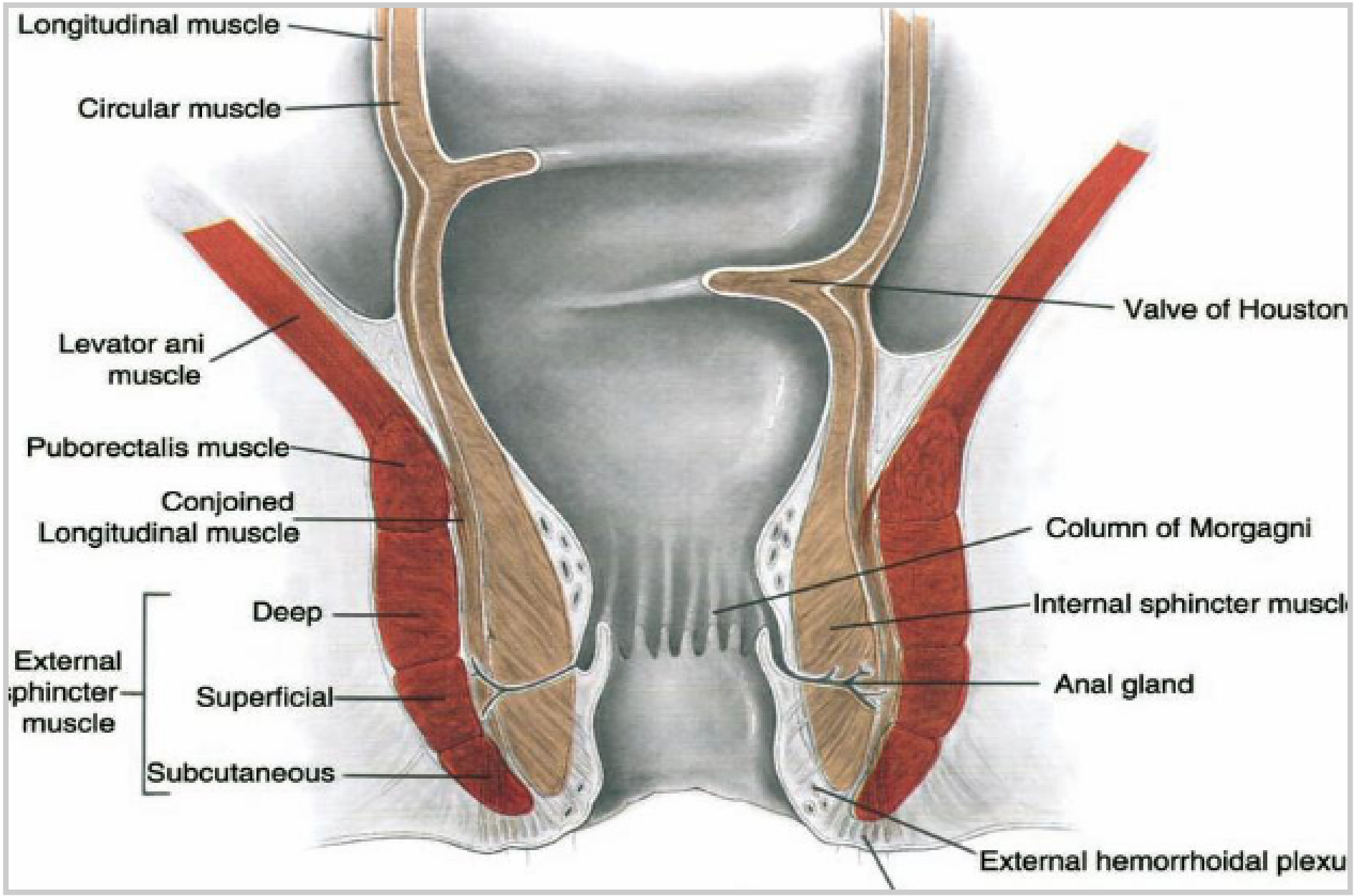
Anal and per-anal condition

Anatomy of Rectum And Anus

- The rectum is the last part of the large intestine and connects the sigmoid colon to the anal canal.
- The rectum begins at the height of S2-S3 and ends at the perineum. It is about 12 to 16 cm long und may be subdivided into three parts:
- The upper third lies intraperitoneally
- The middle third retroperitoneally
- The lower third under the pelvic diaphragm and therefore extraperitoneally.

- The rectum differs from the colon in that the outer layer is entirely longitudinal muscle, characterized by the merging of the three taenia bands.
- It measures 12–15cm in length and lacks a mesentery, sacculations, and appendices epiploicae.

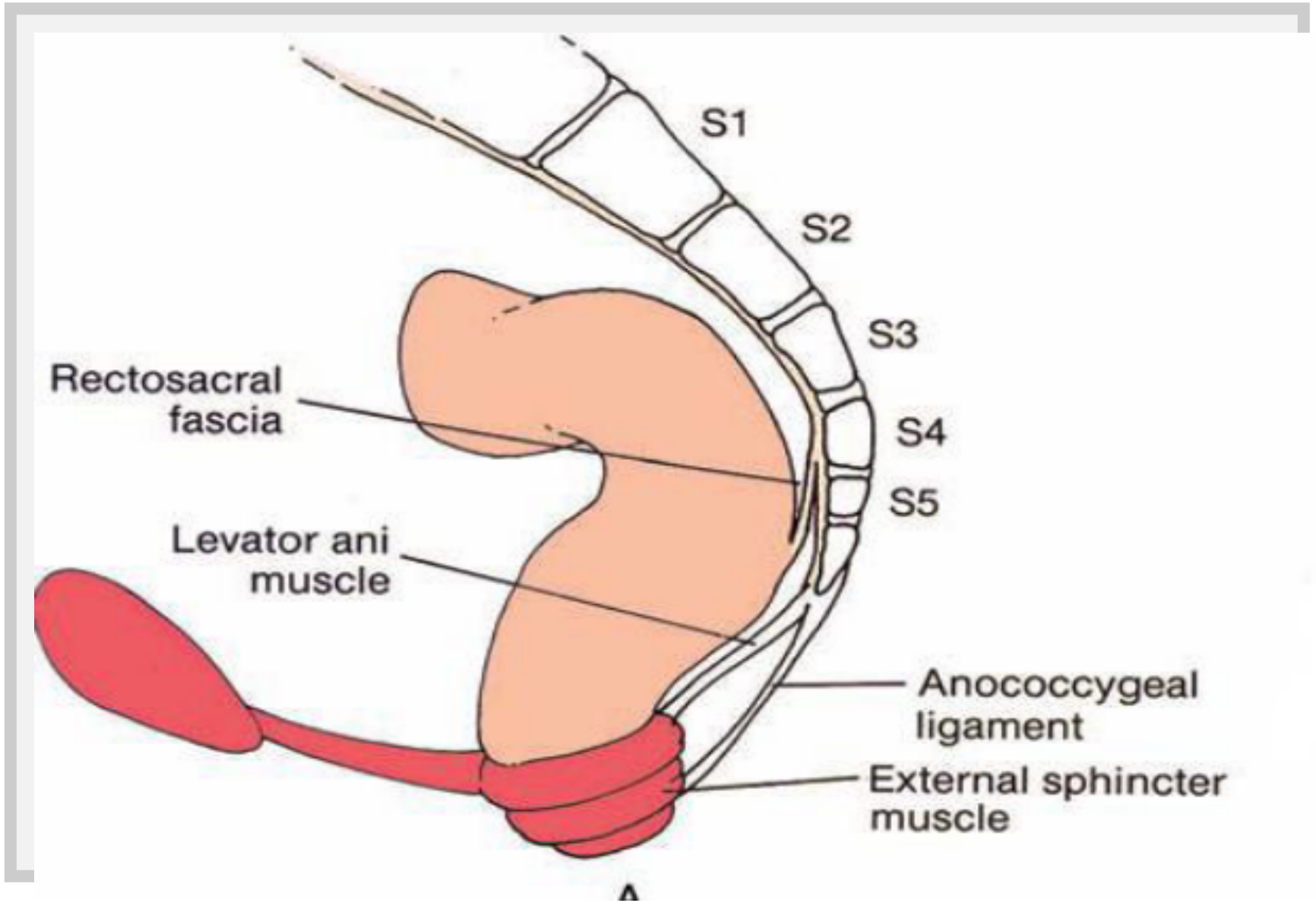
- The rectum describes three lateral curves: the upper and lower curves are convex to the right, and the middle is convex to the left.
- On their inner aspect these in foldings into the lumen are known as the valves of Houston.


Longitudinal muscle
Circular muscle
Levator ani muscle
Puborectalis muscle
Conjoined Longitudinal muscle
External sphincter muscle
Deep
Superficial
Subcutaneous
Valve of Houston
Column of Morgagni
Internal sphincter muscl
Anal gland
External hemorrhoidal plexu

Anal Canal

- It is about 4 cm long, and terminates at the anal verge. (This definition differs from that of the anatomist, who designates the anal canal as the part of the intestinal tract that extends from the dentate line to the anal verge).
- **Relations:**
- Posteriorly the anal canal is related to its surrounding muscle and coccyx.
- Laterally is the ischioanal fossa with its inferior rectal vessels and nerves.
- Anteriorly in the male is the urethra, and in the female are the perineal body and posterior vaginal wall.

- **LINING OF CANAL**
- The lining of the anal canal consists of epithelium of different types at different levels.
- Dentate line. This line is approximately 2 cm from the anal verge.
- Longitudinal folds (columns of Morgagni) , of which there are 6 to 14, are known as the. There is a small pocket or crypt at the lower end of the folds.
- These crypts are of surgical significance because foreign material may become lodged in them, obstructing the ducts of the anal glands and possibly resulting in sepsis.


S1
S2
S3
S4
S5
Rectosacral fascia
Levator ani muscle
Anococcygeal ligament
External sphincter muscle
A

HEAMORRHOIDS

- Hemorrhoids are not varicose veins, and not every one has hemorrhoids.
- Everybody has anal cushions.
- The anal cushions are composed of blood vessels, smooth muscle (Treitz’ s muscle), and elastic connective tissue in the submucosa
- They are located in the upper anal canal, from the dentate line to the anorectal ring (puborectalis muscle).
- Three cushions lie in the following constant sites: left lateral, right anterolateral, and right posterolateral

Etiology

- Chronic constipation has been considered the cause of hemorrhoids
- Other studies show that patients with hemorrhoids are not necessarily constipated but tend to have abnormal anal pressure.

