

Anorectal Diseases



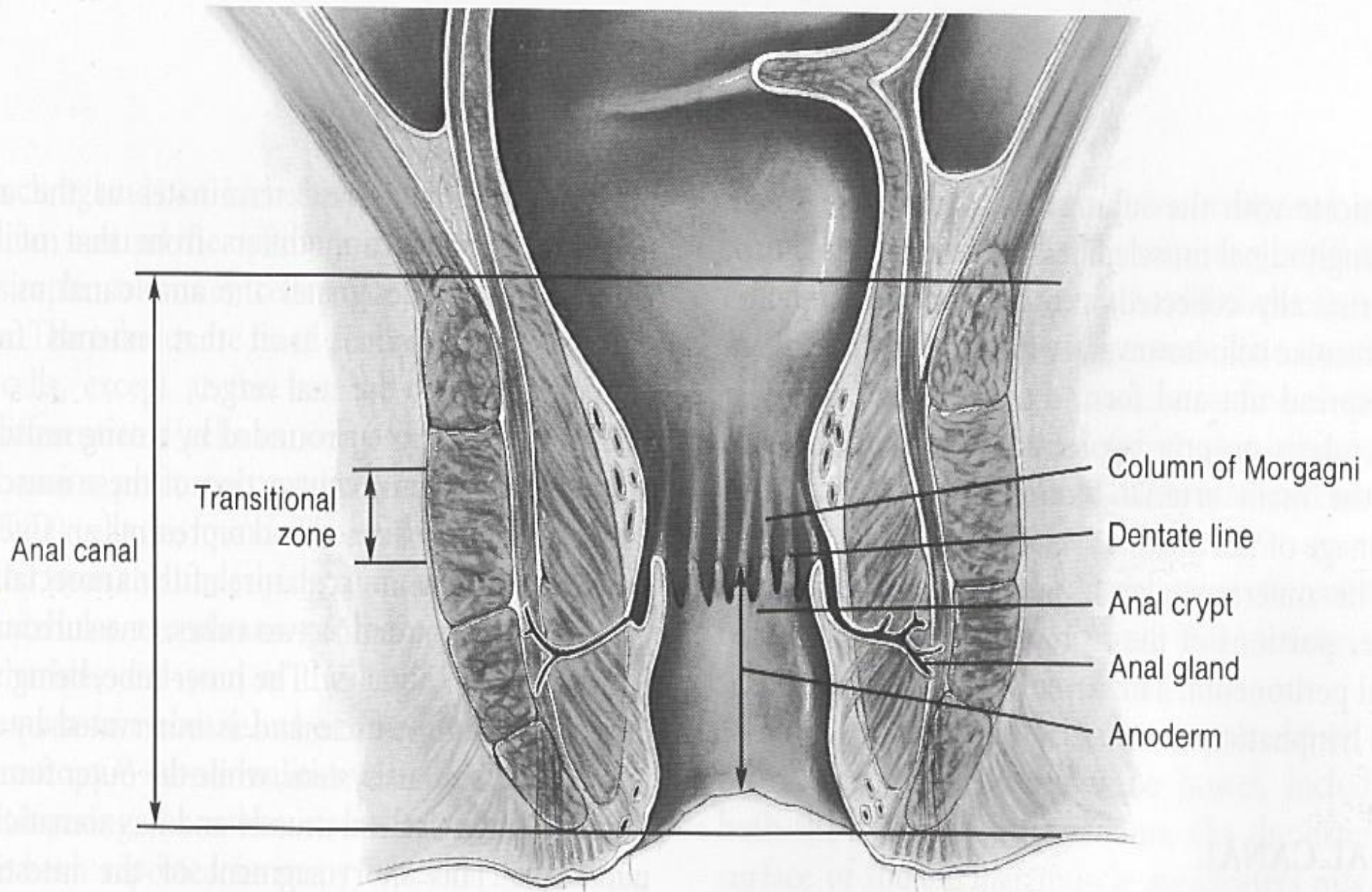


Fig. 1-6 Lining of the anal canal.

