Patient information: Hemorrhoids

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**INTRODUCTION** — Hemorrhoidal disease is a common problem, affecting millions of men and women in the United States. Fortunately, several options are available for patients who experience bleeding, discomfort, or other symptoms, with many obtaining relief with conservative or minimally invasive approaches. Following is a more specific discussion of this common condition, its diagnosis, and treatment options.

**WHAT EXACTLY ARE HEMORRHOIDS?** — Hemorrhoids are normal components of the human body. They arise from a network or "cushion" of widened (dilated) veins called the hemorrhoidal plexus that in turn arise from certain rectal veins, the superior and inferior hemorrhoidal veins. As commonly used, the term "hemorrhoids" refers to conditions in which the hemorrhoids become enlarged or inflamed or otherwise irritated or when a blood clot forms within them.

Hemorrhoids are classified as internal or external based upon whether they are located inside the lower rectum (internal hemorrhoids) or situated under the skin around the anus (external hemorrhoids). Both types of hemorrhoids can be present in the same patient.

Internal hemorrhoids are further classified based upon the degree to which they project or protrude (doctors use the word "prolapse") from the anal canal. According to this grading system:

- Grade I hemorrhoids may bulge into the anal canal but do not protrude through the anus.

- Grade II hemorrhoids protrude through the anus with the elimination of stools (defecation), or while straining to pass stools, but return spontaneously.

- A grade III hemorrhoid protrudes out of the anal canal through the anus with defecation or straining but does not return spontaneously, requiring the patient to gently push it back into its normal position with a finger (ie, manual reduction).

- Grade IV hemorrhoids are "irreducible," meaning that they cannot be manually returned to their normal position.
No widely used grading system exists for external hemorrhoids.

**WHAT ARE THE SYMPTOMS AND SIGNS?** — Symptoms of hemorrhoids can include the following:

- Painless bleeding
- Itching (pruritus) in the anal region
- Protrusion of an internal hemorrhoid through the anus (prolapsing hemorrhoid)
- Pain resulting from the formation of blood clots (thrombi) within hemorrhoids
- Leakage of rectal contents (fecal soilage)

**Bleeding** — A common symptom of hemorrhoidal disease is painless bleeding that occurs with bowel movements. At the end of defecation, bright red blood may coat the stool, streak toilet tissue, or drip into the toilet. The amount of blood is usually small, though it may occasionally be substantial, which can be distressing or cause concern for the patient. In rare cases, chronic blood loss from bleeding may lead to anemia, which can result in fatigue, weakness, or other associated symptoms.

It is not possible to distinguish bleeding from hemorrhoids from other, possibly more serious causes of bleeding without an examination. Thus, anyone with bleeding from the rectum should tell their doctor.

**Itching** — Hemorrhoidal disease commonly leads to itching or irritation of skin around the anus (perianal skin). Such symptoms may be caused by a combination of factors, including the following:

- Protrusion of internal hemorrhoids through the anus may allow leakage of rectal contents, which can be irritating to the skin around the anus.
- In those with such leakage, aggressive or overzealous cleansing may irritate the region around the anus, causing further discomfort.
- Patients with external hemorrhoids may develop relatively small outgrowths of skin known as skin tags. These represent residual or excess skin associated with prior blood clot formation within external hemorrhoids. The skin tags are often difficult to keep clean, resulting in prolonged contact of fecal material with skin around the anus, potentially causing localized irritation.
- Swelling associated with irritation of hemorrhoids may contribute to such symptoms.

**Pain** — In some patients with hemorrhoidal disease, pain may be associated with a detectable "lump" or mass. This typically results from the formation of blood clots (thrombosis), which may occur within both external and internal hemorrhoids.

Thrombosed external hemorrhoids are visible, bluish-purple masses that extend from the anal to the perianal skin. The overlying perianal skin contains a high distribution of nerves, becomes inflamed and swollen, and is extremely painful to the touch.
Thrombosed internal hemorrhoids may also cause pain, although usually to a less severe extent than external hemorrhoids. However, "strangulation" of an internal hemorrhoid can also result in extreme pain. In such cases, there is a reduction of blood supply to an internal hemorrhoid that has remained protruding out of the anal canal through the anus (ie, primarily grade IV disease). The lack of blood supply may lead to tissue death (gangrene), which is a life-threatening complication without immediate surgical treatment. Fortunately, this is a rare complication of hemorrhoids.