A-Pregnancy hormonal changes

B-Portal hypertension

Hemorrhoids: *Pathogenesis and clinical findings*

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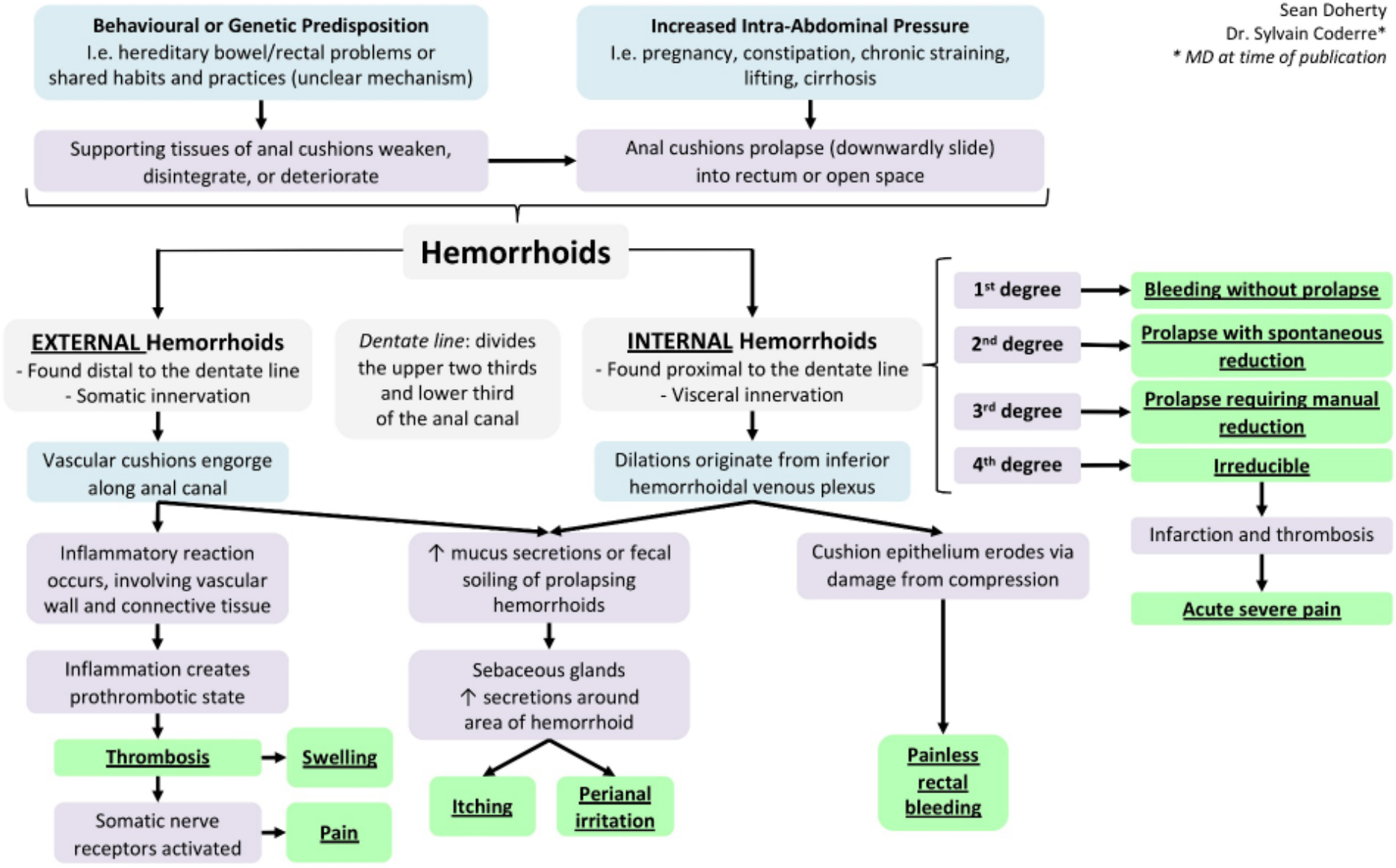


Legend: Pathophysiology | Mechanism | Sign/Symptom/Lab Finding | Complications

Published **March 30, 2019** on www.thecalgaryguide.com

CLINICAL PRESENTATION

- Bleeding
- Mucosal prolapse
- Chronic states of prolapse predispose to mucous and fecal leakage, resulting in pruritus and excoriation of the perianal skin.
- Pain per se is not a symptom of uncomplicated hemorrhoids. It may indicate associated disease, such as anal fissure, perianal abscess.
- Prolapsed, strangulated hemorrhoids present as an acute problem, with the symptom of pain associated with discharging, edematous, tender, irreducible hemorrhoids. Gangrene and infection with sloughing and secondary bleeding

TABLE 2

Classification of Internal Hemorrhoids

Grade 1	Bleeding without prolapse
Grade 2	Bleeding with prolapse that reduces spontaneously
Grade 3	Bleeding with prolapse that requires manual reduction
Grade 4	Incarcerated, irreducible prolapse

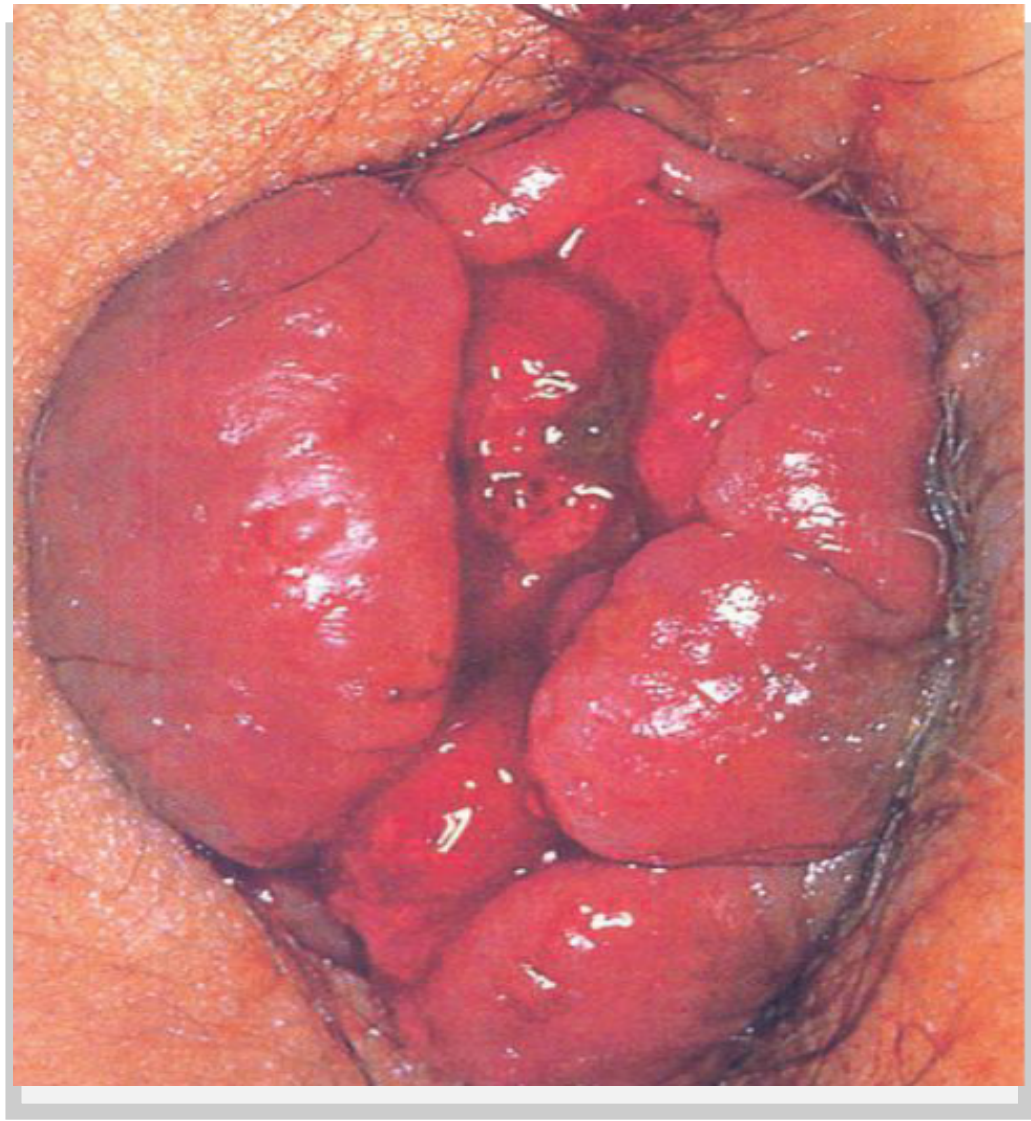
Source: Lohsiriwat. *World J Gastroenterol.* 2012.[10]

