Anus Benign

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Objectives

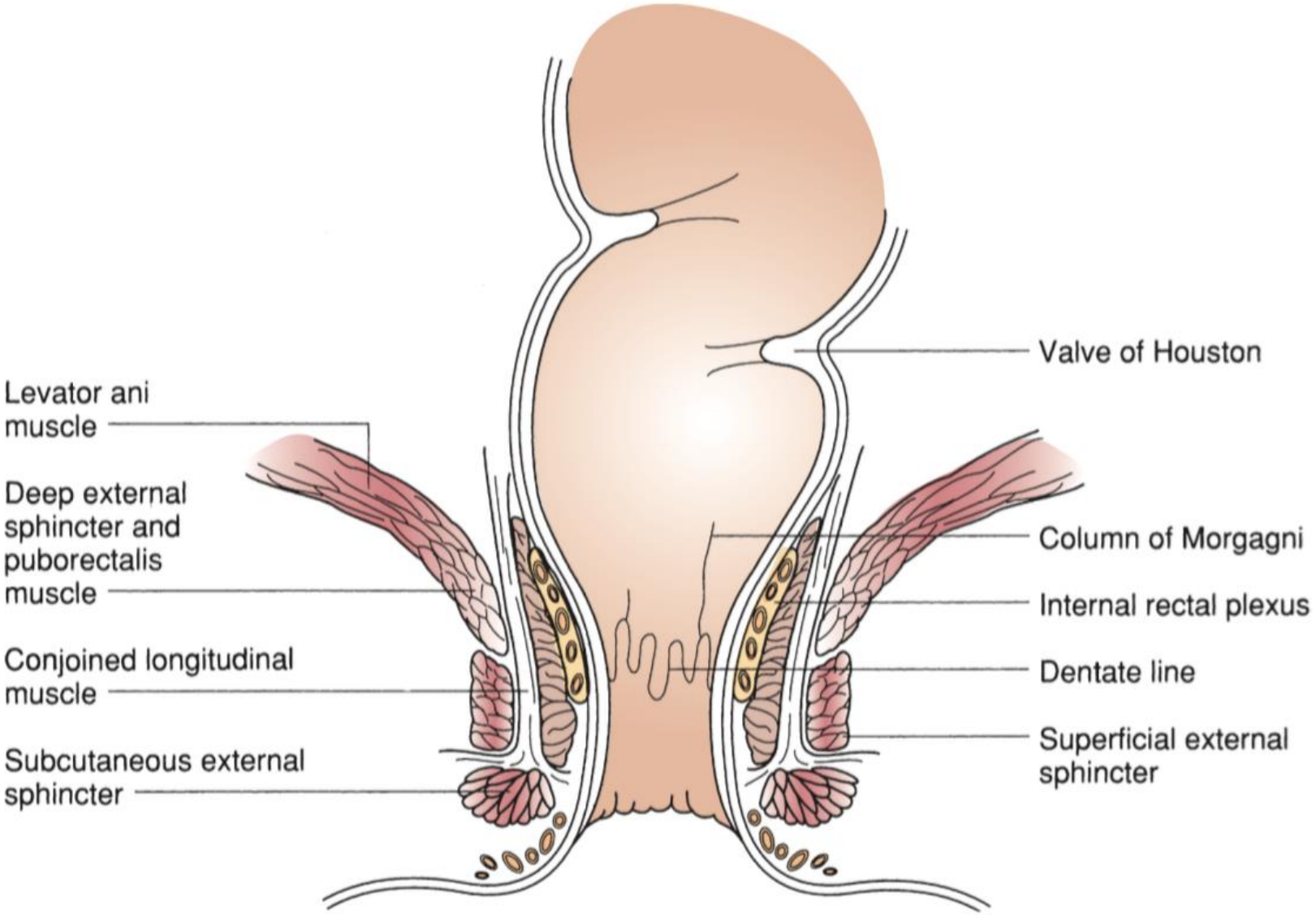
Medical Expert:

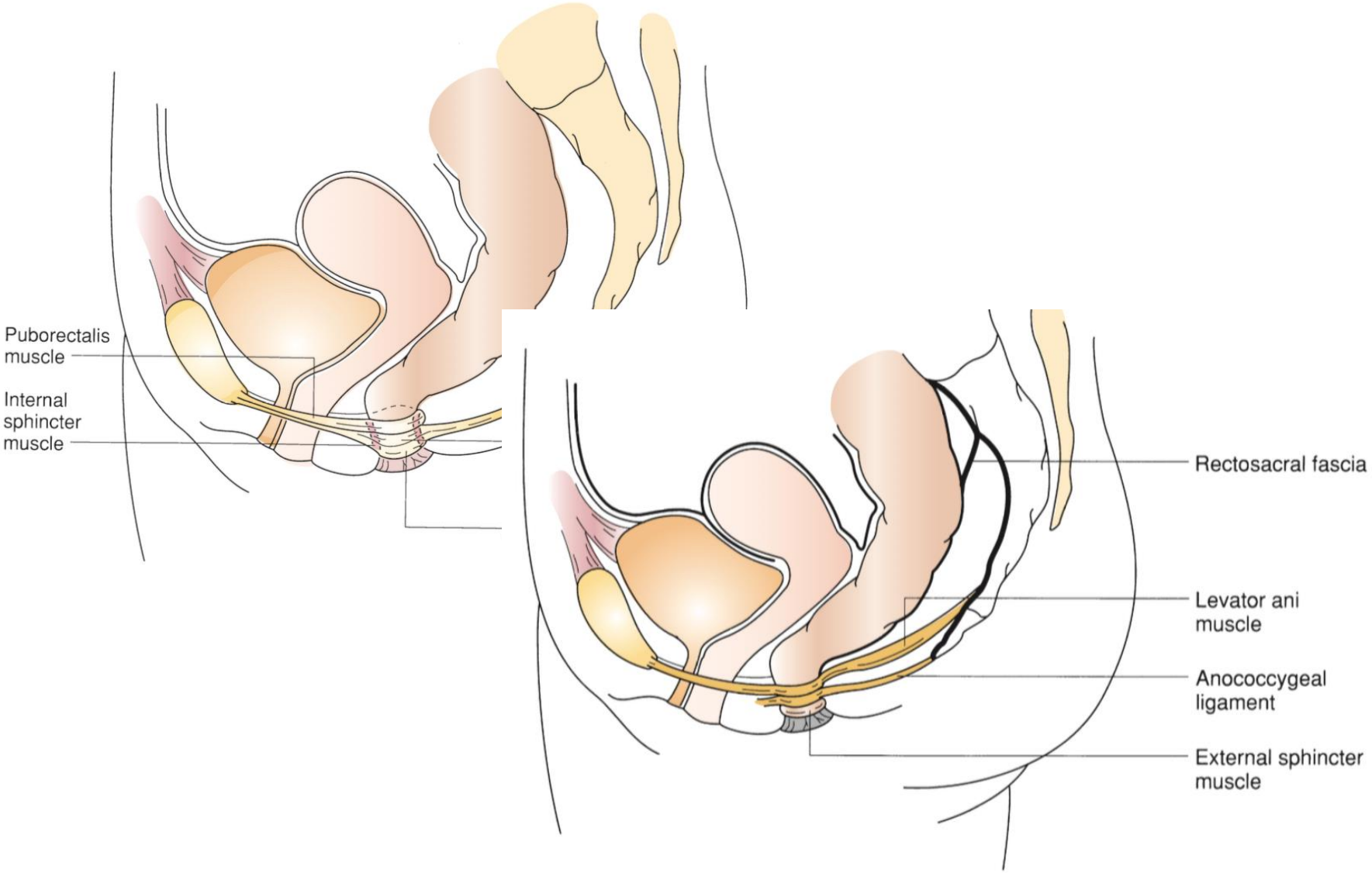
1. Anal canal anatomy, histology, innervation and pelvic floor association
2. Etiology and management of hemorrhoids
3. Complications of office and surgical hemorrhoid procedures
4. Presentation, medical and surgical management of acute and chronic anal fissure
5. Classification and management of ano-rectal abscess
6. Classification and management of ano-rectal fistula
7. Etiology and management of pilonidal disease
8. Management of hidradenitis suppurativa
9. Etiology and management of purities ani

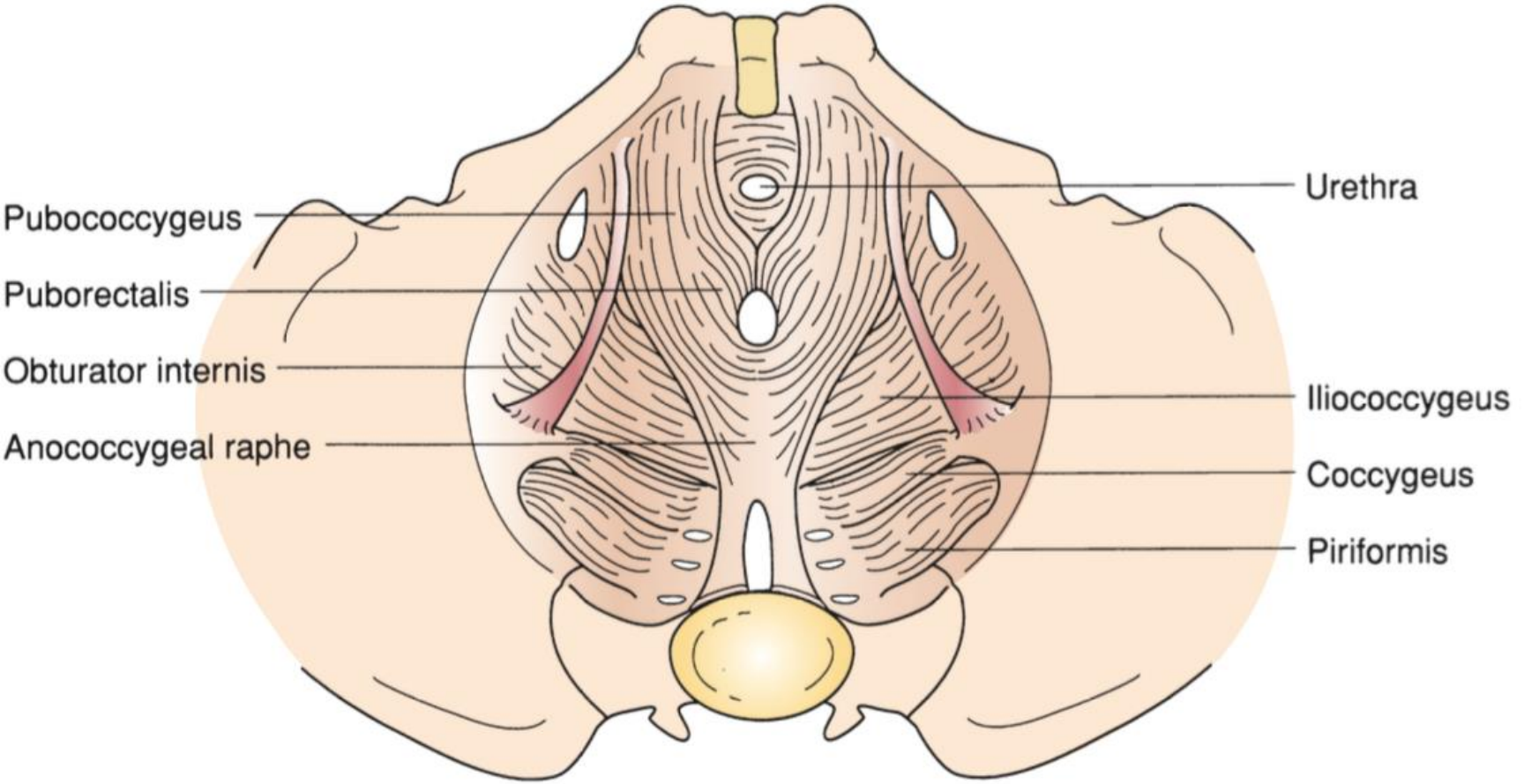
Collaborator:

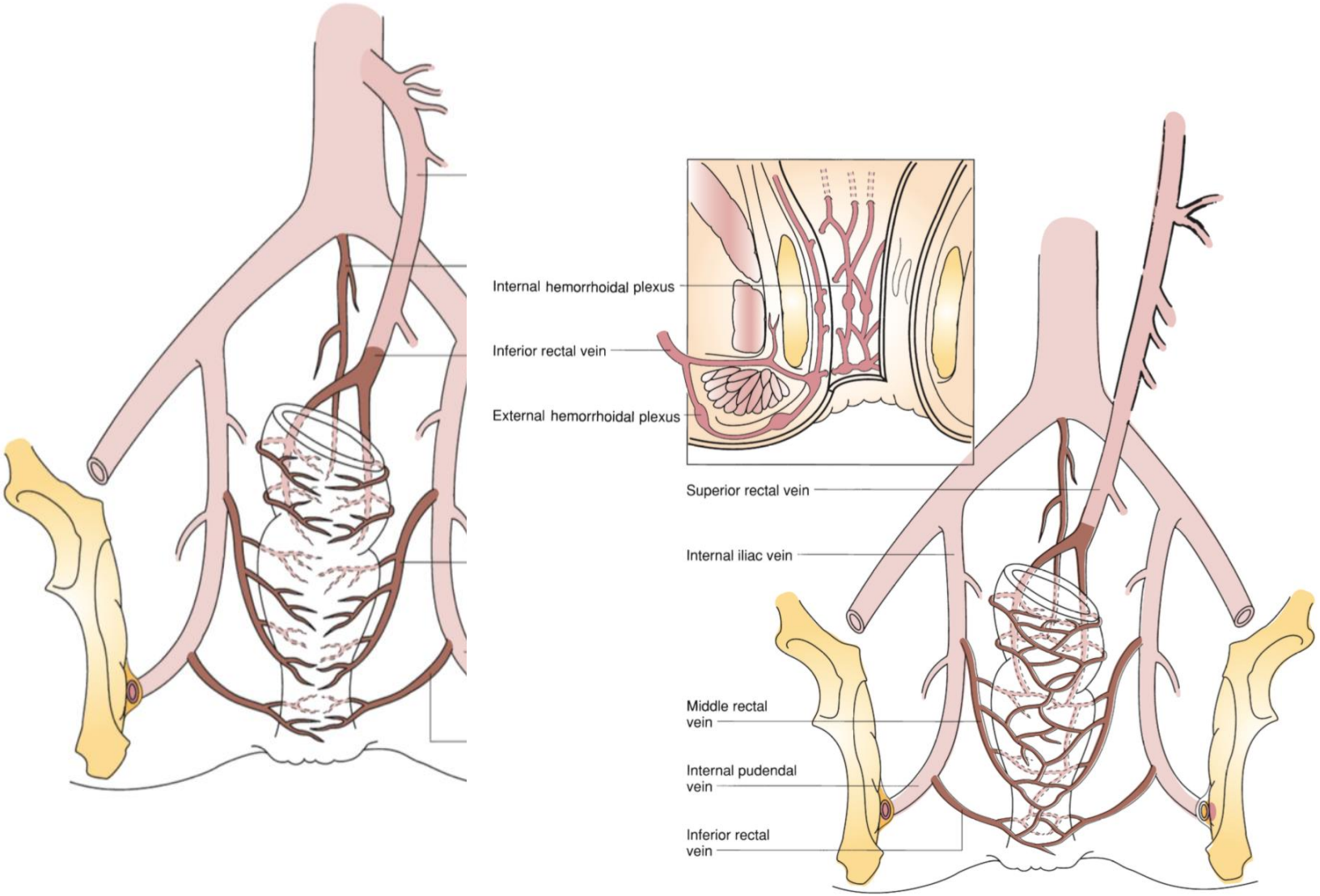
1. Role of imaging in ano-rectal abscess and fistula

