

Presentation and Management of Common Anorectal Conditions

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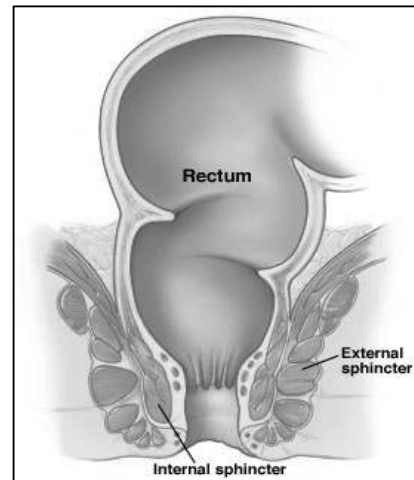
Anatomy and physiology:

- The anal canal is approximately 3-4 cm long and extends from the anorectal junction (dentate or pectinate line) to the anal verge.
- The dentate line is the transitional zone from columnar rectal epithelium and the squamous anal epithelium. ☞

Above the line	Under the line
<ul style="list-style-type: none"> ➤ Derived from endoderm. ➤ Lined by Columnar rectal epithelium. ➤ No sensation of pain <i>except</i> in ischemic cases, it's only sensitive to stretch. 	<ul style="list-style-type: none"> ➤ Derived from anoderm. ➤ Lined by squamous anal epithelium. ➤ Sensitive to pain like skin, richly innervated by somatic sensory nerves. Pathologic conditions that arise below the level of the dentate line cause sever pain. ☞

- Immediately proximal to the dentate line are longitudinal folds called *columns of Morgangi* (rectal column).
- Perianal glands normally discharge their secretions at the base of these columns, at the level of anal crypts.
- Arterial supply:
 - Superior rectum: branches of the inferior mesenteric artery.
 - Middle and inferior rectum: branches of the internal iliac arteries and the internal pudendal arteries.
- Venous drainage:
 - Superior rectum: drains into the portal system through the inferior mesenteric vein.
 - Middle and lower rectum: drain into the systemic circulation through the internal iliac and pudendal veins.
- Two anal sphincters:
 - a. Internal:
 - A tube like shape.
 - It is formed of a continuation of the circular muscular layer of the rectum.
 - Involuntary sphincter made of smooth muscle.
 - Autonomic innervations controls gas and liquid stool.
 - b. External:
 - A Funnel like shape.
 - It is a striated voluntary muscle.
 - It has three parts:
 1. Subcutaneous.
 2. Superficial.
 3. Deep portion.
 - The deep portion is in continuity with the levator ani muscle (puborectalis fibers), which line the base of the pelvic floor.
 - Controls solid stool.

- Colon and rectum have two primary functions:
 - Absorption of water and electrolytes from liquid stool.
 - Storage of feces.
- The physiology of anal continence is the result of complex interactions between sensory, involuntary and voluntary motor functions.
- It harbors a greater number and variety of bacteria, most of them anaerobes. The commonest aerobes are *E.coli* and *enterococci*.



Hemorrhoids

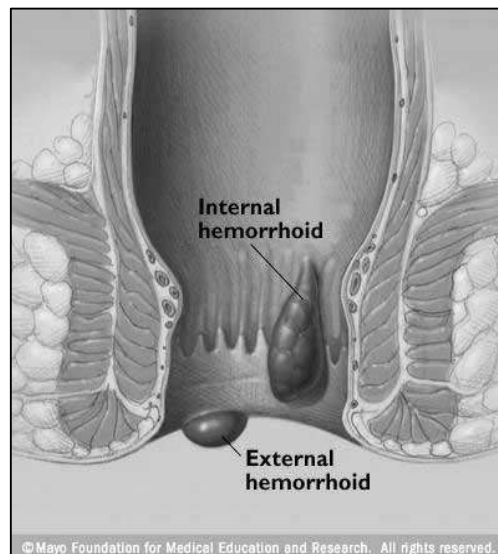
- These are vascular cushions located in the anal canal covered by mucosa.
- Hemorrhoidal protrusion or bleeding is usually precipitated by:
 - Constipation and straining at stool.
 - Pregnancy.
 - Anything that increases pelvic pressure (ascites, tumors).
 - Portal hypertension.
 - Excessive diarrhea.
- Normal sites of hemorrhoids:
 - Right anterior (11 O'clock).
 - Right posterior (7 O'clock).
 - Left lateral (3 O'clock).