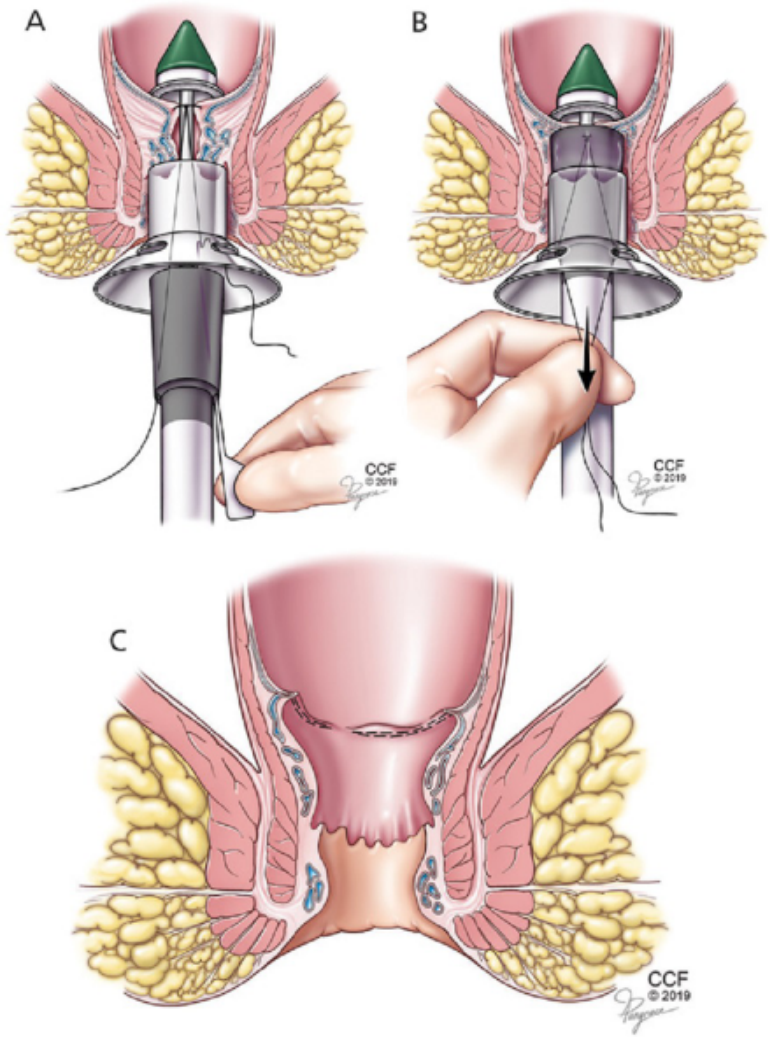
- DIET AND BULKFORMING AGENTS
- OFFICE, OUTPATIENT, AND MINOR PROCEDURES

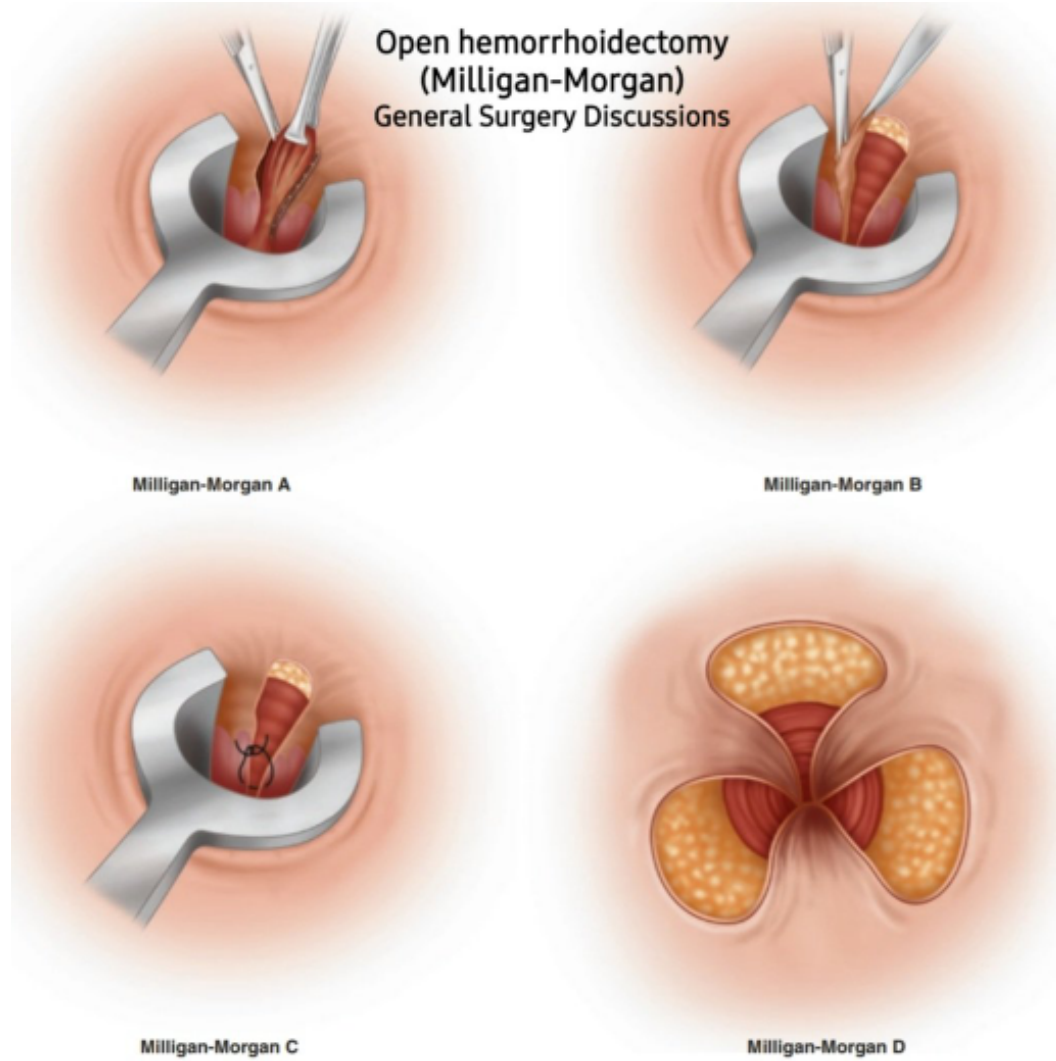
1. Rubber Band Ligation
2. Infrared Photocoagulation
3. Electrocoagulation
4. Sclerotherapy
5. Cryotherapy

- Anal Stretch
- Lateral Internal Sphincterotomy
- Hemorrhoidectomy

1. Closed hemorrhoidectomy
2. Excision and Ligation
3. Laser Hemorrhoidectomy
4. PPH(PROCEDURE FOR PROLAPSE & HEMORRHOIDS)
5. Ligature
6. Harmonic scalpel




A
B
C
CCF
© 2019

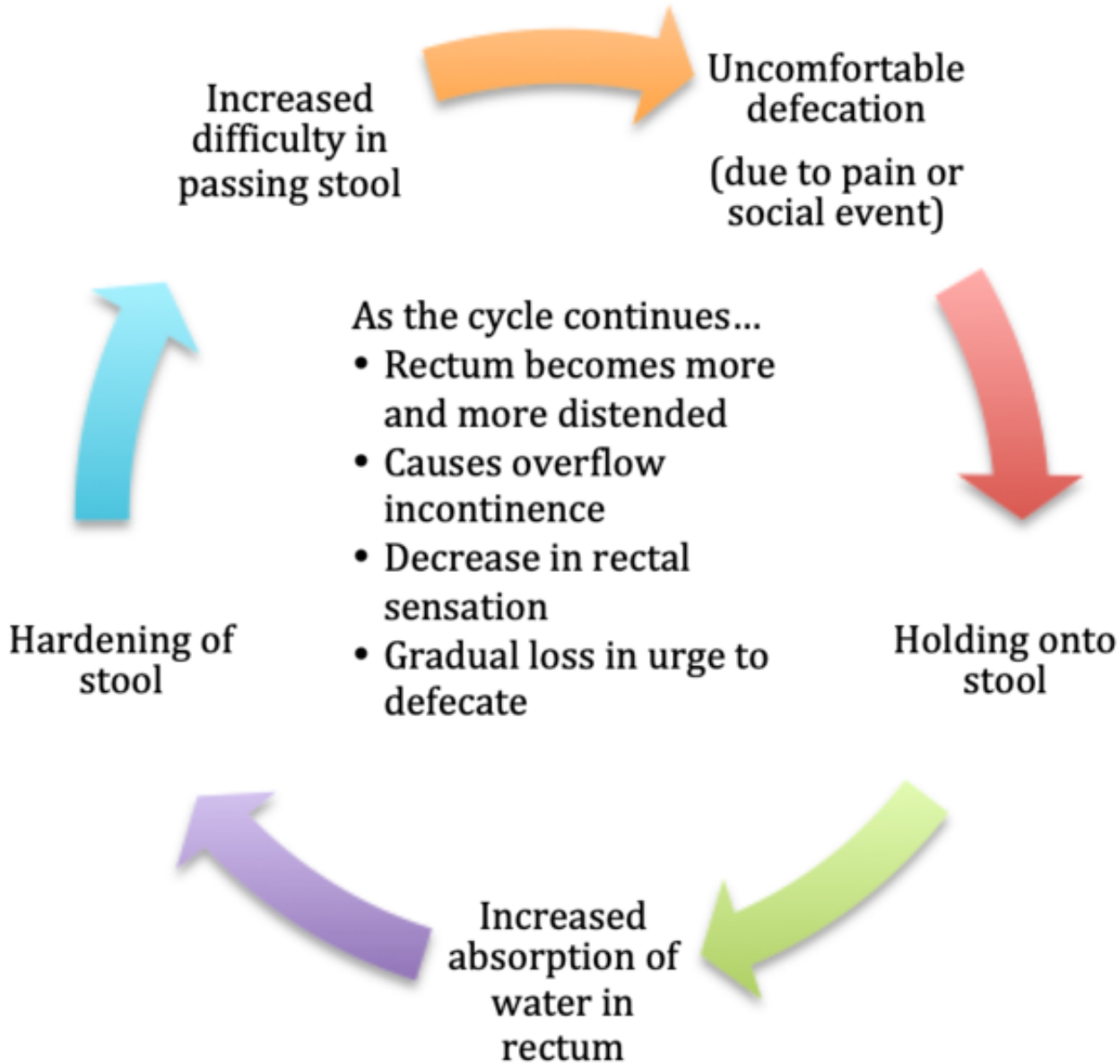

Open hemorrhoidectomy
(Milligan-Morgan)
General Surgery Discussions
Milligan-Morgan A
Milligan-Morgan B
Milligan-Morgan C
Milligan-Morgan D

FISSURE

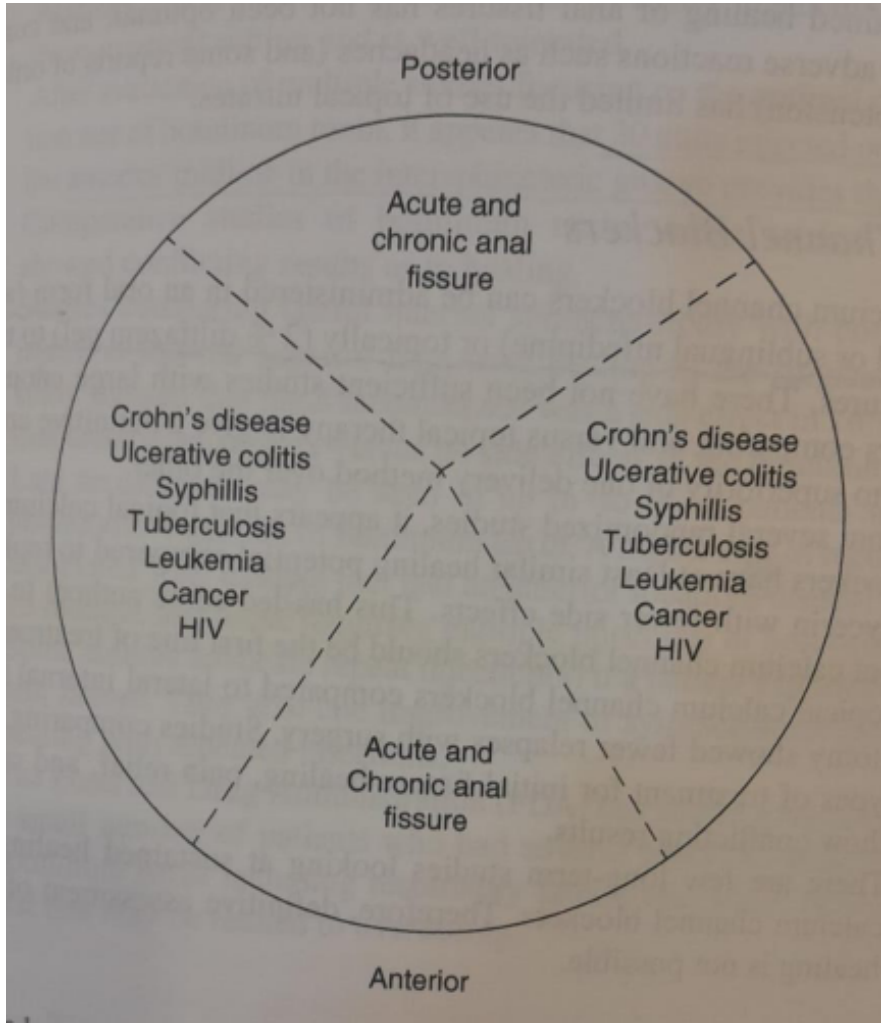
- Definition:A fissure in ano is a painful linear ulcer situated in the anal canal and extending from just below the dentate line to the margin of the anus.
- In the acute phase, the lesion is often a crack in the epithelial surface but causes much pain and spasm.
- Affects both sex equally (women, 51.1%; men, 49.9%).
- Posterior fissure in 73.5%, the anterior in 16.4%, and in both in2.6%.
- Anterior midline in 45% of women and 15% of men.

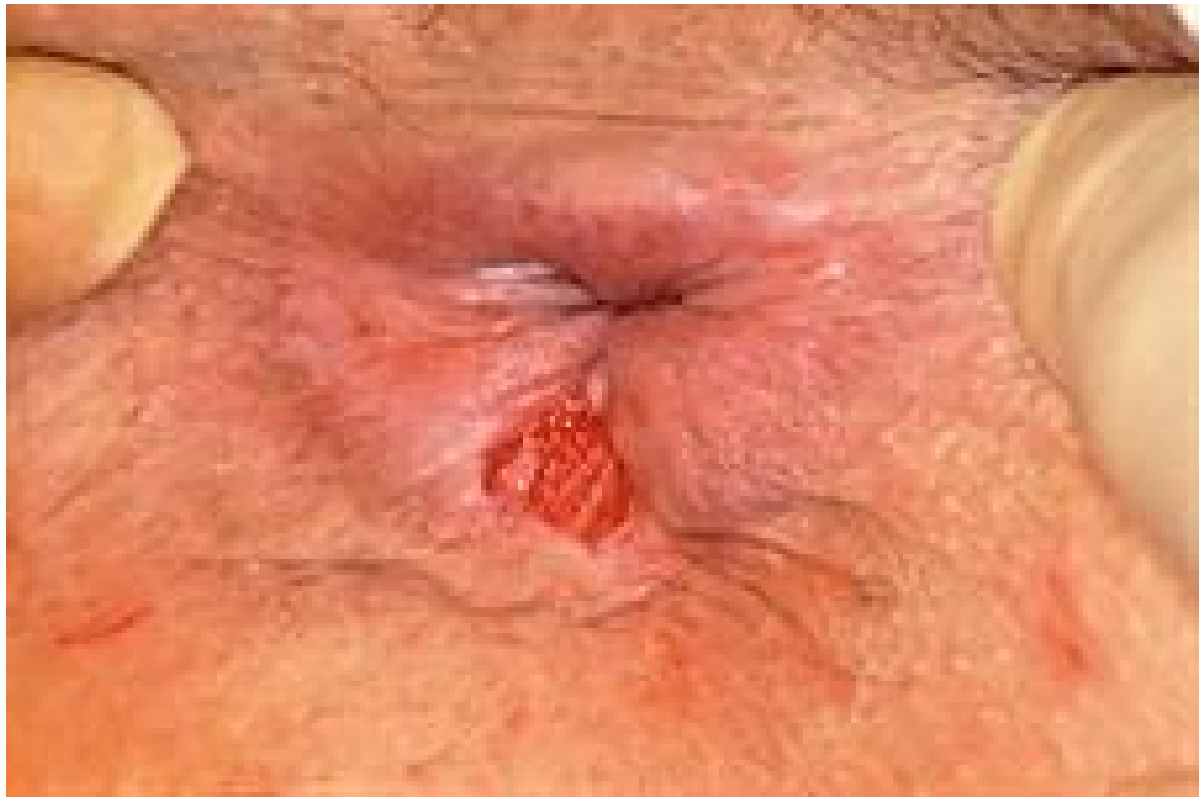
- The vessels passing through the sphincter muscle are subject to contusion during periods of increased sphincter tone and that the resulting decrease in blood supply might lead to a path genetically relevant ischemia at the posterior commissure.