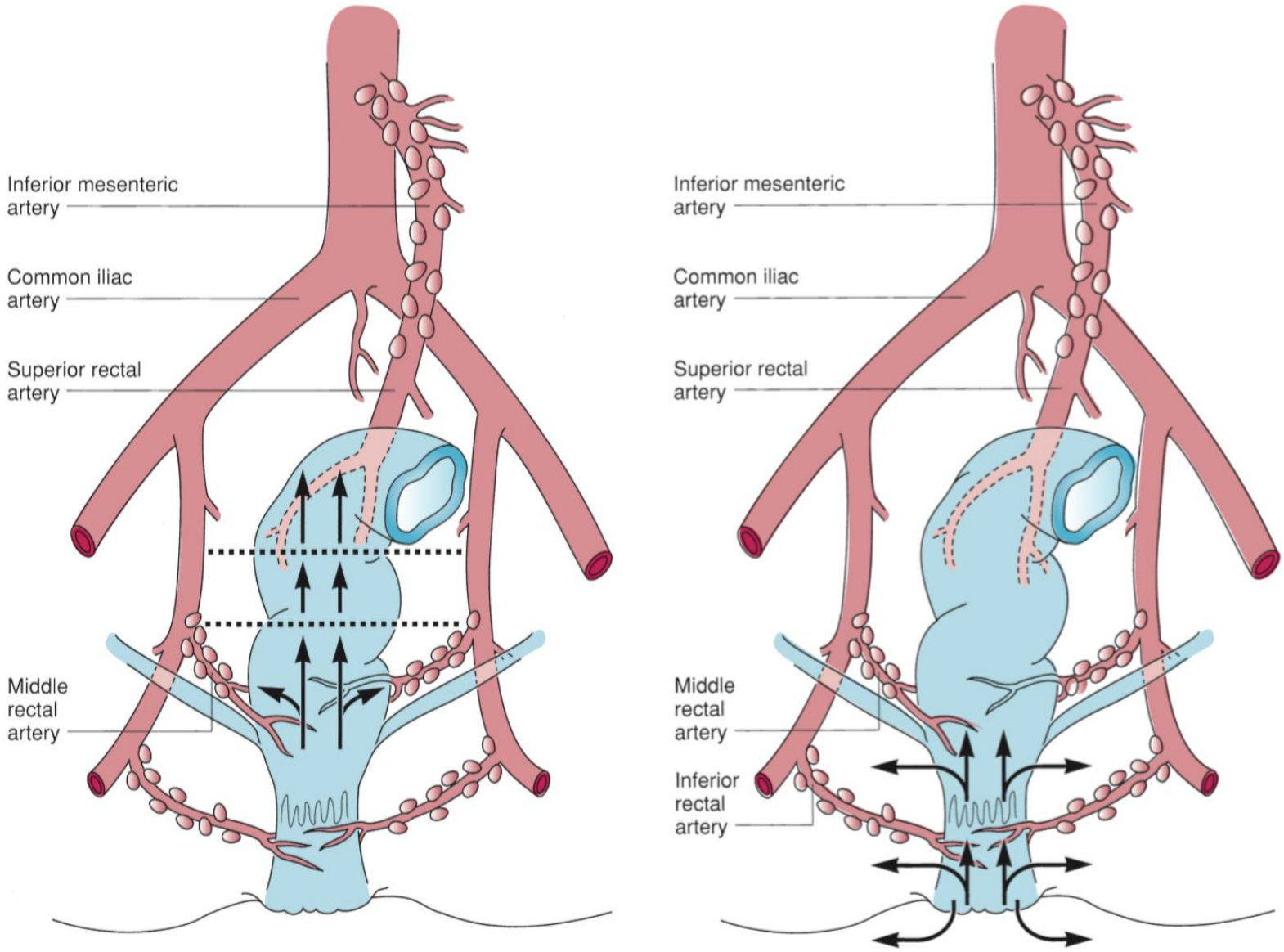
Anatomy

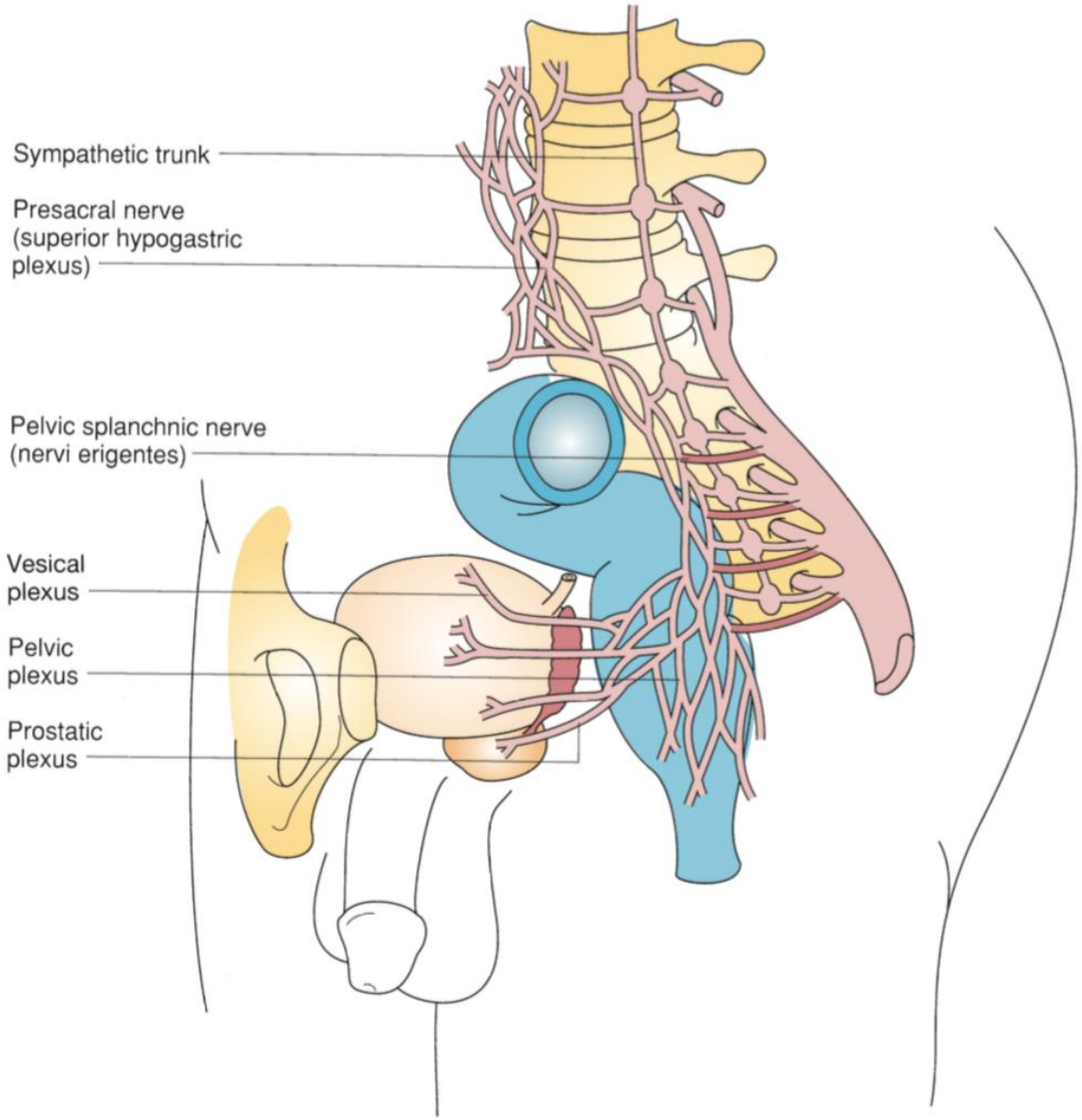

Valve of Houston
Levator ani muscle
Deep external sphincter and puborectalis muscle
Column of Morgagni
Internal rectal plexus
Conjoined longitudinal muscle
Dentate line
Superficial external sphincter
Subcutaneous external sphincter


Puborectalis muscle
Internal sphincter muscle
Rectosacral fascia
Levator ani muscle
Anococcygeal ligament
External sphincter muscle


Pubococcygeus
Puborectalis
Obturator internis
Anococcygeal raphe
Urethra
Iliococcygeus
Coccygeus
Piriformis


Internal hemorrhoidal plexus
Inferior rectal vein
External hemorrhoidal plexus
Superior rectal vein
Internal iliac vein
Middle rectal vein
Internal pudendal vein
Inferior rectal vein


Inferior mesenteric artery
Common iliac artery
Superior rectal artery
Middle rectal artery
Inferior mesenteric artery
Common iliac artery
Superior rectal artery
Middle rectal artery
Inferior rectal artery


Sympathetic trunk
Presacral nerve
(superior hypogastric
plexus)
Pelvic splanchnic nerve
(nervi erigentes)
Vesical
plexus
Pelvic
plexus
Prostatic
plexus

Hemorrhoids

Hemorrhoids

What is it: downward displacement of anal cushions (**left lateral, right anterior, right posterior**) along with dilation of the sinusoids, and sometimes bleeding from the arterial, venous, or sinusoidal portions

External hemorrhoids: original location BELOW the dentate line (covered with squamous epithelium)

Thrombosed external hemorrhoids: intravascular clots in the sinusoids or venules of the external hemorrhoids

Internal hemorrhoids: original location ABOVE the dentate line, covered with epithelium of the transitional zone; these are graded according to degree of prolapse

Internal hemorrhoids

TABLE 70.1 CLASSIFICATION

GRADING OF INTERNAL HEMORRHOIDS

DEGREE	DESCRIPTION
First	Hemorrhoids bleed but do not prolapse
Second	Hemorrhoids prolapse on straining but reduce spontaneously
Third	Hemorrhoids prolapse and require manual reduction
Fourth	Prolapsed hemorrhoids cannot be manually reduced

Clinical Presentation

Common complaints include:

- Burning
- Itching
- Swelling
- Pain from pruritus ani, anal abrasion, anal fissure, thrombosed external hemorrhoids

Internal hemorrhoids:

- Painless
- Bright red blood per rectum associated with bowel movements
- Prolapsed tissue with defecation
- Symptoms are aggravated by constipation and diarrhea
- A feeling of incomplete evacuation is common
- “blood dripping into toilet bowel”

Physical exam

Positi

Inspec

•excor ze

•Scarri

•Fissu nd usually

•Exter

•Prola

•Exter

Scopes

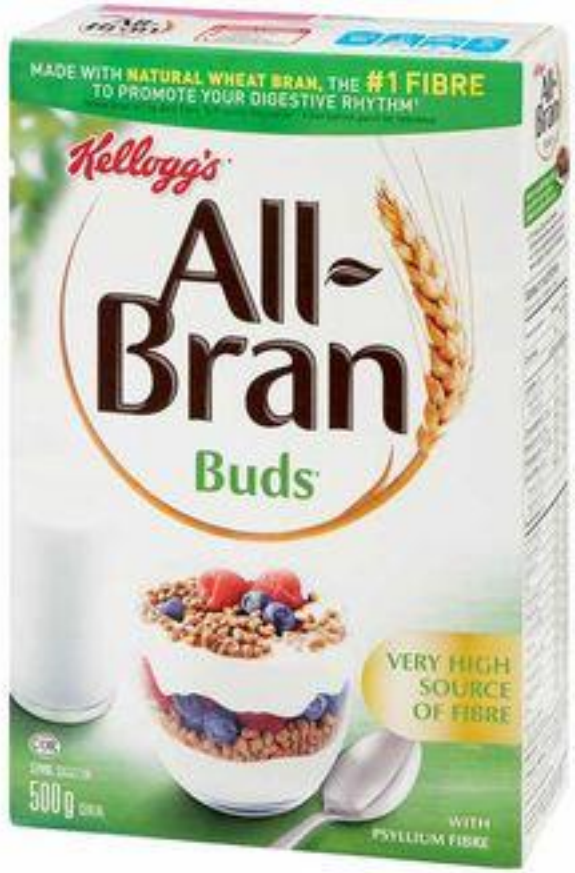
Anoscopy

- Should not do in patients with acutely painful conditions
- Often inserting the anoscope reduces any hemorrhoidal prolapse and will typically show mucosal redundancy above the dentate line
- May detect other lesions such as warts or a hypertrophic anal papilla

Flexible sigmoidoscopy

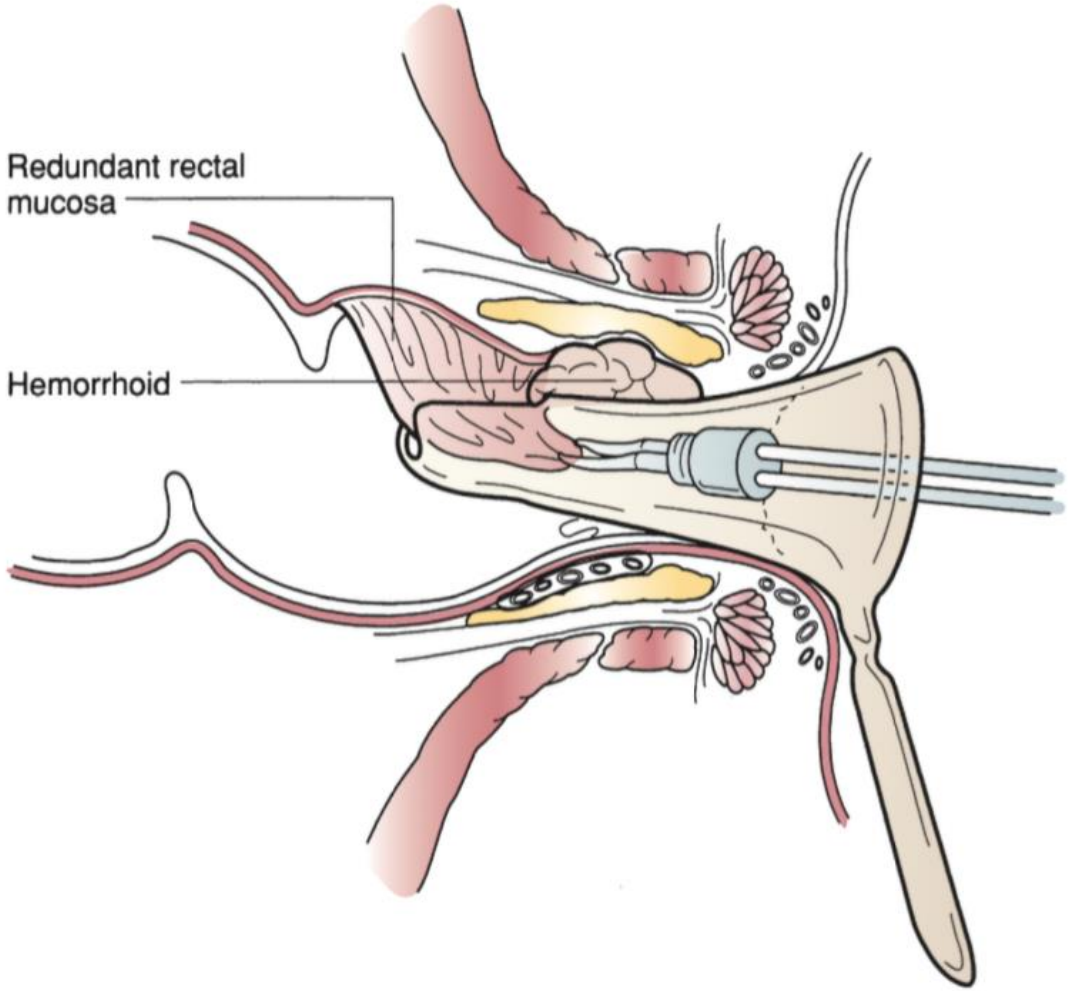
- Should be used in all cases where bleeding is present
- Rule out polyps, carcinoma, IBD

Management


MADE WITH NATURAL WHEAT BRAN, THE #1 FIBRE TO PROMOTE YOUR DIGESTIVE RHYTHM
Kellogg's
All-Bran
Buds
VERY HIGH SOURCE OF FIBRE
500 g
WITH PSYLLIUM FIBRE

YOUR
BER

Rubber band ligation



- Symptomatic first, second, and certain third degree internal hemorrhoids
- Office procedure
- Pinch test for somatic sensation
- Ligation of up to 3 hemorrhoids at one setting
- Overall painless
- 80% success rate
- 30% recurrence rate
- Complications:
  - Bleeding
  - Thrombosis
  - bacteremia