NOTE:

- Hemorrhoids are important because they help in continence mechanism; usually they are asymptomatic unless they become diseased.

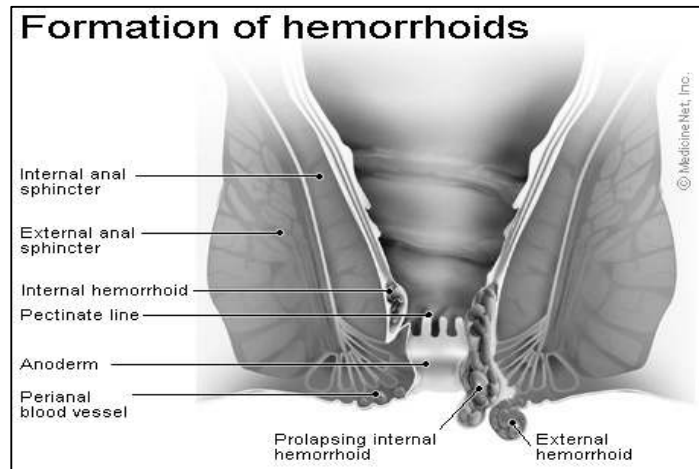
Types:

- Those originating *above* the dentate line termed *internal hemorrhoids*.
- Those originating *below* the dentate line termed *external hemorrhoids*.



Pathogenesis:

- An increase in pressure will cause a stretch in the smooth muscle layer consequently causing muscle hypertrophy leading to a more increase in pressure narrowing the vessels decreasing blood supply (**written by Tareq!!!**).
- Represent engorgement or enlargement of the normal fibrovascular cushions lining the anal canal.
- The overlying mucosa becomes more friable and the vasculature increases.
- With overlying thinning of the mucosa and vascular engorgement, subsequent rectal bleeding occurs.



Classification:

- Classified according to the level of prolapse of *internal* hemorrhoids (*no classification for external hemorrhoids*, they are either present or absent).
- Classified by *history* (symptoms) and *not* by physical examination. ☞
- Internal hemorrhoids are classified to:
 - Grade I: bleeding *without* prolapse.
 - Grade II: bleeding, prolapse *with spontaneous* reduction.
 - Grade III: bleeding, prolapse *with manual* reduction.
 - Grade IV: bleeding, incarcerated, irreducible prolapse.
- Mixed hemorrhoids are a combination of internal and external hemorrhoids.

Symptoms:

- External hemorrhoid:
 - Appears as a painful skin tag (necrotic old external hemorrhoid) that *never* bleeds and prolapses. ☞
- Internal hemorrhoid:
 - There is bleeding and itching without pain *except* when it prolapses or become ischemic. ☞
- They rarely cause severe pain associated with fissuring.
- Prolapse usually occurs in association with a bowel movement, during walking or heavy lifting as a result of increased intraabdominal pressure.
- Extreme pain, bleeding and occasionally signs of systemic illness in case of strangulation.

Physical examination:

- Examination of the perianal and rectal areas is an integral part of every physical examination.
- The importance of gentleness and empathy can't be overemphasized.
- Inspection:
 - Gentle parting of the buttocks allows inspection.
 - Patients should be examined in the left lateral decubitus position.
 - Any rash, condylomata, or eczematous lesions.
 - External sphincter function.
 - Any abscesses, fissures or fistulae.
- Palpation:
 - Gentle digital examination.
 - Lubricated finger should be gently inserted into the anal canal while asking the patient to bear down.
 - The resting tone of the anal canal should be ascertained as well as the voluntary contraction of the puborectalis and external anal sphincter.
 - Masses should be noted as well as any areas of tenderness.
 - Internal hemorrhoids are generally *not* palpable on digital examination.
 - *Anoscopic examination* is mandatory because many visible lesions are not palpable.
 - The side viewing *anoscope* should be inserted with the open portion in the right anterior then right posterior and finally left lateral position.
 - Hemorrhoidal bundles will appear as bulging mucosa and anoderm within the open portion of the anoscope.