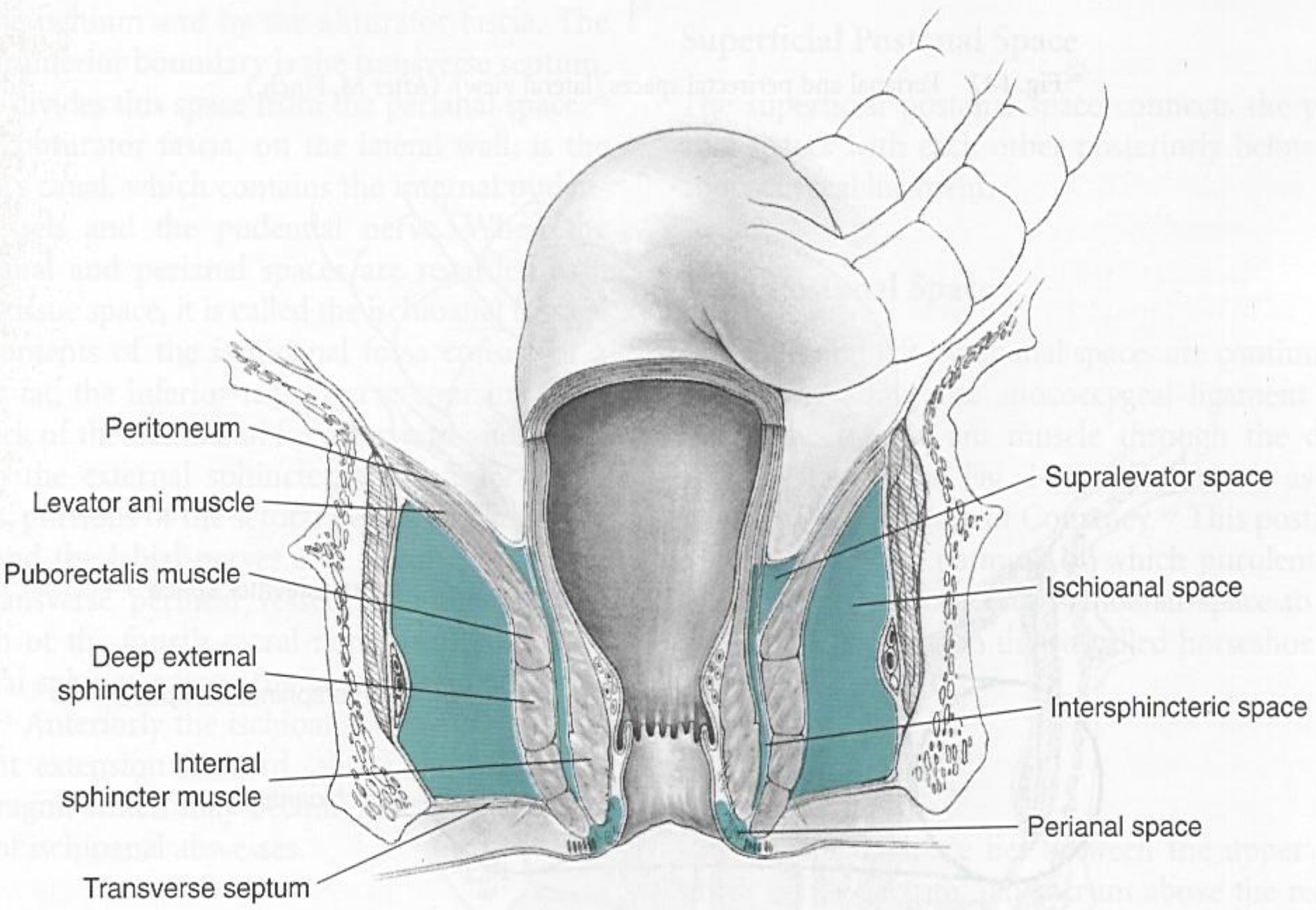


Fig. 1-11 Perianal and perirectal spaces (frontal view). (After M. Finch.)

