

Definitive Therapy for Internal Hemorrhoids—New Opportunities and Options

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Hemorrhoids are common in Western societies. Appropriate assessment and treatment of symptomatic hemorrhoids can substantially reduce morbidity and improve patient well-being. In this article, the clinical presentation, differential diagnoses, and current treatment options, including the CRH-O'Regan banding device, an emerging technology for the anoscopic treatment of symptomatic internal hemorrhoids, are reviewed.

[Rev Gastroenterol Disord. 2009;9(1):16-26]

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Key words: Symptomatic internal hemorrhoids • Anorectal symptoms • Sclerotherapy • Thermocoagulation • Electrocoagulation • Infrared coagulation • Rubber band ligation

Hemorrhoids are common in Western societies. Appropriate assessment and treatment of symptomatic hemorrhoids can substantially reduce morbidity and improve patient well-being. We review the clinical presentation, differential diagnoses, and current treatment options, including the CRH-O'Regan banding device, an emerging technology for the anoscopic treatment of symptomatic internal hemorrhoids.

Epidemiology and Prevalence of Symptomatic Hemorrhoids

The incidence and prevalence of symptomatic internal hemorrhoids are difficult to measure accurately because self-treatment with over-the-counter products is common. The National Center for Health Statistics reported that up to 23 million people

(Figure 1). External hemorrhoids are located distal to the dentate line and are covered with sensitive anoderm. Proximal to the dentate line, pain sensation diminishes as the innervation changes. As external hemorrhoids enlarge, they commonly present with pain, swelling, and, if thrombosis occurs, intense pain and

ment and enlargement usually result in hemorrhoidal symptoms. The most common symptoms of internal hemorrhoids are painless rectal bleeding, prolapse or protrusion, pain, itching, or soiling. Mixed hemorrhoids occur across the dentate line between the external and internal hemorrhoids and may cause pain, bleeding, and other symptoms.

Inadequately controlled symptoms or complications from internal hemorrhoids can result in disability, hospitalization, and, rarely, death.

(12.8% of US adults) have symptoms from internal hemorrhoids,¹ and other epidemiologic studies report up to a 40% prevalence of symptomatic internal hemorrhoids in the United States.² Substantially fewer patients seek medical attention, but studies report that 1.9 million people received outpatient medical care for symptomatic internal hemorrhoids in ambulatory care units.³ Inadequately controlled symptoms or complications from internal hemorrhoids can result in disability,⁴ hospitalization,⁵ and, rarely, death.⁶

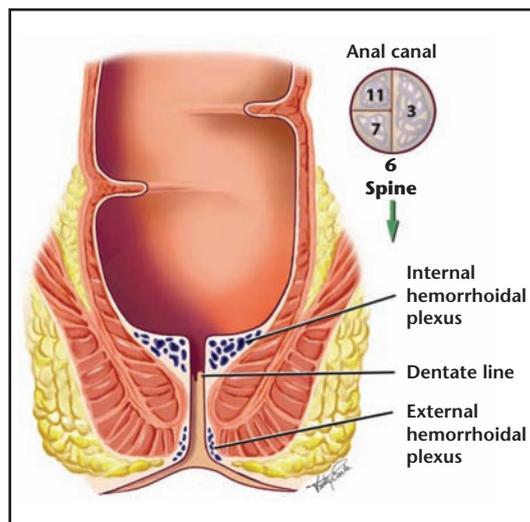
Pregnancy is associated with the development of internal hemorrhoids.⁷ A definitive association between chronic constipation or portal hypertension has not been shown.^{8,9} Age and gender are also associated with symptomatic internal hemorrhoids with an increasing incidence in people over the age of 45 years and in women (24.9% vs 15.2% for men). Although people with a family history of hemorrhoids appear predisposed to developing symptomatic disease, neither definite genetic markers nor racial differences have been identified for symptomatic internal hemorrhoids.¹

Anatomy of the Anorectum

The dentate line is a landmark separating anal (squamous) and colonic (columnar) mucosa in the anal canal

spontaneous rupture and bleeding. Internal hemorrhoids originate proximal to the dentate line from dilated venous plexuses that are covered with colonic mucosa. As internal hemorrhoids enlarge, the congested and redundant tissue protrudes below the dentate line. Chronic venous engorge-

Figure 1. Anorectal anatomy, including internal and external hemorrhoids and dentate line. (Image courtesy of Iain Cleator, MD.)



Grading of Internal Hemorrhoids

Grade I internal hemorrhoids remain above the dentate line and do not prolapse below it (Figure 1, Table 1). They are best visualized with a slotted anoscope (Figure 2), but can also be seen (but not graded well) on retroflexion in the rectum with an endoscope (Figure 3). Most patients with symptomatic grade I internal hemorrhoids respond to medical therapy

Table 1
Internal Hemorrhoid Grades

Grade I	Do not prolapse below the dentate line; visible only on anoscopy
Grade II	Prolapse below the dentate line, but spontaneously reduce
Grade III	Prolapse below the dentate line, but require manual reduction
Grade IV	Prolapse and stay below the dentate line—not reducible

