CLINICAL PRACTICE GUIDELINES

The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the Management of Hemorrhoids

Bradley R. Davis, M.D. • Steven A. Lee-Kong, M.D. • John Migaly, M.D.
Daniel L. Feingold, M.D. • Scott R. Steele, M.D.

Prepared by the Clinical Practice Guidelines Committee of the American Society of Colon and Rectal Surgeons

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The American Society of Colon and Rectal Surgeons (ASCRS) is dedicated to assuring high-quality patient care by advancing the science, prevention, and management of disorders and diseases of the colon, rectum, and anus. The Clinical Practice Guidelines Committee is composed of Society members who are chosen because they have demonstrated expertise in the specialty of colon and rectal surgery. This committee was created to lead international efforts in defining quality care for conditions related to the colon, rectum, and anus. This is accompanied by developing Clinical Practice Guidelines based on the best available evidence. These guidelines are inclusive and not prescriptive. Their purpose is to provide information on which decisions can be made rather than to dictate a specific form of treatment. These guidelines are intended for the use of all practitioners, healthcare workers, and patients who desire information about the management of the conditions addressed by the topics covered in these guidelines. It should be recognized that these guidelines should not be deemed inclusive of all proper methods of care or exclusive of methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the propriety of any specific procedure must be made by the physician in light of all of the circumstances presented by the individual patient.

STATEMENT OF THE PROBLEM

Symptoms related to hemorrhoids are very common in the Western hemisphere and other industrialized societies. Although published estimates of prevalence are varied,[1,2] it represents one of the most common medical and surgical disease processes encountered in the United States, resulting in >2.2-million outpatient evaluations per year.[3] A large number of diverse symptoms may be, correctly or incorrectly, attributed to hemorrhoids by both patients and referring physicians. As a result, it is important to identify symptomatic hemorrhoids as the underlying source of the anorectal symptom and to have a clear understanding of the evaluation and management of this disease process. These guidelines address both diagnostic and therapeutic modalities in the management of hemorrhoidal disease.

METHODOLOGY

These guidelines are built on the ASCRS Practice Parameters for the Management of Hemorrhoids published in 2011.[4] A literature search of MEDLINE, PubMed, and the Cochrane Database of Collected Reviews was performed, expanding on the previous literature search from 1996 and updated through April 2017 (see Supplemental Search Strategy, http://links.lww.com/DCR/A532). Key word combinations included *hemorrhoid*, *internal and external hemorrhoids*, *hemorrhoid disease*, *thrombosed hemorrhoid*, *rubber band ligation*, *hemorrhoidopexy*, *procedure for prolapse and hemorrhoids* (*PPH*), and *stapled hemorrhoidopexy*, *Doppler-guided hemorrhoidopexy*, *hemorrhoidectomy*, *Milligan–Morgan*, and *Ferguson*. Directed searches of the embedded references from the primary articles were also performed in selected circumstances. The final source ma-

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Funding/Support: None reported.

Financial Disclosure: None reported.

Correspondence: Scott R. Steele, M.D., 9500 Euclid Ave, A30, Cleveland, OH 44915. E-mail: Steeles3@ccforg

Dis Colon Rectum 2018; 61: 284–292
DOI: 10.1097/DCR.0000000000001030
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terial used was evaluated for the methodologic quality, the evidence base was examined, and a treatment guideline was formulated by the subcommittee for this guideline. When agreement was incomplete regarding the evidence base or treatment guideline, consensus from the committee chair, vice chair, and 2 assigned reviewers determined the outcome. The final grade of recommendation and level of evidence for each statement were determined using the Grades of Recommendation, Assessment, Development, and Evaluation system (Table 1).[1,5] Members of the ASCRS Clinical Practice Guidelines Committee worked in joint production of these guidelines from inception to final publication. Recommendations formulated by the subcommittee were then reviewed by the entire Clinical Practice Guidelines Committee for edits and recommendations. Final recommendations were approved by the ASCRS Clinical Guidelines Committee and ASCRS Executive Committee. In general, each ASCRS Clinical Practice Guideline is updated every 3 to 5 years.

