Hemorrhoids and varicose veins are common conditions seen by general practitioners. Both conditions have several treatment modalities from which the physician may choose. Varicose veins are treated with mechanical compression stockings. There are several over-the-counter topical agents available for hemorrhoids. Conservative therapies for both conditions include diet, lifestyle changes, and hydrotherapy which require a high degree of patient compliance to be effective. When conservative hemorrhoid therapy is ineffective, many physicians may choose other non-surgical modalities: injection sclerotherapy, cryotherapy, manual dilation of the anus, infrared photocoagulation, bipolar diathermy, direct current electrocoagulation, or rubber band ligation. Injection sclerotherapy is the non-surgical treatment for primary varicose veins. Non-surgical modalities require physicians to be specially trained, own specialized equipment, and assume associated risks. If a non-surgical approach fails, the patient is often referred to a surgeon. The costly and uncomfortable nature of treatment options often leads a patient to postpone evaluation until aggressive intervention is necessary. Oral dietary supplementation is an attractive addition to the traditional treatment of hemorrhoids and varicose veins. The loss of vascular integrity is associated with the pathogenesis of both hemorrhoids and varicose veins. Several botanical extracts have been shown to improve microcirculation, capillary flow, and vascular tone, and to strengthen the connective tissue of the perivascular amorphous substrate. Oral supplementation with *Aesculus hippocastanum*, *Ruscus aculeatus*, *Centella asiatica*, *Hamamelis virginiana*, and bioflavonoids may prevent time-consuming, painful, and expensive complications of varicose veins and hemorrhoids.

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Introduction

Every general practitioner sees a large number of patients who suffer from problems associated with venous insufficiency. Two of the most common manifestations of venous insufficiency are varicose veins and hemorrhoids. The prevalence of these two conditions is astonishing. In population studies the prevalence of varicose veins has been reported to be 10-15 percent for men and 20-25 percent for women. In a recent cross-sectional study, the age-adjusted prevalence of varicose veins was 58 percent for men and 48 percent for women. Over three-quarters of individuals in the United States have hemorrhoids at some point in their lives, and about half of the population over age 50 requires treatment.

The Merck Manual defines hemorrhoids as “Varicosities of the veins of the hemorrhoidal plexus, often complicated by inflammation, thrombosis, and bleeding.” It has been suggested this is an oversimplification of the nature of hemorrhoids. A more recent definition is, "Vascular cushions, consisting of thick submucosa containing both venous and arterial blood vessels, smooth muscle, and elastic connective tissue.” While everyone has this tissue, it is the enlargement, bleeding and protrusion that create pathology. The crossroads to the development of varicose veins and hemorrhoids is the loss of vascular integrity. Considering the combined prevalence of varicose veins and hemorrhoids, venous insufficiency and its manifestations are an extremely common medical problem that every physician should be prepared to treat.

Historical Perspective on Hemorrhoids

Hemorrhoids are mentioned in ancient medical writings of every culture, including Babylonian, Hindu, Greek, Egyptian, and Hebrew. The word “hemorrhoid” is derived from the Greek "haema" = blood, and "rhoeo" = flowing, and was originally used by Hippocrates to describe the flow of blood from the veins of the anus. Prior to the 1800s hemorrhoids were treated simply by poultice, bed rest, or, in difficult cases, by the application of a red hot poker. A simpler method was prayer to the patron saint of hemorrhoid sufferers, St. Fiacre, an Irish priest who lived in the seventh century. Injection therapy was begun in 1869 by Morgan of Dublin using iron persulfate, and was a relief to many who had endured the medical treatment of the time. As late as 1888 the only other recommended treatment (apart from the above mentioned) was
abstinence from alcohol, sitting in cane chairs, and half a pint of cold spring water injected into the rectum after a morning fast. The founding of St. Mark's Hospital in 1935 by Fredrick Salmon, who is given credit for the first ligation of hemorrhoids, marked a turning point in the treatment of hemorrhoids.