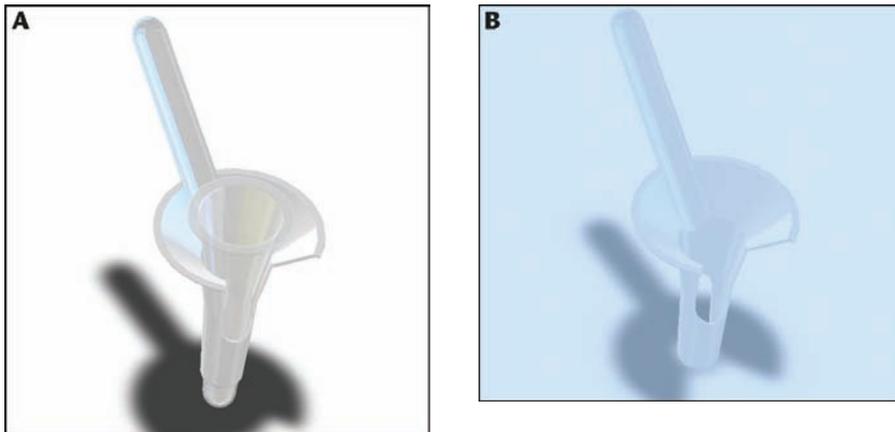


Figure 2. Slotted anoscope with trochar (A) in place and (B) removed. (Images courtesy of Iain Cleator, MD.)

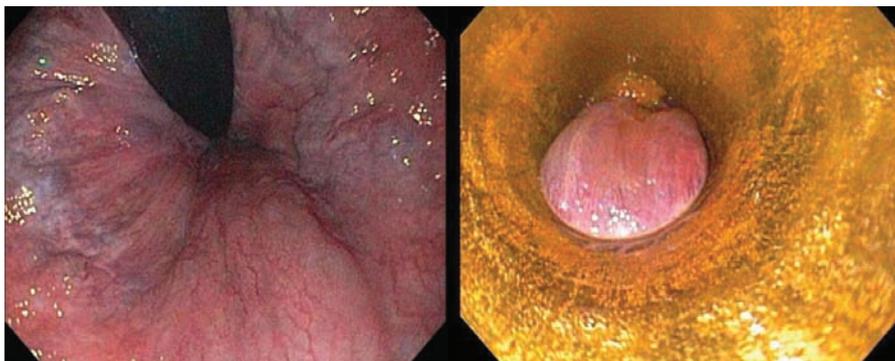


Figure 3. Grade I internal hemorrhoids on retroflexion on endoscopy (left) and slotted anoscopy (right).

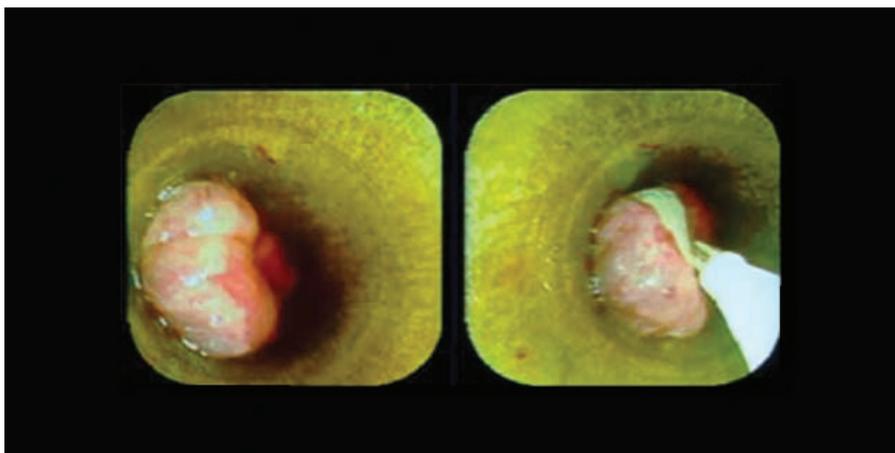


Figure 4. Grade II internal hemorrhoids on slotted anoscopy before (left) and after (right) bipolar electrocoagulation, just above dentate line.

(see Table 3) and do not require anoscopic or surgical therapies. Grade II internal hemorrhoids prolapse below the dentate line with defecation,

Valsalva maneuver, swatting, or lifting, but spontaneously return inside. These can be accurately graded with a slotted anoscope (Figure 4). Some

patients with acute hemorrhoidal symptoms and grade II internal hemorrhoids respond to medical therapy, but those with recurrent or chronic internal hemorrhoidal symptoms often require anoscopic therapies to control recurrent bleeding or other symptoms (Figure 4). Grade III internal hemorrhoids prolapse with defecation and other physiologic events, but must be reduced (pushed back inside) manually to decrease hemorrhoidal swelling or anal pressure. They can be seen on physical examination by inspection of the anus or during anoscopy or retroflexed examination (Figure 5). Symptomatic chronic grade III internal hemorrhoids respond well to banding or surgical therapies, but usually not to medical therapies alone. Grade IV internal hemorrhoids remain prolapsed below the dentate line and cannot be reduced. Most patients with chronic symptoms from grade IV internal hemorrhoids respond best to surgery, although bleeding can be controlled in some patients by banding or other anoscopic therapies.