Evaluation of rectal bleeding:

- *Always* rule out rectal cancer.
- Patients are divided into two categories:
 - a. Low risk group; a young individual with bleeding associated with hemorrhoidal disease without other systemic symptoms and no family history.
 - Anoscopy and rigid sigmoidoscopy.
 - b. High risk group; an older individual, with either a family history of colorectal cancer, or change in bowel habits.
 - Complete colonoscopy should be performed to rule out proximal neoplasia.
- A patient with iron deficiency anemia has to do a GI scope, since it is considered as GI malignancy until proven otherwise.
- Diverticulosis (not diverticulitis) is a common cause of lower GI bleeding. 📌
- Hemorrhoids are a common cause of PR bleeding. 📌

Treatment:

- Treatments is classified into three categories:
 - A. Dietary and lifestyle modification.
 - B. Non operative (office procedures).
 - C. Operative hemorrhoidectomy.

A. Dietary and lifestyle modifications:

- The main goal of this treatment is to minimize straining.
- Achieved by increasing fluid and fiber in the diet, recommending exercise, and perhaps adding fiber agents to the diet such as psyllium.
- If necessary, stool softeners may be added.

B. Office treatments:

1. Rubber band ligation:
 - For grade I or grade II hemorrhoids and, in some circumstances, grade III hemorrhoids.
 - We use it only in internal hemorrhoids. ☝
 - Never done in external hemorrhoids because it's very painful, we just do an incision, evacuate the clot, and then close it under local anesthesia. ☝
 - Complications include bleeding, pain, thrombosis and life threatening perineal sepsis.
 - Successful in two thirds to three quarters of all individuals with first and second degree hemorrhoids.
2. Infrared coagulation:
 - Generates infrared radiation which coagulates tissue protein and evaporates water from cells.
 - Is most beneficial in grade I and small grade II hemorrhoids.
3. Bicap electrocoagulation:
 - It works, in theory, similar to photocoagulation or to rubber banding.
 - The probe must be left in place for ten minutes.
 - Poor patient tolerance minimizes the effect of this procedure.
4. Sclerotherapy:
 - Injection of an irritating material into the submucosa in order to decrease vascularity and increase fibrosis.
 - Injecting agents have traditionally been phenol in oil, sodium morrhuate, or quinine urea.
 - Manual anal dilatation was first described by *Lord*.
 - Cryotherapy was used in the past with the belief that freezing the apex of the anal canal could result in decreased vascularity and fibrosis of the anal cushions.

C. Surgical treatment of hemorrhoids (hemorrhoidectomy):

- The triangular shaped hemorrhoid is excised down to the underlying sphincter muscle, and the wound can be closed or left open.
- Stapled hemorrhoidectomy has been developed as an alternative to standard hemorrhoidectomy.
- In summary:
 - Grade I and II; change life style:
 - a. Diet: increase fiber intake (fruit, vegetables, brown bread) and drink a lot of water. A patient may receive supplement fibers (movicle) and laxatives if he/she is constipated.
 - b. Never squeeze or strain and don't take long in the wash room.
 - Grade III: change life style with banding (if failed, do surgery).
 - Grade IV: surgical intervention immediately.

Anal Fissure

- A fissure is a tear in the anal canal extending from just below the dentate line to the anal verge.
- Is the most common cause of severe localized anorectal pain.
- In simple words; there is hypertrophy of the anal sphincter that causes increased pressure leading to ischemia and when there is traumatic bowel movement that causes injury a fissure will occur.
- Most commonly in young and middle aged adults.
- The pain is dramatically increased during bowel movements and is often associated with streaks of blood in the stool.
- Usually the blood is minimal and bright red.
- The cardinal symptom is pain that accompanied by bleeding, and that pain typically starts with defecation and may persist for minutes to hours. ☝
- Anal fissures almost always occur on the posteroanterior plane because pelvic muscular support is weakest along this axis.
- Over 90% of anal fissures are located in the posterior midline due to lack of tissue support and maximal stretching at this site during defecation in both male and female, but females also have anterior anal fissures. ☝
- The fissure may be acute, appearing as a simple tear, or chronic with the following signs:
 - Hypertrophy of anal papillae.
 - Fibrotic edges of the fissure.
 - External skin tag.
 - Appearance of internal sphincter fibers in the base of the fissure.