**Hemorrhoid Histology**

As mentioned, there are variant definitions of the histology of the hemorrhoid tissue, but they are universally classified according to anatomical origin. Internal hemorrhoids consist of redundant mucus membrane of the anal canal with the origin above the dentate (anorectal) line. External hemorrhoids have an epithelial component and originate below the dentate line. Internal hemorrhoids are further graded based on the extent to which the tissue descends into the anal canal.

**Grading of Hemorrhoids***

**First degree**

The mucosa barely prolapses, but with severe straining may be trapped by the closing of the anal sphincter. Subsequently, venous congestion occurs occasionally, resulting in discomfort and/or bleeding. Clinically speaking there is no obvious external abnormality.

**Second degree**

With further protrusion of the mucosa, the patient complains of an obvious lump, but this disappears spontaneously and rapidly after defecation unless thrombosis occurs.

**Third degree**

In chronic hemorrhoidal disease, the persistent prolapsing produces dilatation of the anal sphincter, and the hemorrhoids protrude with minimal provocation and usually require manual replacement.

**Fourth degree**

These are usually described as external hemorrhoids and are protruding all the time unless the patient replaces them, lies down, or elevates the foot of the bed. In these fourth degree hemorrhoids, the dentate line also distends, and there is a variable external component consisting of redundant, permanent perianal skin.


**Differential Diagnosis**

When a patient presents with rectal discomfort, swelling, pain, discharge, and bleeding at the time of defecation, it is prudent not to assume it is a result of hemorrhoids; a full evaluation is indicated, including a rectal examination, a proctoscopic exam, and in some cases a sigmoidoscopy. There are several conditions producing symptoms similar to hemorrhoids that must be considered. To rule out grave causes of anorectal bleeding, such as anal or rectal carcinoma, one gastroenterologist suggests, "All patients over forty years old, even with typical hemorrhoidal bleeding, must undergo flexible sigmoidoscopy (or colonoscopy)."
Other types of anorectal pathology that must be ruled out include anal fissures, which can cause pain with defecation and be associated with rectal bleeding. The pain will be described as burning or tearing, as opposed to the achiness or feeling of fullness after defecation described by patients with hemorrhoids. Perirectal abscesses are less common in the general population but should be considered in patients with diabetes or other immunocompromising conditions. Anal fistulas can cause drainage, soiling of underwear, and discomfort. Mucosal diseases such as ulcerative proctitis, colitis, or Crohn's disease can present with rectal bleeding and should be ruled out. Perianal condylomas cause pruritus, local irritation, pain and bleeding. Skin tags can be remnants of past external hemorrhoids and commonly co-exist with fissures. A rectocele can cause fullness in the rectum, giving the patient a similar sensation to an internal hemorrhoid.

It is common for patients to associate pruritis ani with hemorrhoids. In some cases swelling of external hemorrhoids and skin tags can prevent proper anal hygiene, which can cause marked itching. Hemorrhoids themselves do not produce significant itching. When a patient presents with pruritis ani, many assume it is the sequela of hemorrhoidal disease. However, a mindful physician will consider causes such as allergic reactions, perianal dermatitis, microorganisms, parasites, oral antibiotics, hygiene, systemic disease (e.g., diabetes mellitus, liver disease), heat, and hyperhidrosis.

**Etiological Factors**

The exact cause of enlarged and symptomatic hemorrhoids is debated, and numerous etiologies have been suggested. Some of the earliest proposed etiologies included temperament, body habits, customs, passions, sedentary life, tight-laced clothes, climate, and seasons. Recent studies implicate gravity, intrinsic weakness of the blood vessel wall, heredity, increased intra-abdominal pressure from many causes, including prolonged forceful valsalva during defecation or resistance training, obstruction of venous outflow secondary to pregnancy or pelvic masses, and constipated stool in the rectal ampulla. As a patient ages and has continual presence of one or more of the factors mentioned, the integrity of the hemorrhoid "cushions" deteriorates, and the hemorrhoids begin to bulge and descend into the anal canal. When the cushion bulges into the canal, it is exposed to potential trauma and irritation from the passage of stool.