- **ACUTE FISSURE**
- The aim treatment of an acute fissure In ano is to break the cycle of a **hard stool, pain, and reflex spasm.**
- Avoidance of constipation by ingestion of bulkforming foods.
- simple measures such as warm baths Anesthetic ointments suppositories that contain anesthetics, analgesics, astringents, anti-inflammatory agents (usually hydrocortisone),Nitroglycerin GTN ,Calcium channel blocker e.g. Diltiazem, Nifedipine,Botulinum Toxin (BT),Sympathetic Neuromodulators.
- Surgery:Dilatation, Lateral sphincterotomy (open or closed)


Uncomfortable defecation
(due to pain or social event)
Holding onto stool
Increased absorption of water in rectum
Hardening of stool
Increased difficulty in passing stool
As the cycle continues…
• Rectum becomes more and more distended
• Causes overflow incontinence
• Decrease in rectal sensation
• Gradual loss in urge to defecate

the location of anal fissure suggest etiology

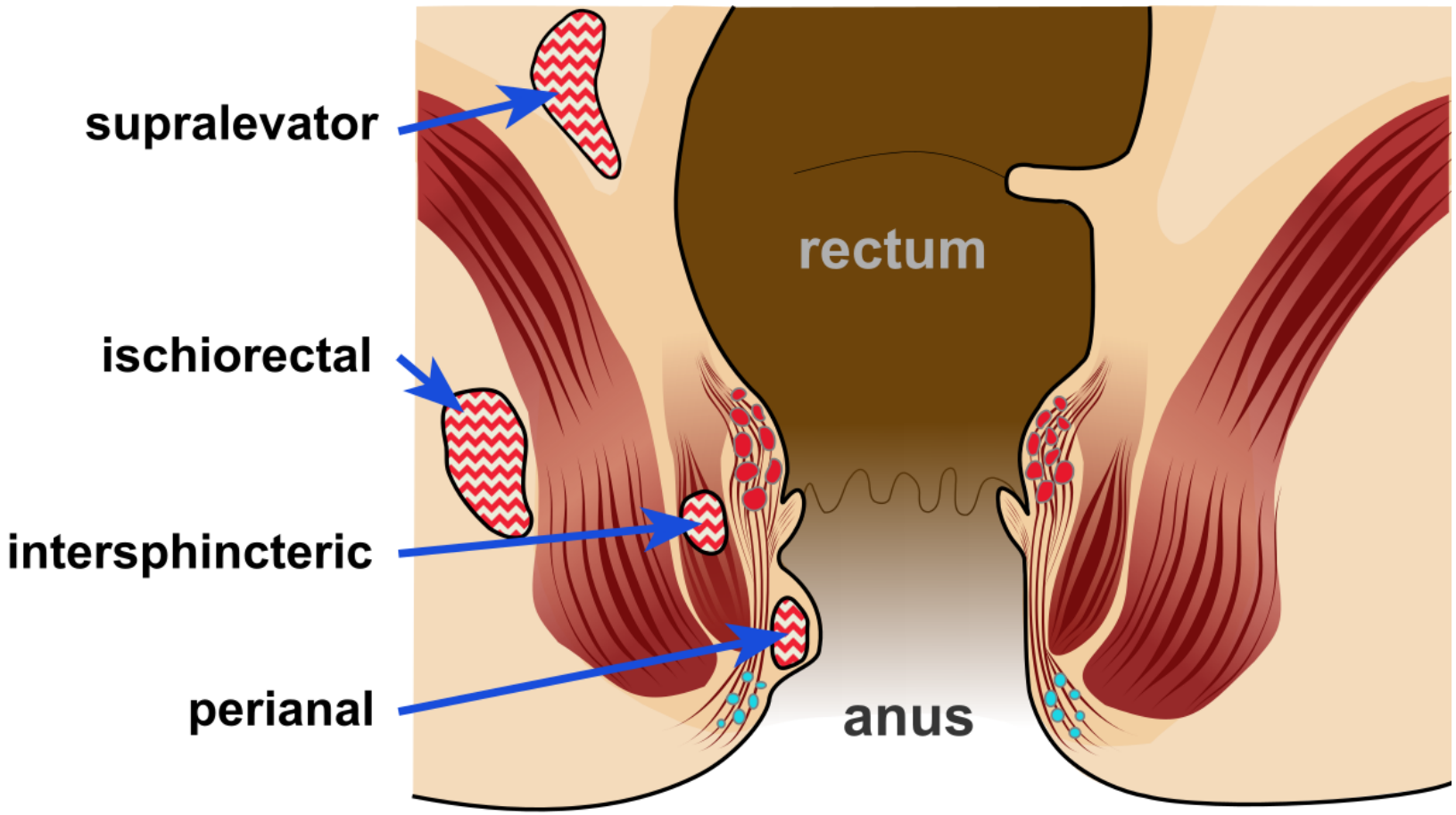




Anorectal Abcess

- Infection originates in the intersphincteric plane, most likely in one of the anal glands.

- This may result in
  - simple intersphincteric abscess
  - extend vertically either upward
  - downwards horizontally
  - circumferentially resulting in varied clinical presentations.

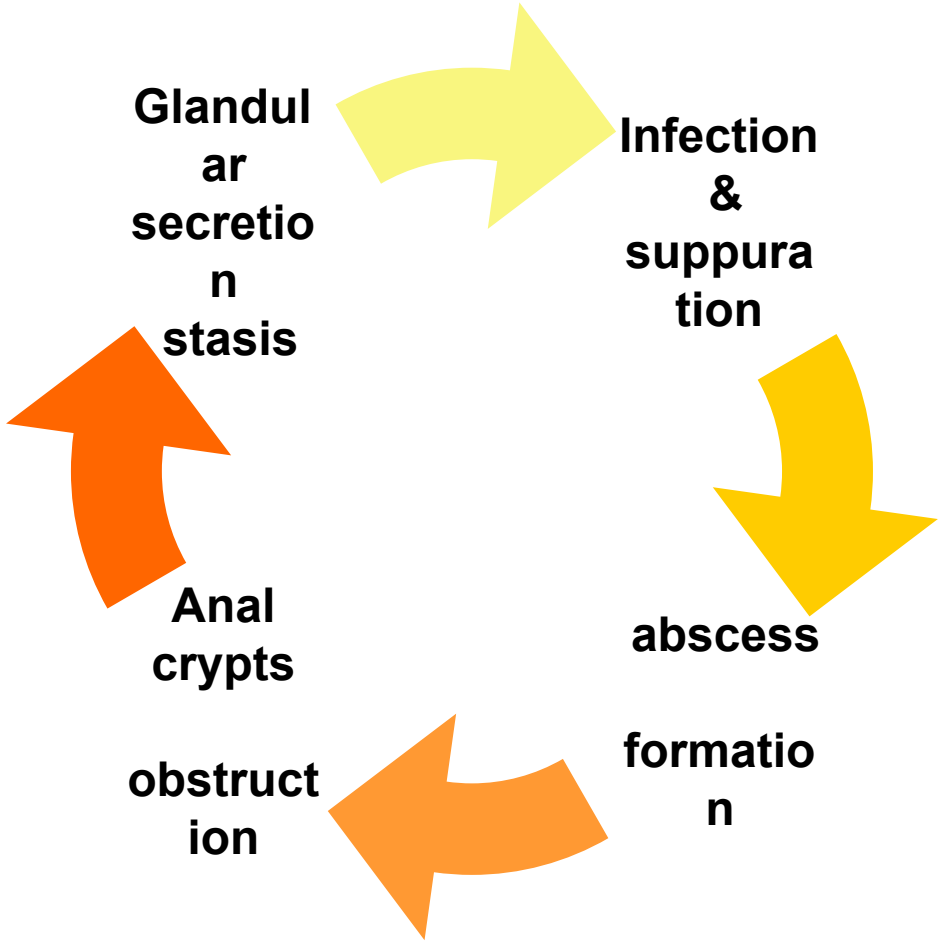

supralevator
ischiorectal
intersphincteric
perianal
rectum
anus

Aetiology & Pathogenesis:

- 4-10 glands at dentate line.
- Infection of the cryptglandular epithelium resulting from obstruction of the glands.
- Ascending infection into the intersphincteric space and other potential spaces.
- Bacteria implicated:
  E.Coli., Enterococci, bacteroides

Other causes:

- Crohn
- TB
- Carcinoma, Lymphoma and Leukaemia
- Trauma
- Inflammatory pelvic conditions (appendicitis)


Glandular secretion stasis
Infection & suppuration
abscess formation
obstruction
Anal crypts

Clinical presentation

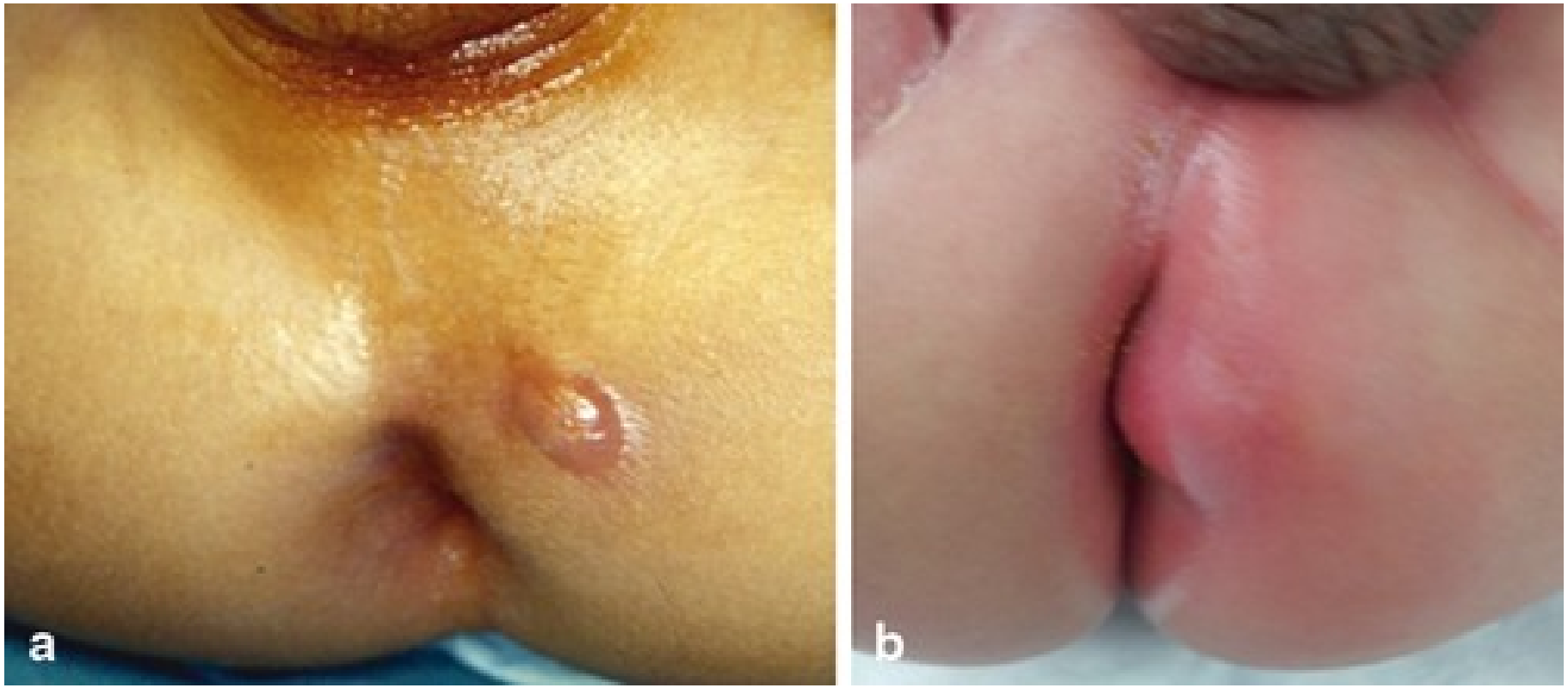
- Perianal:Perianal pain, discharge (pus) and fever,Tender, fluctuant, erythematous subcutaneous lump.
- Ischio-rectal:Chills, fever, ischiorectal pain,Indurated, erythematous mss, tender.
- Intersphincteric:Rectal pain, chills and fever, discharge
- Supralevator:PR tender. Difficult to identify are. EUA needed