Etiology and pathogenesis:

- Fissures are secondary to local trauma, either from constipation or excessive diarrhea.
- Failure to heal is due to poor perfusion of the anoderm in the posterior midline.
- Ectopic lateral fissures and multiple fissures may be due to Crohn's disease, malignancy, leukemias, or sexual transmitted diseases.

Treatment:

- Based on the duration and severity of the symptoms.
- In acute cases we use conservative treatment with non-narcotic analgesic and bulk laxatives to keep bowel movements atraumatic. These manners with using sitz baths (warm baths) allow approximately 80% of acute anal fissures to heal within three weeks.
- If the conservative treatment fails, or if the fissure is chronic we shift to surgery:
 - *Lateral internal sphincterotomy* is the operation of choice which is based on cutting a small portion of the internal sphincter, releasing the sphincter spasm to decrease the pressure and increase blood supply to allow the fissure to heal.
- Sometimes to avoid surgery, we use ointment vasodilators, e.g. nitroglycerin, calcium channels blockers (nifedipine).

REMEMBER!

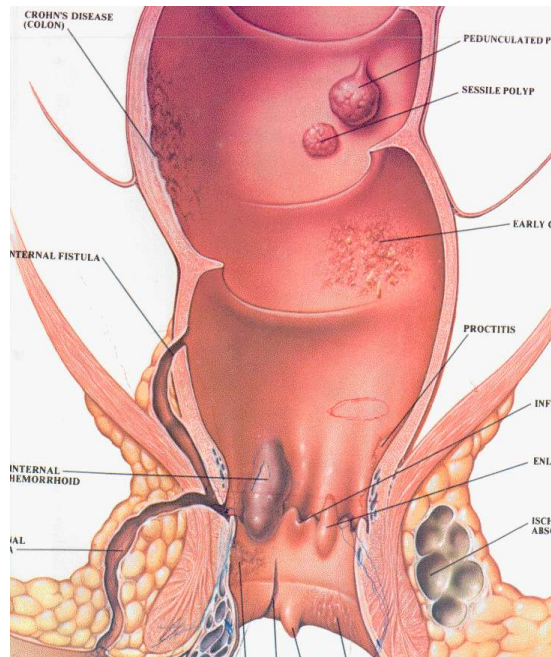
"You don't defecate in the library, so you shouldn't read in the bathroom"

Anorectal Abscesses and Fistula-in-Ano

- Both abscess and fistula-in-ano can be considered simultaneously.
- The abscess is an acute manifestation, and the fistula is a chronic condition. 📌
- Anyone with a fistula has a history of an abscess, which has been drained spontaneously.

Etiology:

- Nonspecific:
 - Cryptoglandular in origin.
- Specific:
 - Crohn's (the most important because it is very tough to treat).
 - Ulcerative colitis.
 - TB.
 - Actinomycosis.
 - Carcinoma.
 - Trauma.
 - Radiation.
 - Foreign body.
 - Lymphoma.
 - Pelvic inflammation.
 - Leukemia.