**Conventional Approaches**

Despite thousands of years and millions of patients with pain, discomfort, and perceived embarrassment of hemorrhoids, the exact nature and cause of the condition is not clear, and the standard treatments are, at best, imperfect. Dietary manipulation, vascular tonifying agents, injection sclerotherapy, cryotherapy, manual dilation of the anus, infrared photoagulation, bipolar diathermy, direct current electrocoagulation, rubber band ligation, and hemorrhoidectomy are all standard considerations for the treatment of hemorrhoids.

The treatments can be grouped into conservative (diet and vascular tonification); nonexcisional (sclerotherapy, cryotherapy, manual dilation, photoagulation, diathermy, and electrocoagulation); and surgical methods (ligation and hemorrhoidectomy). "Conservative methods with or without nonexcisional treatments are preferred to surgical methods."

**Rubber Band Ligation**

A device is used to place one or two small rubber bands securely around the base of the hemorrhoid. The rubber bands are left in place to close off the blood supply to the hemorrhoid. The hemorrhoid and the rubber bands fall off after seven to ten days, leaving a small sore that will heal over time.
**Direct Current Electrocoagulation**

A small probe is inserted into the hemorrhoid, and very low levels of electrical current are applied for six to ten minutes. The electrical current closes off the blood supply to the hemorrhoid. One group of hemorrhoids is treated at a time, so patients must return for additional treatments.

**Infrared Coagulation**

The device is used to deliver four to five 1.5-second applications of infrared light to close off the blood supply to the hemorrhoid. One area is treated per office visit. Additional visits may be necessary, usually one month apart. Patients may experience a little bleeding between the fourth and tenth days after the procedure.

**Bipolar Electrocoagulation**

The probe is used to deliver electrical current for two seconds to the hemorrhoid. This will close off the blood supply to the hemorrhoid. This procedure is similar to infrared coagulation and direct current electrocoagulation.


Some of the conventional approaches are not without potential complications. Injection sclerotherapy has resulted in cases of anaphylactic shock. Cryotherapy is cumbersome to perform and is associated with severe rectal pain and discharge. Manual dilation often requires general anesthetic and admission to the hospital. If dilation is not performed carefully the results may be disastrous. Septic complications, including death, have resulted from rubber band ligation. Hemorrhoidectomy, although indicated in extreme cases unresponsive to conservative treatment, is extremely painful and requires a four to six week recovery.

**Nonexcisional Techniques in Hemorrhoid Treatment**

The potential disadvantages of sclerotherapy, banding, manual dilation, and surgery have led to the development of a new generation of nonexcisional techniques for the treatment of hemorrhoidal disease. Infrared photoagulation, bipolar diathermy, and electrocoagulation are the most recent additions to the plethora of modalities to consider. These modalities aim to affect sclerosis of the vascular root and to fix the mucosa to the underlying submucosa and muscle. There have been several studies showing the efficacy of these treatments as comparable to the semi-invasive therapeutic modalities. A study of 758 patients with symptomatic hemorrhoidal disease concluded that all three techniques, performed on an outpatient basis with little or no sedation, are effective modalities for first- and second-degree hemorrhoids. Moreover, direct current electrocoagulation was associated with less discomfort and fewer complications and can be effective in third- and fourth-degree hemorrhoids.

Although direct current electrocoagulation was utilized in 1867, and explained by Wilbur E. Keesey, MD in 1934, doctors today oddly consider it one of the new generations of modalities. A study of 120 patients using direct current electrocoagulation treating a total of 590 hemorrhoid segments reported all patients were successfully treated and remained symptom free at a mean duration of follow-up of 23 months. The researchers concluded that direct current electrotherapy is an effective, painless, and safe outpatient treatment approach to all grades of internal and mixed hemorrhoid disease. Direct current electrotherapy has also been shown to be effective, safe, and cost effective in the treatment of chronic anal fissures associated with internal hemorrhoids. One author suggests patients postpone evaluation of suspected hemorrhoids due to fear of the treatment modality, hospitalization, cost, and time of disability, leading to progression of the hemorrhoid or late diagnosis of serious gastrointestinal disease. Patients must be made aware of less invasive, relatively inexpensive, outpatient treatment options.
(The remainder of the article deals with other modalities. – Ed.)