Differential Diagnosis of Patients With Rectal Bleeding or Other Anorectal Symptoms

In a recent Center for Ulcer Research and Education (CURE) study of ambulatory adult patients referred by physicians (eg, primary care or specialists) for recurrent rectal bleeding suspected to be from internal hemorrhoids, at least 50% were bleeding from other anorectal or distal colonic lesions.¹⁰ The differential diagnoses of anorectal conditions causing acute or chronic symptoms or bleeding are listed in Table 2; etiologies are divided into those with or without anorectal pain. Uncomplicated or untreated internal hemorrhoids are not usually associated with much pain. Therefore, significant anal pain suggests the presence of a nonhemorrhoidal

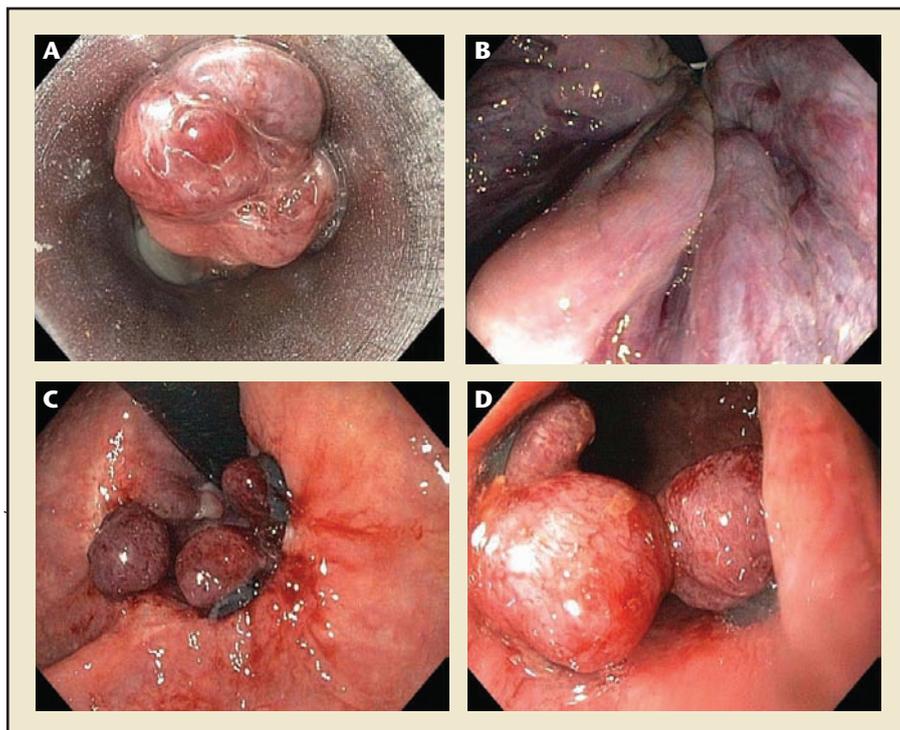


Figure 5. Grade III internal hemorrhoids before (on slotted anoscopy [A] and on retroflexion [B]) and after standard rubber band ligation (retroflexion [C] and end-on views [D]).

polypectomy ulcers); pelvic cancer and radiation treatment (radiation telangiectasia); liver cirrhosis and portal hypertension (rectal varices); chronic human immunodeficiency virus infection (Kaposi sarcoma or opportunistic infections); infection, swelling, or fever (rectal abscess or rectal fistula); recent antibiotics (*Clostridium difficile* colitis); inflammatory bowel disease or other colitis or proctitis; and chronic constipation (anal fissures or solitary rectal ulcer syndrome).

In addition to a careful medical history, a physical examination of the perirectal area and anus will facilitate diagnosis of thrombosed external hemorrhoids, anal fissure, perirectal fistula, anal abscess, anal warts, rectal prolapse, rectal cancers, or anal polyps.

Clinical Management of Patients With Anorectal Symptoms

Complementing the history and physical examination are anoscopy and either flexible sigmoidoscopy or colonoscopy in patients referred to a gastroenterologist for evaluation of rectal bleeding or other anorectal symptoms (Figure 7). All patients older than 50 years or at high risk for colorectal cancer (CRCa; a family history of CRCa or predisposing condition such as chronic ulcerative colitis or a familial polyposis syndrome) should undergo a full colonoscopy before focusing on internal hemorrhoids. Other laboratory testing (such as stool cultures, *C. difficile* toxin tests, or serologies) is also recommended to exclude infectious etiologies in selected cases.

Once nonhemorrhoidal etiologies have been excluded as the cause of the patient's anorectal complaints, medical treatment is recommended (Table 3). If medical therapies have already failed and the patient's bleeding or internal hemorrhoidal complaints persist, anosopic treatment is recommended (Figure 7, Table 4).

Table 2
Differential Diagnosis of Anorectal Conditions Causing Acute or Chronic Symptoms or Bleeding

Painless	Painful
Internal hemorrhoids	Thrombosed external hemorrhoids
Anal fistula	Mixed hemorrhoids
Polyps (anal or rectal)	Anal fissure
Early cancer (1° or 2°)*	Anal trauma
Radiation telangiectasia	Advanced cancer
Kaposi sarcoma	Rectal abscess
Solitary rectal ulcer syndrome	Anal warts
Rectal varices	Rectal prolapse
Postsurgical anastomotic ulcer	Proctitis ani
Postpolypectomy ulcer	Proctitis or colitis

*1° refers to cancers originating in anorectum (squamous, cloacal, or adenocarcinoma); 2° cancers are metastatic (prostate, uterine, ovarian, or other etiologies) to the anorectum.

anorectal condition, such as an anal fissure (Figure 6).