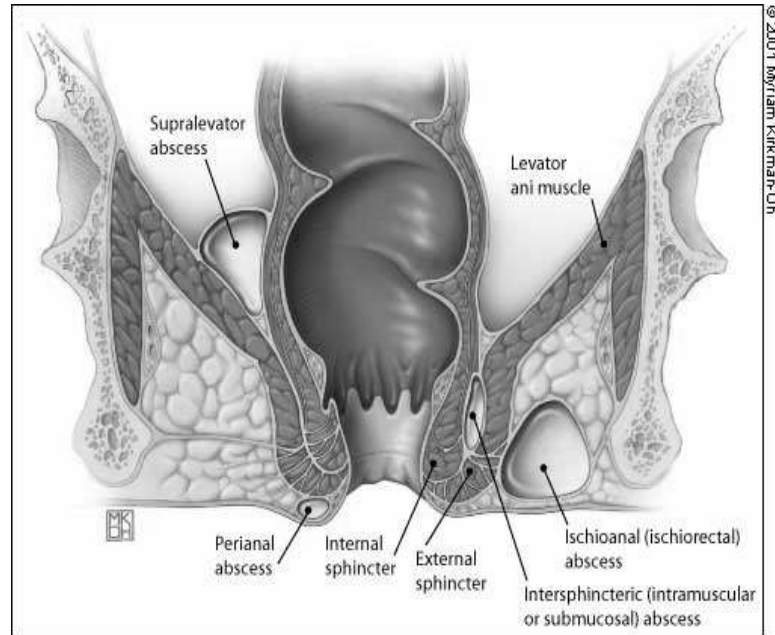


Pathogenesis:

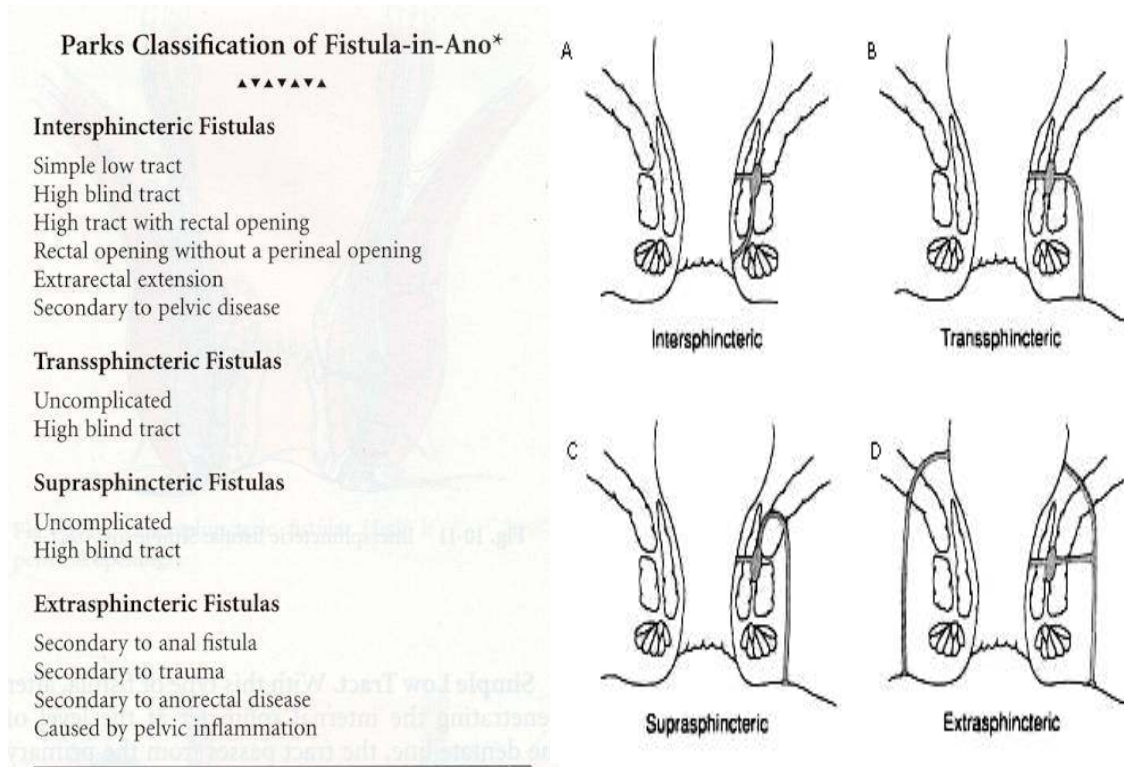
- Abscesses are believed to start with obstruction of the perianal glands that are located between the internal and external sphincters.
- The cryptoglandular hypothesis states that infection of the anal glands associated with the anal crypts is the primary cause of anal fistula and abscess.
- In the dentate line there is about 9-15 glands inside the crypt, which secrete through ducts. If there is any obstruction it leads to accumulation of the secretion and inflammation causing abscess and anal fistula.
- An anal fistula is an abnormal connection between the epithelialized surface of the anal canal and (usually) the perianal skin. 📌
- Anal fistulae originate from the anal glands, which are located between the two layers of the anal sphincters which drain into the anal canal. If the outlet of these glands becomes blocked, an abscess can form which can eventually point to the skin surface. The tract formed by this process is the fistula.
- Anal fistulae can present with many different symptoms:
 - Pain.
 - Discharge, either bloody or purulent.
 - Pruritus ani (itching).
 - Systemic symptoms if abscess becomes infected.
- Diagnosis is by examination, either in an outpatient setting or under anesthesia (referred to as EUA; examination under anesthesia).