EVALUATION OF HEMORRHOIDS

1. **A disease-specific history and physical examination should be performed, emphasizing degree and duration of symptoms and risk factors. Grade of Recommendation: Strong recommendation based on low-quality evidence, 1C.**

The diagnosis of hemorrhoids is almost always a clinical one and should start with a medical history, with great care taken to identify symptoms suggestive of hemorrhoidal disease and risk factors such as constipation,[6] followed by a focused physical examination. The cardinal signs of internal hemorrhoids are painless bleeding with bowel movements with intermittent protrusion. Focus should be on the extent, severity, and duration of symptoms such as bleeding and prolapse, issues of perineal hygiene, and presence or absence of pain. A careful review of fiber intake and bowel habits, including frequency, consistency, and ease of evacuation, should also be performed, because constipation predisposes patients to hemorrhoidal disease.[6,7] A careful assessment of fecal incontinence symptoms should also be made, because this may affect management decisions, to include the possibility of surgical treatment. Physical examination in the prone, knee–chest, or lateral decubitus position should include visual inspection of the anus, as well as digital rectal examination to evaluate for other anal pathology and sphincter integrity. In addition, an evaluation of the patient while straining on the bathroom will assist in the diagnosis of hemorrhoidal prolapse, as well as exclude full-thickness rectal prolapse. An anoscopic examination should be performed to assess the anatomy.[8] Internal hemorrhoids, located above the dentate line, can be assigned a grade based

TABLE 1. The Grades of Recommendation, Assessment, Development, and Evaluation System Grading Recommendations

	Description	*Benefit vs risk and burdens*	*Methodologic quality of supporting evidence*	*Implications*
1A	Strong recommendation, high-quality evidence	Benefits clearly outweigh risk 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 recommendation, moderate-quality evidence	Benefits clearly outweigh risk and burdens or vice versa	RCTs with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or exceptionally strong evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1C	Strong recommendation, low- or very-low-quality evidence	Benefits clearly outweigh risk and burdens or vice versa	Observational studies or case series	Strong recommendation but may change when higher-quality evidence becomes available
2A	Weak recommendation, 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 patient or societal values
2B	Weak recommendations, moderate-quality evidence	Benefits closely balanced with risks and burdens	RCTs with impo0rtant limitations (inconsistent results, methodologic flaws, indirect or imprecise) or exceptionally strong evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2C	Weak recommendation, low- or very-low-quality evidence	Uncertainty in the estimates of benefits, risks, and burden; benefits, risks, and burden may be closely balanced	Observational studies or case series	Very weak recommendations; other alternatives may be equally reasonable

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RCT = randomized controlled trial.

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on the definitions in Table 2, which may help to guide therapy. Laboratory evaluation is not typically required for diagnostic purposes.

EVALUATION OF RECTAL BLEEDING

1. **Complete endoscopic evaluation of the colon is indicated in select patients with symptomatic hemorrhoids and rectal bleeding. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.**

Although hemorrhoidal disease is the most common reason for hematochezia, other disease processes, such as colorectal cancer, IBD, other colitides, diverticular disease, and angiodysplasia, can also precipitate bleeding.[9] While the majority of patients with hematochezia will not have colorectal cancer, rectal bleeding attributed to hemorrhoids represents the most common missed opportunity to establish a cancer diagnosis.[10] Obtaining a thorough personal and family history and a physical examination, which may include proctoscopy and/or flexible sigmoidoscopy, will identify high-risk patients requiring more extensive evaluation. Previous endoscopy records should be reviewed, when available. Those who fulfill select criteria set in Table 3 should have a full colonic evaluation with colonoscopy or other colorectal cancer screening modality.[11] Patients unable to undergo colonoscopic evaluation may be considered for flexible sigmoidoscopy combined with other diagnostic modalities per consensus guidelines.[12]

MEDICAL TREATMENT OF HEMORRHOIDS

1. **Dietary modification consisting of adequate fluid and fiber intake and counseling regarding defecation habits typically form the primary first-line therapy for patients with symptomatic hemorrhoid disease. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.**