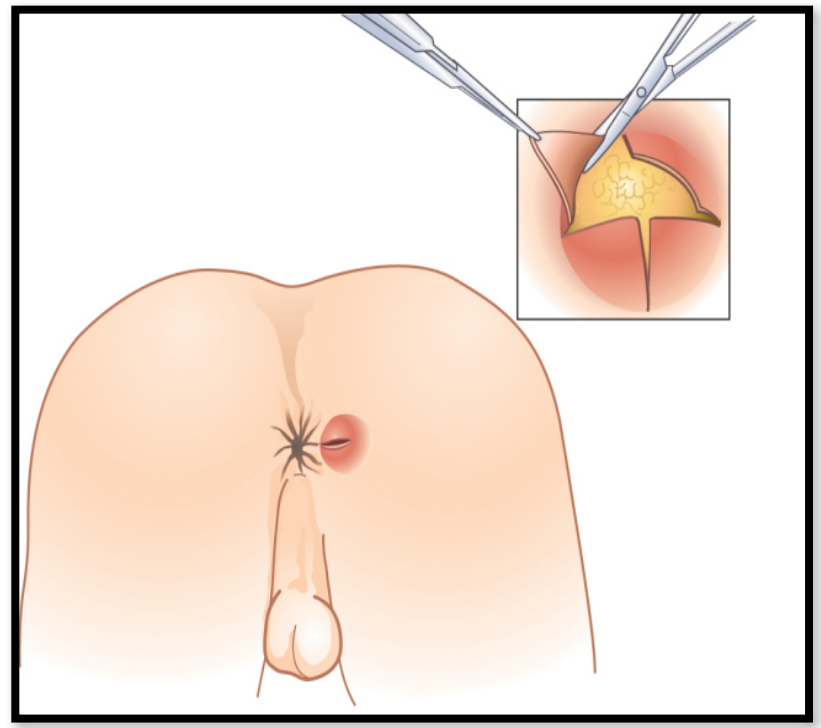
Table 13.2 Etiology of anorectal abscess

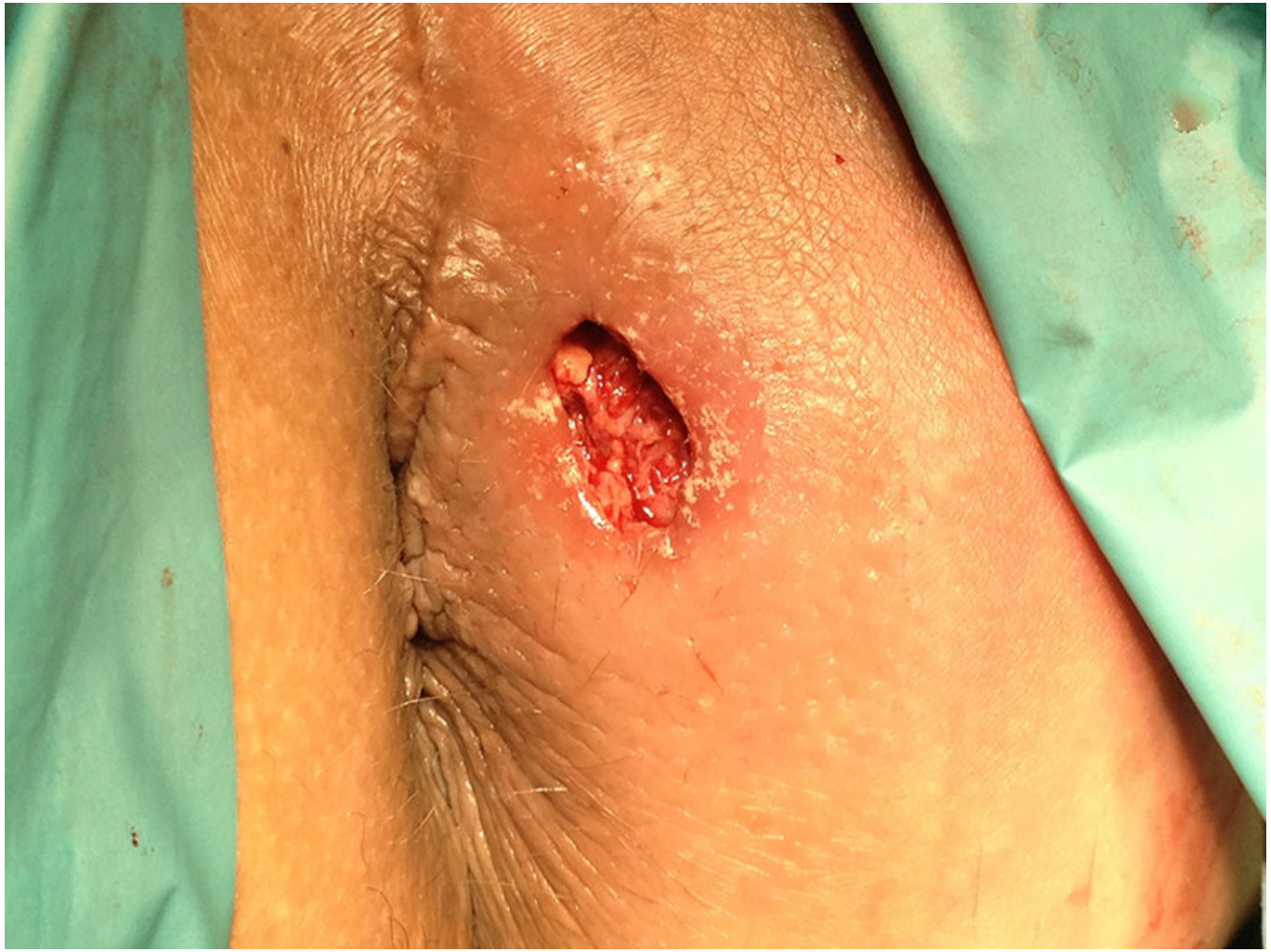
- Nonspecific
  - Cryptoglandular
- Specific
  - Inflammatory bowel disease
    - Crohn's disease
    - Ulcerative colitis
    - Infection
    - Tuberculosis
    - Actinomycosis
    - Lymphogranuloma venereum
  - Trauma
    - Impalement
    - Foreign body
    - Surgery
    - Episiotomy
    - Hemorrhoidectomy
    - Prostatectomy
  - Malignancy
    - Carcinoma
    - Leukemia
    - Lymphoma
    - Radiation

Treatment

- Abscesses should be drained when diagnosed.
- Simple and superficial abscesses can most often be drained under local anesthesia
- Patients who manifest systemic symptoms, immunocompromised and those with complex, complicated abscesses are best treated in a hospital setting.
- An intersphincteric abscess is drained by dividing the internal sphincter at the level of the abscess