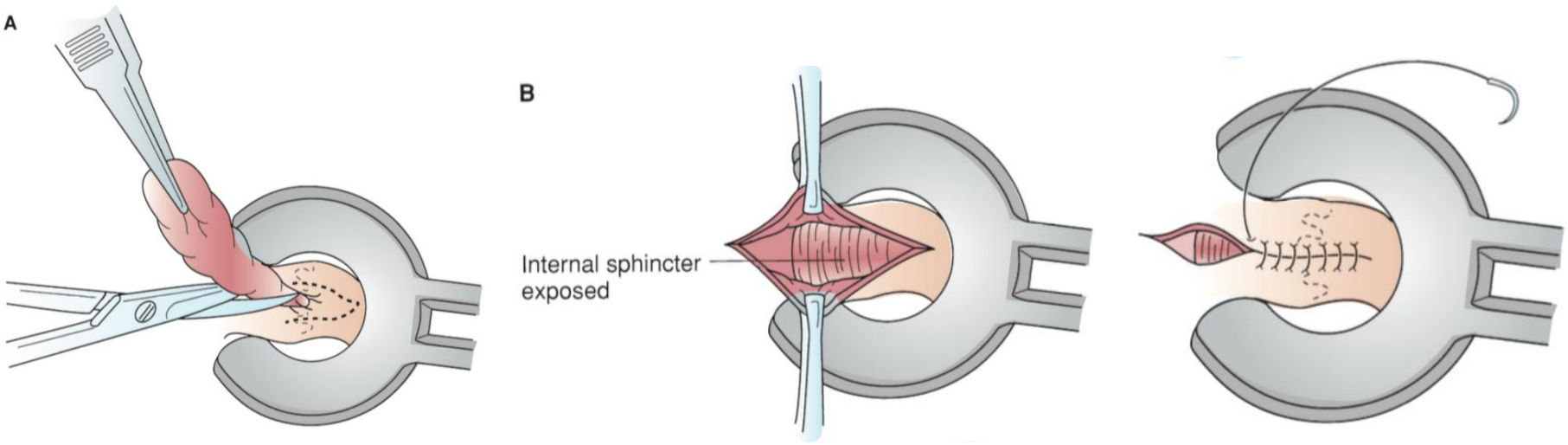
Sclerotherapy

- Office procedure
- First, second degree hemorrhoids
- Injection substances include:
  - Phenol
  - Oliver oil
  - Sodium tetradecyl sulfate
- Can be used for hemorrhoids that are too small to band
- Anoscope, narrow-gauge needle, and 1-2 mL of sclerosant into the submucosal space just proximal to the hemorrhoidal bundle

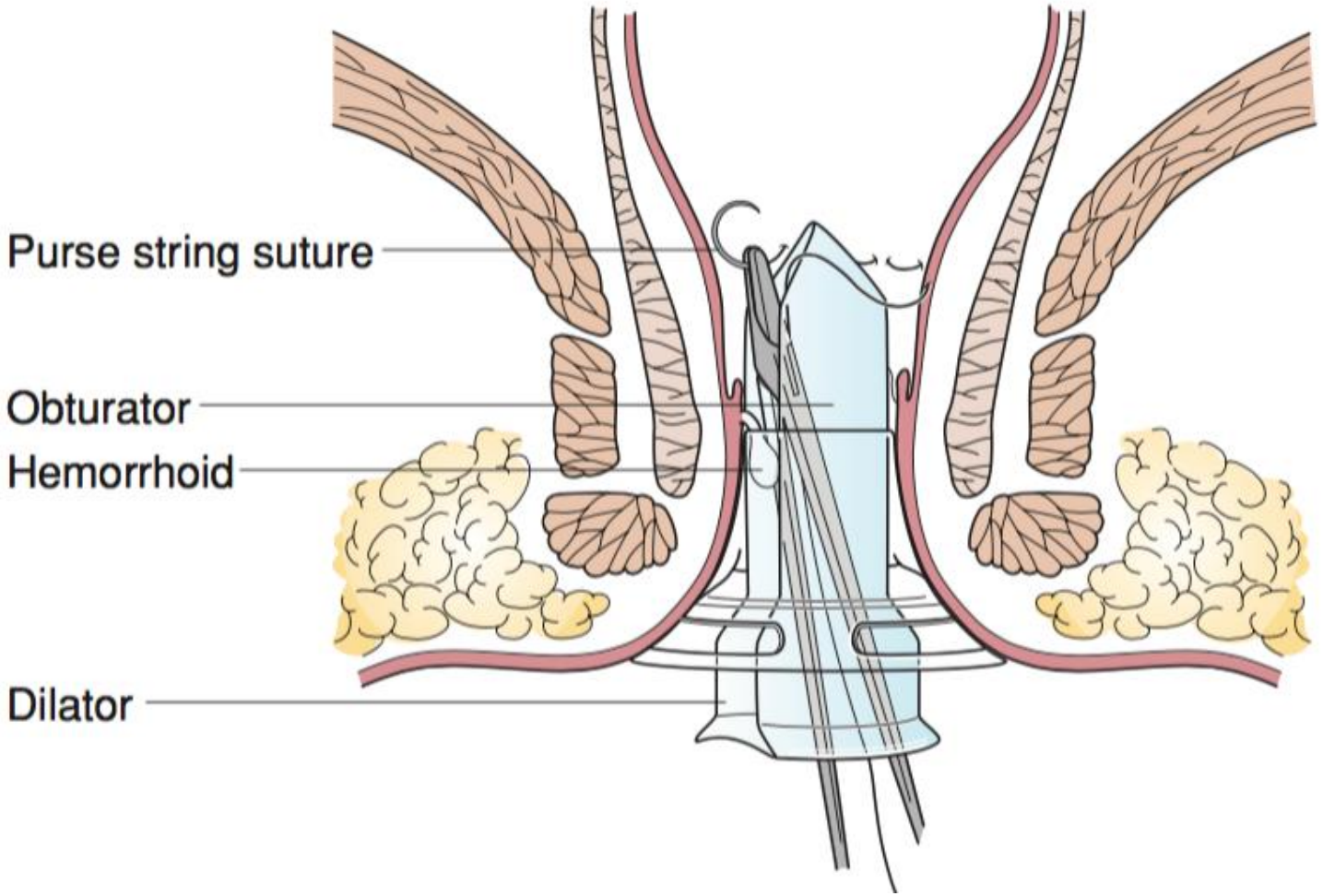
Hemorrhoidectomy

Indications

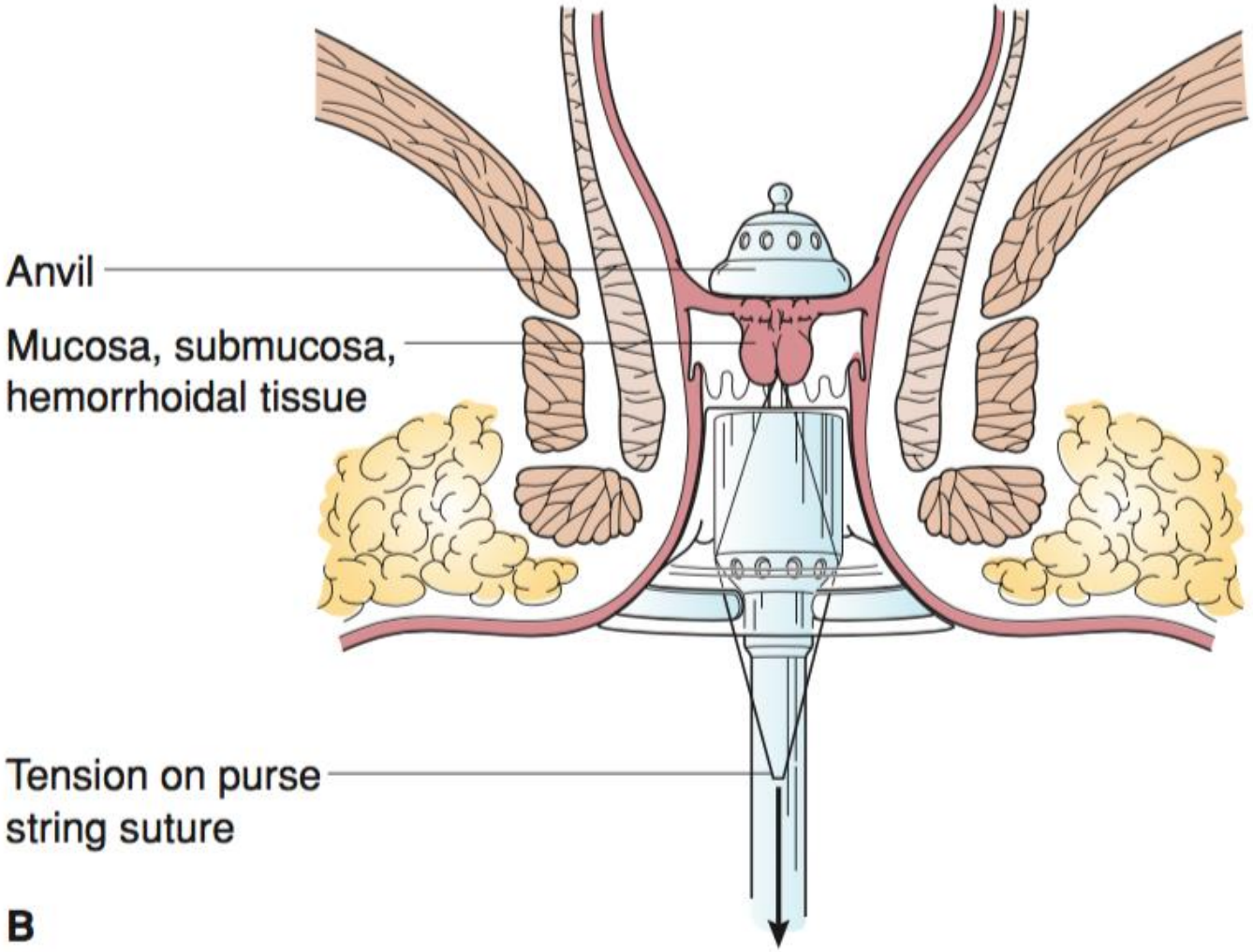
- Mixed internal and external hemorrhoids
- Severely prolapsed
- Complicated with ulceration, fissures, fistulas, or extensive skin tags