Constipation and abnormal bowel habits (eg, straining, prolonged sitting, and frequent bowel movements) can play a significant role in patients with symptomatic hemorrhoids.[6,7] Increased fiber and fluid intake should be recommended to all patients and have been shown to improve symptoms of mild-to-moderate prolapse and bleeding. A Cochrane review including 7 randomized trials and a total of 378 participants compared fiber with a nonfiber control and showed that fiber had a beneficial effect in the treatment of symptomatic hemorrhoids (risk reduction (RR) = 0.47 (95% CI, 0.32–0.68)). The effect on bleeding showed a significant difference in favor of fiber supplementation (RR = 0.50 (95% CI, 0.28 to 0.89)), whereas symptoms such as prolapse, pain, and itching showed a tendency toward no effect.[13] Patients should also be counseled as to maintaining proper bowel habits, such as avoidance of straining and limiting time on the commode, because these practices have been associated with higher rates of symptomatic hemorrhoids.[14,15]

TABLE 2. Classification of Internal Hemorrhoids

Grade	*Physical Findings*
I	Prominent hemorrhoidal vessels, no prolapse
II	Prolapse with Valsalva and spontaneous reduction
III	Prolapse with Valsalva requires manual reduction
IV	Chronically prolapsed manual reduction ineffective

TABLE 3. Indications for Complete Colon Evaluation

1. Age ≥50 y if no complete examination within 10 y
2. Age ≥40 y or 10 y younger than the age at diagnosis with history positive for a single, first-degree relative with colorectal cancer or advanced adenoma diagnosed at age <60
3. Age ≥40 y or 10 y younger than the age at diagnosis with history positive for two first-degree relatives with advanced adenomas or colorectal cancer
4. Positive fecal immunochemical testing (FIT)
5. Positive FIT-fecal DNA test

Source: The Multi-Society Task Force on Colorectal Cancers.[11]

2. **Medical therapy for hemorrhoids represents a heterogeneous group of treatment options that can be offered with expectations of minimal harm and a decent potential for relief. Grade of Recommendation: Weak recommendation based on moderate-quality evidence, 2B.**

Phlebotonics are a heterogeneous class of drugs used to treat both acute and chronic hemorrhoidal disease. Although their true mechanism of action has not been well established, they are associated with strengthening of blood vessel walls, increasing venous tone and lymphatic drainage, and normalizing capillary permeability. In a Cochrane review of 24 randomized controlled trials (RCTs) enrolling a total of 2334 participants, which compared an intervention using phlebotonics with a control, phlebotonics demonstrated a statistically significant beneficial effect for the outcomes of pruritus (OR = 0.23 (95% CI, 0.07–0.79); $p = 0.02$), bleeding (OR = 0.12 (95% CI, 0.04–0.37); $p = 0.0002$), discharge and leakage (OR = 0.12 (95% CI, 0.04–0.42); $p = 0.0008$), and overall symptom improvement (OR = 15.99 (95% CI, 5.97–42.84); $p < 0.00001$). Although beneficial, they did not show a statistically significant effect when compared with a control intervention for pain (OR = 0.11 (95% CI, 0.01–1.11); $p = 0.06$).[16] A meta-analysis reviewed 14 RCTs comparing flavonoids (diosmin, micronized purified flavonoid fraction, and rutosides) with placebo or no therapy in patients with symptomatic hemorrhoids (1514 patients). Flavonoids were noted to have a beneficial effect on bleeding, pruritus, and recurrence (RR = 0.53).[17] Although topical application of ointments containing anesthetics, steroids,

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emollients, and/or antiseptics are used commonly, their prolonged use can cause allergic reactions or sensitization, and there is no strong scientific evidence regarding their long-term use.

OFFICE TREATMENT

1. **Most patients with grade I and II and select patients with grade III internal hemorrhoidal disease who fail medical treatment can be effectively treated with office-based procedures, such as banding, sclerotherapy, and infrared coagulation (IRC). Hemorrhoid banding is typically the most effective option. Grade of Recommendation: Strong recommendation based on high-quality evidence, 1A.**

The goals of office-based procedures are to alleviate patient symptoms by decreasing the size or vascularity of the hemorrhoidal tissue and to increase the fixation of the hemorrhoidal tissue to the rectal wall to minimize prolapse. These procedures are all relatively well tolerated and cause minimal pain and discomfort. However, patients should understand that they all have a variable recurrence rate and may require repeated applications.[18,19]