Most patients with nonhemorrhoidal anorectal conditions have a

medical history that can be elicited from the patient, such as prior anorectal surgery or nonsurgical treatments (anastomatic or post-

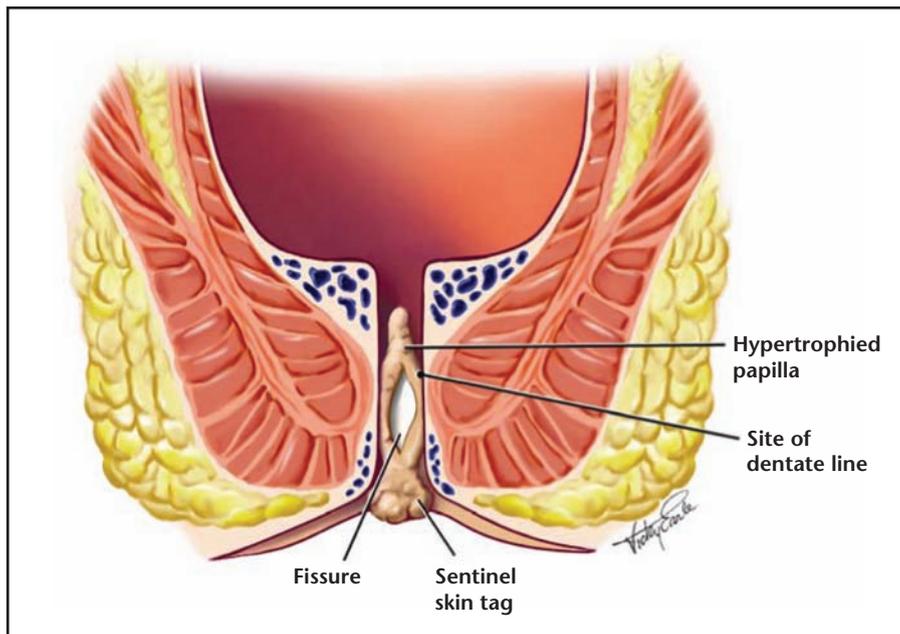


Figure 6. Anorectal pathology including an anal fissure, hypertrophied rectal papillae, and sentinel skin tag. (Image courtesy of Iain Cleator, MD.)

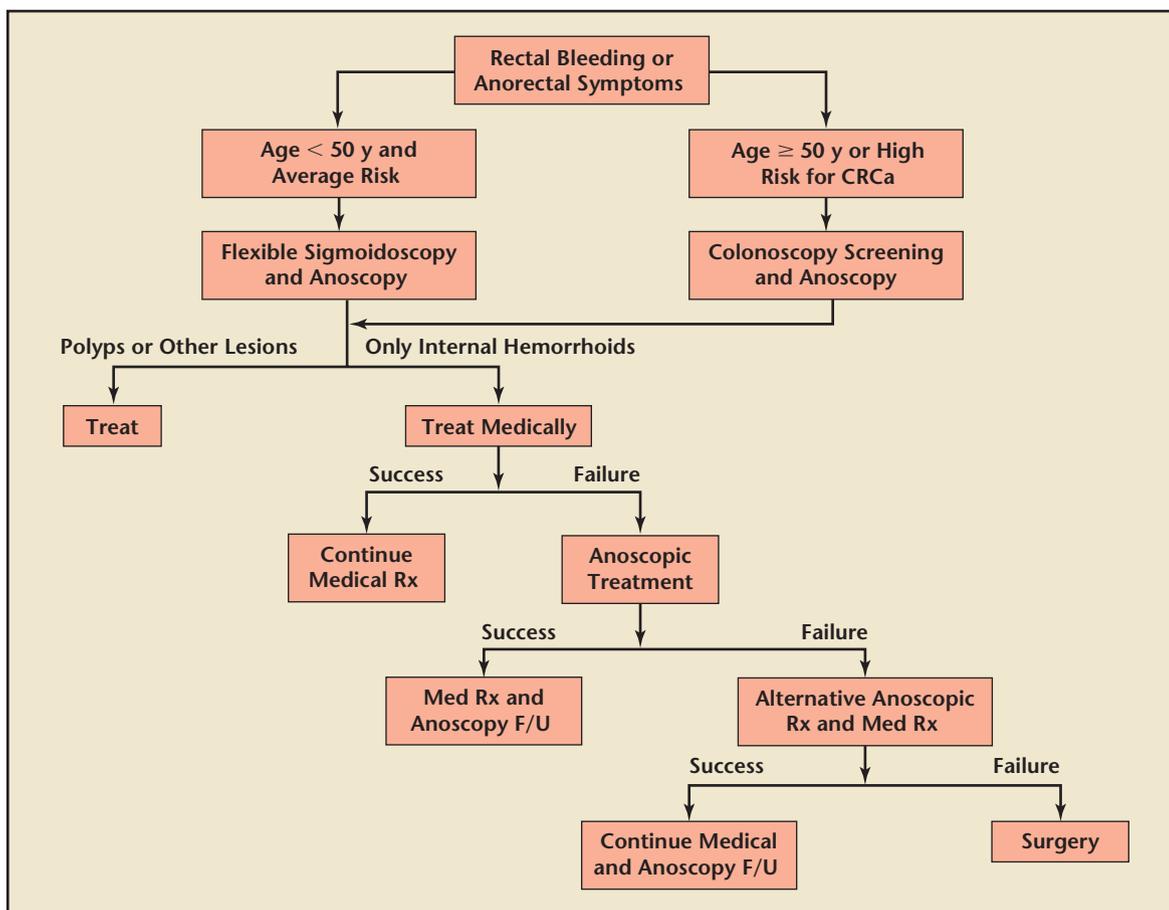


Figure 7. Clinical management algorithm for anorectal symptoms and possible internal hemorrhoids. CRCa, colorectal cancer; F/U, follow-up; Rx, prescription.