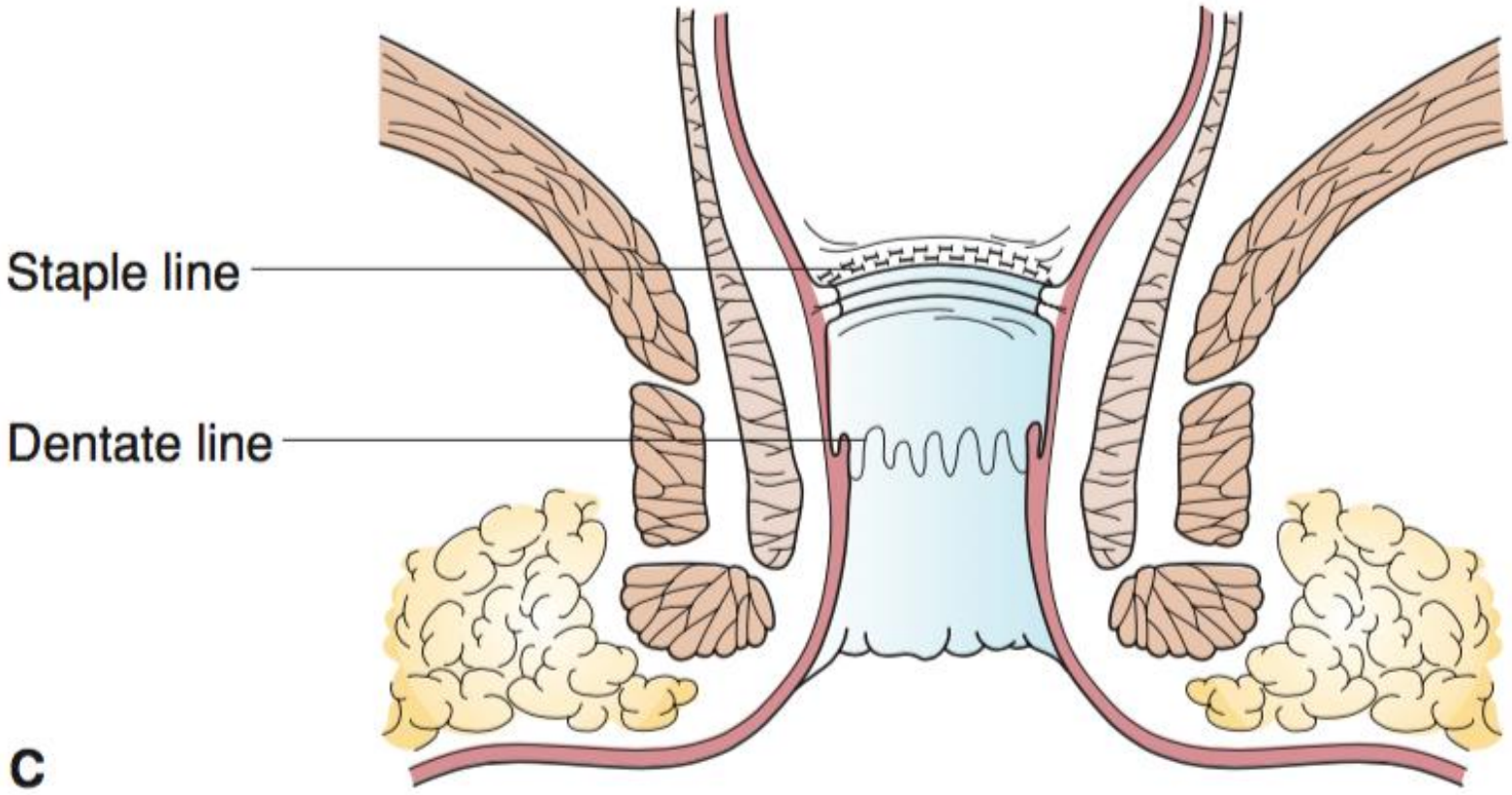
Procedure for Prolapse and Hemorrhoids

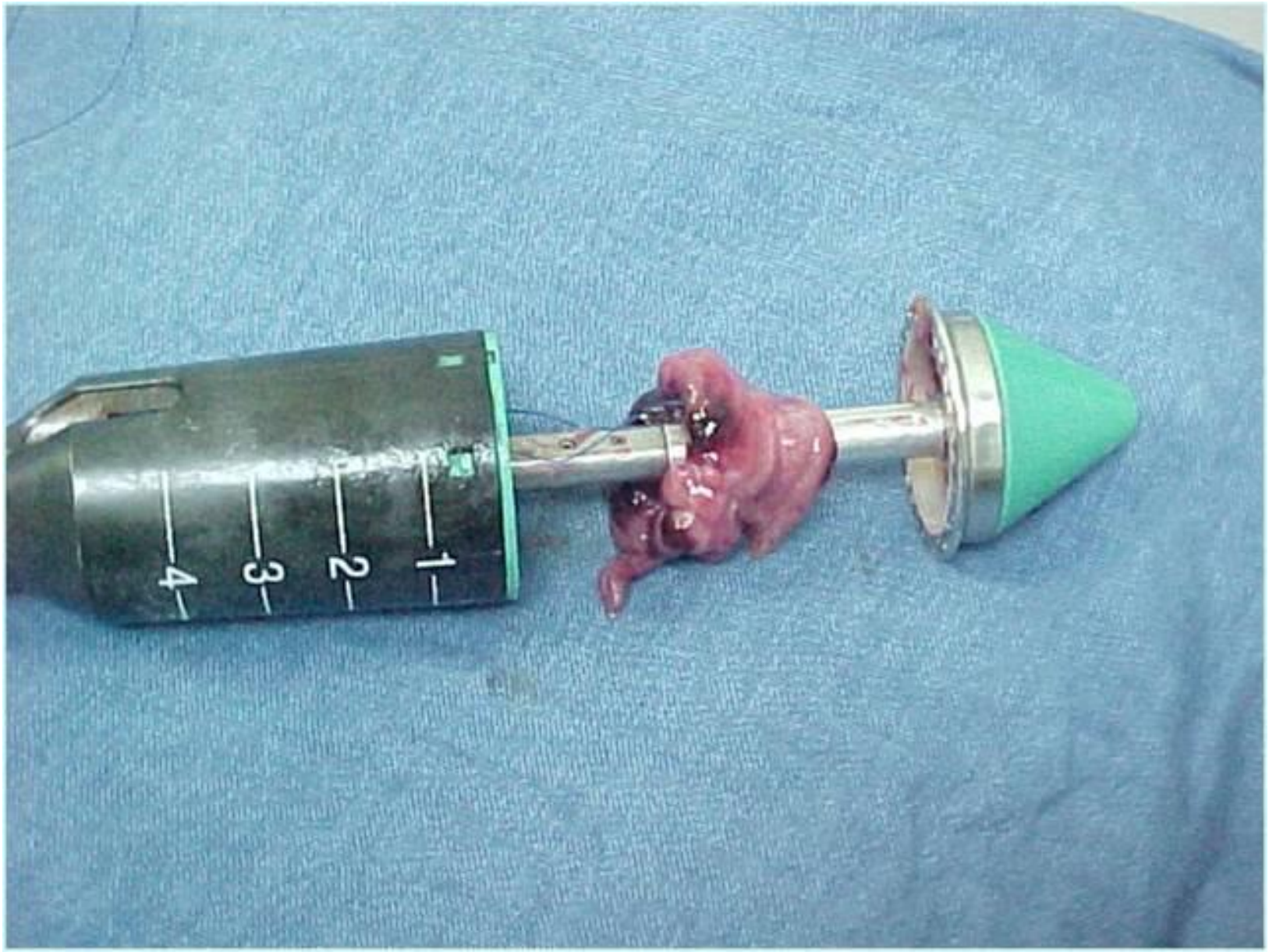


Procedure for Prolapse and Hemorrhoids



Procedure for Prolapse and Hemorrhoids




4
3
2
1

Special considerations

Incarcerated hemorrhoids

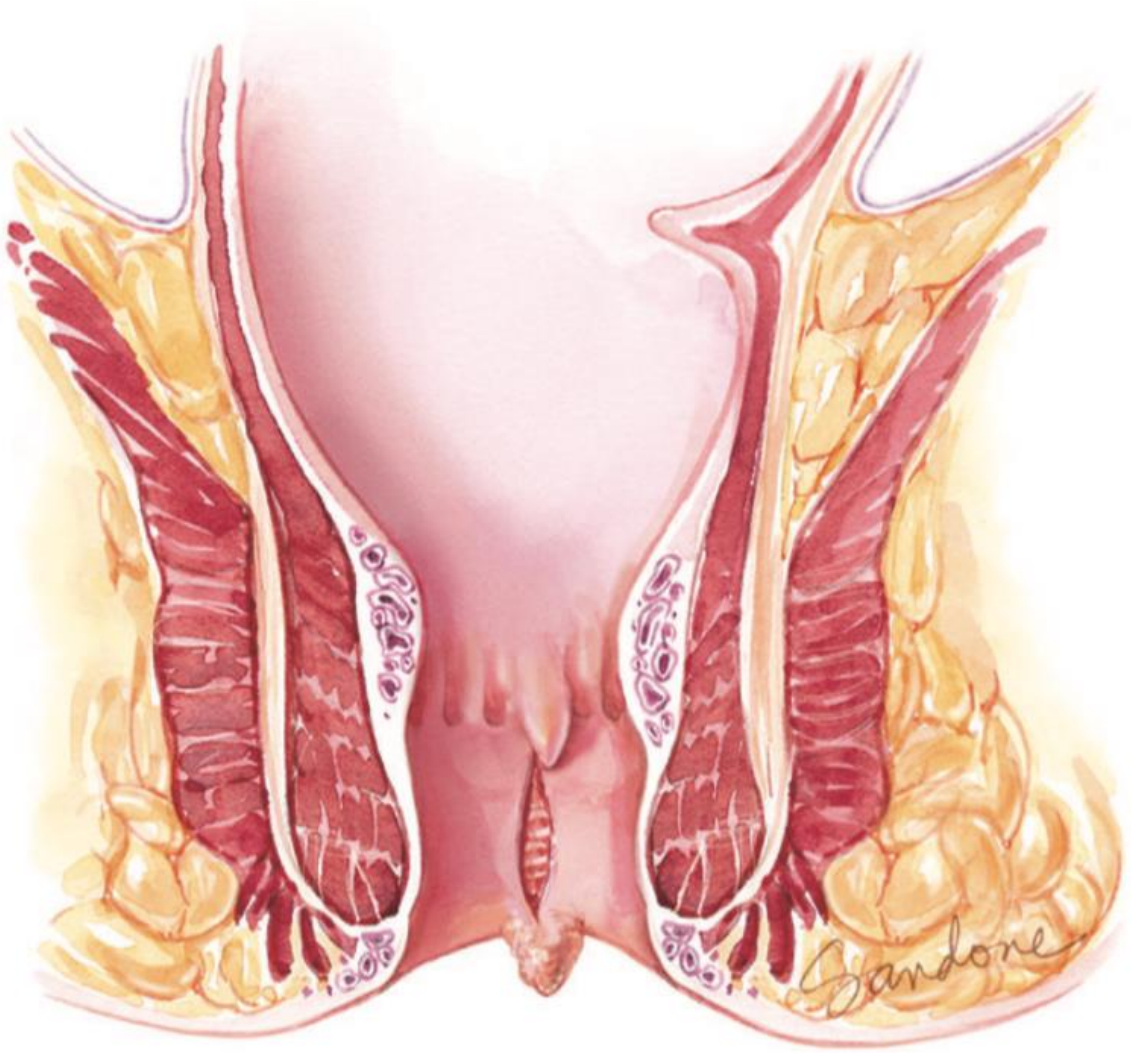
- Irreducibly prolapsed, fourth degree hemorrhoids
- Can cause severe pain with urinary retention
- If untreated, incarceration and strangulation can occur, leading to necrosis
- Treatment is urgent or emergent hemorrhoidectomy

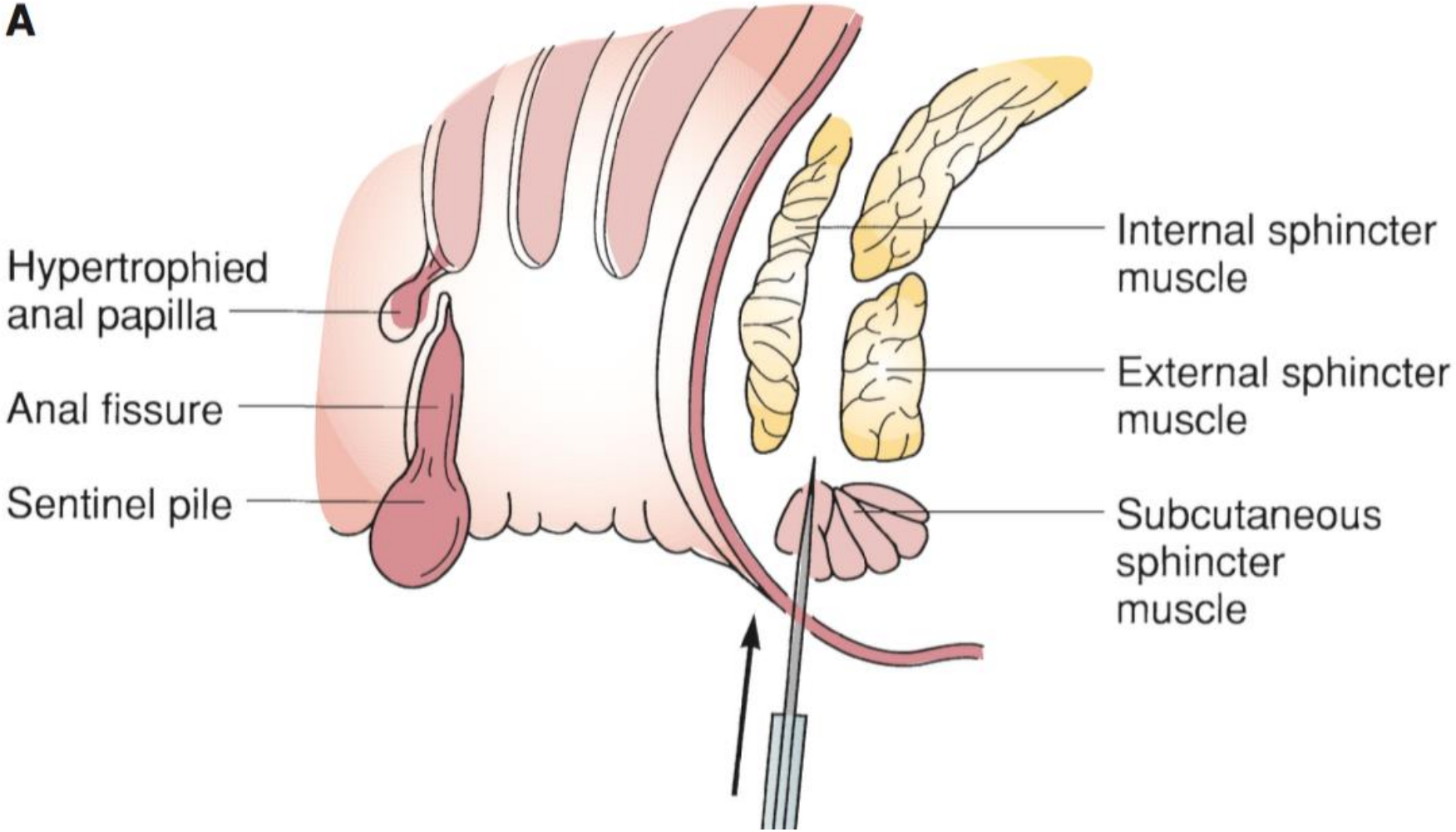
Bleeding rectal varices from portal hypertension

- Can be life threatening
- Transanal suture should incorporate mucosa, submucosa, and muscular wall of rectum
- Rubber band ligation and hemorrhoidectomy are not indicated (create more bleeding opportunities)

Anal fissure

Anal fissure




A
Hypertrophied anal papilla
Anal fissure
Sentinel pile
Internal sphincter muscle
External sphincter muscle
Subcutaneous sphincter muscle

Clinical presentation

- Pain – usually severe but short-lived
- Bleeding – usually small volume, just on toilet paper
- Symptoms typically occur after defecation

- DDx
  - Hemorrhoid (fissures are often misdiagnosed as hemorrhoids)
  - Anorectal fistula
  - Perirectal abscess
  - IBD
  - STI
  - Anal cancer

- All atypical fissures should be biopsied or excised to rule out additional pathology

Treatment

Acute anal fissure

- Fissures that have been symptomatic for < 6 weeks
- FIBER!!! (40g per day)
- Warm sitz baths after bowel movements
- Stool softeners

Chronic anal fissure

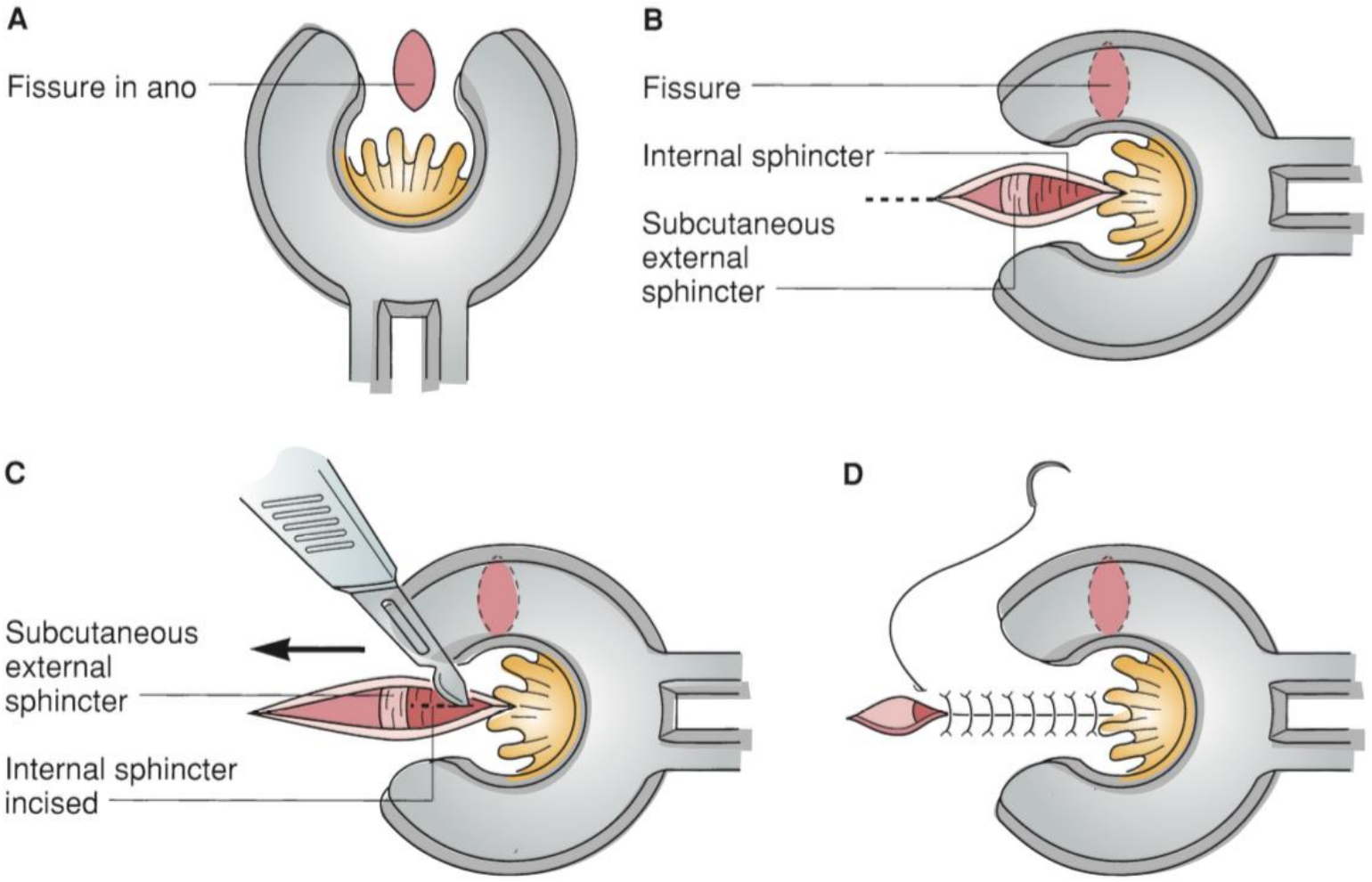
- Non surgical therapies: smooth muscle relaxation, anti-inflammatory, pain mx
- Surgical therapies

TABLE 1: Nonsurgical therapy for anal fissure

Smooth muscle relaxation	Antiinflammatory	Pain control
Nitroglycerine ointment/patch	Topical hydrocortisone (Analpram-HC)	Topical anesthetic (Lidocaine)
Calcium channel antagonists (diltiazem, nifedipine)	Injectable steroid (Kenalog)	Clove oil
Phosphodiesterase inhibitors (sildenafil, minoxidil)		
α-Adrenoceptor antagonist (indoramin)		
Botulinum toxin injection		
Anal dilators		
L-Arginine		
Sitz baths		

Surgery

- Goal is relief of spasm of the internal anal sphincter



Ano-rectal abscess

Anorectal abscesses

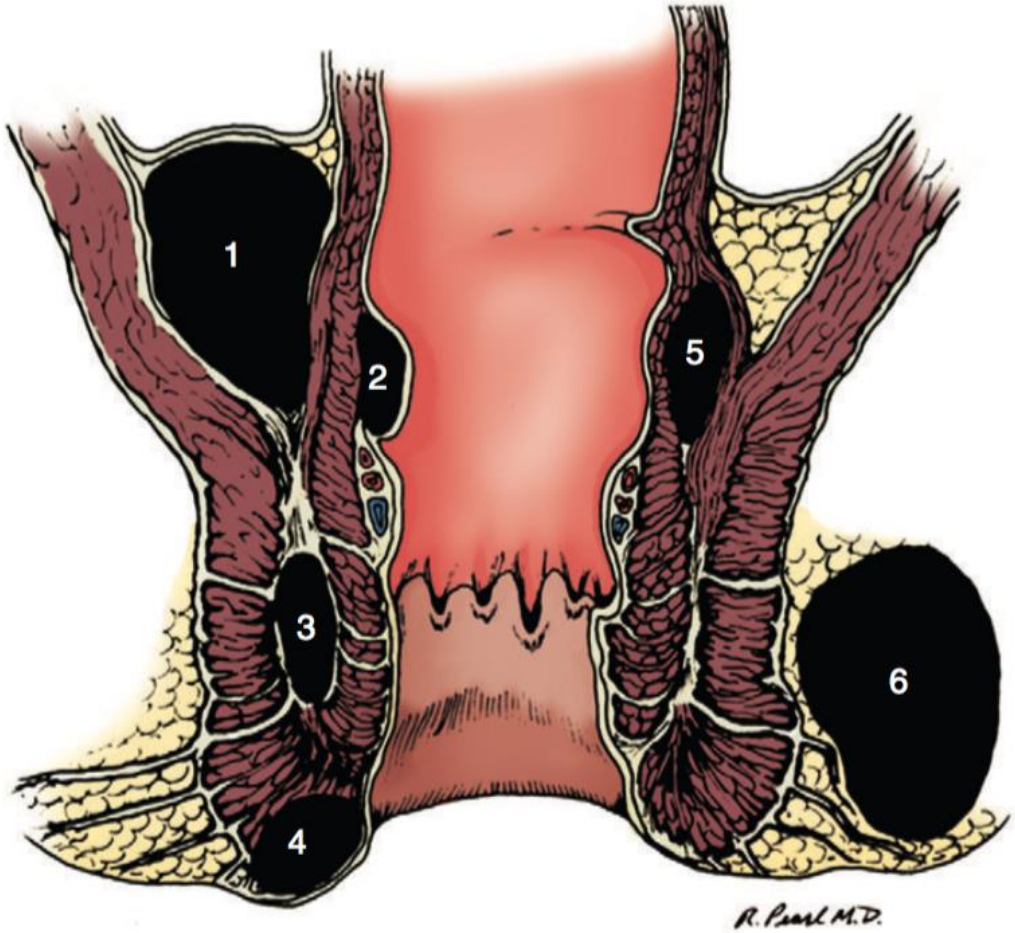


FIGURE 1 Abscess location: *1*, supralevator; *2*, submucosal; *3*, intersphincteric; *4*, perianal; *5*, intermuscular; *6*, ischiorectal. *(Original illustration provided by Dr. Russell Pearl.)*