**HOW COMMON IS HEMORRHOIDAL DISEASE?** — Hemorrhoidal disease is a common condition for both women and men. As an example, a large database survey conducted in the United States and England found a prevalence of about 4 percent, with approximately 10 million people in the United States alone reporting symptoms associated with hemorrhoids. In both genders, hemorrhoidal disease was most frequent from age 45 to 65, declining thereafter. The development of symptoms before age 20 was unusual. However, experts note that the true prevalence remains uncertain, since any discomfort in the anal and rectal (anorectal) region is often attributed to hemorrhoidal disease.

**WHAT CAUSES HEMORRHOIDAL DISEASE?** — The development of symptoms resulting from hemorrhoids (ie, symptomatic hemorrhoids) has traditionally been associated with a number of factors, including the following:

- Straining to pass stools
- Chronic constipation
- Diarrhea
- Prolonged sitting
- Advancing age
- Pregnancy
- Pelvic tumors

The exact underlying cause of hemorrhoidal disease is not completely understood. However, several theories have been proposed concerning the development of symptoms associated with internal hemorrhoids:

- The connective tissues that support hemorrhoids and "anchor" them in place may deteriorate with increasing age or due to other aggravating conditions. As they eventually lose their support, the veins may begin to bulge or stretch (distend) and "slide" into the anal canal. The loose hemorrhoidal lining may become more sensitive to pressure or trauma from defecation or straining and may erode the lining, contributing to a progressive onset of symptoms.

- Symptomatic hemorrhoids arise from enlargement (hypertrophy) or increased tone (a relative increase in pressure) of the internal sphincter muscle of the anus (internal anal sphincter). Sphincters are ring-shaped muscles located around natural bodily openings or passages. The anal opening, or orifice, is kept closed by sphincter
muscles, including the internal sphincter, which is composed of involuntary (smooth) muscle, and the external sphincter, which can be voluntarily relaxed during defecation. According to this theory, during defecation, fecal material forces the hemorrhoidal plexus against the internal sphincter, causing veins to enlarge and swell, resulting in associated symptoms. (As mentioned above, the hemorrhoidal plexus is a network of veins that arise from certain rectal veins.)

- Symptoms develop due to swelling and displacement of the hemorrhoidal "cushions" of submucosal tissue lining the anal canal. (Submucosa is the layer of connective tissue located beneath the mucous membrane.)

According to experts, evidence is available that appears to both support or contradict each of the above theories. However, the specific underlying cause may differ in individual patients or multiple factors may be responsible.

HOW IS HEMORRHOIDAL DISEASE DIAGNOSED? — Hemorrhoidal disease is diagnosed based upon a complete patient history and a thorough clinical evaluation, during which the physician will examine the rectum and anus and insert a gloved finger into the rectum to feel (ie, palpate) any abnormalities. Visible rectal bleeding or the presence of blood in the stool that is not visible to the eye (occult bleeding) is not attributed to hemorrhoidal disease until other potential causes and sites of bleeding have been excluded. During testing for occult bleeding, the physician obtains a small stool sample on a gloved finger obtained upon rectal examination. The stool sample is smeared onto a chemically coated paper and drops of another chemical are added. If blood is present, the color of the paper will change to blue.

To help confirm hemorrhoidal disease and detect or exclude other anorectal disorders or other possible causes of bleeding, diagnostic evaluation typically requires endoscopy. During endoscopy, a flexible or rigid, lighted instrument is used to visualize the mucosal surface of a particular region or regions of the digestive (gastrointestinal [GI]) tract. Such testing may include anoscopy or sigmoidoscopy in selected younger patients or colonoscopy in most other patients. (Colonoscopy is generally recommended for older patients to help exclude more serious causes of GI bleeding, such as colorectal cancer.) Before such procedures, use of a laxative may be necessary to ensure that the rectum and large intestine are clear of feces.

- Anoscopy involves examination of the anus and the lower rectum by means of a short, illuminated, rigid viewing tube or speculum. (A speculum is an instrument that exposes the interior of a cavity or passage by enlarging the opening and separating the cavity walls.)

- During sigmoidoscopy, use of a longer, flexible, lighted viewing tube inserted through the anus enables direct visualization of the rectum and the "S-shaped" lower region of the large intestine (sigmoid colon).

- Colonoscopy enables visual examination of the rectum and the major portion of the large intestine (colon) via an elongated, flexible, viewing instrument introduced via the anus.