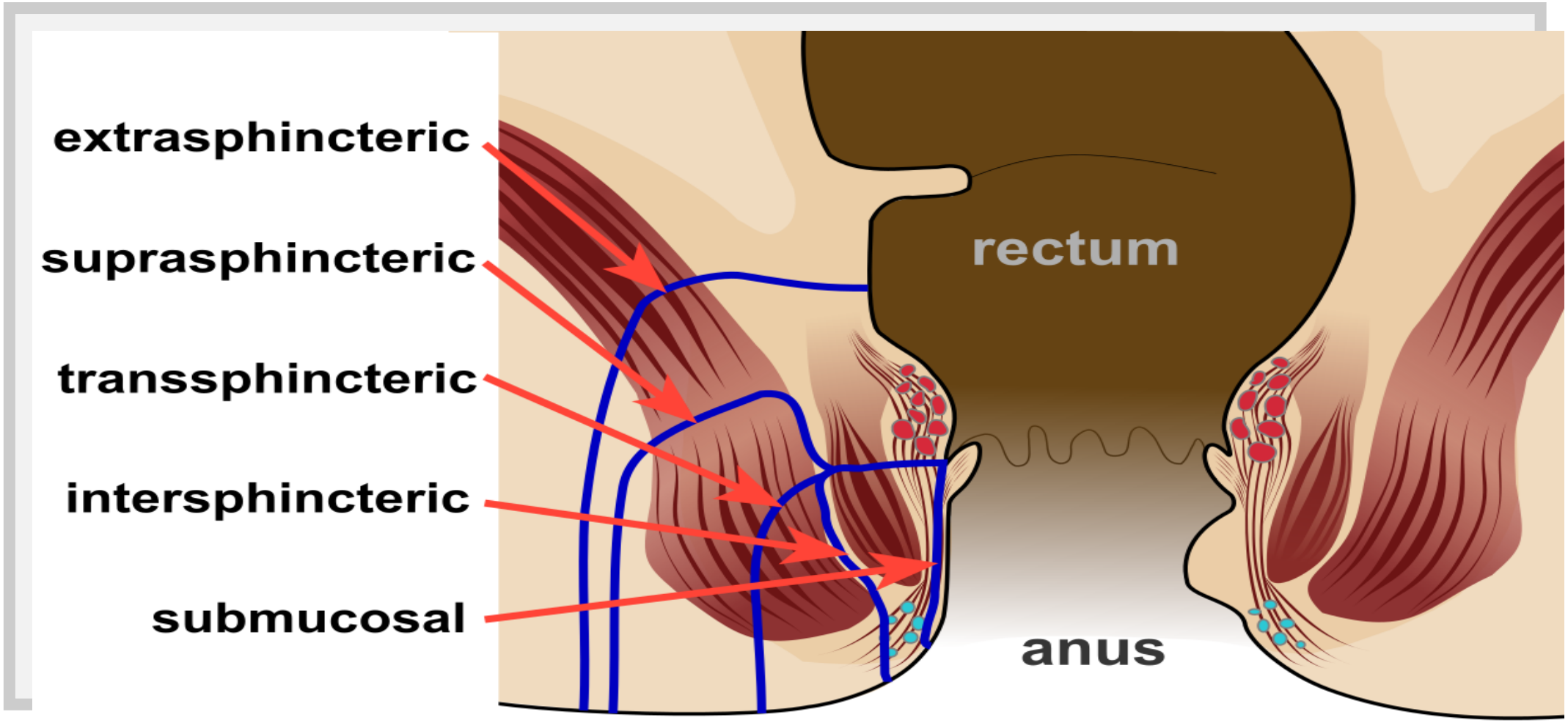

a
b

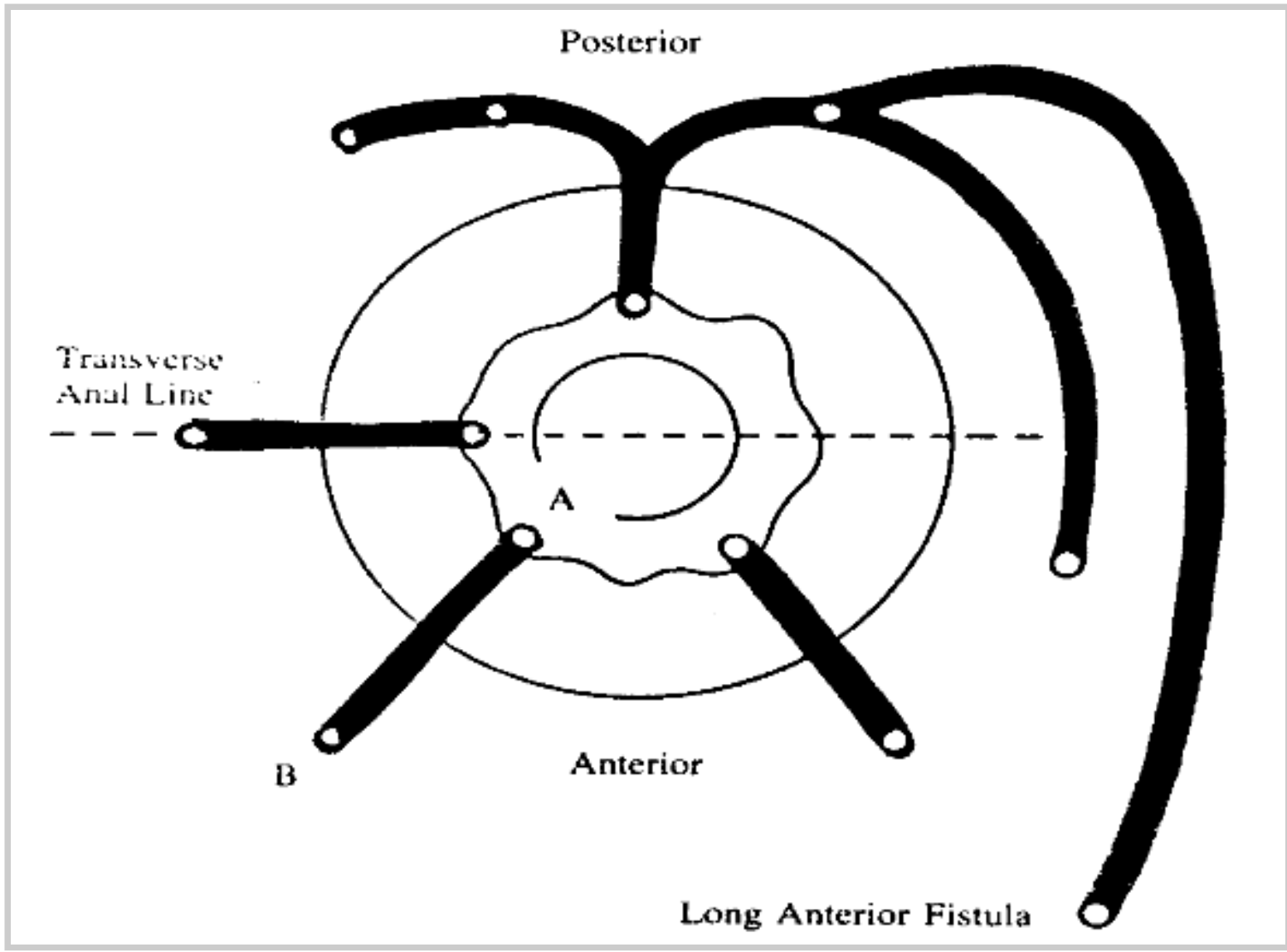


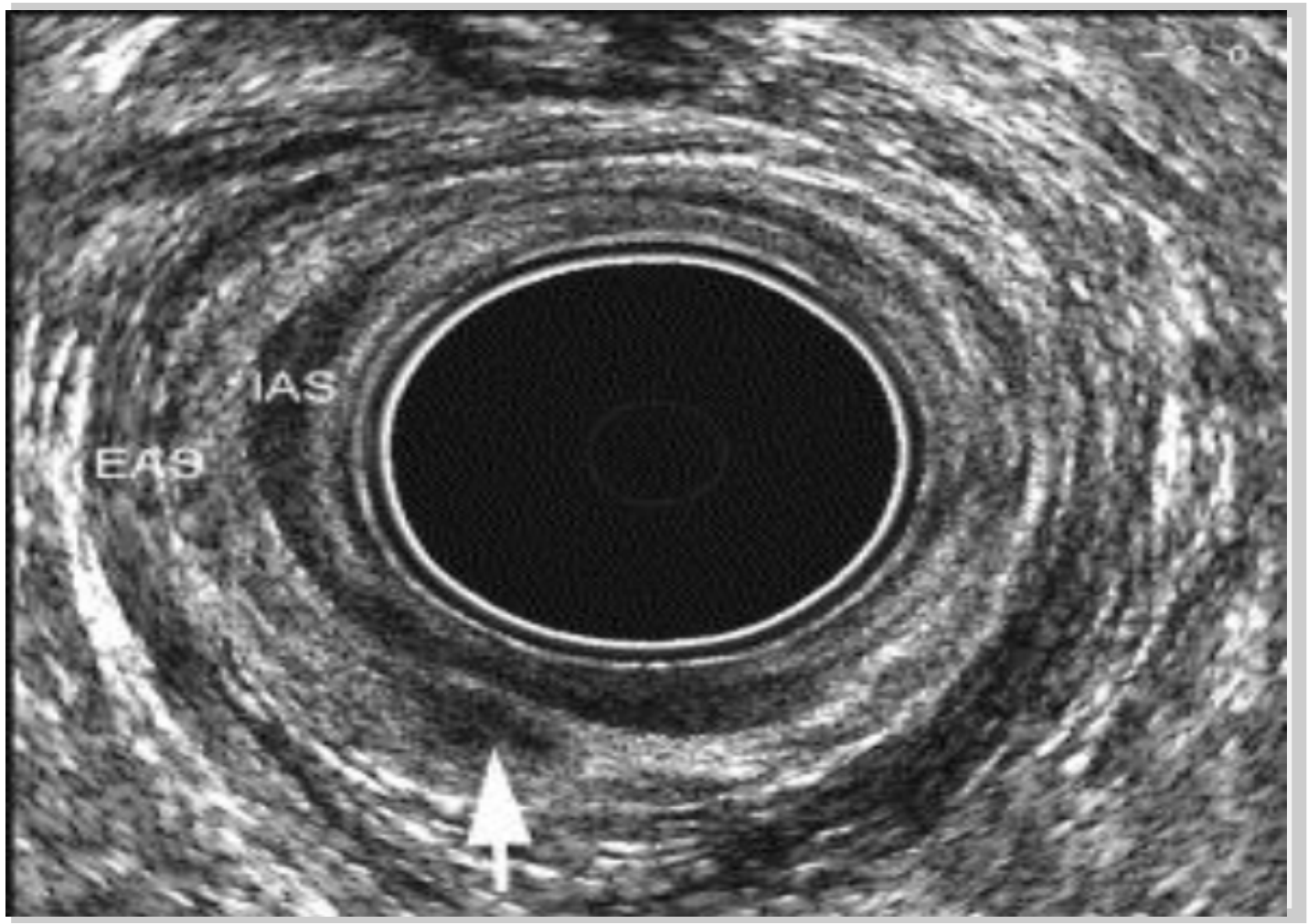


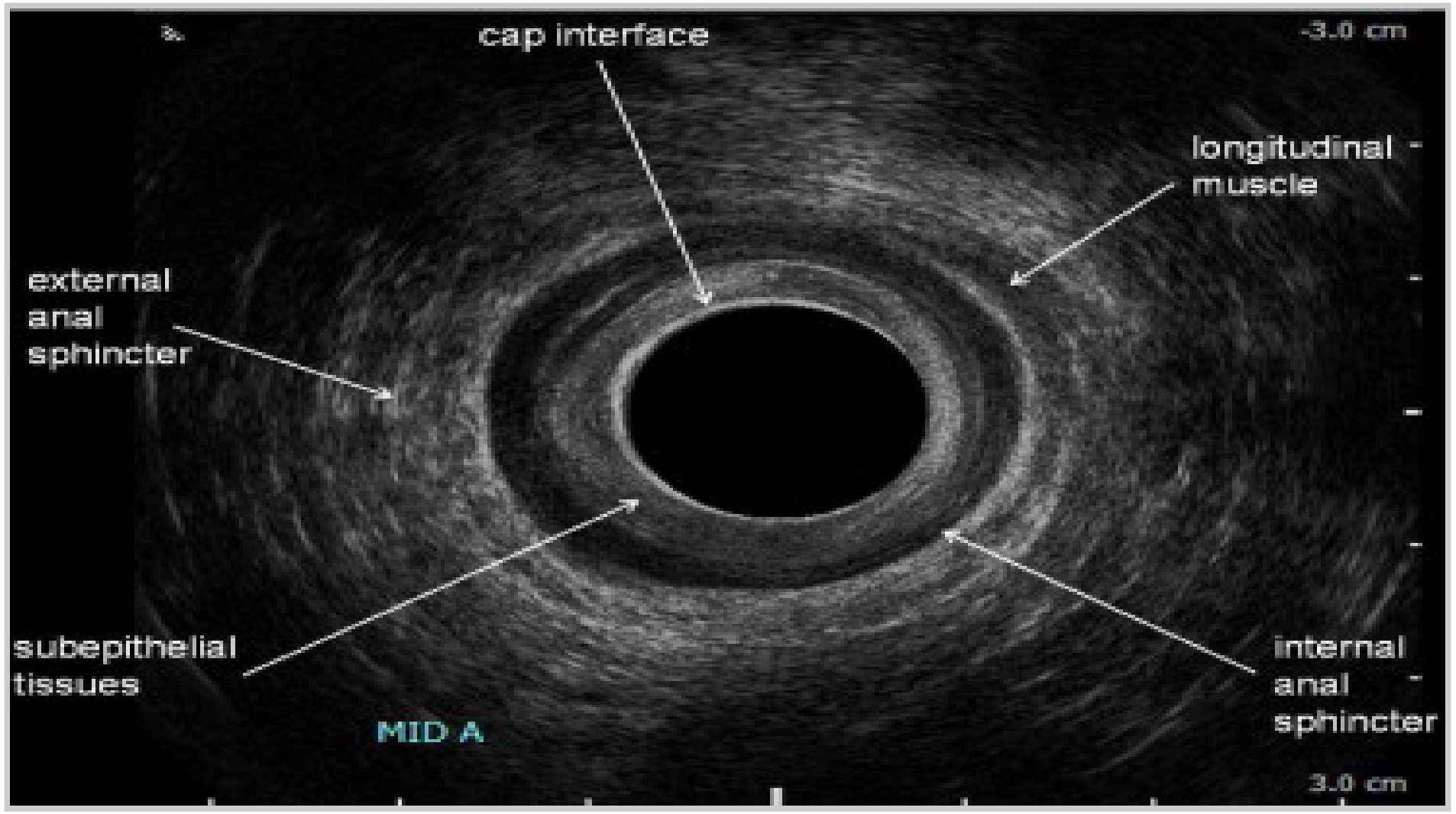
Anal Fistula

- **Definition:** It is an opening between perianal skin and the cavity of the anal canal or rectum.
- According to the site of their internal opening they can be classified into:
- **1. Low level fistula**, the internal opening open into the anal canal below the anorectal ring.
- **2. Highlevel fistula**, the internal opening open into the anal canal at or above the anorectal ring .


extrasphincteric
suprasphincteric
transsphincteric
intersphincteric
submucosal
rectum
anus