- Collection of pus
- Originating from blocked anal glands

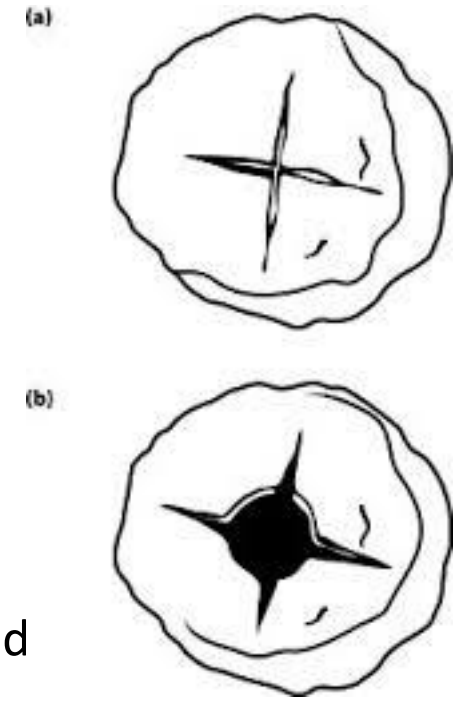
- **Symptoms:** severe anal pain aggravated by activity, swelling, skin changes
- Some patients develop urinary retention

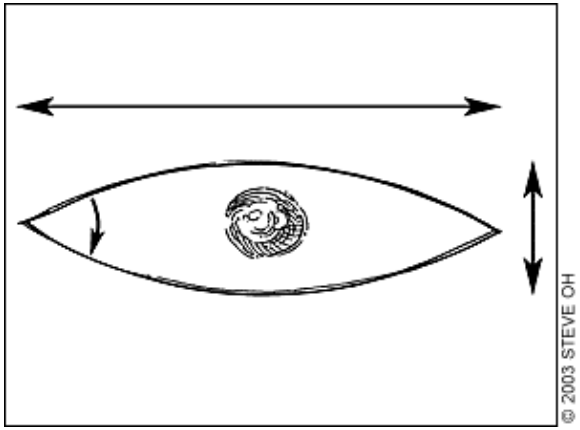
Management

- I&D
  - **Elliptical or cruciate** incision
  - Redundant skin edges are excised to prevent premature closure of the abscess

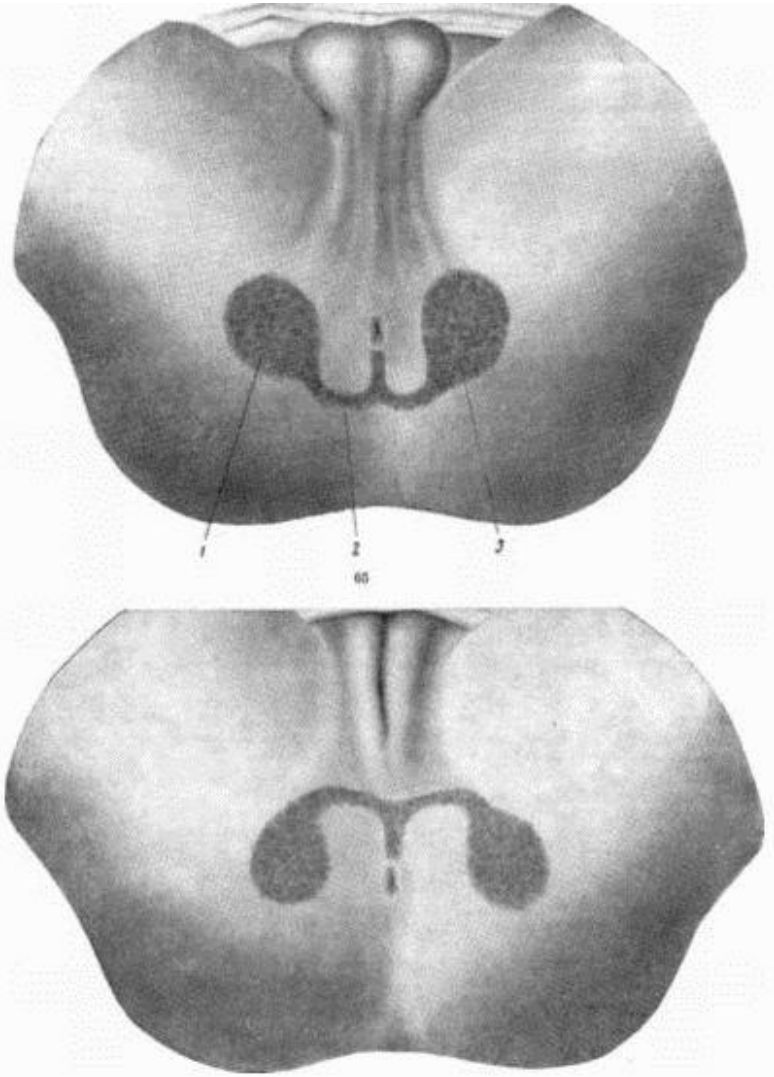
- Antibiotics do NOT help
  - Can consider in immunocompromised patients

- Packing – generally discouraged because painful and impractical
  - May be needed to tamponade bleeders post I&D

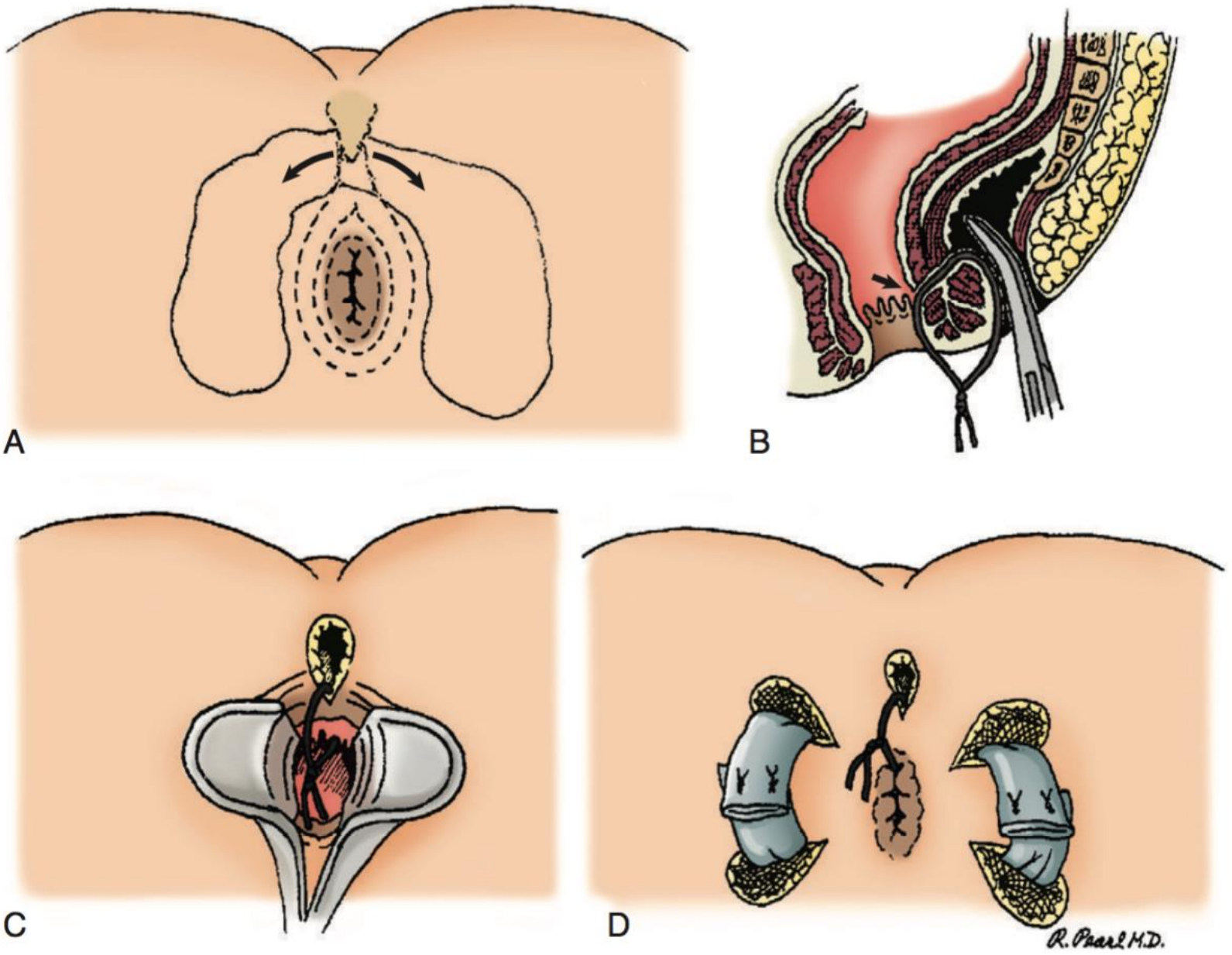




Horseshoe abscess



- Abscess that originates in the deep post-anal space that spreads bilaterally to the ischiorectal regions
- Should be drained from the deep post-anal space
- Longitudinal incision is made in the skin between the tip of the coccyx and the anus
- After the abscess cavity is drained and irrigated, a counterincision is made on one or both limbs of the ischiorectal space


A
B
C
D
R. Pearl M.D.

Intersphincteric and supralevator

Intersphincteric abscess

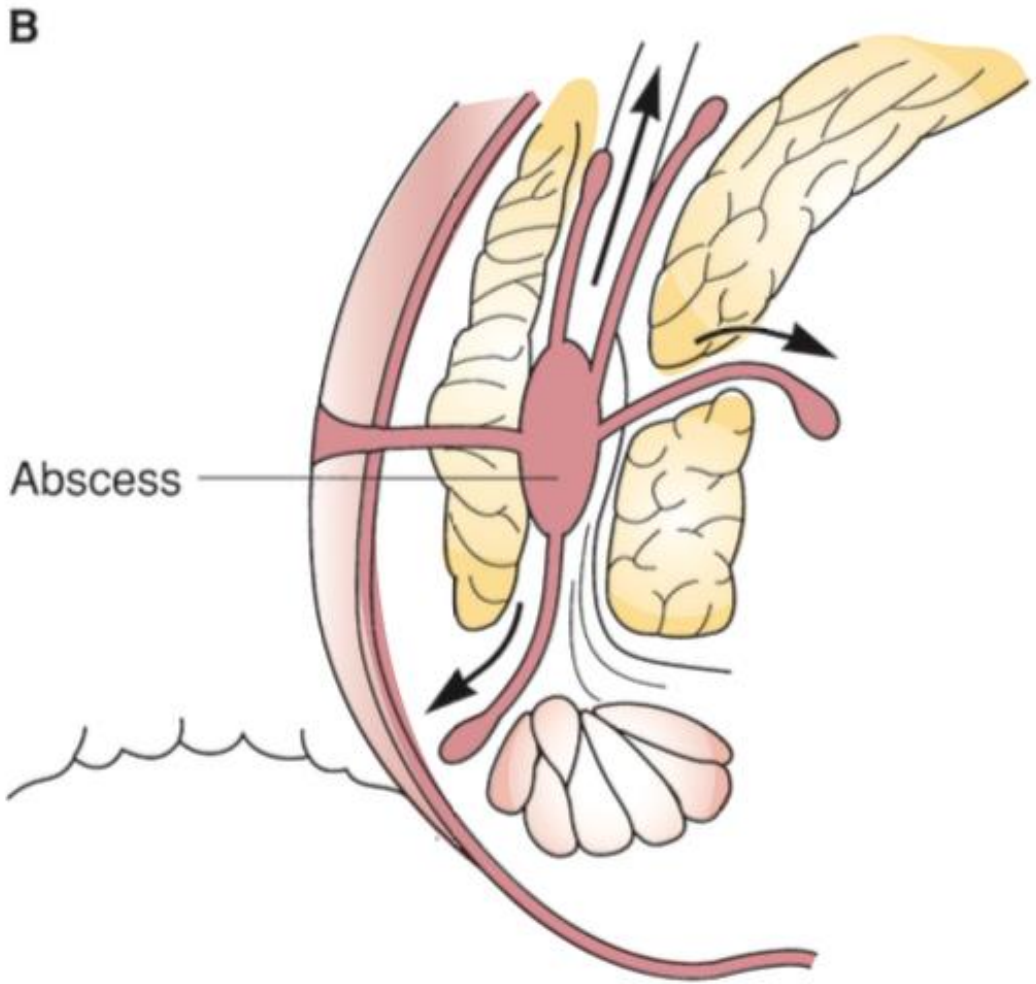
- There is no obvious swelling or induration
- Diagnosis is suspected with severe anorectal pain and no evident pathology
- Most intersphincteric abscesses are located posteriorly
- Drain through the anal canal by incising the mucosa and cutting through the internal sphincter muscle

Supralevator abscess

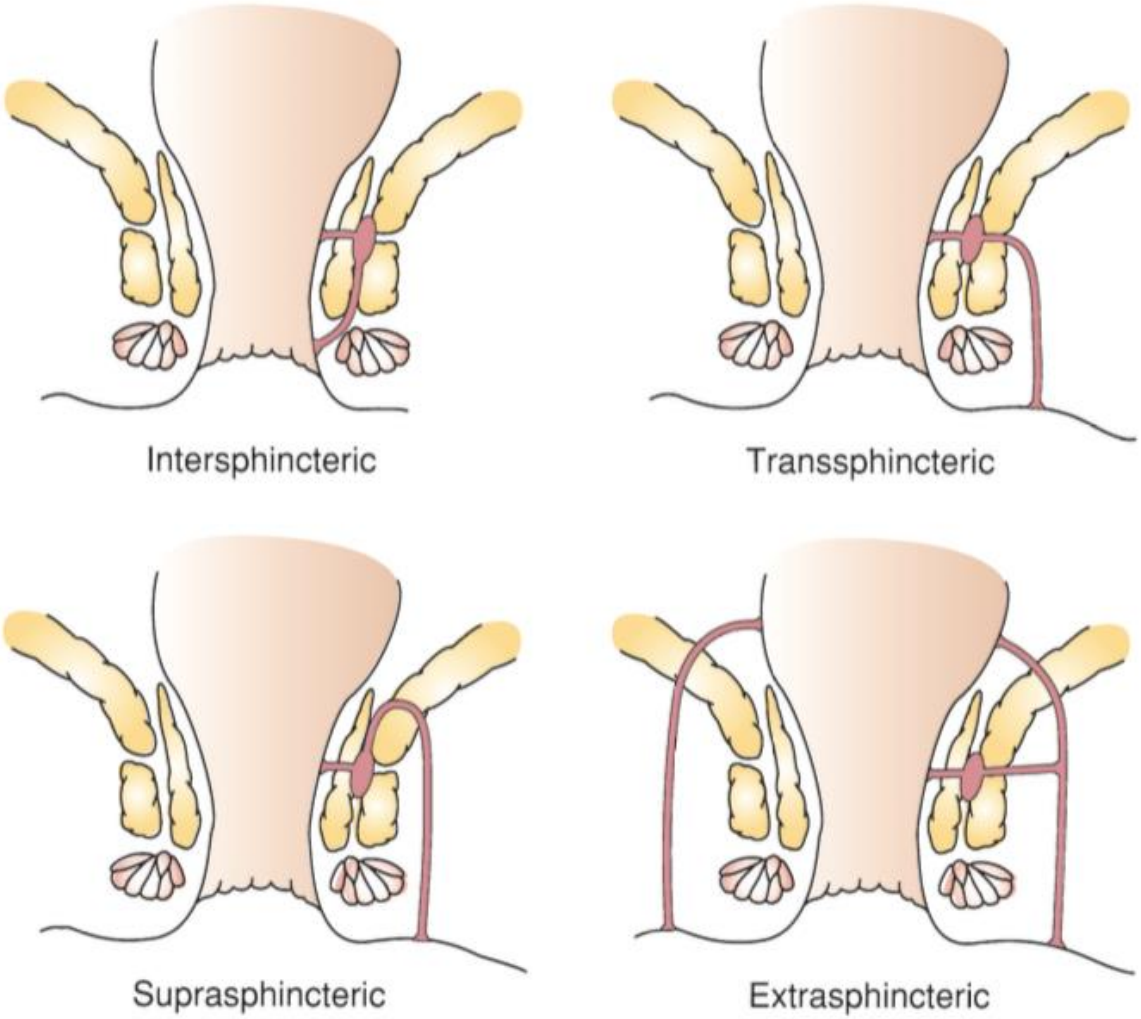
- Uncommon
- Difficult to diagnose
- Adjacent to the abdominal cavity and can mimic acute abdomen
- May arise by extension of an intersphincteric abscess, by extension of an ischiorectal abscess, or from intra-abdominal processes such as diverticulitis, appendicitis, and Crohn's disease
  - Upwarding extending abscesses should be drained into the rectum
  - Downward extending abscesses should be drained through the ischiorectal fossa

