

1976 Pudendal nerve studies evaluate the function of the nerves innervating the anal canal using a finger electrode placed in the anal canal. Stretch injuries to these nerves will result in a delayed response of the sphincter muscle to a stimulus, indicating a prolonged latency. Finally, endoanal ultrasound will evaluate the extent of the injury to the sphincter muscles before surgical repair. Unfortunately, all of these investigations are user-dependent, and very few studies demonstrate that these studies predict outcome following an intervention. Magnetic resonance imaging (MRI) has been used, but its routine use for imaging in fecal incontinence is not well established.

Rarely does a pelvic floor disorder exist alone. The majority of patients with fecal incontinence will have some degree of urinary incontinence. Similarly, fecal incontinence is a part of the spectrum of pelvic organ prolapse. For this reason, patients may present with symptoms of obstructed defecation as well as fecal incontinence. Careful evaluation including dynamic MRI or cinedefecography should be performed to search for other associated defects. Surgical repair of incontinence without attention to other associated defects may decrease the success of the repair.

TREATMENT **FECAL INCONTINENCE**

Medical management of fecal incontinence includes strategies to bulk up the stool, which help in increasing fecal sensation. These include fiber supplementation, loperamide, diphenoxylate, and bile acid binders. These agents harden the stool and delay frequency of bowel movements and are helpful in patients with minimal to mild symptoms. Furthermore, patients can be offered a form of physical therapy called biofeedback. This therapy helps strengthen the external sphincter muscle while training the patient to relax with defecation to avoid unnecessary straining and further injury to the sphincter muscles. Biofeedback has had variable success and is dependent on the motivation of the patient. At a minimum, biofeedback is risk free and safe. Most patients will have some improvement. For this reason, it should be incorporated into the initial recommendation to all patients with fecal incontinence.

The “gold standard” for the treatment of fecal incontinence with an isolated sphincter defect has been the overlapping sphincteroplasty. The external anal sphincter muscle and scar tissue as well as any identifiable internal sphincter muscle are dissected free from the surrounding adipose and connective tissue and then an overlapping repair is performed in an attempt to rebuild the muscular ring and restore its function. Long-term results following overlapping sphincteroplasty show about a 50% failure rate over 5 years. Poorer outcome has been seen in patients with prolonged pudendal nerve terminal motor latency.

Sacral neuromodulation, collagen-enhancing injectables, radiofrequency therapy, and the artificial bowel sphincter are other options. Sacral nerve stimulation and the artificial bowel sphincter are both adaptations of procedures developed for the management of urinary incontinence. Sacral nerve stimulation is ideally suited for patients with intact but weak anal sphincters. A temporary nerve stimulator is placed on the third sacral nerve. If there is at least a 50% improvement in symptoms, a permanent nerve stimulator is placed under the skin. The artificial bowel sphincter is a cuff and reservoir apparatus that allows for manual inflation of a cuff placed around the anus, increasing anal tone. This allows the patient to manually close off the anal canal until defecation is necessary. Long-term results for sacral stimulation have been promising, with nearly 80% of patients having a reduction in incontinence episodes by at least 50%. This reduction has been sustainable in studies out to 5 years. Unfortunately, the artificial bowel sphincter has been associated with a 30% infection rate. Accordingly, implantation is performed less often.

Collagen-enhancing injectables have been around for several years. The largest open trial involved 115 incontinent patients treated with nonanimal stabilized hyaluronic acid (NASHA/DX) gel. In this study, patients underwent injections of NASHA/DX (Solesta)

into the anal mucosa and were followed for 12 months. The results were promising, with over 50% achieving greater than 50% reduction in incontinence episodes, and these results were sustainable up to 2 years. This method is another less invasive therapy for patients with fecal incontinence.

Radiofrequency energy delivery to the anal canal in patients with fecal incontinence aids in the development and restructuring of collagen fibers and provides tensile strength to the sphincter muscles. The radiofrequency is delivered as an office procedure with sedation. The results have been variable, with 20–50% of patients having a sustained reduction in incontinence episodes for 5 years.

Finally, the use of stem cells to increase the bulk of the sphincter muscles is currently being tested. Stem cells can be harvested from the patient’s own muscle, grown, and then implanted into their sphincter complex. Concern for cost and the need for an additional procedure dampen enthusiasm. Trial results are awaited.

HEMORRHOIDAL DISEASE

Incidence and Epidemiology Symptomatic hemorrhoids affect >1 million individuals in the Western world per year. The prevalence of hemorrhoidal disease is not selective for age or sex. However, age is known to be a risk factor. The prevalence of hemorrhoidal disease is less in underdeveloped countries. The typical low-fiber, high-fat Western diet is associated with constipation and straining and the development of symptomatic hemorrhoids.

Anatomy and Pathophysiology Hemorrhoidal cushions are a normal part of the anal canal. The vascular structures contained within this tissue aid in continence by preventing damage to the sphincter muscle. Three main hemorrhoidal complexes traverse the anal canal—the left lateral, the right anterior, and the right posterior. Engorgement and straining lead to prolapse of this tissue into the anal canal. Over time, the anatomic support system of the hemorrhoidal complex weakens, exposing this tissue to the outside of the anal canal where it is susceptible to injury. Hemorrhoids are commonly classified as external or internal. External hemorrhoids originate below the dentate line and are covered with squamous epithelium and are associated with an internal component. External hemorrhoids are painful when thrombosed. Internal hemorrhoids originate above the dentate line and are covered with mucosa and transitional zone epithelium and represent majority of hemorrhoids. The standard classification of hemorrhoidal disease is based on the progression of the disease from their normal internal location to the prolapsing external position ([Table 353-5](#)).

Presentation and Evaluation Patients commonly present to a physician for two reasons: bleeding and protrusion. Pain is less common than with fissures and, if present, is described as a dull ache from engorgement of the hemorrhoidal tissue. Severe pain may indicate a thrombosed hemorrhoid. Hemorrhoidal bleeding is described as painless

TABLE 353-5 THE STAGING AND TREATMENT OF HEMORRHOIDS

Stage	Description of Classification	Treatment
I	Enlargement with bleeding	Fiber supplementation Cortisone suppository Sclerotherapy
II	Protrusion with spontaneous reduction	Fiber supplementation Cortisone suppository
III	Protrusion requiring manual reduction	Fiber supplementation Cortisone suppository Banding Operative hemorrhoidectomy
IV	Irreducible protrusion	Fiber supplementation Cortisone suppository Operative hemorrhoidectomy