Classification of abscesses (acute phase):

- A. Intersphincteric abscess.
- B. Ischioanal abscess, the commonest. ☞
- C. Perianal abscess.
- D. Supralelevator abscess, very difficult to diagnose, very rare, and caused by inflammation or a disease in the pelvis. ☞

**Treatment of abscess:**

- Incision and drainage.
 - All patients will get fistulae (50% permanent and 50% will heal).
 - Determine the most tender point; a 2 cm area of skin is injected with local freezing.
 - Elliptical or cruciate incision.
 - Drainage of pus and destroying of all loculations.
- Antibiotics:
 - Using it alone has no role in the primary treatment of an abscess.
 - Given to certain groups of people: ☞
 - a. Immunocompromised patients.
 - b. Patients with valvular diseases.
 - c. Diabetics.
 - d. Extensively diseased patients.
 - e. Association with systemic manifestations.

Classification of fistulae (chronic phase):**A. Intersphincteric fistulae:**

- Common course:
 - Via the internal sphincter to the intersphincteric space and then to the perineum.

B. Transsphincteric fistulae:

- Common course:
 - Low, via the internal and external sphincters into the ischiorectal fossa and then to the perineum.

C. Suprasphincteric fistulae:

- Common course:
 - Via the intersphincteric space superiorly to above the puborectalis muscle into the ischiorectal fossa and then to the perineum.

D. Extrasphincteric fistulae (traumatic), as in a gunshot wound:

- Common course:
 - From the perianal skin, through levator ani muscles, to the rectal wall.
 - Completely outside the sphincter mechanism.

NOTE

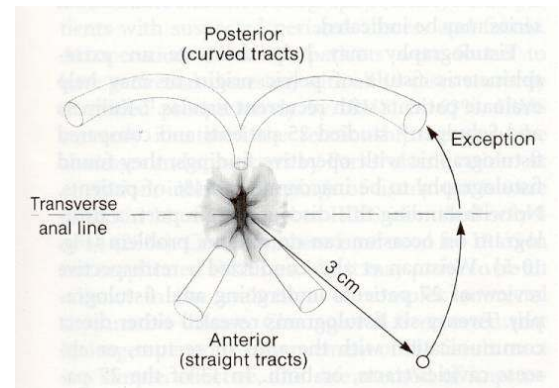
- Every fistula should open into the dentate line except traumatic fistulae which are difficult to treat. ☞

Evaluation of anal fistulae:

- An accurate preoperative assessment of the anatomy of an anal fistula is very important. We manage it depending on muscle involvement.
- Five essential points of a clinical examination of an anal fistula:
 1. Location of the *internal* opening.
 2. Location of the *external* opening.
 3. Location of the *primary* tract.
 4. Location of any *secondary* tract, usually iatrogenic.
 5. Determination of the presence or absence of underlying disease.

Goodsall's rule:

- With the patient in the lithotomy or the knee-chest position, an imaginary line is drawn at the level of the anus, parallel to the floor.
- For an external opening located anterior to this line, the fistulas tract usually goes radially straight into the anal crypt.
- For an external opening located posterior to this line, the fistulas tract is generally curved around, and the internal opening is in a frank midline position.
- Any fistula anterior to the imaginary line goes to the dentate line (i.e. 9 to 3 O'clock).
- Any fistula posterior to the imaginary line goes to the 6 O'clock position.