Rubber Band Ligation

The most popular and effective treatment is rubber band ligation (RBL), which has been shown to be superior to sclerotherapy and IRC.[20] Ligation of the hemorrhoidal tissue results in ischemia and necrosis of the prolapsing mucosa followed by scar fixation to the rectal wall. This quick technique is well tolerated in patients, because the ligature is performed well above the dentate line, where somatic sensitivity is absent. One large case series including 750 consecutive patients with grade II and III hemorrhoids reported a cure rate of 93% and a recurrence rate of 11% after 2 years, which was not influenced by the grade of hemorrhoid.[19] The efficacy of RBL in treating grade II and III hemorrhoids was evaluated in an RCT, and after 1 year, 49% of the 176 patients had recurrent hemorrhoidal symptoms, of which the majority were treated with repeat RBL (32% of the cohort required additional procedures, more than half of which were repeat RBL).[21] A Cochrane review evaluated the efficacy of RBL with respect to grade of hemorrhoids and found that excisional hemorrhoidectomy was superior to RBL for grade III hemorrhoids (2 trials, 116 patients, RR = 1.23 (95% CI, 1.04–1.45); $p = 0.01$). However, no significant difference was noticed with grade II hemorrhoids (1 trial, 32 patients, RR = 1.07 (95% CI, 0.94–1.21); $p = 0.32$). Fewer patients required retreatment after excisional hemorrhoidectomy (3 trials, RR = 0.20 (95% CI, 0.09–0.40); $p < 0.00001$).[22] Although there is limited evidence regarding the safety of RBL in patients on anticoagulation, it is generally considered a contraindication. In 1 large retrospective review of 805 patients undergoing 2114 RBLs, 25.0% of patients on warfarin bled postprocedure compared with 7.5% taking aspirin or nonsteroidal anti-inflammatory drugs. Of note, only 2.9% of patients bled postprocedure when not taking any of these products.[23]

Sclerotherapy

A variety of techniques and sclerosing agents have been described for treating grade I to III internal hemorrhoids. The most commonly used sclerosant agents are 5% phenol in almond or vegetable oil or sodium tetradecyl sulfate, a sclerosant that is approved by the US Food and Drug Administration only for treating small varicose veins of the lower extremities (Sotradecol, Elkins-Sinn, Cherry Hill, NJ). The mechanism of action is fibrosis of the submucosa with subsequent fixation of the hemorrhoidal tissue. Injection is performed into the submucosa at the apex of a hemorrhoidal bundle (0.5–2.0 mL of 1% sodium tetradecyl sulfate or 1.0–3.0 mL of 5% phenol in oil). The injection may also result in mucosal ulceration or necrosis and rare septic complications, such as prostatic abscess and retroperitoneal sepsis.[24] Transient bacteremia has been reported in 8% of individuals after sclerotherapy, and antibiotic prophylaxis should be considered for individuals at increased risk.[25] There are limited data on the efficacy of sclerotherapy, with 1 recent trial demonstrating only 20% success at 1 year in the treatment of grade III hemorrhoids.[26] The results appear to be much better for the treatment of grade I hemorrhoids, with a recent trial evaluating the efficacy of polidocanol, a nonester local anesthetic approved for use by the US Food and Drug Administration, with 88% of patients treated successfully (12-week follow-up).[27] Although there are no randomized data to support the use of sclerotherapy in anticoagulated patients, a case-matched series of 37 patients receiving antiplatelet therapy, including aspirin, ticlopidine, clopidogrel, and cilostazol; anticoagulant therapy, including warfarin; or both antiplatelet therapy and anticoagulant therapy, showed no difference in postprocedure bleeding rates.[28] Newer agents are being evaluated and used throughout Asia and Europe and have been shown to be more efficacious in the treatment of more advanced degrees of hemorrhoids but to date are not available for use in the United States.[29,30] Until then, the role of sclerotherapy in the treatment of hemorrhoids will continue to be limited.