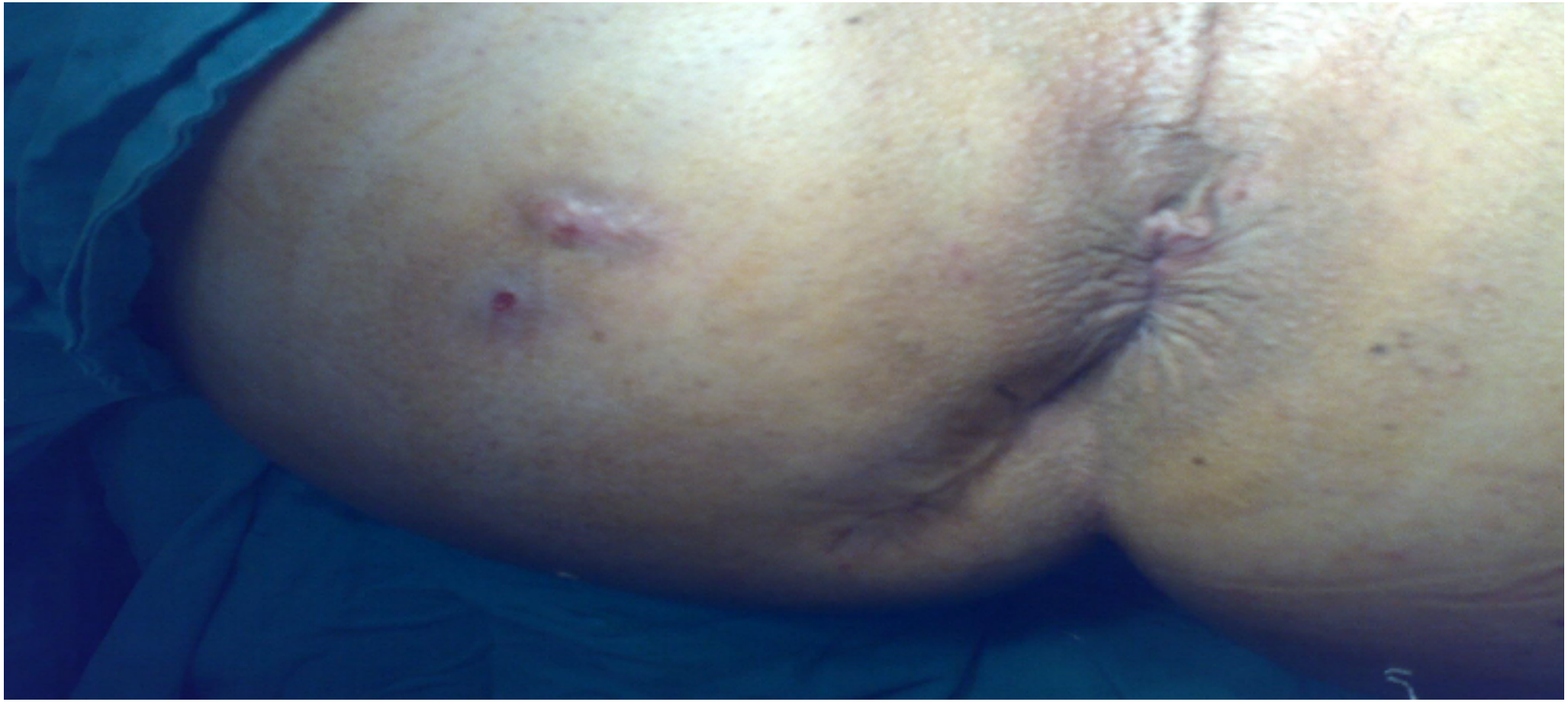

Posterior
Transverse
Anal Line
A
B
Anterior
Long Anterior Fistula

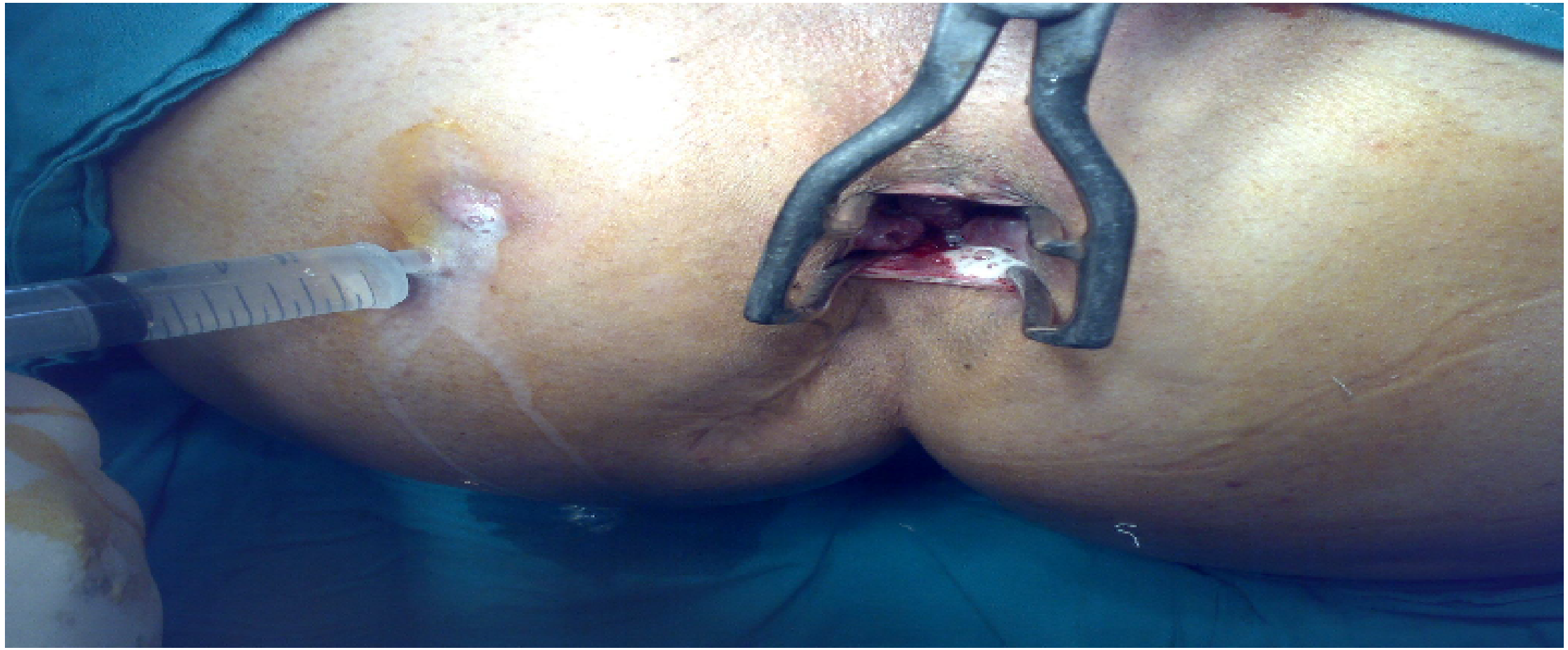

IAS
EAS

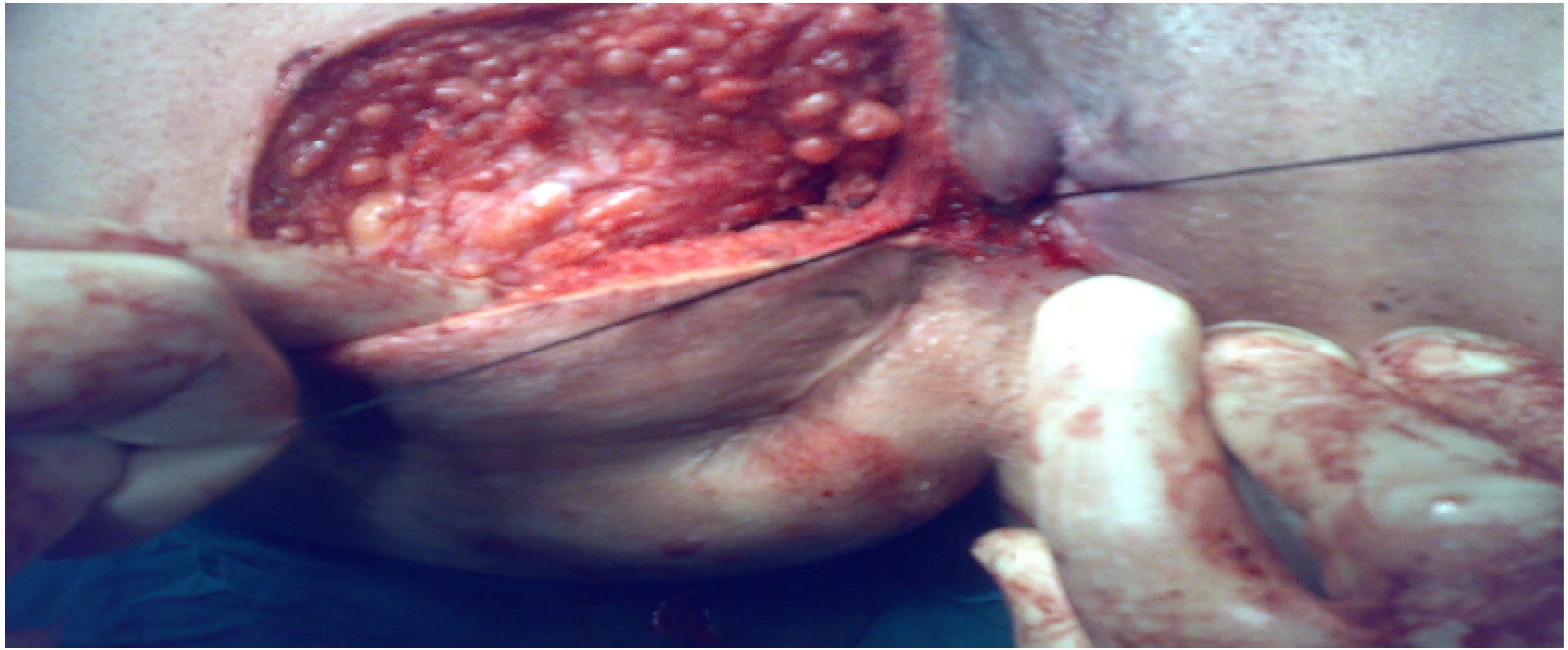

cap interface
longitudinal muscle
external anal sphincter
subepithelial tissues
internal anal sphincter
MID A
-3.0 cm
3.0 cm

- Principles of fistula surgery: Treatment of fistulas is aimed at draining sepsis,defining and eradicating fistulous tracts whilst preserving sphincter integrity and function.
- Fistulotomy and drainage: Fistulotomy means laying open and allowing to heal by secondary intention. It should be used only when a significant degree of incontinence would not result. Intersphincteric and low transsphincteric tracks are probably best treated by this method.
- Advancement flaps: The rectal advancement flap achieves healing of the fistula in a shorter time, & avoiding any sphincter division.

