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What is an anal fistula?

A fistula is an abnormal connection or tunnel between two organs or two tissue surfaces. An anal fistula is known medically as “fistula-in-ano” and is sometimes also referred to as perianal fistula. Perianal refers to the area of the body surrounding the anus, and particularly the skin in that area. Perianal fistulas are when these abnormal connections or tunnels occur between the anal canal (or rectum) and an external opening in the skin near the anus.

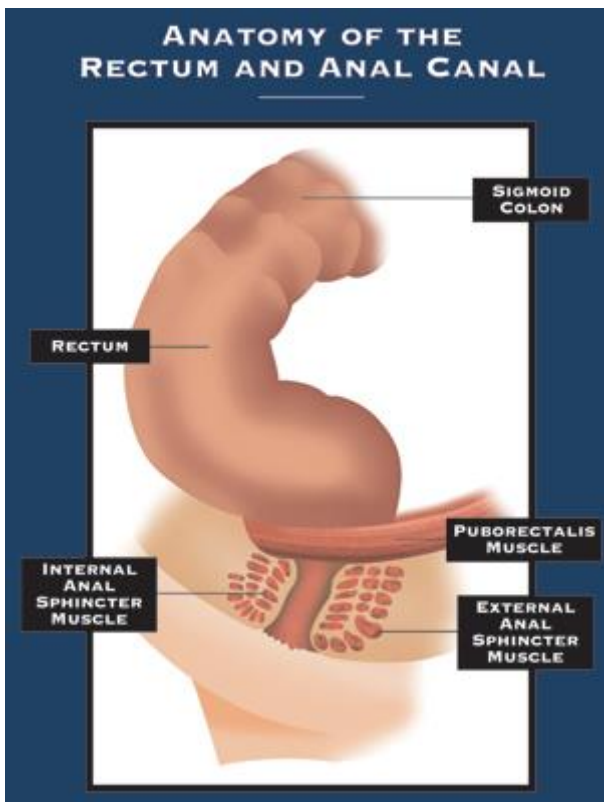
The **anus** is the lower opening of the GI track.

The **anal canal** or **rectum** is the lowermost portion of the large intestine.

Anatomy

In order to understand the cause, treatment, and complications of therapy for anal fistulas, an understanding of the anatomy of the anal canal (or rectum) is necessary. The anal canal is the terminal (end) portion of the gastrointestinal tract. Two rings of muscle, the internal anal sphincter and external anal sphincter, surround the anal canal. The internal anal sphincter is composed of smooth muscle and is not under voluntary control. The external anal sphincter is

composed of skeletal muscle and is under voluntary control. Together these two muscles are very important in the maintenance of the ability to control bowel movements. Approximately one to two centimeters inside the anal canal, the lining changes. There is a line that marks this change called the dentate line. There are also anal glands located between the layers of the internal and external anal sphincters. These glands contain fluid that will empty into the anal canal at the level of the dentate line. It is when these anal glands get infected that abscesses and anal fistulas can occur. An abscess is a pocket of pus from an infection.



Causes of Perianal Fistulas

Perianal fistulas can occur in anyone; however, it is twice as common in men and people assigned male at birth (AMAB). Perianal fistulas are often a result of a specific cause or disease. These can include:

- Colitis
- Crohn's disease
- Chronic diarrhea
- Diverticulitis
- Chronic sexually transmitted infection (STI)
- Infection with tuberculosis or HIV
- Radiation treatment in the perianal region (such as for rectal cancer)
- Complications of surgery near the anus
- Being immunocompromised (having a weakened immune system) or prone to more frequent infections

People with Crohn's disease may experience fistulas forming in different parts of the intestines, with another organ, such as the bladder, or through to the skin surface. However, perianal fistulas are the most common type of fistula in Crohn's disease and can be referred to as perianal Crohn's fistulizing disease. Research has shown that between 23%-38% of those with Crohn's disease may develop perianal Crohn's fistulizing disease.

Anal fistulas and abscesses

Anal fistulas and abscesses of the perianal region are different signs of the same clinical disease. They usually develop in the upper part of the anus, where the anal glands are located. When these glands become infected, they can cause a perianal abscess. The abscesses may break through the skin and drain, causing a fistula. As many as 50% of people with an abscess get a fistula. However, a fistula can also occur without an abscess if there is an injury to the anal canal. This sometimes can happen during surgery to the rectum or anus.

What does an anal fistula look like?

An anal fistula looks like a hole in the skin near your anus. This hole is the portion of the tunnel on the skin which drains the abscess and connects to it inside the body. It might have drainage coming from it, especially when you touch around it. The drainage can be pus, blood and/or bowel movement. Some older fistulas may close at the opening, while the rest of the tunnel remains. This can cause pain and swelling in the area until the fistula reopens to let out the drainage. You may or may not be able to see the fistula with a mirror.