Infrared Coagulation

IRC involves the direct application of infrared waves resulting in protein necrosis within the hemorrhoid. This is most commonly used for grade I and II hemorrhoids. Although previous reports demonstrated high rates of recurrence, especially with grade III and IV hemorrhoids,[31] recent randomized studies have demonstrated outcomes similar to RBL.[32,33] The most recent RCT to evaluate IRC

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for grade I and II internal hemorrhoids demonstrated control of symptoms in 81% of patients at 6 months after IRC, whereas 28% of patients required a repeat procedure.[34]

Complications of Office-Based Procedures

Overall, the incidence of major complications is rare; yet, one must remember that perianal sepsis is a life-threatening complication that can develop after office-based procedures or after anal surgery, in general. Urinary dysfunction, worsening pain, or fever after an office-based anal procedure may be the initial sign of perianal sepsis and should typically prompt an urgent patient evaluation.[35] Bleeding is the most common complication and occurs more often after RBL then other office-based procedures. It generally presents days after the procedure and is felt to be related to the resultant ulcer. Although the numbers are not well reported, some patients who undergo RBL will experience significant pain because of misplacement of the band near or below the dentate line, which will need to be removed. Patients should be appropriately counseled regarding these rare complications.[24,36,37]

THROMBOSED EXTERNAL HEMORRHOIDS

1. **Select patients with thrombosed external hemorrhoids may benefit from early surgical excision. Grade of Recommendation: Weak recommendation based on low-quality evidence, 2C.**

There is a remarkable paucity of studies on external hemorrhoid thrombosis and even fewer that provide high levels of evidence. Surgery may be superior to nonoperative treatment, but there is no evidence regarding the optimal period of initiation of conservative management.[38] Although most patients treated nonoperatively will experience eventual resolution of their symptoms, excision of thrombosed external hemorrhoids may result in more rapid symptom resolution, lower incidence of recurrence, and longer remission intervals. A prospective study by Cavcić et al[39] randomly assigned 150 patients into 3 treatment groups, including topical application of 0.2% nitroglycerin, incision and evacuation of thrombus, and excision of the hemorrhoid. Comparison of the pain scores on day 4 after treatment initiation suggested that hemorrhoid excision provided the best pain control, followed by topical application of nitroglycerin, whereas thrombectomy was the least effective. There was, however, no difference in symptomatic relief between the groups at 1-month follow-up. Greenspon et al[40] retrospectively reviewed 231 patients who underwent treatment for external hemorrhoid thrombosis from 1990 to 2002, of which 48.5% were treated surgically. Of those, 97.3% underwent excision of the thrombosed hemorrhoid, and the rest underwent incision and evacuation of the thrombus. The remaining 51.5% of patients were treated conservatively with dietary modifications, stool softeners, oral and topical analgesics, and sitz baths. Resolution of presenting symptoms (pain, bleeding, and/or lump) was achieved in a mean period of 24 days for conservatively managed patients compared with 3.9 days in the surgically managed group.

SURGICAL HEMORRHOIDECTOMY

1. **Hemorrhoidectomy should typically be offered to patients whose symptoms result from external hemorrhoids or combined internal and external hemorrhoids with prolapse (grades III–IV). Grade of Recommendation: Strong recommendation based on high-quality evidence, 1A.**

Surgical Excision

Surgical excision of hemorrhoids remains a very effective approach for patients who fail or cannot tolerate office-based procedures, those who have grade III or IV hemorrhoids, or patients with substantial concomitant skin tags. In a meta-analysis of 18 randomized prospective studies comparing hemorrhoidectomy with office-based procedures, hemorrhoidectomy was the most effective treatment for patients with grade III hemorrhoids. However, it was associated with increased pain and the highest complication rates.[20]

Either open or closed hemorrhoidectomy can be performed with a variety of surgical devices. In a meta-analysis of 11 RCTs comparing open versus closed hemorrhoidectomy (1326 patients), the closed approach was associated with decreased postoperative pain, faster wound healing, and lesser risk of postoperative bleeding.[41] Postoperative complications, hemorrhoid recurrence, and infectious complications were similar. In a meta-analysis of 5 studies with 318 patients, the use of a bipolar energy device was found to be faster and to cause less postoperative pain when compared with closed hemorrhoidectomy with comparable rates of postoperative complications.[42] Ultrasonic shears were associated with earlier return to work, decreased postoperative pain, and fewer postoperative complications in a meta-analysis of 8 studies (468 patients) compared with conventional hemorrhoidectomy.[43] When these 2 devices were evaluated head to head in an RCT of patients undergoing closed hemorrhoidectomy, postoperative pain scores were similar, with no differences in clinical outcomes.[44] Additional studies particularly addressing increased cost during surgery are needed to additionally define the use of each of these modalities for operative intervention.