HOW IS HEMORRHOIDAL DISEASE TREATED? — Several options are available for the treatment of symptomatic hemorrhoids. For most patients, conservative or minimally invasive measures are effective in relieving symptoms. Surgery may be
appropriate as initial therapy in patients with grade IV hemorrhoids and some with symptomatic grade III hemorrhoids, in those who do not obtain sufficient relief from more conservative approaches; and for patients who have developed complications.

**Conservative treatment** — Conservative measures are successful in alleviating symptoms for most patients with hemorrhoidal disease:

**Bleeding** — Clinical trials have demonstrated that adding fiber to the diet through supplementation with **psyllium** or appropriate commercially available fiber preparations may significantly reduce bleeding episodes associated with hemorrhoidal disease. Psyllium as well as **methylcellulose** add bulk to stools (ie, they are "bulking agents"), making them softer and easier to pass. Several fiber supplements are commercially available that contain either of these components. Those who take fiber supplementation should increase their fluid intake to help avoid constipation.

For patients who are unwilling to take fiber supplements, physicians may recommend implementing a high-fiber diet. Fiber-rich foods include vegetables, such as beans, broccoli, brussels sprouts, cabbage, carrots, peas, and potatoes; fruits, including apples, bananas, oranges, peaches, and raspberries; and whole-wheat breads and cereals (show table 1A-1C). Experts typically recommend that treatment should aim at a dose of approximately 20 to 30 grams daily.

**Irritation and itching (pruritus)** — Irritation and pruritus associated with hemorrhoids may be treated by various measures including the following:

- Warm sitz baths. During sitz baths, the rectal area is immersed in warm water for approximately 10 to 15 minutes two to three times daily. Sitz baths are available in most drugstores; in addition, portable bowls are commercially available that allow for their use in the workplace. The effectiveness of warm sitz baths may be due in part to relaxation of the internal anal sphincter.

- Fiber supplementation may help to alleviate itching potentially related to fecal soilage, since their bulking effect may reduce leakage of rectal contents.

- Application of various pain-relieving (analgesic) creams

- Administration of **hydrocortisone** rectal suppositories

Creams and suppositories, particularly **hydrocortisone**, should not be used for longer than one week unless directed by your doctor, since they may result in certain side effects, such as skin rash and inflammation (contact dermatitis) with pain-relieving creams or skin wasting (atrophy) with steroid creams.

**Thrombosed hemorrhoids** — As mentioned earlier, the formation of blood clots (thrombi) within external hemorrhoids may result in excruciating pain. Patients seen by physicians within 48 hours of thrombosis may benefit from surgical treatment (ie, evacuation) of thrombosed hemorrhoids. However, after this period, gradual resolution of the thrombus and associated improvement of symptoms generally make such measures unnecessary. Alternative measures may include the use of pain-relieving (analgesic) medications by mouth (orally), analgesic creams (topical
analgesics), stool softening agents, and warm sitz baths, which may provide adequate relief until the blood clot and associated pain resolve.

Following a resolution of symptoms resulting from thrombosed hemorrhoids, patients should receive sigmoidoscopy (see above) or colonoscopy to exclude other underlying anorectal diseases if the procedure was not previously performed.

**Minimally invasive procedures** — Patients who continue to have symptoms despite the conservative measures described above may be candidates for one of various techniques developed to treat symptomatic hemorrhoids. The following sections pertain to internal hemorrhoids.

Most of the minimally invasive therapies are directed at removing or promoting the "shedding" or sloughing of excess hemorrhoid tissue, with associated healing and scarring of residual tissue. The scarring causes the hemorrhoids to adhere to the bowel wall, thereby preventing prolapse and reducing the risk of bleeding.

Many may be performed on an outpatient basis.

**Rubber band ligation** — Rubber band ligation is the most widely used procedure for patients with symptomatic internal hemorrhoids who have not obtained relief from conservative measures. It may be recommended for grade I, grade II, and certain grade III internal hemorrhoids. During this technique, which requires no anesthesia, rubber bands or rings are placed around the base of an internal hemorrhoid. Due to a lack of blood supply, the hemorrhoid gradually shrinks over several days and drops off, and there is localized scarring of submucosal tissue. Many patients report a sense of "tightness" after the procedure, which is typically alleviated with a warm bath. Patients are also encouraged to take fiber supplementation to help avoid constipation.