Ano-rectal fistula

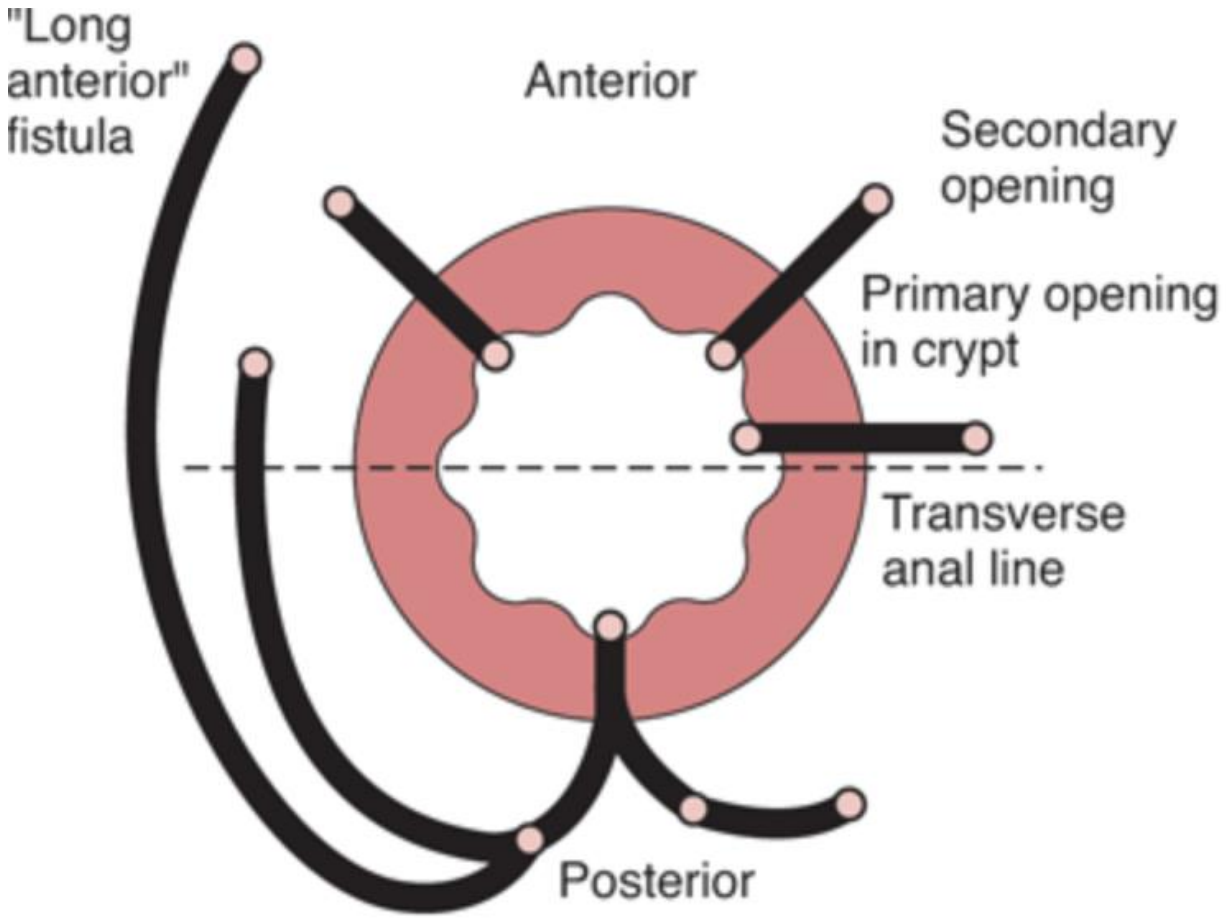
Ano-rectal fistula



Ano-rectal fistula



Goodsall's rule



Management

Primary fistulotomy

- Gold standard
- Safe in superficial fistulas, intersphincteric fistulas, and low transsphincteric fistulas

- Principles = unroofing the fistula, eliminate the internal opening, and establish adequate drainage
    - Open the entire fistula tract over a fistula probe
    - Curette any granulation tissue

- failure to open the entire tract leads to recurrence

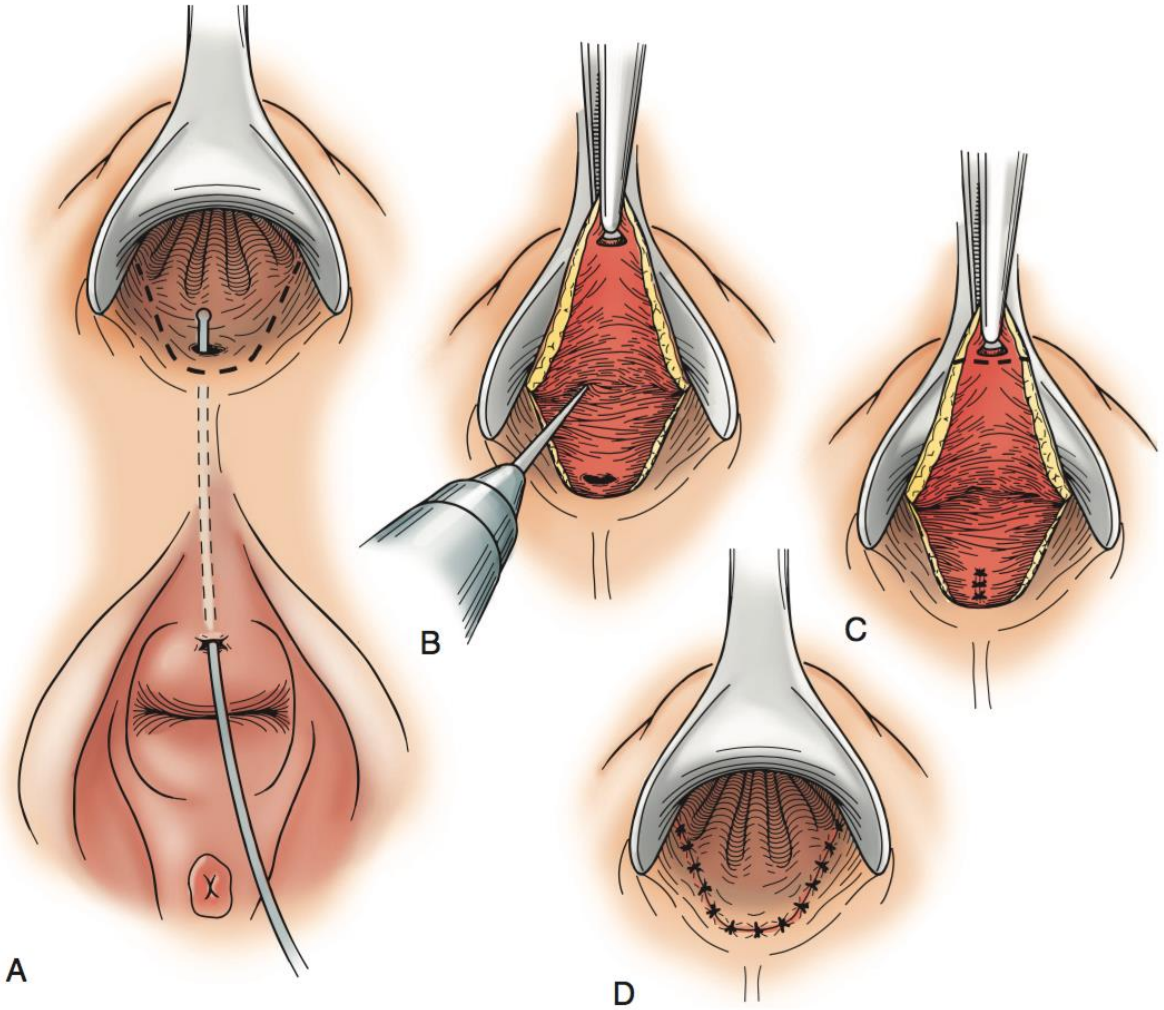
Management

Setons

- Anal fistulas that cannot be treated with primary fistulotomy alone
- Any sphincter muscle division carries the risk of **impaired continence**
    - High fistulas and those involving large amounts of external anal sphincters are not suitable for fistulotomy
    - Anterior sphincter in women is short and anterior fistulotomy in women is risky
    - HIV or Crohn's disease patients
- Drain and allow for identification of tract
- Loosely tied, heavy-duty, nonabsorbable braided suture that promote fibrosis and maturation
- Can be in conjunction with a partial fistulotomy, with completion fistulotomy 8-12 weeks after
- Can be used as the definitive procedure

Management

Endorectal advancement flap



Pilonidal disease

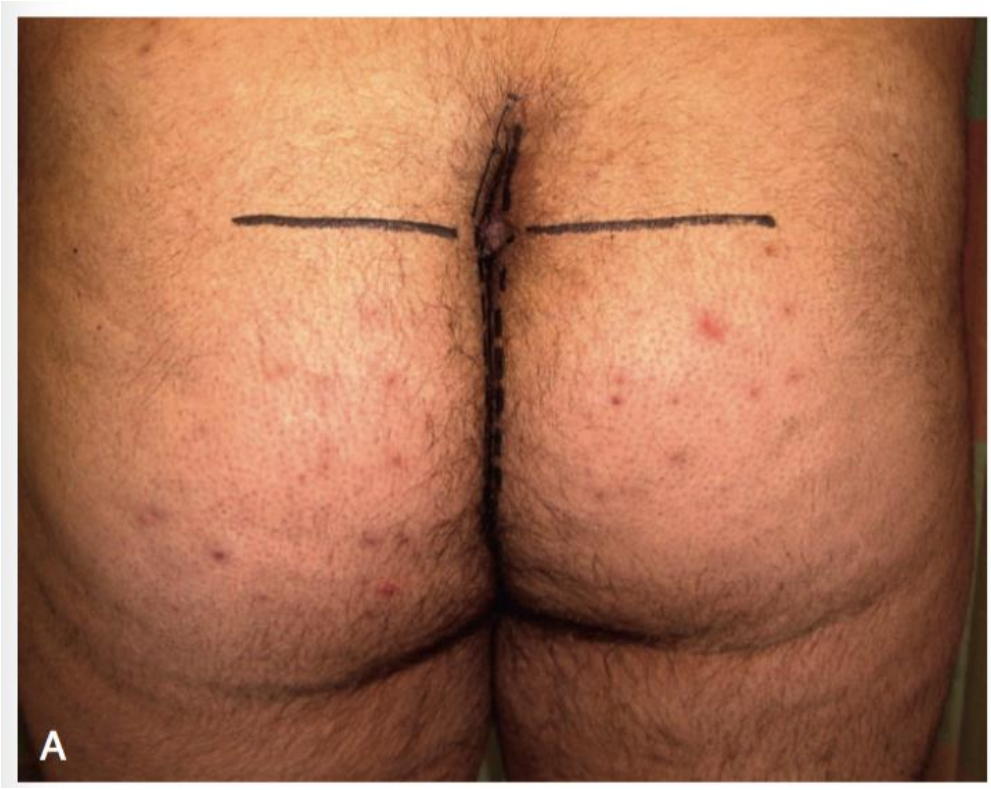
Pilonidal disease

"Pilo" = hair
"Nidus" = nest

•M > F

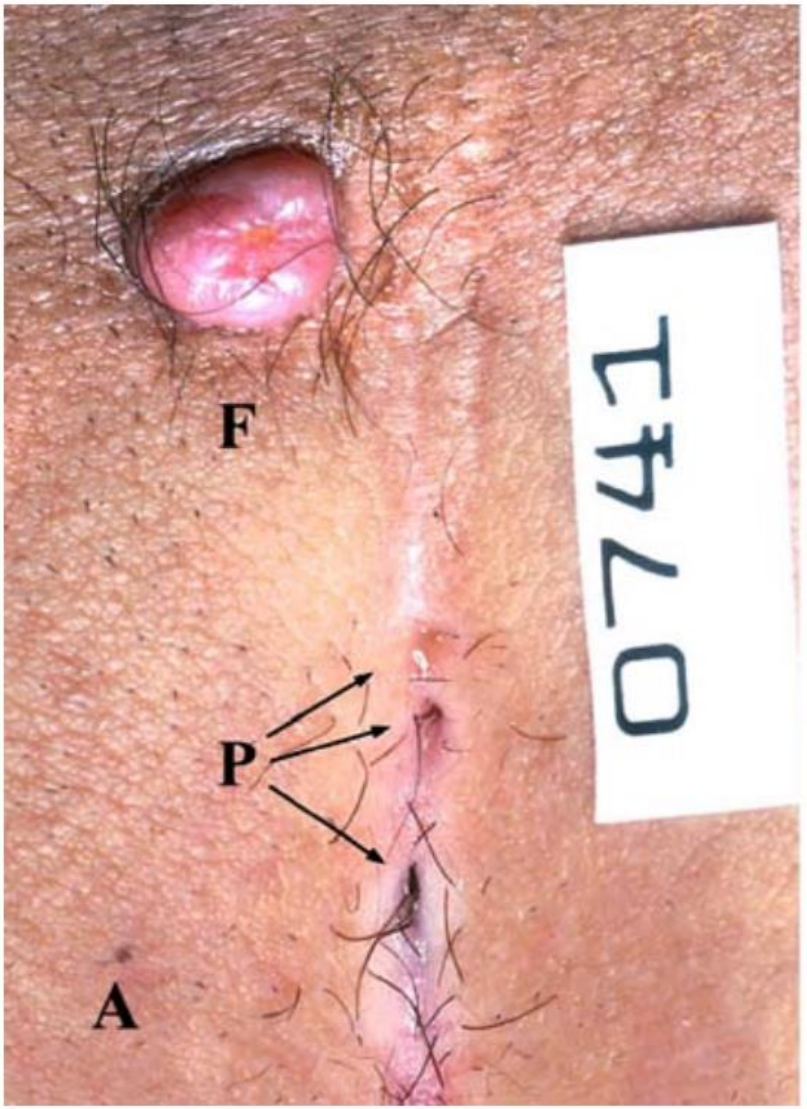
•Hirsute individuals with **deep natal clefts**

•Subcutaneous abscess filled with purulent material and debris (mostly hair)



Etiology

- Follicular occlusion causes subcutaneous abscess
- Moist natal cleft prevents healing
- Dilated pore opens in the midline
- Hair and debris falls into the enlarged pore, causing abscess
- Secondary sinus may track in an attempt to expel infection



Clinical presentation & diagnosis

- Acute painful abscess
- Chronic draining sinus

- **Diagnosis:** recognition of midline pits with or without a chronic draining sinus

- Often can find a secondary opening above the natal cleft as the body's attempt to expel infection outside