Hemorrhoidopexy

Stapled hemorrhoidopexy uses a circular stapling device to create a mucosa-to-mucosa anastomosis by excising the submucosa proximal to the dentate line, resulting

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in a cephalad relocation of the anal cushions and interruption of the feeding arteries. Although effective for internal prolapsing disease, it does not address external hemorrhoids. Early cohort and smaller nonrandomized trials reported stapled hemorrhoidopexy to be associated with less pain and faster recovery when compared with excisional hemorrhoidectomy. Watson et al[45] randomly assigned 777 patients, including 389 patients to undergo stapled hemorrhoidopexy and 388 patients to undergo traditional excisional surgery. Stapled hemorrhoidopexy was less painful than excisional hemorrhoidectomy in the short term, and surgical complication rates were similar between groups. The excisional hemorrhoidectomy group had significantly better quality-of-life scores than the hemorrhoidopexy group. In the stapled hemorrhoidopexy group, 32% of patients reported that their symptoms had recurred compared with 14% in the excisional hemorrhoidectomy group (OR = 2.96 (95% CI, 2.02–4.32); $p < 0.0001$), and this difference was maintained at 24 months.[45] A Cochrane review demonstrated that patients with stapled hemorrhoidopexy were significantly more likely to have recurrent hemorrhoids in long-term follow-up at all of the time points compared with those who underwent excisional hemorrhoidectomy (12 trials, 955 patients, OR = 3.22 (95% CI, 1.59–6.51); $p = 0.001$). Furthermore, a significantly higher proportion of patients who underwent hemorrhoidopexy reported the symptom of prolapse at all time points (13 studies, 1191 patients, OR = 2.65 (95% CI, 1.45–4.85); $p = 0.002$).[45] Patients undergoing hemorrhoidopexy were also more likely to require an additional operative procedure compared with those who underwent excisional hemorrhoidectomy (8 articles, 553 patients, OR = 2.75 (95% CI, 1.31–5.77); $p = 0.008$). When all of the symptoms were considered, patients undergoing excisional hemorrhoidectomy surgery were more likely to be asymptomatic (12 trials, 1097 patients, OR = 0.59 (95% CI, 0.40–0.88)). Nonsignificant trends in favor of stapled hemorrhoidopexy were seen in pain, pruritus ani, and fecal urgency. All of the other clinical parameters showed trends favoring excisional hemorrhoidectomy.[46] In another systematic review of all surgical techniques for the operative treatment of hemorrhoids, recurrence of hemorrhoidal symptoms was more common after stapled hemorrhoidopexy than after excisional operations.[47]

Stapled hemorrhoidopexy has been associated with several unique complications (ie, rectovaginal fistula, staple line bleeding, and stricture at the staple line). A systematic review of 784 articles including a total of 14,232 patients found a median complication rate of 16.1%, with 5 mortalities documented.[48] Between 2000 and 2009, there were 40 published cases in the literature of rectal perforation after stapled hemorrhoidopexy. Thirty-five patients required a laparotomy with fecal diversion, and 1 patient was treated by low anterior resection. Despite surgical treatment and resuscitation, there were 4 deaths.[49]

Doppler-Guided Hemorrhoidectomy

Doppler-guided/assisted hemorrhoid artery ligation (HAL) uses an anoscope fashioned with a Doppler probe to identify each hemorrhoid artery that is subsequently ligated. Potential benefits are the lack of tissue excision and possibly less pain. A mucopexy has also been described for patients with symptomatic prolapse. In general, prospective studies using HAL have demonstrated favorable short-term results.[50] A systematic review evaluating 28 studies, including 2904 patients with grade I to IV hemorrhoids, demonstrated a recurrence rate that ranging between 3.0% and 60.0% (pooled recurrence rate = 17.5%), with the highest rates for grade IV hemorrhoids. Postoperative analgesia was required in 0% to 38% of patients. Overall postoperative complication rates were low, with an overall bleeding rate of 5.0% and an overall reintervention rate of 6.4%. The operative time ranged from 19 to 35 minutes.[51]