Table 3
Medical Therapy for Bleeding or Symptomatic Internal Hemorrhoids

Patients should be advised to:

- Avoid straining with bowel movements, prolonged standing, and heavy lifting
- Use fiber supplementation and drink extra, nonalcoholic, caffeine-free fluids
- Take daily stool softeners during severe episodes
- Use hydrocortisone suppositories or creams
- Take frequent sitz baths (warm water without soap or irritants)
- Stop aspirin and nonsteroidal anti-inflammatory drugs
- Reduce prolapsing hemorrhoids after bowel movements or exercise
- Avoid dietary irritants such as pepper, spices, coffee, and cola
- Exercise daily, such as walking or swimming

Table 4
Treatment Options for Internal Hemorrhoids*

Treatment	Treatment Sessions	Success Rate (%)	Minor Complications (%)	Major Complications (%)	Lost Time [†]
Medical	Continuous	≤ 50	0	0	0
BICAP probe	3-5	> 75	10-15	< 2	< 1 day
Infrared coagulator	3-5	> 75	10-15	< 2	< 1 day
Heater probe	2-4	> 90	10-20	< 5	< 1 day
Sclerotherapy	3-5	> 75	10-20	< 5	< 1 day
RBL standard	2-4	> 95	10-20	< 5	1-2 days
CRH-O'Regan RBL	3-5	> 95	5-10	< 2	< 1 day
Surgery	1	> 98	20-30	< 15	> 30 days

BICAP, biopolar coagulation probe; RBL, rubber band ligation.

*Treatments are effective for grades I-III internal hemorrhoids, except for surgery, which also includes grade IV.

[†]Time away from work or usual activity.

Medical Therapies

Initial treatments for symptomatic hemorrhoids typically use noninvasive therapies that combine medications, dietary changes, and modification of personal habits.¹¹ Many patients will have tried nonprescription medications prior to presentation and these should be reviewed for both duration and proper use in assessing failures of such treatments. Effective medications for treatment of

acute hemorrhoidal symptoms have either steroids or vasoconstrictors with lubricants. Suppositories are usually more effective than topical preparations for internal hemorrhoids by providing more uniform dosing and are more easily administered. Long-term medical treatment includes fiber supplementation and stool softeners.^{11,12} Also, treatment of underlying conditions such as functional diarrhea is an important component

of medical therapy to prevent exacerbation of hemorrhoidal symptoms.

Patients should be counseled about pathophysiologic mechanisms that contribute to hemorrhoid development and progression, such as advising against straining during defecation, heavy lifting, or other activities that require substantial increase in abdominal muscle use (eg, Valsalva maneuver) (Table 3). Dietary restrictions include avoidance of

irritating foods, such as peppers, spices, coffee, and colas. Use of aspirin or nonsteroidal anti-inflammatory drugs should be avoided, particularly during bleeding episodes. Warm water sitz baths without soap or other irritating agents are recommended. Patients should be advised to manually reduce prolapsed hemorrhoids during periods of symptom exacerbation.

Anoscopic and Endoscopic Treatment of Internal Hemorrhoids

When patients do not respond to medical therapy, several different anoscopic and endoscopic therapies can be offered. These include injection sclerotherapy, rubber band ligation, thermocoagulation, electrocoagulation, and infrared coagulation^{12,13}; refer to Table 4 for a summary.

Sclerotherapy

Injection sclerotherapy is the oldest nonsurgical therapy for symptomatic internal hemorrhoids and is indicated for the treatment of grade I and II symptomatic internal hemorrhoids. Several injectable sclerosants are available, but this procedure is most commonly performed with a 5% phenol solution. The procedure is performed by passing a slotted anoscope into the anal canal and then withdrawing it until the hemorrhoid bulges into the lumen (Figures 2 and 4). The injection is then made into the submucosa at the base of the hemorrhoid. The subsequent inflammatory reaction produced by the phenol causes hemorrhoid thrombosis and finally submucosal fibrosis with obliteration of the hemorrhoid tissue.

A meta-analysis of randomized controlled studies (RCS) comparing anoscopic, endoscopic, and surgical therapies for internal hemorrhoids reported that sclerotherapy was less effective than rubber band ligation or surgery. However, surgery was associated with more pain and complications.¹⁴ Another meta-analysis of RCS

comparing sclerotherapy, rubber band ligation, and infrared coagulation reported that rubber band ligation had longer-term efficacy than the other treatments.¹⁵ However, it was associated with more posttreatment pain and complications. Infrared coagulation had similar efficacy and less posttreatment pain or complications, but required more treatment sessions.¹⁵

Sclerotherapy is not indicated for the treatment of external hemorrhoids and grade III or IV internal hemorrhoids, nor is it indicated for rectal or anal pathology such as proctitis, fistulas, fissures, tumors, or perianal infection (eg, acute perianal dermatitis).

Care must be taken during injection of the sclerosant because different complications have been reported with this technique. Inadvertent injection into the paraprostatic parasympathetic nerves may lead to impotence. Systemic bacteremia or sepsis and hepatic toxicity may occur,^{16,17} and perirectal abscess or pelvic cellulitis occurs rarely.