Delayed bleeding may occur when the rubber band falls off, approximately two to four days after the procedure. In some cases, there may also be ulceration or mucosal "sloughing" approximately five to seven days following the procedure. Ulceration refers to the development of a well-defined raw area or sore of the mucous membrane due to localized tissue loss (necrosis) that accompanies an inflammatory process.

Other complications potentially associated with rubber band ligation may include severe pain due to misapplication of the band or associated spasm; thrombosis of other hemorrhoids, leading to pain or a detectable mass; localized infection or pus formation (abscess) at the site of the band ligation, potentially resulting in persistent pain, fever, or foul smelling rectal drainage and in very rare cases even death. Evidence suggests that rubber band ligation only rarely causes serious complications.

**Laser, infrared, or bipolar coagulation** — These methods involve the destruction of internal hemorrhoids through the application of laser or infrared light (photocoagulation) or electrocautery. Such procedures result in hardening (ie, coagulation) and necrosis of excess hemorrhoidal tissue, with an associated formation of scar tissue (fibrosis) within the submucosal layer. These methods are generally effective for grade I and grade II internal hemorrhoids. Evidence suggests that infrared coagulation may be associated with more frequent recurrences of hemorrhoids than rubber band ligation, but may have fewer side effects.
**Sclerotherapy** — During sclerotherapy, a chemical solution (a sclerosing agent), such as 5 percent phenol, is injected directly into hemorrhoidal tissue, resulting in an inflammatory reaction, with subsequent scarring (fibrosis) and obliteration of the veins. Various injected sclerosing agents are effective for grade I and grade II internal hemorrhoids. However, some evidence suggests that sclerotherapy may be less effective than rubber band ligation. As a result, it is uncommonly used as a first-line therapy.

**Cryosurgery** — This technique involves the destruction of excess hemorrhoidal tissue through the application of extreme cold. Rubber band ligation, photocoagulation, and electrocoagulation have generally replaced cryosurgery as a preferred method, since cryosurgery is associated with a higher rate of complications and less patient satisfaction.

**Sphincter dilation** — With this technique, there is forceful stretching or enlargement (dilation) of the internal anal sphincter under general anesthesia followed by daily anal dilation for several weeks. This approach is based upon the theory that hemorrhoidal disease results from increased tone or tension of the internal sphincter muscle of the anus. However, the effectiveness of this technique may be similar to other methods, potentially resulting from scar formation associated with dilation. In addition, although good results have been reported in approximately 80 percent of patients, damage to the internal and external anal sphincters may lead to an impaired ability to control defecation (fecal incontinence).

**Other methods** — Other minimally invasive techniques have also been investigated as possible treatments for symptomatic internal hemorrhoids. As an example, a specially designed proctoscope, which is used for illumination and viewing of the rectum, has been developed to work in conjunction with equipment (a Doppler flow meter) that uses reflected sound waves to detect the movement of blood flow. This device (known as the Moricorn) can identify hemorrhoidal arteries, allowing them to be tied off with surgical stitches (suture ligation). According to a report on the technique’s use in 116 patients with internal hemorrhoids, there was improvement in associated pain in 96 percent of patients, prolapse in 78 percent of patients, and bleeding in 95 percent of patients. Long-term follow-up, further research with additional patients, and comparison with other therapies are necessary to determine the long-term safety and effectiveness of this method in the treatment of internal hemorrhoids.

**Comparison among the nonsurgical choices** — The choice between the techniques described above depends upon a number of factors, including hemorrhoidal grade, severity of associated symptoms and signs, overall effectiveness, potential side effects, and the availability of certain procedures. Analysis of data from 18 clinical trials suggested the following:

- Surgical removal (excision) of hemorrhoids (hemorrhoidectomy) was more effective than sphincter dilation or rubber band ligation in preventing recurrent symptoms. However, band ligation was associated with fewer complications and pain than surgery.

- Rubber band ligation was more effective than sclerotherapy.
Patients treated with sclerotherapy or infrared coagulation were more likely to require further therapy than those who underwent rubber band ligation.

Based upon such findings, it was suggested that rubber band ligation was optimal treatment for symptomatic internal hemorrhoids grades I to III that were unresponsive to conservative measures.

However, analysis of data from five clinical trials comparing the effectiveness and side effects of rubber band ligation, sclerotherapy, and infrared coagulation had different conclusions. According to these findings, although recurrent symptoms were less common in those undergoing rubber band ligation, the higher incidence of pain following such therapy as compared with infrared coagulation outweighed the superior effectiveness of rubber band ligation.