Investigations:

- Fistulography.
- MRI is the best investigation:
 - Findings show 80-90% concordance with operative findings when observing a primary tract course and secondary extensions.
 - MRI is becoming the study of choice when evaluating complex fistulae.
 - It has been shown to improve recurrence rates by providing information on otherwise unknown extensions.
- Endoanal/endorectal US:
 - Use hydrogen peroxide in the external opening, and then track the gas bubbles to the internal opening.
 - These studies involve passage of a 7 or 10-MHz transducer into the anal canal to help define muscular anatomy differentiating intersphincteric from transsphincteric lesions.
 - A standard water-filled balloon transducer can help evaluate the rectal wall for any suprasphincteric extension.
 - Recent studies show that the addition of hydrogen peroxide via the external opening can help outline the fistula tract course. This may be useful to help delineate missed internal openings.
- CT scan.

Treatment:

- objectives of therapy:
 - Cure with lowest possible recurrence rate.
 - Minimal, if any, alteration in continence in the shortest period.
- The principles are:
 - Identification of the primary opening.
 - Relationship to puborectalis
 - Least amount of muscles should be divided.
 - Side tracts should be sought.
 - Presence of underlying disease.
- Procedures:
 - Fistulotomy/fistulectomy.
 - Setons in the management of difficult fistulas.
 - Mucosal advancement flap.

A. Fistulotomy/ fistulectomy:

- Curettage is performed to remove granulation tissue.
- Marsupialization of the edges to improve healing times.
- Fistulectomy: go around the tract, remove then close.
- The laying-open technique (fistulotomy) is useful for 85-95% of primary fistulae (i.e. submucosal, intersphincteric, low transsphincteric).
- A probe is passed into the tract through the external and internal openings.
- The overlying skin, subcutaneous tissue, and internal sphincter muscle are divided with a knife or electrocautery, thereby opening the entire fibrous tract.
- At low levels in the anus, the internal sphincter and subcutaneous external sphincter can be divided at right angles to the underlying fibers without affecting continence. This is not the case if the fistulotomy is performed anteriorly in female patients. If the fistula tract course is higher into the sphincter mechanism, Seton placement should be performed.
- Curettage is performed to remove granulation tissue in the tract base.
- Complete fistulectomy creates larger wounds that take longer to heal and offers no recurrence advantage over fistulotomy.
- Opening the wound out on the perianal skin for 1-2 cm adjacent to the external opening with local excision of skin promotes internal healing before external closure.
- Some advocate marsupialization of the edges to improve healing times.
- Perform a biopsy on any firm, suggestive tissue.

NOTE:

- *In females, never cut anterior fistulae, they are in a weak muscle where cutting may lead to incontinence. ☝*

B. Setons in the management of difficult fistulae:

- Most patients prefer this method to avoid incontinence.
- It takes from 6-8 weeks.
- Every time the patient goes to the wash room, he pulls the Setons till he cannot bear the pain (it slips in his hand).
- A Seton can be placed alone, combined with fistulotomy, or in a staged fashion. This technique is useful in patients with the following conditions:
 - Complex fistulae (i.e. high transsphincteric, suprasphincteric, extrasphincteric) or multiple fistulas.
 - Recurrent fistulae after previous fistulotomy.
 - Anterior fistulae in female patients.
 - Poor preoperative sphincter pressures.
 - Patients with Crohn's disease or patients who are immunosuppressed.
- Setons have two purposes beyond giving a visual identification of the amount of sphincter muscle involved. These are:
 - To drain and promote fibrosis.
 - To cut through the fistula.
- Setons can be made from large silk sutures, silastic vessel markers, or rubber bands that are threaded through the fistula tract.

C. Mucosal advancement flap:

- Mucosal advancement flap is reserved for use in patients with chronic high fistulas but is indicated for the same disease processes as Seton use.
- Advantages include a 1-stage procedure with no additional sphincter damage.
- A disadvantage is poor success in patients with Crohn's disease or acute infection.
- This procedure involves total fistulectomy, with removal of the primary and secondary tracts and complete excision of the internal opening.
- A rectal mucomuscular flap with a wide proximal base (2 times the apex width) is raised.
- The internal muscle defect is closed with an absorbable suture, and the flap is sewn down over the internal opening so that its suture line does not overlap the muscular repair.

For extra reading
Lawrence's Essential of General Surgery
Chapter 16 328 – 331

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