Symptoms

Symptoms of an anal fistula include:

- skin irritation around the anus
- a throbbing pain that may worsen with movement, a bowel movement, or coughing
- smelly discharge near the anus
- passing pus or blood with a bowel movement
- swelling and redness around the anus
- difficulty controlling bowel movements
- fever

Diagnosis

Diagnosis of a perianal fistula rests on identifying

- the external opening on the skin
- the internal opening to the abscess in the anal canal
- the path or tunnel of the fistula from one opening to another

Perianal fistulas often present as small holes or red bumps on the skin, and healthcare providers can find most external openings during a physical exam. During the exam, they will press on the skin where they suspect a fistula to determine if there is a drainage. Often the area is extremely painful to the touch the examination must be performed in the operating room under sedation. This is called examination under anesthesia (EUA). Finding the internal opening of the fistula can be more difficult. They may use a lighted scope, like an anoscope or proctoscope (a longer scope that can visualize your rectum) to view inside the rectal canal. Knowing the complete path of an anal fistula is important for effective treatment. To determine the path (or tunnel), healthcare providers may use a probe inserted at one opening, travelling through the path and coming out at the other opening. This allows them to see where the fistula travels and if it goes through sphincter muscles.

There are also several imaging tests that can also attempt to determine this, including:

- Pelvic magnetic resonance imaging (Pelvic MRI): Sometimes also referred to as an MRI fistulogram, provides an image of the anal canal, sphincter muscles and the surrounding tissues. In this MRI, magnetic and electronic waves are used to create multiple 3D images which can be read by the healthcare provider to determine the openings and path of the fistula.
- Endoanal ultrasound: Takes images of the anal sphincter and surrounding areas to assess the area.
- Endoscopic ultrasound: This uses high-frequency sound waves to identify the fistula, the sphincter muscles and surrounding tissues.
- Fistulography: This is a traditional radiological technique used to define the anatomy of fistulas. The external opening of the fistula is injected with a water-soluble dye to define the fistulous path. An x-ray is then taken so that the path of the fistula can be seen.

- Computed tomography (CT) scanning: CT scanning is a specialized form of radiography in which multiple X-rays of the anus and rectum are taken at different angles and projections. Healthcare providers use these images to produce a two-dimensional image to see what is happening in the body.
- Anal endosonography, also known as endoanal ultrasonography (EUS) or transrectal ultrasonography (TRUS): In this procedure a special long tube is gently introduced into the rectum through the anus and gradually withdrawn through the anal canal. This produces an image with multiple layers to allow healthcare providers to see the area in 3-D.

What are the different types of anal fistulas?

Healthcare providers classify anal fistulas by where they are in relation to the anal sphincter muscles. These are the muscles that control bowel movements. There are specific names based on the fistula location.

- Intersphincteric anal fistula: Passes through the internal anal sphincter muscle and then comes out through the space between the internal and external sphincter muscles.
- Transsphincteric fistula: Travels through both layers of the anal sphincter muscles.
- Suprasphincteric fistula: Passes through the internal sphincter and then goes around the external sphincter.
- Extrasphincteric fistula: Goes around both sphincter muscles. This type is less common and usually originates from the rectum rather than the anus. This type does not begin as an abscess in an anal gland.
- Superficial anal fistula: Travels from the lower part of the anal canal, below the anal glands, through the skin nearby, bypassing the muscles. This type does not begin as an abscess in an anal gland.

Classifying Perianal Fistulas

Fistulas can be classified as simple or complex:

- Simple perianal fistula: A low fistula, confined to the anal canal with a single external opening without abscess or stricture (abnormal narrowing of the anal canal). Simple perianal fistulas occur below the dentate line, and generally have no perianal complications.

- Complex perianal fistula: high fistula, passes through or above muscle layer with single or multiple external openings with or without abscess. Complex perianal fistulas occur above the dentate line and may be associated with perianal abscesses, rectal stricture, inflammation of the lining of the rectum (proctitis) or connection with bladder or vagina.

Treatment

The goals of treatment for a perianal fistula are the complete closure of the fistula, the elimination of sepsis (if present), the prevention

of recurrence, and continence (continued ability to control bowel movements). Combined medical and surgical

treatments are used to treat perianal fistulas. Having a multidisciplinary team which includes a gastroenterologist, radiologist, and colorectal surgeon is important. The treatment and management of perianal

Sepsis is when the body responds improperly to an infection. It can be very serious and must be treated promptly.

fistulas requires precise diagnostics to understand the disease, the correct choice of treatment option, either pharmacological or surgical, or both, as well

Colorectal surgeons are experts in the surgical and non-surgical treatment of diseases of the colon, rectum, and anus.

as a monitoring plan to ensure they do not recur. There are many options and open and honest discussions between the healthcare team and the patient are extremely important.