In a randomized prospective trial comparing RBL with HAL for the treatment of grade II and III hemorrhoids, the recurrence rates at 1 year postprocedure were 49% (87/176) in the RBL group and 30% (48/161) in the HAL group (adjusted OR = 2.23 (95% CI, 1.42–3.51); $p = 0.0005$). The main reason for this difference was the number of additional procedures required in the RBL group to alleviate symptoms (32% in the RBL group and 14% in the HAL group). Recurrence rates, symptom scores, complications, 5-level EQ-5D version (ie, a widely used quality-of-life assessment instrument), and continence score were similar, although patients had more pain in the early postoperative period after HAL. HAL was also more expensive and was not found to be cost-effective compared with RBL in terms of incremental cost per quality-adjusted life-year.[52]

Complications of Surgical Hemorrhoidectomy

Complications after surgical hemorrhoidectomy are low, with the most common being postprocedure hemorrhage and most larger series reporting an incidence between 1% and 2%.[41] Acute urinary retention has been reported to occur between 1% and 15% and is the most common reason for failure of surgical patients to be discharged from an ambulatory setting.[53] The incidence is higher after spinal anesthesia and after HAL procedures. The risk may be mitigated with decreasing volume of intravenous fluids and through judicious use of local anesthesia.[54]

2. **Patients undergoing surgical hemorrhoidectomy should use a multimodality pain regimen to reduce narcotic usage and promote a faster recovery. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.**

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In a review of 115,775 patients undergoing surgery, pain reported after hemorrhoidectomy was ranked 23rd of 529 well-defined surgical procedures.[55] A number of modifications in surgical and postoperative management have attempted to reduce this pain.[56] Topical 2% Diltiazem ointment has been shown to reduce narcotic usage and pain scores after conventional hemorrhoidectomy.[57,58] A meta-analysis of 12 trials with 1095 patients undergoing excisional hemorrhoidectomy and treated with topical nitroglycerin demonstrated significant pain reduction as well. Patients also appeared to resume routine activities earlier than those in the control group.[59] Studies evaluating surgical sphincterotomy (LIS) also demonstrate efficacy in reducing postoperative pain and need for analgesics after excisional hemorrhoidectomy. LIS also managed to decrease the incidence of postoperative urinary retention and anal stenosis. The negative aspect of adding LIS to excisional hemorrhoidectomy was the risk of developing minor anal leakage after surgery, which in most instances was temporary.[60] Three RCTs have investigated botulinum toxin A after hemorrhoidectomy. Postoperative pain appeared to be reduced for <1 week after excisional hemorrhoidectomy. Its adverse effect profile, including incontinence to flatus, was comparable to placebo.[61] The use of oral metronidazole was evaluated in a recent meta-analysis and found to be no better than placebo in controlling postoperative pain.[62] Liposomal bupivacaine (LB) has been evaluated in 2 RCTs. In the first, 189 patients undergoing excisional hemorrhoidectomy were randomly assigned to LB versus placebo. Pain intensity scores were significantly lower in the LB group (141.8 vs 202.5; $p < 0.0001$). More patients in the LB group remained opioid free from 12 hours (59%) to 72 hours (28%) after surgery compared with patients receiving placebo (14% and 10%; $p < 0.0008$ through 72 h).[63] In another study, 100 patients were randomly assigned to receive a single dose of bupivacaine HCl 75 mg (0.25% with 1:200,000 epinephrine) or LB 66, 199, or 266 mg on completion of hemorrhoidectomy. Cumulative pain scores were significantly lower with LB at each study dose ($p < 0.05$) compared with bupivacaine HCl 72 hours after surgery. The mean total postoperative opioid consumption was significantly lower for the LB 266-mg group compared with the bupivacaine HCl group during the 12- to 72-hour postoperative period ($p = 0.019$). Median time to first opioid use was 19 hours for LB 266 mg versus 8 hours for bupivacaine HCl ($p = 0.005$). Incidence of opioid-related adverse events was 4% for LB 266 mg compared with 35% for bupivacaine HCl ($p = 0.007$).[64]

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