Infrared, Bipolar, and Heater Probe Coagulation

Coagulation of internal hemorrhoids can be achieved by a variety of thermal modalities. Infrared coagulation utilizes infrared light to cause tissue coagulation. A bipolar probe has positive and negative electrodes located at the tip of the probe that generate heat when current is applied and thereby coagulates the tissue. A heater probe has a thermocouple located inside the probe tip that heats up quickly when current is applied and causes tissue coagulation. All 3 of these modalities are easy and quick to apply.

In RCS, infrared coagulation has been compared with banding, sclerotherapy, and surgical hemorrhoidectomy.^{14,15} Although infrared coagulation is well tolerated, it was less effective than banding or surgical hemorrhoidectomy and usually required more treatments. However,

it was associated with significantly less postoperative pain and fewer complications.^{18,19}

Bipolar and heater probe coagulation were compared in a RCS by our group.²⁰ The efficacy was equivalent for both probes with a 6.2% recurrence of bleeding at 12 months that responded to retreatment. Heater probe treatment achieved hemorrhoid reduction and control of bleeding in a shorter period than bipolar coagulation (76.5 vs 120.5 days). However, postoperative pain was more severe with heater probe treatment. Overall, more complications occurred with bipolar coagulation than with heater probe (11.9% vs 5.1%) and 1 patient in the bipolar group required surgical hemorrhoidectomy due to sphincter spasms with bipolar treatments.

In another RCS by our group,¹⁰ the rubber band ligation group required significantly fewer treatment sessions (2.3 vs 3.8) than the bipolar group for symptomatic relief, and there were fewer failures and crossovers (8% vs 35%).

Rubber Band Ligation

Application of a small rubber band around the base of an internal hemorrhoid causes ischemic necrosis and sloughing of hemorrhoidal tissue, with ulceration resulting in fibrosis and obliteration of the submucosal tissue. This procedure was originally performed via rigid proctoscopy and required 2 people for proper placement of the bands: one to hold the proctoscope and the other to place the rubber band. Despite the difficulties involved with this system, hemorrhoidal banding was found to be quite effective, caused much less pain than surgical hemorrhoidectomy, and was associated with fewer complications. Hemorrhoid banding was reported to cure 79% of patients, have a recurrence rate of 20%, and a failure rate of 2%.^{14,15} Newer techniques for hemorrhoidal

banding can be used by a single operator with better visualization and improved efficacy.

The most common complication of hemorrhoid banding is postoperative anal pain that can last 1 to 2 days or as many as 7 days. It usually responds to warm sitz baths and analgesics. Severe pain immediately following the procedure is usually due to banding on or too close to the dentate line and is usually relieved by prompt removal of the offending band.^{10,13} Other less common complications include delayed hemorrhage, urinary retention, and, rarely, pelvic or perineal cellulitis.^{13,14,16}

Flexible Endoscopic Hemorrhoid Banding

Flexible video endoscopy is an alternative to the rigid proctoscopic method. Internal hemorrhoid visualization is either direct or in retroflexion (Figures 3-5). Endoscopic banding allows for placement of 2 or more bands, 1 to 2 cm above the dentate line, on internal hemorrhoids.^{10,13} The dentate line can be clearly visualized prior to placement of the bands so bands can be placed 1 to 2 cm above it. Comparative studies have shown endoscopic banding to be highly effective with almost 90% cure rates and only 3% to 9% relapses during long-term observation.^{10,16-19,21}

Complication rates of endoscopic and anosopic (conventional) banding are similar.²² Postligation bleeding

associated with significant rectal prolapse, or for complications (perianal abscess, fistula, or fissure).¹¹⁻¹³ Techniques include carbon dioxide or neodymium-doped yttrium aluminum garnet laser and cold scalpel and scissor dissection without a definitive advantage for any particular method.¹³ Excisional hemorrhoidectomy provides definitive treatment and involves either an open or closed technique with similar outcomes and complication rates.²³ Successful surgery removes substantial amounts of the hemorrhoidal plexus and can be effective for long periods (up to and beyond 10 years). However, surgical procedures are associated with substantial postsurgical morbidity, particularly postoperative pain, and patients typically cannot return to work or usual activities for 2 to 4 weeks after surgery. Other reported complications include hemorrhage (0.03%-6%), anal stenosis (0%-6%), perianal or pelvic infection (0.5%-5.5%), urinary retention (2%-36%), and fecal incontinence (2%-12%).²³

Rubber Band Ligation Techniques *General*

Although 3 dominant internal hemorrhoidal plexus have been described and emphasized by proctologists, patients with chronic internal hemorrhoids develop cushions circumferentially distributed in all sectors around the rectal canal.¹³ We advocate grading of internal hemorrhoids in 8 sec-

using any technique. First, place the band at least 1 cm above the dentate line. When suctioning the internal hemorrhoidal tissue, ask the patient if there is pain. If so, do not deploy the band at that location and move proximally with repeat suctioning and inquiry about pain. Second, place no more than 3 bands per session because pain and other complications correlate with the number of bands per session. Third, place the bands in different locations around the rectal canal, such as in the 2, 6, and 9 o'clock positions with the patient in left lateral decubitus position and avoid placing bands adjacent to each other. Fourth, wait 4 to 6 weeks between sessions and continue medical treatment. This delay will allow the full effects of banding, healing (of 2° ulcers), and retraction of internal hemorrhoidal tissue to be achieved. Finally, be cautious with patients who have irritable bowel syndrome (IBS) because banding of internal hemorrhoids often aggravates IBS symptoms. Discuss this with the patient prior to initiating therapy, reduce the number of bands per session, and be prepared to intensify medical treatments for both IBS and internal hemorrhoids.