- Fistulectomy and coring out: Fistulectomy means to excises rather than to incise the fistula track. It has advantage of low rate of recurrence but it leads to greater tissue loss with delayed healing and more risk of incontinence *(Kronborg, 1985).*
- Setons: A seton is used as a drain for the primary track, but use of the seton to transect the muscle carries a significant risk of incontinence Setons may be classified as loose, tight or chemical according to their different properties and modes of action *(Fleshman et al., 1999)*







PILONIDAL SINUS

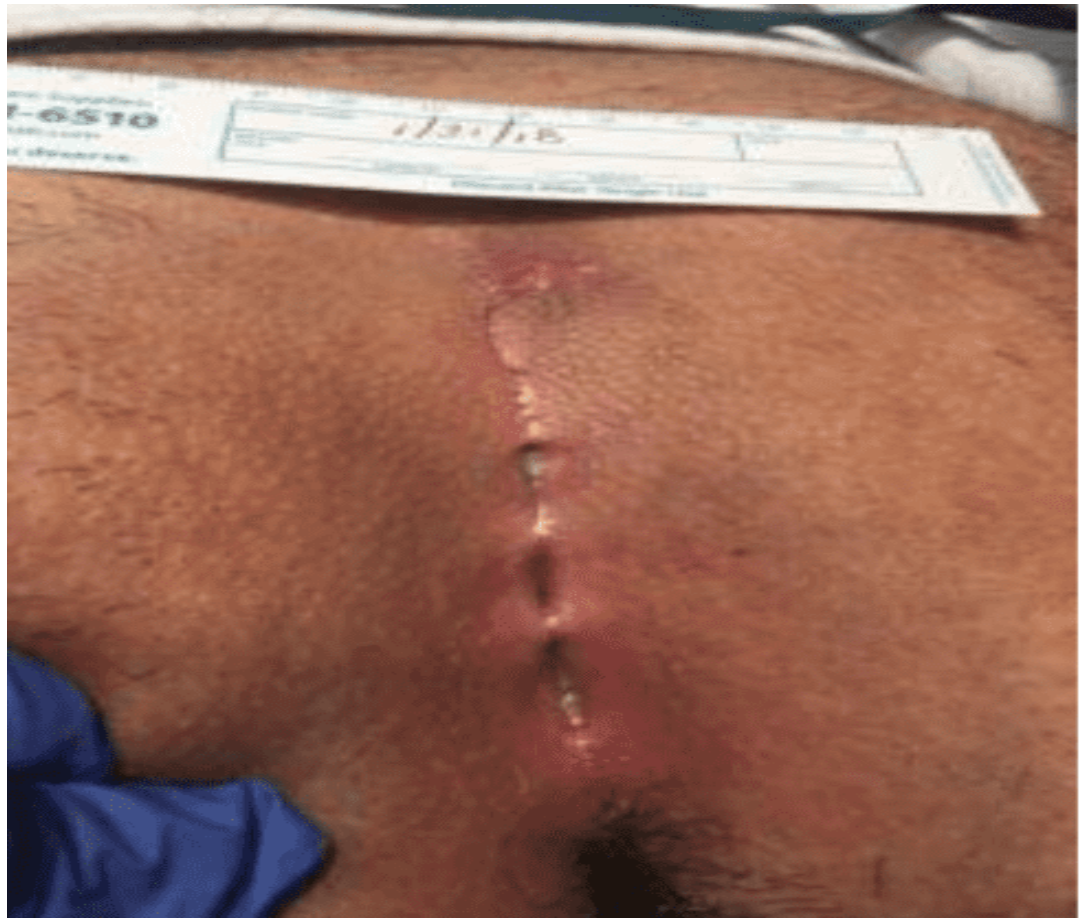
- The term ‘‘pilonidal sinus’ ’ (pilus, meaning hair, and nidus, meaning nest) to describe the chronic sinus containing hair and found between the buttocks.
- Pilonidal sinus is a chronic subcutaneous abscess in the natal cleft, which spontaneously drains through the openings.
- The acquired theory is now widely accepted. The affected hair follicles become distended with keratin and subsequently infected, leading to folliculitis and the formation of an abscess that extends down into the subcutaneous fat.

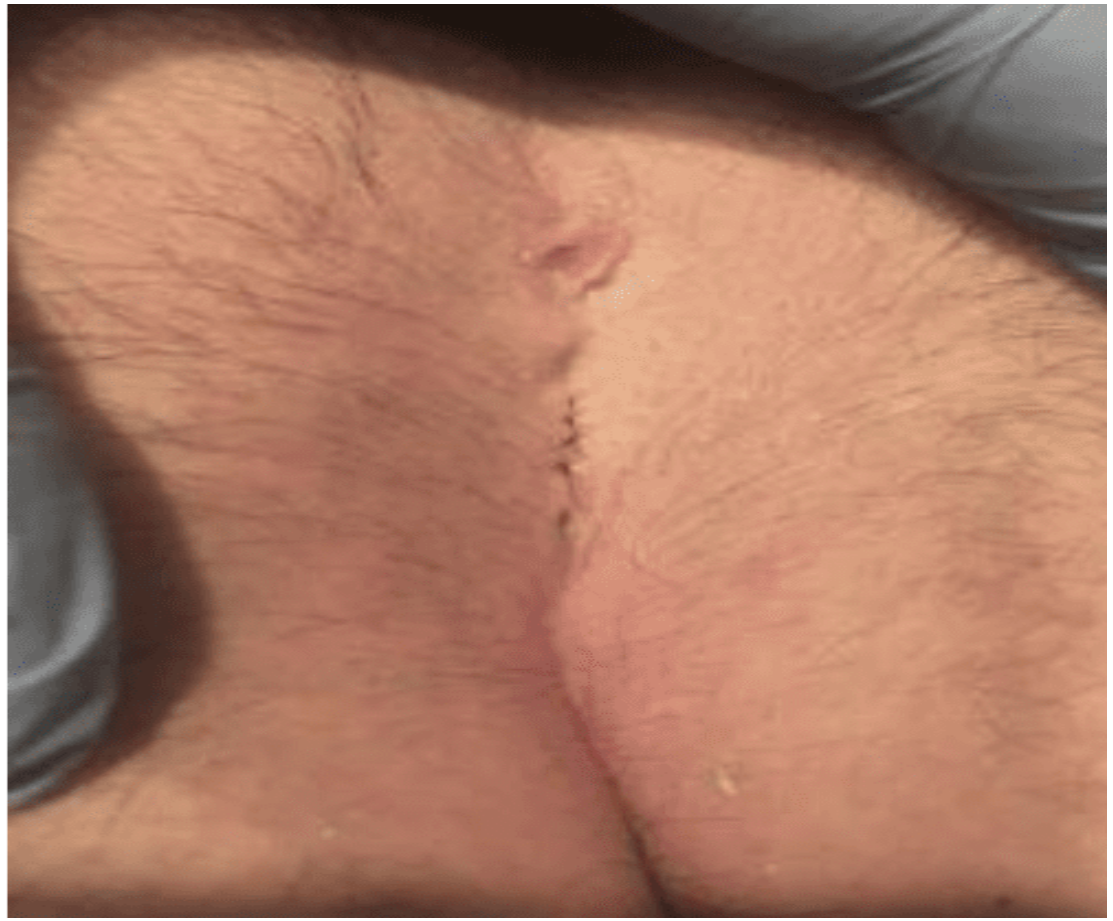
- Treatment of pilonidal sinus can be done in one of several ways:

1. Nonoperative treatment,

2. Lateral incision and excision of midline pits, incision and marsupialization,

3. Wide local excision with or without primary closure, excision and a ZPlasty,or badvancing flap operation





Rectal prolapse

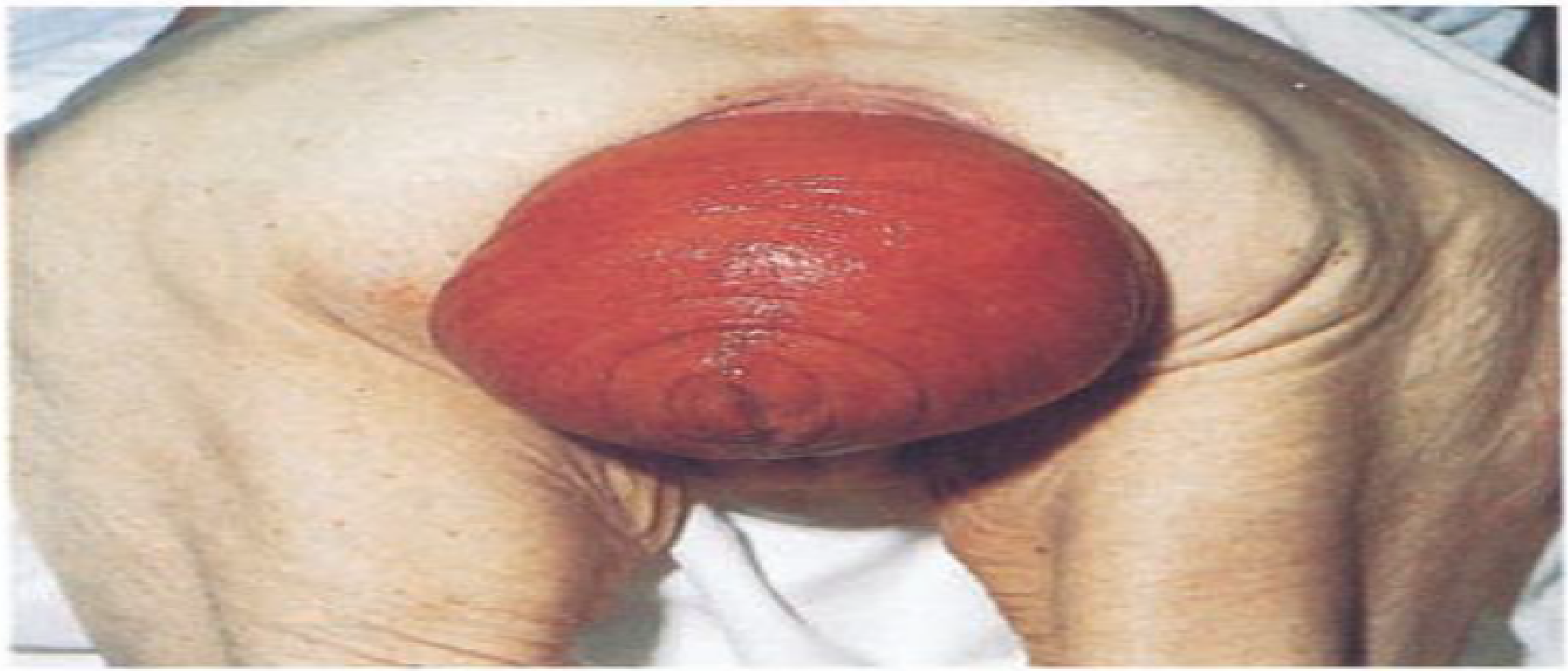
- Rectal prolapse is the protrusion of a few or all layers of the rectal mucous membrane through the anus.
- Prolapse of the rectum may involve only the mucosa, or it may involve all layers of the rectum protruding through the anus (procidentia) .
- Most cases of childhood prolapse occur in patients younger than 4 years. Equal in both sex, Pediatric rectal prolapse is more common in tropical and underdeveloped countries, where diarrhea and parasitic infection play much greater roles.

1. **Increased intraabdominal pressure** Straining due to constipation, toilet training, protracted coughing (pertussis), excessive vomiting
2. **Parasitic** Trichuriasis (whipworm), Entamoeba histolytica; and Giardia
3. **Neoplastic** disease Polyps
4. **Malnutrition** Loss of ischiorectal fat reduces perirectal support.
5. **Cystic fibrosis**

- – This accounts for about 11% of rectal prolapse.
- – Sweat test is diagnostic.

6. **Ulcerative colitis**
7. **EhlersDanlos Syndrome**
8. **Rectal neoplasm**
9. **Previously repaired anorectal anomaly**

- Conditions with increased intraabdominal pressure
  - Constipation
  - Diarrhea
  - Benign prostatic hypertrophy
  - Chronic obstructive pulmonary disease (COPD)
  - Cystic fibrosis
  - Pertussis (i e, whooping cough)
- Pelvic floor dysfunction
- Parasitic infections
  - Amebiasis
  - Schistosomiasis
- Neurologic disorders
  - Previous lower back or pelvic trauma/lumbar disk disease
  - Cauda equina syndrome
  - Spinal tumors
- – Multiple sclerosis



- Perineal procedures have a higher recurrence rate but a lower morbidity rate and are often performed in the elderly population or inpatients who have a contraindication to general anesthetic.
- **Anal encirclement (Thiersch wire)** This procedure is no longer performed
- **Delorme mucosal sleeve resection** This procedure is often used for small prolapses
- **Altemeier perineal Rectosigmoidectomy**
- **Surgery for mucosal prolapse**

Thank you