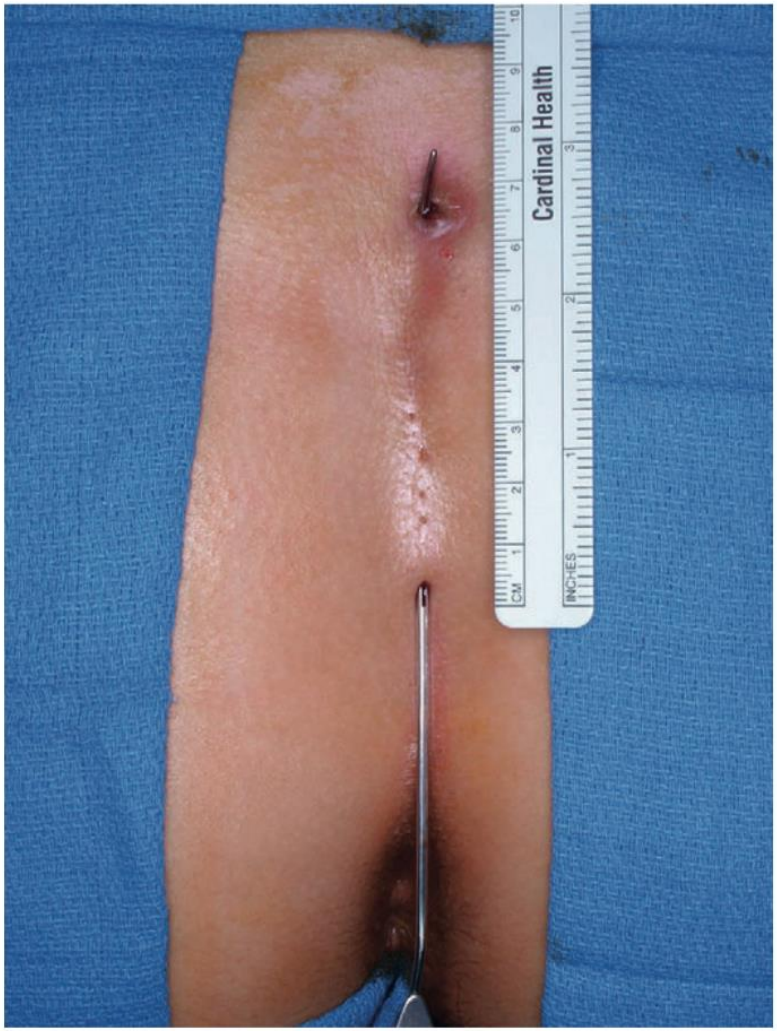
- Primary openings/pits are hard to visualize because their deep apices are often tethered to the underlying abscess cavity

Management – acute pilonidal abscess

- **Incision & drainage**
  - 1-2 cm off midline to avoid a large midline wound
  - Cruciate or elliptical incision
  - Usually a safe office procedure with local anesthesia
  - Antibiotics are usually not needed unless significant cellulitis, or patient is immunocompromised
  - Continue with good hygiene

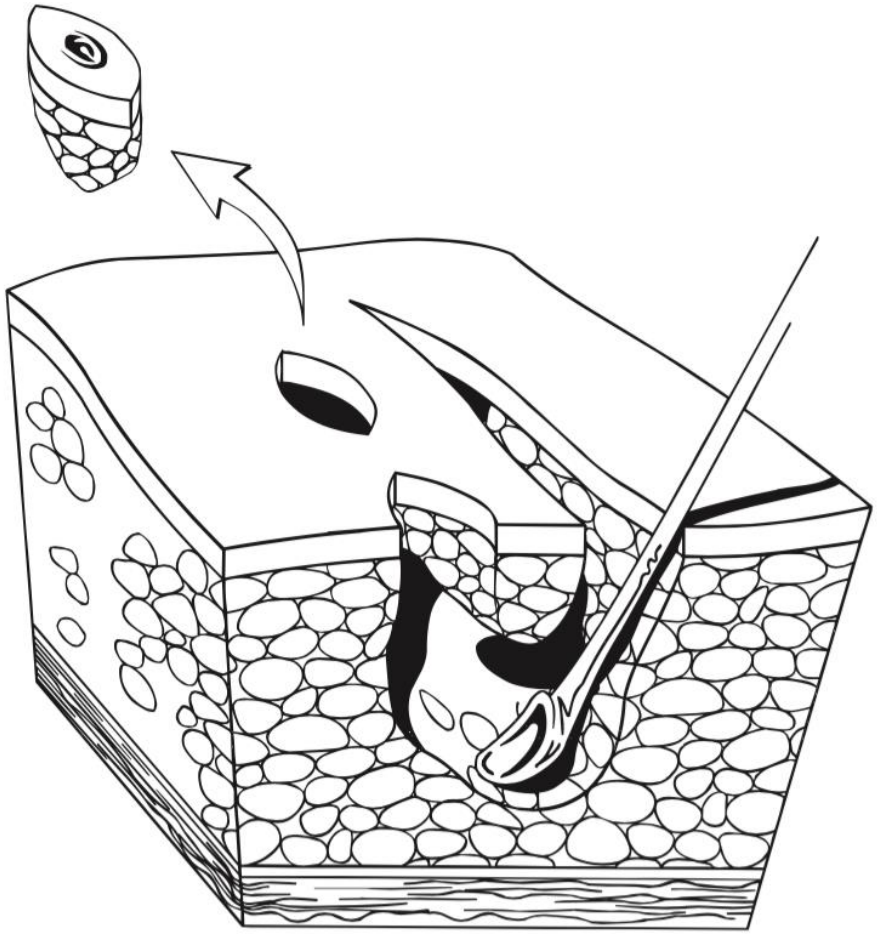
Management – chronic pilonidal sinus

- **Nonsurgical**
  - Patients with no/minimal symptoms
  - observation
- **Surgical**
  - Indications
    - Recurrent acute abscesses
    - Symptomatic chronic pilonidal sinuses
    - Patient preference
  - **Unroofing**
    - Fistula probe
    - Electrocautery over the probe to unroof the skin and connect the midline pits/sinus
    - Curette underlying abscess to remove debris

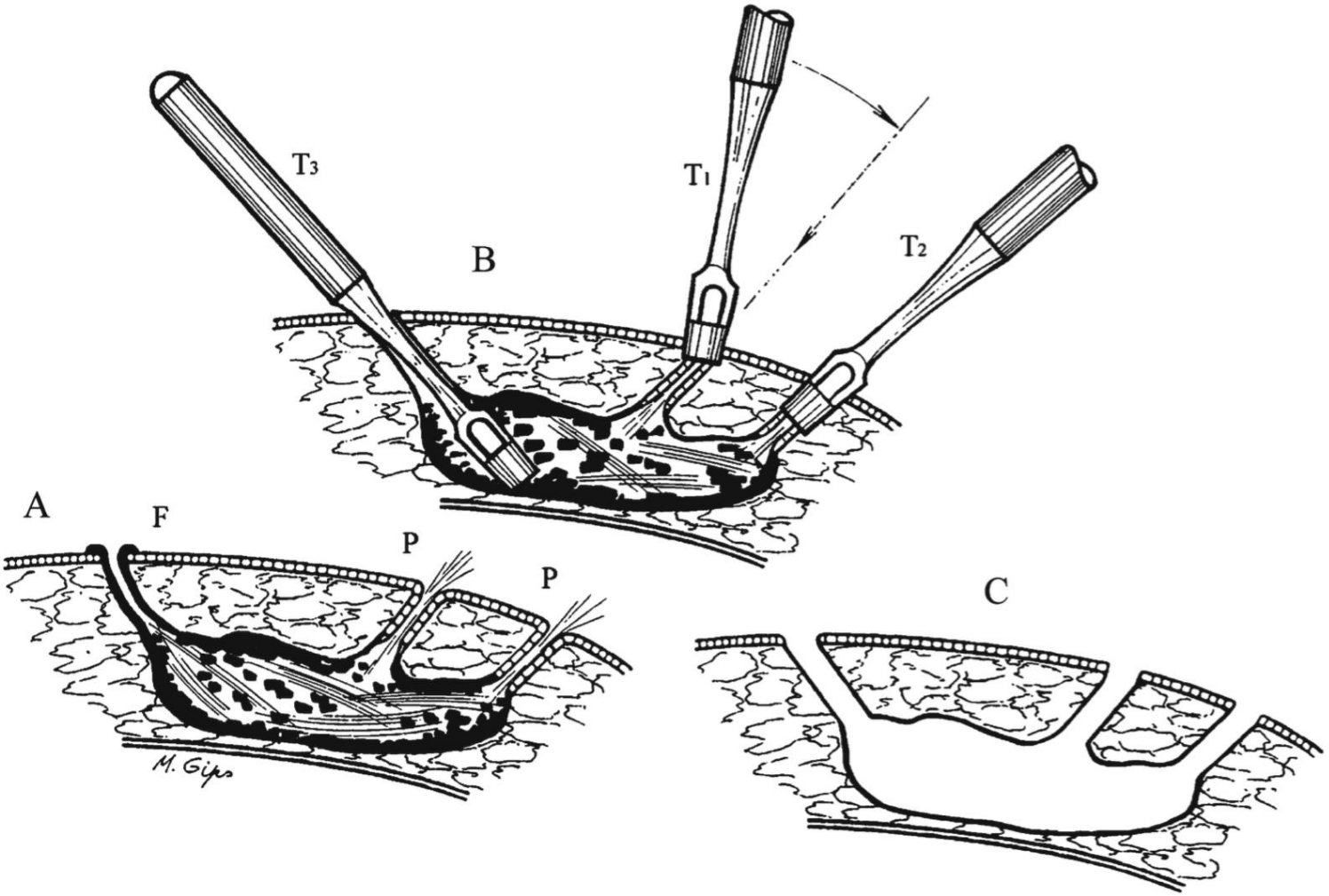


Management – chronic pilonidal sinus

- **Pit picking**
  - Minimal excision of midline pits with debridement of abscess cavity
  - Patients with several midline pits and short sinus
  - Local anesthesia
  - Punch biopsy around the midline pits
  - Debride and curette the abscess cavity with a lateral incision 1-2 cm off midline
  - Can either close skin of pits or leave them open

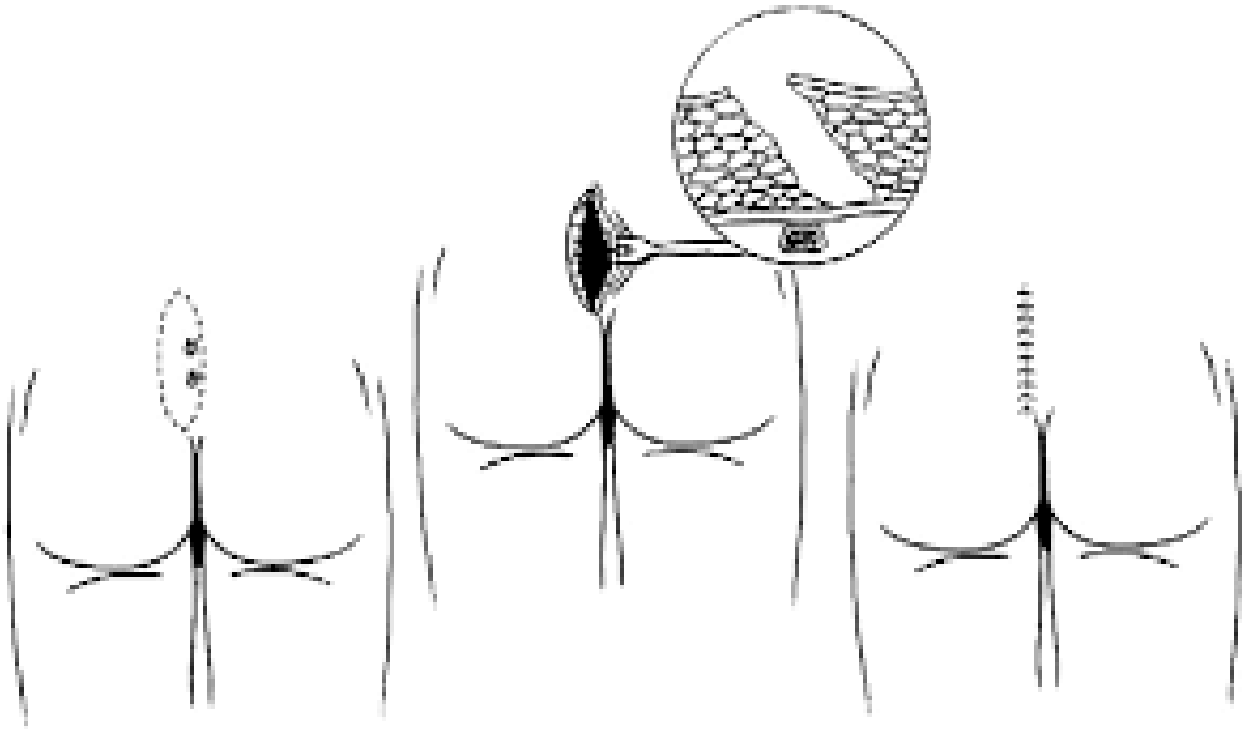


Management – chronic pilonidal sinus



Management – Karydakis flap

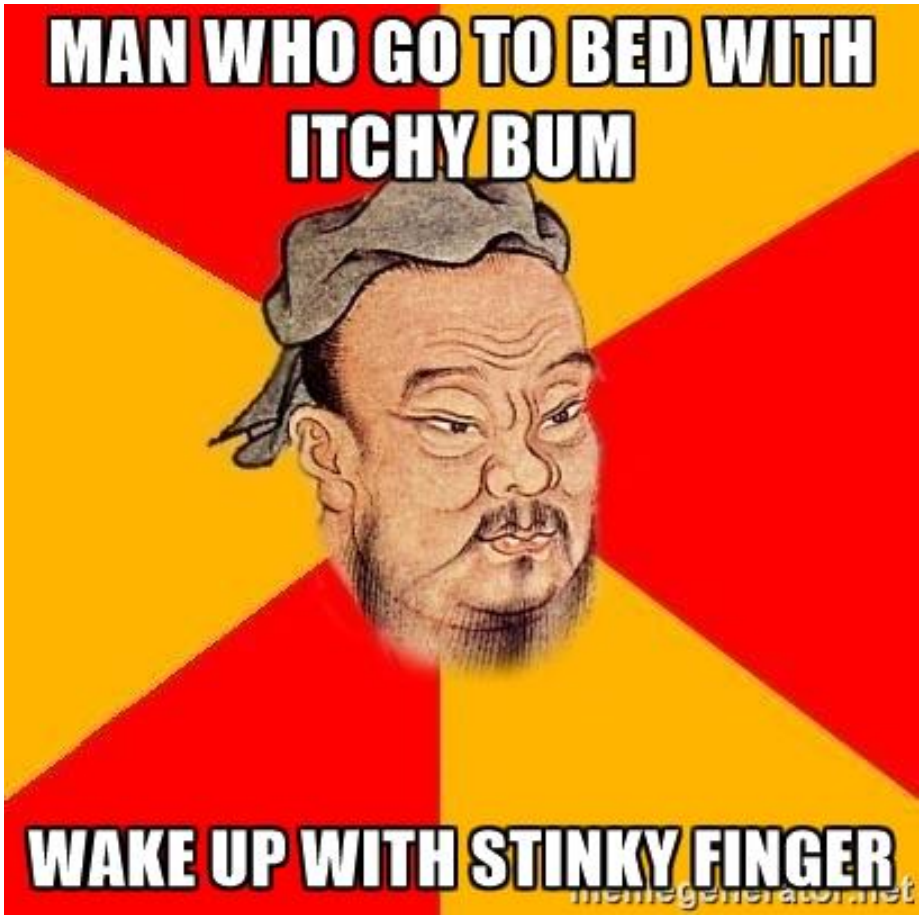
- Essentially an advancement flap - laterally
- Elliptical excision of skin encompassing the midline pits and sinus tract 2 cm off midline
- Skin and subcutaneous fat from opposite side of cleft is mobilized to produce a thick flap and sutured on side of the excised tissue
- Penrose or closed suction drain
- Recurrence rate 1%
- 8-9% complication rate
- Significant pain



Pruritus ani

Pruritis ani

- Itching and burning of the perianal skin
- 1-5% incidence
- Many people do not seek medical attention
- M > F 4:1
- 4th-7th decade of life
- Localized or diffuse
- Onset is usually gradual



Idiopathic pruritus ani

- **Idiopathic or secondary**
  - Idiopathic pruritus ani = diagnosis of exclusion
  - 20-75% are secondary
- **Idiopathic**
  - Local irritants
  - Excess moisture
  - Repeated trauma from wiping
  - medications

BOX 2: Factors associated with idiopathic pruritus ani

Local Irritants
Fecal contamination (poor hygiene, internal anal sphincter relaxation, incontinence, diarrhea)
Diet (coffee, tea, cola, chocolate, citrus fruits, spicy foods, tomatoes, beer, wine, dairy products)
Drugs (mineral oil, docusate, witch hazel, topical creams, "-caine" anesthetics)
Soaps, detergents, and perfumes