Standard Rubber Band Ligation

Ligation can be performed using a standard rigid anosopic rubber band ligator (RBL) through an anoscope or with an endoscope. For the endoscope, we use a diagnostic size instrument with either single shot or multiple band ligators. End-on internal hemorrhoidal ligators or banding above the dentate line in retroflexion is feasible. Figure 5 shows an example of standard RBL of chronic grade III internal hemorrhoids.

CRH-O'Regan Hemorrhoid Ligator and Kit

The CRH-O'Regan Disposable Hemorrhoid Banding System (CRH Medical Corporation, Vancouver, BC,

Surgery is usually considered when medical and endoscopic therapies fail.

rates requiring endoscopic treatment occurred in 3.2% of cases (none required transfusions).

Surgical Therapies

Surgery is usually considered when medical and endoscopic therapies fail, although this is the primary treatment of acute or recurrent thrombosis, grade IV hemorrhoids, hemorrhoids

tors around the rectal canal with a slotted anoscope (Figures 2-5). Useful accessories are a head lamp (for hands-free illumination), a suction machine (if anoscopy is done), and an examining table that elevates to facilitate anal examination and treatment.

We recommend several guidelines to avoid or reduce pain or complications for banding of internal hemorrhoids,



Figure 8. CRH-O'Regan Disposable Hemorrhoid Banding System (CRH Medical Corporation, Vancouver, BC, Canada) (anoscope, ligator, bands). (Image courtesy of Iain Cleator, MD.)

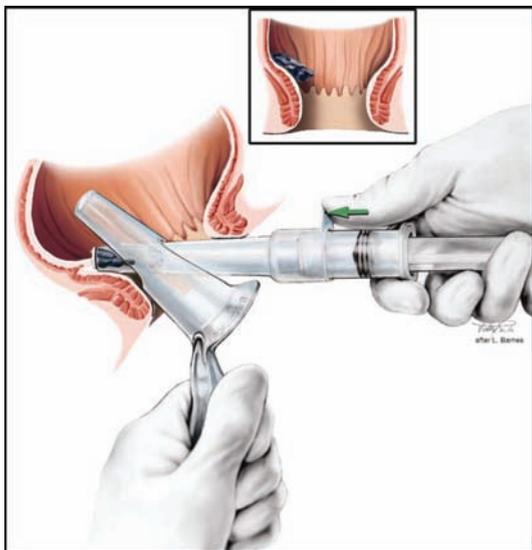


Figure 9. CRH-O'Regan band application using an anoscope. (Image courtesy of Iain Cleator, MD.)

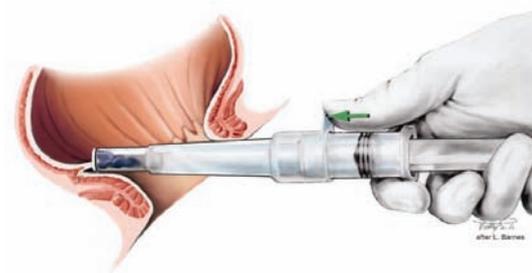


Figure 10. CRH-O'Regan blind technique for internal hemorrhoid banding. (Image courtesy of Iain Cleator, MD.)

Canada) for internal hemorrhoid ligation consists of a slotted anoscope, a ligator that resembles a syringe, and rubber bands for ligation (Figure 8). The advantages of the CRH-O'Regan kit are the inclusion of key elements for slotted anoscopic diagnosis, the ligator for treatment, and the single-use disposable design that does not require equipment reprocessing (Table 5).^{24,25}

Internal hemorrhoid ligation can be performed with the anoscope for visualization of the placement site, as shown in Figure 9. Another option is placement of the bands with a blind technique, as shown in Figure 10. This latter technique is particularly useful for patients returning for follow-up in an office setting who did well after initial or prior treatments of internal hemorrhoids with this ligator.

Comparisons of Standard Rubber Band Ligation and CRH-O'Regan Ligation

To our knowledge, randomized studies comparing internal hemorrhoid ligation results for standard RBL versus the CRH-O'Regan ligation system have not been reported. The most extensive experience was reported by Cleator and Cleator²⁴ as a large case series of 1852 patients with symptomatic grade I to IV internal hemorrhoids. Their success rate was 95.5% and the recurrence rate was 4.5%.²⁴ Minor complications reported were bleeding (0.4%), thrombosis (0.3%), and minor pain (0.2%) for a total complication rate of 0.9%. Pelvic sepsis, urinary retention, and anal stenosis were not reported. Cleator and Cleator²⁴ relate this to placement of a single band per session and avoidance of banding the underlying muscle. Another prospective study in 60 patients also reported very high efficacy with very few complications.²⁵ Minor early rebleeding occurred in 10% and late rebleeding in 6.7% of patients. Manageable pain was observed in 6.7% of patients.²⁵

In experienced hands, both standard and CRH-O'Regan band ligation are reported to be safe and effective. Refer to Table 5, which highlights the similarities and differences of the techniques. The range of complications in the literature correlates with the experience of the physician, the number of bands placed per session, and the standardization of banding techniques (such as placement ≥ 1 cm above the dentate line).