In conclusion, rubber band ligation may be superior to other nonsurgical techniques for preventing recurrent symptoms; however, when compared with infrared coagulation, it may be associated with a higher occurrence of side effects. Thus, the choice between certain minimally invasive therapies should be determined by doctors in consultation with patients based upon the specifics of their case and a thorough assessment of potential benefits and risks.

**Surgery** — Patients who continue to experience symptoms despite conservative or minimally invasive therapies typically require surgical removal of hemorrhoids (hemorrhoidectomy). In addition, surgery is the initial treatment of choice for patients with symptomatic grade IV internal hemorrhoids and/or strangulated internal hemorrhoids. It may also be required in other selected cases, such as for patients with symptomatic grade III internal hemorrhoids or those who have thrombosed hemorrhoids.

**Hemorrhoidectomy** — Hemorrhoidectomy involves the surgical removal (excision) of excess tissue lining the anal canal (anoderm) and hemorrhoidal tissue. There are various techniques for the operative treatment of hemorrhoids. The specific surgical procedure performed depends upon a number of factors, including the specific circumstances of each case and the potential risks and benefits of such procedures. Patients for whom surgery has been recommended should share any questions with their physicians, surgeons, and other members of their healthcare team concerning optimal surgical approaches for their particular situation.

In most cases, such procedures require general or spinal anesthesia. With general anesthesia, loss of consciousness and sensation is induced by various injected and/or inhaled medications. With spinal anesthesia, a state of insensitivity to pain is produced by injection of an anesthetic drug into the space around the spinal cord.

However, selected patients may tolerate such procedures with a local anesthetic as well as medications that produce a calming effect (ie, sedatives). With local anesthesia, loss of sensation is induced in a limited region of the body by interrupting the activities of certain nerve fibers.

**Complications of hemorrhoidectomy** — The main complications following standard surgical intervention (ie, a procedure called "closed" hemorrhoidectomy) include the following:
Some patients develop temporary difficulty emptying their bladder following hemorrhoidectomy. The frequency with which this occurs ranges from 2 to 30 percent depending upon the amount of fluid given after surgery, the degree of pain, and any history or difficulty emptying the bladder before surgery. Many of these patients have no apparent symptoms (doctors use the term "asymptomatic"), while others may require urinary catheterization. This involves insertion of a sterile, hollow, flexible tube (catheter) into the bladder, usually through the urethra, the tubular structure that drains urine from the bladder. Various measures may help to reduce the need for catheterization, including limiting fluid intake following surgery as well as administration of pain medication and treatment with warm sitz baths.

Urinary tract infections develop in approximately 5 percent of patients following hemorrhoidectomy, possibly occurring secondary to asymptomatic urinary retention.

Fecal impaction, the presence of a large mass of hardened feces in the rectum, can occur following hemorrhoidectomy. This is due to the pain following surgery (postoperative pain) and the use of certain medications to help relieve such pain (narcotics). Most surgeons recommend the use of bulk fiber, stool softeners, and stimulant laxatives to help prevent fecal impaction. However, should it develop, intervention may be required with anesthesia to manually remove the mass.

Delayed bleeding develops in about 1 to 2 percent of patients, typically occurring 7 to 16 days following surgery. The bleeding is thought to result from the "shedding" or sloughing of the operated tissue. Delayed hemorrhage typically requires surgical intervention with suture ligation.

Rarely, other complications may occur. As an example, infection of and localized pus formation within submucosal tissue (submucosal abscess) occurs in less than 1 percent of cases. Death is very rare.

WHERE TO GET MORE INFORMATION — Your doctor is the best resource for finding out important information related to your particular case. Not all patients with hemorrhoids are alike, and it is important that your situation is evaluated by someone who knows you as a whole person.

This discussion will be updated as needed every four months on our web site (www.uptodate.com). Additional topics as well as selected discussions written for health care professionals are also available for those who would like more detailed information.

A number of other sites on the internet have information about hemorrhoids. Information provided by the National Institutes of Health, national medical societies, and some other well-established organizations are often reliable sources of information, although the frequency with which their information is updated is variable.

• National Library of Medicine
  (http://www.nlm.nih.gov/medlineplus)

• National Institute of Diabetes and Digestive and Kidney Diseases
REFERENCES