Antibiotics

Antibiotics may be necessary in the treatment of anal fistulas as they are effective for improving symptoms; however, they rarely heal the fistula on their own. If there are septic symptoms present, they will generally be prescribed, usually a combination of ciprofloxacin and metronidazole. If severely septic, Amoxicillin-clavulanate, or even parenteral imipenem or piperacillin-tazobactam may be used.

Surgical procedures for perianal fistulas

Most with perianal fistulas will need surgery. This is to drain the abscess causing the fistula. A colorectal surgeon will make an incision in the skin at one end of the fistula

to drain the infection. This can be done either in the surgeon's office with local anesthesia or in the operating room under general anesthesia. In some cases, it may take several surgeries to completely take care of the problem.

Other procedures include:

1. **Fistulotomy:** If the fistula is too deep for a simple drainage, the fistula track will be opened to allow healing from the bottom up. The surgeon will cut the internal opening of the fistula, clean the infected area, and then flatten the tunnel and stitch it in place. This type of surgery may require cutting into the sphincter muscle. If the fistula tunnel involves a large portion of the sphincter muscle, other surgeries may be considered in order to minimize injury to the sphincter muscle which controls continence.
2. **Seton drain placement.** This procedure places a surgical thread into the fistula in order to keep it open and drain the discharge. The surgeon may remove the drain and close the fistula with a fistulotomy or another procedure once the fistula has healed. However, if the fistula is caused by a chronic condition, it may be left in.
3. **Ligation of the intersphincteric fistula tract (LIFT).** This procedure is designed to avoid cutting the sphincter muscle entirely by accessing the fistula between the sphincter muscles and avoid cutting them. This procedure usually follows a seton drain procedure described above. With this procedure, after the seton drain is removed, the surgeon closes, likely with stitches, the part of the fistula between the sphincter muscles.
4. **Endorectal advancement flap:** This procedure is used to reduce the amount of sphincter muscle that is cut by the surgery. In this procedure, the infected tissue around the inside opening of the fistula is removed. A healthy piece of tissue (flap) from the inside of your rectum is cut and the opening of the fistula is covered with it. The fistula should continue to drain and heal from the inside out.
5. **Endoscopic ablation:** In this procedure, endoscope (a long, thin tube with a small camera on the end) is put in the fistula. An electrode is then passed through the endoscope. This electrode will cauterize the area it touches in the fistula tract. The fistula tract is

Cauterize – a technique that burns a part of a body to stop bleeding

cauterized from the external opening to the internal opening through a series of electrodes.

6. **Fistulectomy:** In this procedure, the surgeon completely removes the fistula tract. This procedure is rarely used as it increases the likelihood of damage to the anal sphincter muscles. However, it may be necessary in some severe cases where the fistula interferes with normal bowel function, or if there is a high likelihood of recurrence.
7. **Filling the fistula with fibrin glue:** This is one of two treatments that are non-surgical methods used to treat perianal fistulas without medication. While under general anesthesia, the surgeon cleans the fistula tunnel and then closes the internal opening with stitches. The fistula tunnel is then filled with a material, called fibrin glue, which is absorbed into the body while the fistula heals.
8. **Filling the fistula with a collagen plug.** This is one of two treatments that are non-surgical methods used to treat perianal fistulas without medication. The surgeon cleans the fistula tunnel, and the fistula inner opening is then blocked with a plug of collagen protein. This protein will provide a structure that allows for new tissue growth to close the internal opening of the fistula tract.

Procedures for Anal fistulas are generally outpatient procedures and patients go home the same day without need for an overnight stay in the hospital. Pain medication is often prescribed following the procedure as the affected area will be sore and painful. Alongside the pain medications, some find taking a sitz bath (sitting in a warm bath) several times a day to be helpful. It will also aid in healing the area faster. The perianal area will likely have a wound dressing which will need to be changed often and kept clean.

Stages of Fistula Healing

Healthcare providers will use one of two categorizations when assessing fistulizing disease. During treatment, healthcare providers may assess the healing using the three stages of healing recognized in the fistula drainage assessment (FDA):

- **Draining:** the presence of drainage containing, consisting of, or completely of pus after a gentle finger compression
- **Clinical Response:** a reduction of 50% or more in the number of draining tunnels

- Closed or remission: there is no pus drainage after compression. Remission is generally regarded as either the reduction or disappearance of the signs and symptoms of a disease. A fistula assessed as closed or remission does not necessarily indicate the problem has fully been resolved.

Remission versus Response

Anal Fistulas are often a chronic condition for those with autoimmune diseases such as Crohn's disease. When experiencing fistulas, it is not considered "cured" even if the treatment has proved successful.

