

## ANAL FISTULAE

Anal fistulae represent a common and challenging problem. There is no single treatment for this complex condition. Successful management of this condition requires understanding the differential diagnosis, etiology, and anatomy of fistulae, as well as the impact of complicating factors.

Anorectal diseases include fissure, fistulae, ulcer, abscess, hidradenitis, pilonidal disease, hemorrhoidal disease, rectal prolapse, sexually transmitted disease, inflammatory bowel disease, and anorectal neoplasia. Distinguishing these requires a careful history and physical, and where appropriate, radiologic evaluation and examination under anesthesia with biopsy.

Extent and severity of disease vary from asymptomatic subcutaneous tracts to disabling complex fistulae that cause pain, infection, incontinence, disfigurement, and compromise of sexual function.

The clinical objectives in treating fistulae are

1. Control and prevention of infection
2. Relief of symptoms
3. Preservation of continence
4. Protection of urologic and gynecologic organs.

Fistulae are described in terms of how much of the anal canal is contained in the tract, whether there are single or multiple tracts, whether or not the urethra, vagina is involved, and whether or not there are complicating factors such as obstetric injury, radiation, Crohns Disease or tumor present.

Assessment of fistulae requires identification of the external and internal openings, and their positions relative to the intersphincteric groove, the anal verge, the dentate line, and the upper border of the anal canal. Assessment requires Examination under anesthesia, Pelvic MRI or Endorectal Ultrasound. The combination of any two of these modalities yields an extremely accurate assessment. Examination under anesthesia can provide treatment by draining abscesses and controlling fistulae with setons.

Critical to successful management and avoidance of complications is a staged approach. In the initial surgical evaluation, abscesses are drained, and fistulae are controlled with setons. A seton is an inert suture or a silicon vesselloop, which is guided through the fistula and tied to itself. Setons may be cutting, or non-cutting. Cutting setons are secured tightly around the muscle contained within a fistula tract and gradually erode through the muscle over several weeks. More effective is the loosely approximated noncutting seton, which keeps the fistula tract patent, provides for drainage and does not damage sphincter.

Most patients should improve dramatically with incision and drainage and placement of setons. Failure to improve should prompt further investigation of underlying illness such as HIV, Crohns Disease or cancer. Antiretroviral therapy should be optimized. Cancers should be treated. The extent and severity of Crohns disease should be determined using pan endoscopy, small bowel series, capsule endoscopy where appropriate, and serologic testing. Generally, perianal disease should not be treated with definitive surgical therapy such as cutting setons or advancement flaps until all small intestinal and colorectal disease is controlled. There are several reasons for this. First, patients with active inflammatory disease or HIV may be malnourished and are at high

risk for complications. Second, an advancement flap requires healthy pliable rectal mucosa and muscularis. Active proctitis is not only contraindicates a flap, but renders it anatomically impossible. Third, colonic and small bowel disease may be accompanied by diarrhea, and bleeding, rendering the patients ability to recuperate more difficult and complicated.

Role of a colostomy or ileostomy is controversial. This may render fistulae inactive, but will not cure the fistulae and upon closure of the colostomy, the fistulae will become active. An ostomy may control rectal disease and thus make a flap possible, but without aggressive medical management the disease is likely to recur. Ostomy is indicated clearly in the presence of fecal incontinence that impairs hygiene, predisposes to tissue destruction and recurrent infection. "Temporary" diversion may also gently serve to introduce a patient with proctitis and perianal disease to a permanent ostomy as part of a proctocolectomy. Diversion is indicated in the presence of severe refractory proctitis and perianal disease. In cases of malignant fistulae require radiation and chemotherapy, a proximal stoma can dramatically improve quality of life and ability to tolerate therapy.

### **Definitive Therapy**

Definitive surgery for fistula involves the use of one or more of the following procedures:

- Cutting Seton
- Staged Fistulotomy
- Advancement flap
- Anal Fistula Plug

One controlled and stable, with no evidence of recurrent infection or new fistulae, a second procedure to close the fistula can be considered. None is appropriate for everyone and all have risks and failure rates.

**Cutting Seton:** In the procedure the seton is tightened around the muscle and works its way through the remaining muscle bit by bit, over a period of weeks to months. This is analogous to passing a wire through a block of ice without cutting the ice completely. It requires patience and tolerance of some pain when the seton is tightened. However, no anesthesia or surgery is needed. This procedure is generally reserved for low fistula since its effects cut the sphincter slowly over time. It may also be offered to individuals who cannot or will not undertake additional surgery.

**Staged Fistulotomy:** In this procedure, a previously placed seton is removed by cutting the remaining skin and muscle contained within a seton. This is again generally reserved for low fistulas with minimal tissue involvement. This procedure can be performed under local or general anesthesia, depending on patient and physician preference, is self limited and usually well tolerated. It may be used in conjunction with a cutting seton.

**Advancement Flap:** For fistulae involving more than the distal third of the sphincter, or involving the vagina, a more complex repair is needed. The advancement flap involves

- Surgical dissection of the lining of the anal canal over and proximal (farther up the rectum) to where the fistula is located.
- Removal of the segment containing the fistula
- Suturing the fistula closed
- Covering the closed fistula with the flap of new, healthy tissue.

This procedure requires general anesthesia and about 1 hour of surgery. It generally requires two weeks to recover and four weeks to heal completely. The success rate is 70% with tobacco use and Crohns Disease being risk factors for failure. This procedure is the most aggressive, and most anatomic of fistula closure procedures.

**Anal Fistula Plug:** This procedure is the newest, simplest, and most controversial of fistula closure procedures. A toothpick shaped structure, aptly named the fistula plug is created from the purified connective tissue of a pig's small intestine. This is a bioprosthesis, meaning it is made from nonhuman material but is biologic in origin. It is passed through the fistula tract and sutured in place. This device allows tissue from the patient's body to grow into it, eventually replacing the plug with normal human tissue, completely and closing the fistula. This procedure is performed under general or spinal anesthesia and takes a half hour. Patients must rest for two weeks and avoid major straining or exertion to prevent dislodgement of the plug.

Controversy with this device is based on the fact that while this device received FDA approval as safe to use, it was tested only in by researchers who had a financial interest in the product. Success rates have ranged from 14% to 80%. A recent metanalysis suggested an average success rate of 40%. Nonetheless, because of its ease and safety, it remains option.

### **Fistulae with Tissue Loss**

Obstetric relate fistulae and radiation induced fistulae merit brief discussion. These two conditions have in common the loss of vascularized viable tissue in the area of the fistulae. Obstetric fistulae generally involve a fourth degree tear or posterior midline episiotomy that damages the internal and external anal sphincter. A resulting fistula is usually anterior and involves the vagina. While the fistulae may be controlled with a seton, definitive treatment requires the interposition of viable muscle between the rectum and vagina either with overlapping sphincteroplasty, or a muscle/skin flap. Similarly, male patients receiving radiation for prostate cancer may develop radiation injury leading to rectourethral fistulae. These are among the most difficult of fistulae to treat, and require both fecal and urinary diversion, followed by flap interposition and repair of the urethra.

### **Summary**

Anorectal fistulae represent a diagnostic and therapeutic challenge. Etiology, anatomy, and complexity must be assessed methodically. While simple fistulae may be treated with fistulotomy, complex fistulae require a staged approach with setons, and occasionally a stoma. Underlying medical conditions should be sought and treated prior to undertaking definitive surgical repair.