal incontinence can result from a loss of sensitive anoderm, alterations in the symmetry and closure of the anal canal after hemorrhoidal tissue removal, and occult damage to the sphincter complex during surgery. The incidence of continence disorders following hemorrhoidectomy varies widely, with reports ranging

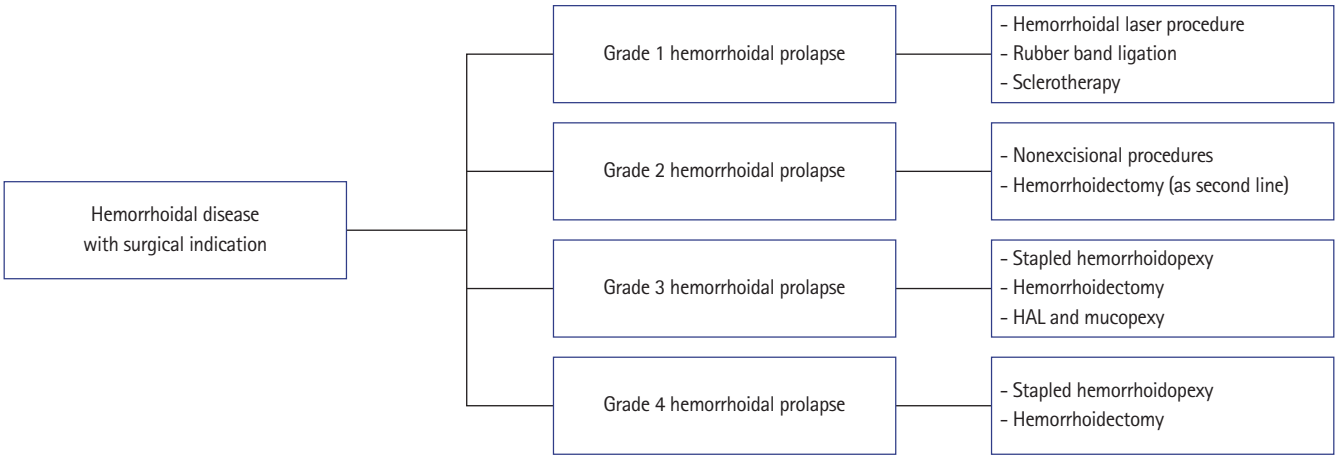

Fig. 1. Surgical options and indications for chronic hemorrhoidal disease not responsive to conservative measures. The choice among the various procedures should be based on each patient's clinical characteristics, each patient's compliance and needs, local resources, and the surgeon's expertise. Beyond this, the expert panel considers stapled hemorrhoidopexy to be the gold-standard treatment for grade 3 hemorrhoidal prolapse. HAL, hemorrhoidal artery ligation.

from 0% to 28% [293]. A large retrospective study of 418 patients who underwent open hemorrhoidectomy found that, after a minimum follow-up of 5 years, 2/3 of the patients were satisfied with the surgical outcomes. However, 1/3 reported fecal incontinence, with 29% attributing it directly to the hemorrhoidectomy. Overall, 9.5% of patients identified the onset of incontinence as coinciding with the operation [294]. Interestingly, hemorrhoidectomy may also lead to postoperative urge incontinence. The pathogenesis is thought to be related to impairment of the external anal sphincter and the most superficial component of the longitudinal conjoined muscle, the corrugator ani muscle. This damage may be caused by excessive traction of the skin during hemorrhoidal excision [70].

In conclusion, when considering excisional procedures for the treatment of hemorrhoidal disease, recommendations can be supported by numerous high-quality evidence-based studies. Despite the higher long-term success rate of hemorrhoidectomy compared with nonexcisional procedures, the immediate postoperative course is less favorable after hemorrhoidectomy. Additionally, the significant complication rate associated with excisional surgery and the important role of hemorrhoids in anal continence must be considered. Consequently, the expert panel strongly recommends hemorrhoidectomy, especially for patients with advanced hemorrhoidal prolapse. This recommendation is particularly pertinent for patients with combined grade 4 prolapse and external pathological hemorrhoids, such as those with recurrent high-grade hemorrhoidal prolapse after nonexcisional procedures.

CONCLUSION

Based on previous evidence-based statements and expert opinions, various surgical procedures may be recommended for patients with different grades of hemorrhoidal prolapse severity, following the failure of conservative measures. These recommendations align with the Goligher classification (Fig. 1).

In cases of grade 1 hemorrhoidal prolapse, outpatient procedures such as LHP, RBL, and sclerotherapy may be considered the preferred surgical options.

In cases of grade 2 prolapse, a wide array of surgical procedures can be utilized, either individually or in combination. Nonexcisional treatments, such as outpatient procedures, HAL plus mucopexy, LHP, the Rafaelo procedure, and stapled hemorrhoidopexy, may be considered as first-line treatment options. Excisional surgery, in contrast, may be regarded as a second-line treatment.

In cases of grades 3 and 4 hemorrhoidal prolapse, stapled hemorrhoidopexy and hemorrhoidectomy are often the most appropriate procedures. However, for grade 3 prolapse, HAL and mucopexy can also be viable options. The selection of a specific procedure should take into account the clinical characteristics of the patient, their compliance and needs, available local resources, and the expertise of the individual surgeon. Furthermore, the expert panel regards stapled hemorrhoidopexy as the gold-standard treatment for grade 3 hemorrhoidal prolapse. Excisional surgery, in contrast, may be particularly suitable for patients with large, prolapsed, and fixed external hemorrhoids in conjunction with high-grade internal hemorrhoidal prolapse. If high-grade hemorrhoidal prolapse recurs following nonexci-

https://doi.org/10.3393/ac.2023.00871.0124

sional procedures, hemorrhoidectomy may be the most judicious treatment choice.

ARTICLE INFORMATION

Conflict of interest

Antonio Brillantino, Pasquale Talento, and Luigi Marano are Editorial Board members of *Annals of Coloproctology*, but were not involved in the peer reviewer selection, evaluation, or decision process of this article. No other potential conflict of interest relevant to this article was reported.

Funding

None.

Author contributions

Conceptualization: A Brillantino; Investigation: all authors (the study group was composed by A Brillantino, AR, PT, LB, L Marano, FI, LL; all other authors were panelists of Delphi rounds); Methodology: A Brillantino; Supervision: A Brillantino; Writing–original draft: A Brillantino, L Marano; Writing–review & editing: all authors. All authors read and approved the final manuscript.

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