It is categorized as:

- Symptomatic Response: Meaningful improvement in symptoms of pain and drainage in the absence of remission. This category is often used during treatment to assess if the current treatment is working.
- Symptomatic Remission: The absence of both pain and drainage after gentle compression in the perianal area near the fistula opening.
- Complete Remission: the experience of being symptom-free or having a significant reduction in severity of symptoms following treatment. It does not; however, imply that the treatment has cured the disease or that another fistula will not develop.
- Radiographic Remission: The absence of inflammation in any fistula tract and the absence of any abscess. This is only confirmed by using either a pelvic MRI and/or endoanal ultrasound (EUS). (see below in diagnosis section)

What are the complications of an anal fistula?

A fistula that goes untreated generally will not heal on its own. Even with treatment they may return. This can lead to long-term complications, such as:

- Persistent infection. A fistula that has a symptomatic response, but is not healed completely may return, forming a new abscess. Sometimes, the fistula may seem to be healing and may close at the opening, but the abscess is still present and the fistula may reopen or a new fistula appear.
- Fistula extension. Sometimes a chronic fistula can extend in new directions, creating new dividing paths and openings in the skin. These complex fistulas are very difficult to repair.
- Cancer. Anal cancer has been found in untreated

anal fistulas that have been present for years. Chronic inflammation and erosion are known risk factors for cancer.

- Fecal incontinence. Some people experience fecal continence after anal fistula surgery due to damage to the anal sphincter.

Management of Crohn's complex perianal fistulas (CPF)

There is one medication that can be used to treat Crohn's complex perianal fistulas (CPF). It is in a class called Biologic Therapies. These medications are antibodies created in a laboratory made from materials found in life, not a chemical compound used in pharmacology. Biologics stop certain proteins in the body from causing inflammation. There are also biosimilars, which are the generic form of the biologic they are the generic for. Because biologics are made from living cells and organisms, they cannot be exactly reproduced like a chemical formula. Biosimilars are clinically similar to the biologic; but not exactly the same. Infliximab (Remicade®) is an intravenous infusion that has been approved by the FDA for the treatment and maintenance of remission of Crohn's disease and ulcerative colitis. It is also approved for reducing the number of draining fistulas and maintaining fistula closure in adult patients with fistulizing disease. There are three biosimilars for infliximab. They are Infliximab-abda (Renflexis®), Infliximab-dyyb (Inflectra™) and Infliximab-qbtx (IXIFI™).

If infliximab is not available, another course of therapy is to treat the fistula and the underlying condition of Crohn's disease at the same time. Healthcare providers will sometimes prescribe certain drugs to treat Crohn's, beginning with milder ones and working up to more aggressive treatments. They will often use surgery alongside one of the following therapies.

- Immunomodulatory agents: Immunomodulators are medicines that modify the immune system, so it can work more effectively. Immunomodulators commonly used are azathioprine (Imuran®, Azasan®), 6-mercaptopurine (6-MP, Purinethol®), methotrexate, cyclosporine A (Sandimmune®, Neoral®) and tacrolimus (Prograf®). It can take up to three to six months to see an improvement in symptoms with immunomodulators; therefore, antibiotics and/or steroids may be used in the

beginning.

- 5-aminosalicylic acid (5-ASA): This anti-inflammatory medication is often prescribed to people with IBD to reduce inflammation in the digestive tract by working directly on the lining of the bowel. By reducing inflammation in the bowel, it is possible to achieve and maintain remission.
- Corticosteroids: Sometimes a fast-acting anti-inflammatory steroid may be used. However, since long-term use can make IBD symptoms worse, they should only be used in the short-term to treat flares.
- Biologic therapies: these biologics are used to treat Crohn's disease, but do not treat perianal fistulas. In some cases, a combination of biologics may be used to achieve the best possibility for remission.
 - Anti-Tumor Necrosis Factor Agents (anti-TNF): This type of biologic helps reduce inflammation in the intestine as well as other organs and tissues. Two anti-TNF therapies are Adalimumab (Humira®) and Certolizumab pegol (Cimzia®). Both are given by injection (shot) to treat Crohn's disease. There are three biosimilars for adalimumab. They are Adalimumab-atto (Amjevita™), Adalimumab-adbm (Cyltezo™) and Adalimumab-adaz (Hymiroz™).
 - Integrin Receptor Antagonists: These types of biologics reduce inflammation. Two examples of this type of medication include Natalizumab (Tysabri®) and Vedolizumab (Entyvio™). Both medications are given intravenously.
 - Interleukin-12 and -23 Antagonist: This biologic helps to reduce inflammation. An example of this type of medication is Ustekinumab (Stelara®). The first dose of ustekinumab is given intravenously. The remaining treatments are given as an injection (shot).

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