Moisture
Obesity
Heat
Athletic activity
Tight underwear

Trauma
Excessive wiping with toilet paper

Drugs
Colchicine
Quinidine
Tetracycline
Erythromycin

Secondary pruritus ani

BOX 1: Causes of secondary pruritus ani

Anorectal Conditions

Hemorrhoids (prolapsing internal or external)
Fistula-in-ano
Anal fissure
Hidradenitis suppurativa
Condylomata
Pilonidal sinus
Perianal Crohn's disease
Hypertrophied anal papilla
Anal canal cancer
Anal margin cancer
Paget's disease
Bowen's disease
Rectal adenoma
Rectal cancer
Rectal prolapse
Fecal incontinence
Chronic diarrhea
Skin tags

Secondary pruritus ani

Infectious Conditions

Bacterial

Corynebacterium minutissimum (erythrasma)
Beta-hemolytic *Streptococci*
Staphylococcus aureus
Gonococcus
Chlamydia
Syphilis

Viral

Herpes virus
Human papillomavirus
Molluscum contagiosum

Parasitic

Pinworms *(Enterobius vermicularis)*
Scabies

Fungal

Candida
Dermatophytes

Secondary pruritus ani

Dermatologic Conditions
Contact dermatitis
Allergic dermatitis
Lichen sclerosus
Lichen planus
Psoriasis
Radiation dermatitis

Systemic Conditions
Diabetes mellitus
Hepatic disease or jaundice
Leukemia
Lymphoma
Aplastic anemia
Renal failure
Hyperthyroidism

History & physical

History

- Location, frequency, duration of symptoms
- Aggravating/alleviating factors
- Dietary history
- Medications history
- Stool patterns
- Perianal hygiene patterns
- Personal dermatologic history and past medical history
- Review of any allergies

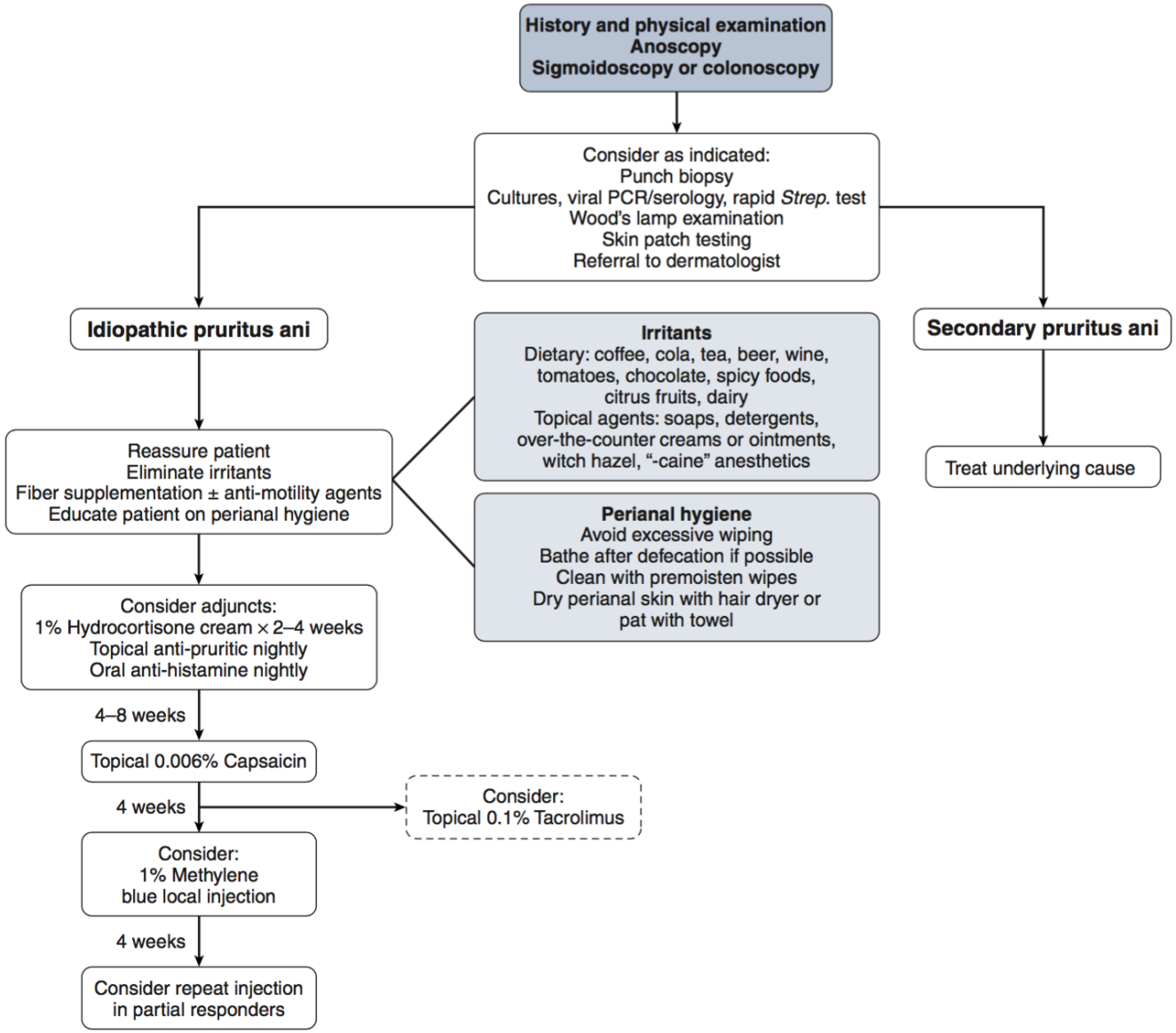
Physical exam

- Inspection of perianal skin and genitalia
- Palpation of inguinal LN
- DRE
- Complete skin exam
- Anoscopy/sigmoidoscopy
- Colonoscopy in patients > 40, changes in bowel habits, GI bleeds, or fam hx colorectal ca

Investigations

- Biopsy suspicious lesions (punch biopsy) to include lesion and normal perianal skin
- If infectious concerns: aerobic, anaerobic, and fungal cultures
- HSV: small, painful vesicles → send specimen/swab for PCR
- Pinworm: apply tape to perianal region, followed by microscopic evaluation
- Allergy testing

Management


History and physical examination
Anoscopy
Sigmoidoscopy or colonoscopy
Consider as indicated:
Punch biopsy
Cultures, viral PCR/serology, rapid Strep. test
Wood's lamp examination
Skin patch testing
Referral to dermatologist
Idiopathic pruritus ani
Secondary pruritus ani
Irritants
Dietary: coffee, cola, tea, beer, wine, tomatoes, chocolate, spicy foods, citrus fruits, dairy
Topical agents: soaps, detergents, over-the-counter creams or ointments, witch hazel, "-caine" anesthetics
Perianal hygiene
Avoid excessive wiping
Bathe after defecation if possible
Clean with premoisten wipes
Dry perianal skin with hair dryer or pat with towel
Reassure patient
Eliminate irritants
Fiber supplementation ± anti-motility agents
Educate patient on perianal hygiene
Treat underlying cause
Consider adjuncts:
1% Hydrocortisone cream × 2–4 weeks
Topical anti-pruritic nightly
Oral anti-histamine nightly
4–8 weeks
Topical 0.006% Capsaicin
4 weeks
Consider:
Topical 0.1% Tacrolimus
Consider:
1% Methylene blue local injection
4 weeks
Consider repeat injection in partial responders

Secondary

- Treat underlying cause
- Anorectal conditions → correction of anorectal pathology and subsequen reduction of fecal contamination and moisture
- Bacterial infections → oral antibiotics
- HSV → oral acyclovir
- HPV condylomata → topical podophyllin, 5-FU, cryotherapy, fulguration, or surgical exicision
- Fungal infections → topical imidazole + antifungal powder
- Pinworms → 2 doses of PO mebendazole given 2 weeks apart

Hidradenitis suppurativa

Hidradenitis suppurativa

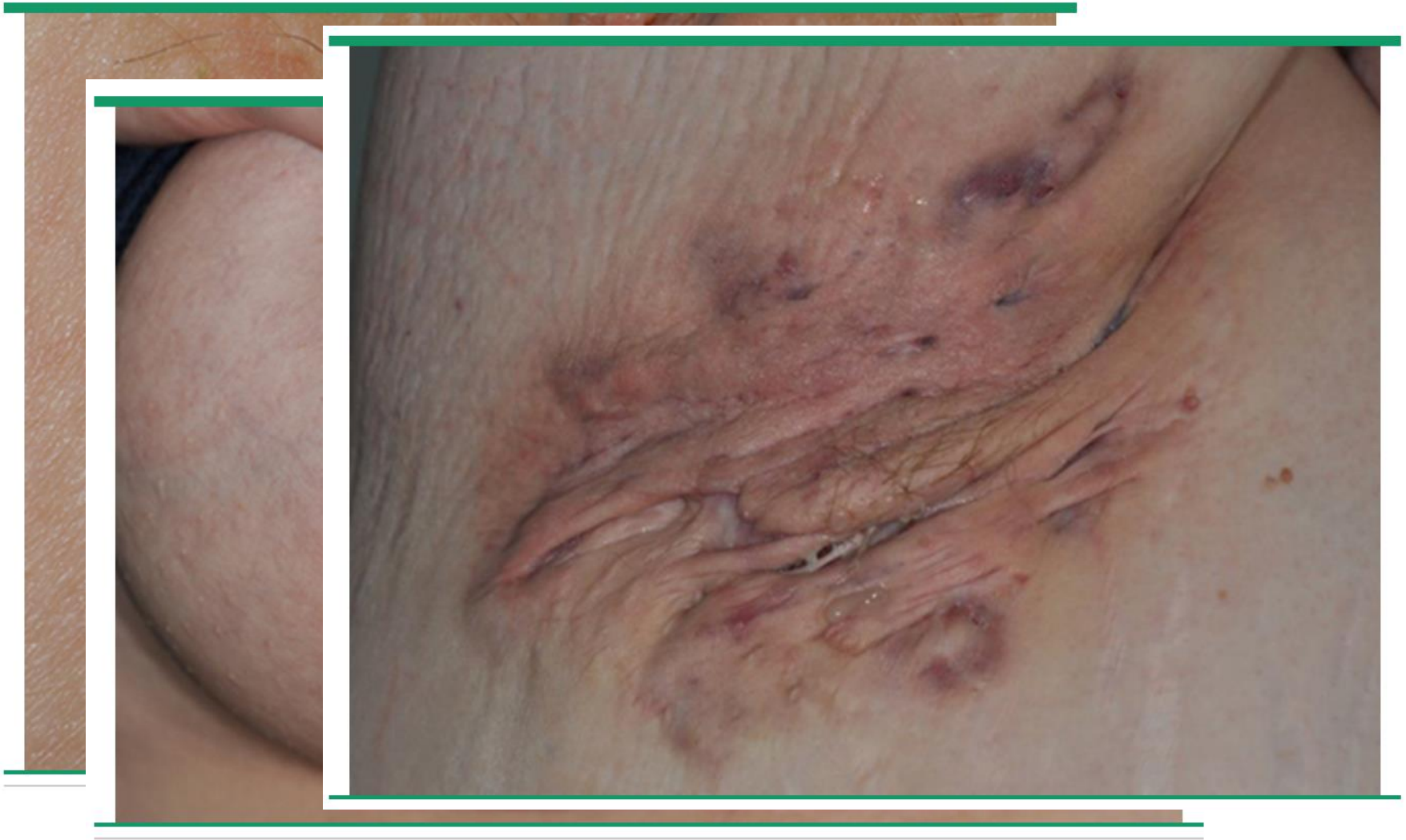
- Chronic inflammatory skin condition
- Primary site: intertriginous skin areas
- 1-4%
- 2nd-3rd decade of life
- Pathogenesis
  - Not well understood
  - **Follicular occlusion**
    - Hormonally induced increase in ductal keratinocyte proliferation
    - Failure of keratinocytes to shed properly
    - Follicular hyperkeratosis and plugging

Clinical manifestation

- Primary site: intertriginous skin areas of the axillary, groin, perianal, perineal, and inframammary regions

- Recurrent inflamed nodules
  - Solitary, painful, deep-seated inflamed nodule (0.5-2cm in diameter)
  - Commonly misdiagnosed as boils or furuncles
  - Nodules progress to form an abscess
  - Pain improves after drainage
- Sinus tracts
  - Persist for months or years
  - From multiple recurrent nodules
  - Intermittent release of seropurulent, bloody discharge
- Comedones
  - Open comedones
  - Long standing HS
  - Double-headed or multi-headed open comedones
- Scarring
  - Resolution of small nodules to dense fibrotic bands

Hurley clinical staging system



Diagnosis

3 main clinical features that support diagnosis if hidradenitis supprativa

1.Typical lesions (deep seated inflamed nodules, tombstone comedones, sinus tracts, abscesses and/or fibrotic scars)

2.Typical location (intertriginous regions of axillae, groin, inframammary) with bilateral distribution

3.Relapses and chronicity

Treatment

3 major goals:

1. To prevent formation of new lesions and reduce the extent and progression of disease
2. To treat new lesions quickly and effectively to prevent development of chronic sinuses
3. To eliminate existing nodules and sinus tracts to limit or prevent scar formation

Conservative management

- Avoid skin trauma
- Discontinue products that irritate skin
- Improve hygiene
  - Daily, gentle cleansing
- Smoking cessation
  - Smoking is associated with HS
- Dietary changes
  - Decrease dairy and high glycemic load diets

Treatment – Hurley stage I

- Local therapy
- **Topical clindamycin BID**
  - First line for mild HS
  - Beneficial for decreasing the number of mild inflammatory lesions
  - Treating superficial secondary inflection
- **Topical resorcinol**
  - Topical chemical peel with keratolytic and anti-inflammatory properties
  - Reduces pain and promote healing
  - Recurrences may follow discontinuation of medication
  - Availability is limited
- **Surgery**
  - Punch debridement to evacuate inflamed nodule
- **Intralesional corticosteroids**
  - Triamcinolone acetonide
  - 0.1-0.5 mL injection into each lesion
- **Systemic antibiotics**
  - 7-10 day course
  - Doxycycline or clindamycin

Treatment – Hurley stage II

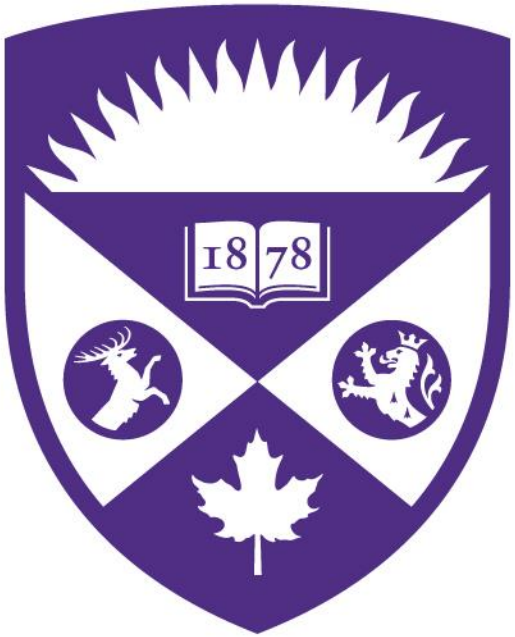
- **Antibiotic therapy**
  - Doxycycline 50-100mg BID
  - Erythromycin
  - Combination of cindamycin and rifampin for patients who failed to respond to conventional antibiotic therapy
- **Hormonal therapy**
  - Androgens contribute to the development of HS
  - Anti-androgenic therapies
  - Cyproterone acetate with estrogen
  - Finasteride – do not give to women of childbearing age
  - Do not give to pregnant women
- **Surgery**
  - Punch debridement
  - Wide excision is reserved for chronic Hurley stage III, unresolving cases

Treatment – Hurley stage III

- **Surgery**
  - Goal is to remove the nidus and prevent development of sinus tracts
  - Surgery should not be used in isolation
  - **Incision & drainage**
    - Short term relief, no long term benefits
    - Does not clear the actively growing tissue in the involved area
  - **Punch debridement** (mini-unroofing)
    - Use of a 5-7 mm circular punch biopsy instrument to deeply excise the inflamed lesion
    - Aggressive debridement and currettage with gauze
    - Helps prevent further growth and build-up
  - **Unroofing**
    - Unroof all sinus tracts
    - Currette the sinus floor
  - **Wide excision**
    - Excision of the entire affected area combined with aggressive medical management
    - Reserved for the most severe cases
    - Tissue should be removed until only soft, normal subcutaneous fat

Treatment – Hurley stage III

- **Immunosupressive agents – short course**
  - Prednisone
  - Cyclosporin
  - TNF-alpha inhibitors (infliximab, adlimumab, etanercept)
- **Oral retinoids**
  - Antiproliferative and immunomodulatory effects
  - Acitretin
  - isotretinoin



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