For the physician, the advantages of the CRH-O'Regan ligator are that it is a single-use disposable complete kit, bands can be deployed easily (by either blind technique or via anoscopy), and complications may be somewhat fewer than with standard RBL (if guidelines are followed).

One of the recommendations advocated with use of the CRH-O'Regan

Table 5
Comparison of Standard Banding and CRH-O'Regan Hemorrhoid Ligation

	Standard Banding	CRH-O'Regan Ligation
Equipment use	Reusable/sterilizable	Single use/disposable
Packaging	Separate parts	Complete kit
Deployment		
Via anoscope	Yes	Yes
Blinded	No	Yes
Complications*		
Minor	10%-20%	5%-10%
Major	< 5%	< 2%

*Depends upon the number of bands placed per session.

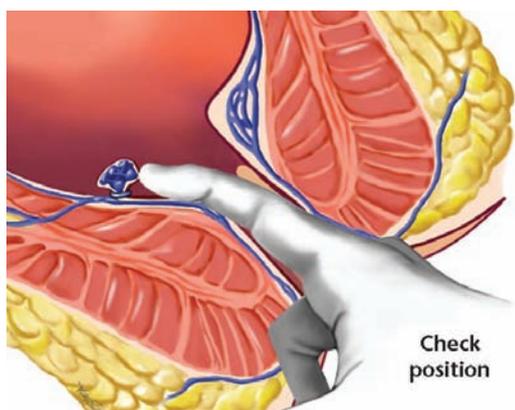


Figure 11. Diagram of rolling the band in case of pain or banding of the underlying muscle layer. (Image courtesy of Iain Cleator, MD.)

system is to roll the band off the underlying muscle layer in case the patient experiences pain after band ligation (Figure 11). This and placement of only 1 band per session could explain the lower complication rates reported in the large series by Cleator and Cleator²⁴ as compared with standard banding reports. This “rolling” technique is recommended for patients who have banding by any technique and experience rectal pain after band placement above the dentate line.

Training, Resources, and Economic Considerations

Training is required for gastroenterologists and other physicians who are

interested in providing diagnosis and treatment of internal hemorrhoids. First, practitioners will require cognitive training about the anatomy of the anorectum, disorders and diseases of this organ, differential diagnosis, and treatments available. Second, an adequate knowledge of the technical guidelines and application of anoscopy and anoscopic or endoscopic treatments should be obtained. Finally, additional instruction or training is recommended for anyone contemplating use of the CRH-O'Regan disposable bander or any other banding technique.

References and review articles are widely available and learning resource materials, an atlas, and videos are

available (<http://www.crhcenter.com/physician.html>).

This review does not include economic or practice considerations and the reader is referred to a recent article by Sarles²⁶ addressing this issue.

Conclusions and Recommendations

Internal hemorrhoids are a common anatomic finding and often cause anorectal symptoms and signs, such as prolapse or bleeding. The differential diagnosis is long and the anorectal anatomy and diseases are often unfamiliar to the gastroenterologist or primary care physician because they have not been trained to diagnose or treat these disorders. Because gastroenterologists are performing an increasing number of colonoscopies for colorectal cancer screening, there is an opportunity to diagnose and treat anorectal conditions, including symptomatic internal hemorrhoids. Familiarity with the anatomy, disorders, and treatments of anorectal conditions through retraining is highly recommended. Resources and hands-on workshops are available to learn about and apply nonsurgical treatments, including banding. In addition, providing such training during gastroenterology fellowships is highly recommended. A prospective, randomized study of standard rubber band ligation versus the CRH-O'Regan ligator technique with standard outcomes and an economic assessment is also highly recommended. ■

The CURE studies and investigators were funded in part by National Institutes of Health (NIH) grants NIH DK41301 (CURE Human Studies Core) and NIH K24 DK02650 (Dr. Jensen). We thank Michelle Meadows for preparing the manuscript and Iain Cleator, MD, for kindly providing Figures 1, 2, 6, and 8 to 11.

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Main Points

- Uncomplicated or untreated internal hemorrhoids are not usually associated with much pain. Significant anal pain suggests the presence of a nonhemorrhoidal anorectal condition, such as an anal fissure. All patients older than 50 years or at high risk for colorectal cancer should undergo a full colonoscopy before focusing on internal hemorrhoids.
- Initial therapies for symptomatic hemorrhoids typically use noninvasive therapies that combine medications, dietary changes, and modification of personal habits.
- Injection sclerotherapy is the oldest nonsurgical therapy for symptomatic internal hemorrhoids and is indicated for the treatment of grade I and II symptomatic internal hemorrhoids.
- Although infrared coagulation is well tolerated, it was less effective than banding or surgical hemorrhoidectomy and usually required more treatments.
- Comparative studies have shown endoscopic banding to be highly effective with almost 90% cure rates and only 3% to 9% relapses during long-term observation.
- Successful surgery removes substantial amounts of the hemorrhoidal plexus and can be effective for long periods (up to and beyond 10 years). However, surgical procedures are associated with substantial postsurgical morbidity, particularly postoperative pain, and patients typically cannot return to work or usual activities for 2 to 4 weeks after surgery.
- In experienced hands, both standard and CRH-O'Regan band ligation are reported to be safe and effective. The range of complications in the literature correlates with the experience of the physician, the number of bands placed per session, and the standardization of banding techniques.
- A prospective, randomized study of standard rubber band ligation versus the CRH-O'Regan ligator technique with standard outcomes and an economic assessment is highly recommended.