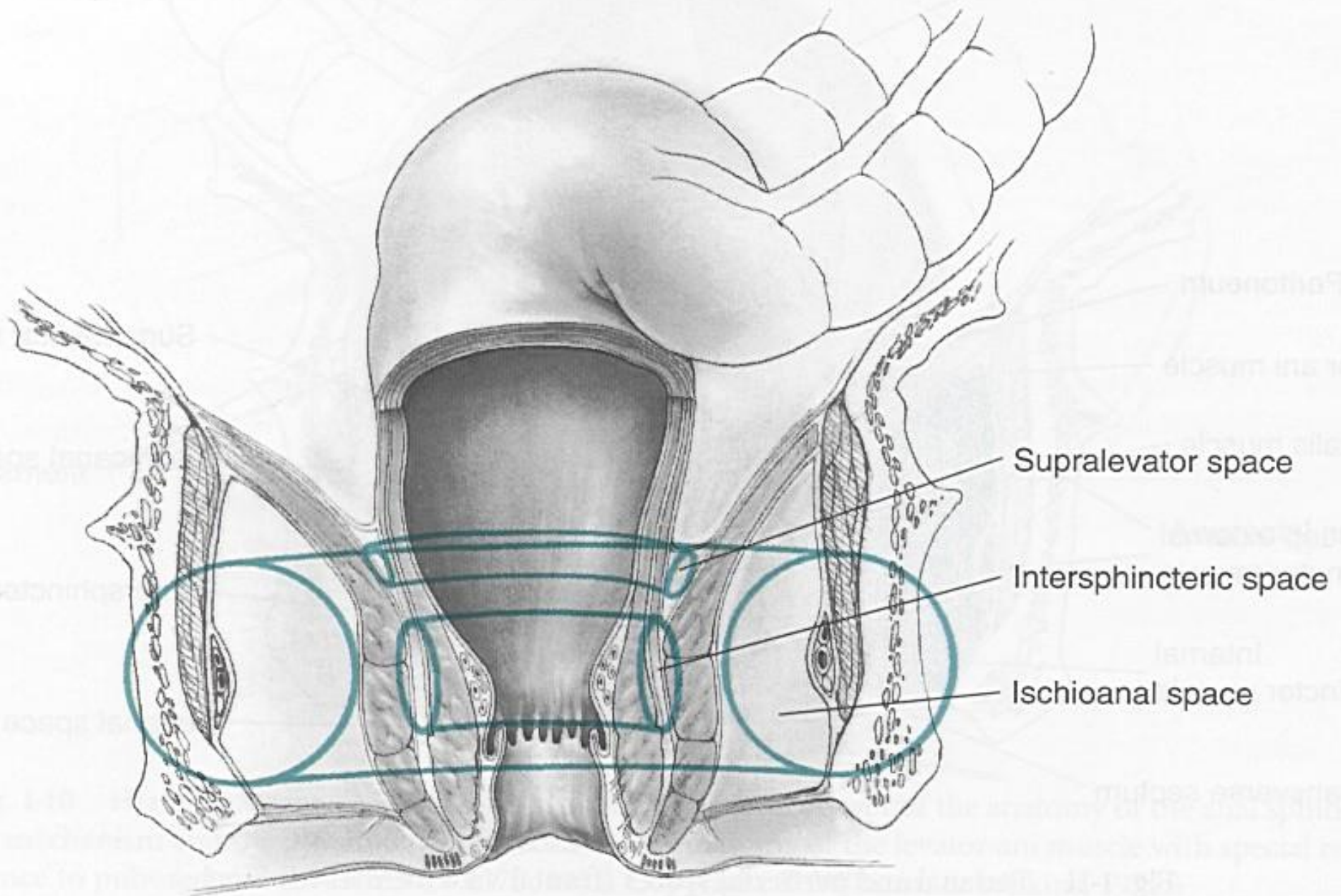


Fig. 1-13 Horseshoe-shaped connections of the anorectal spaces.

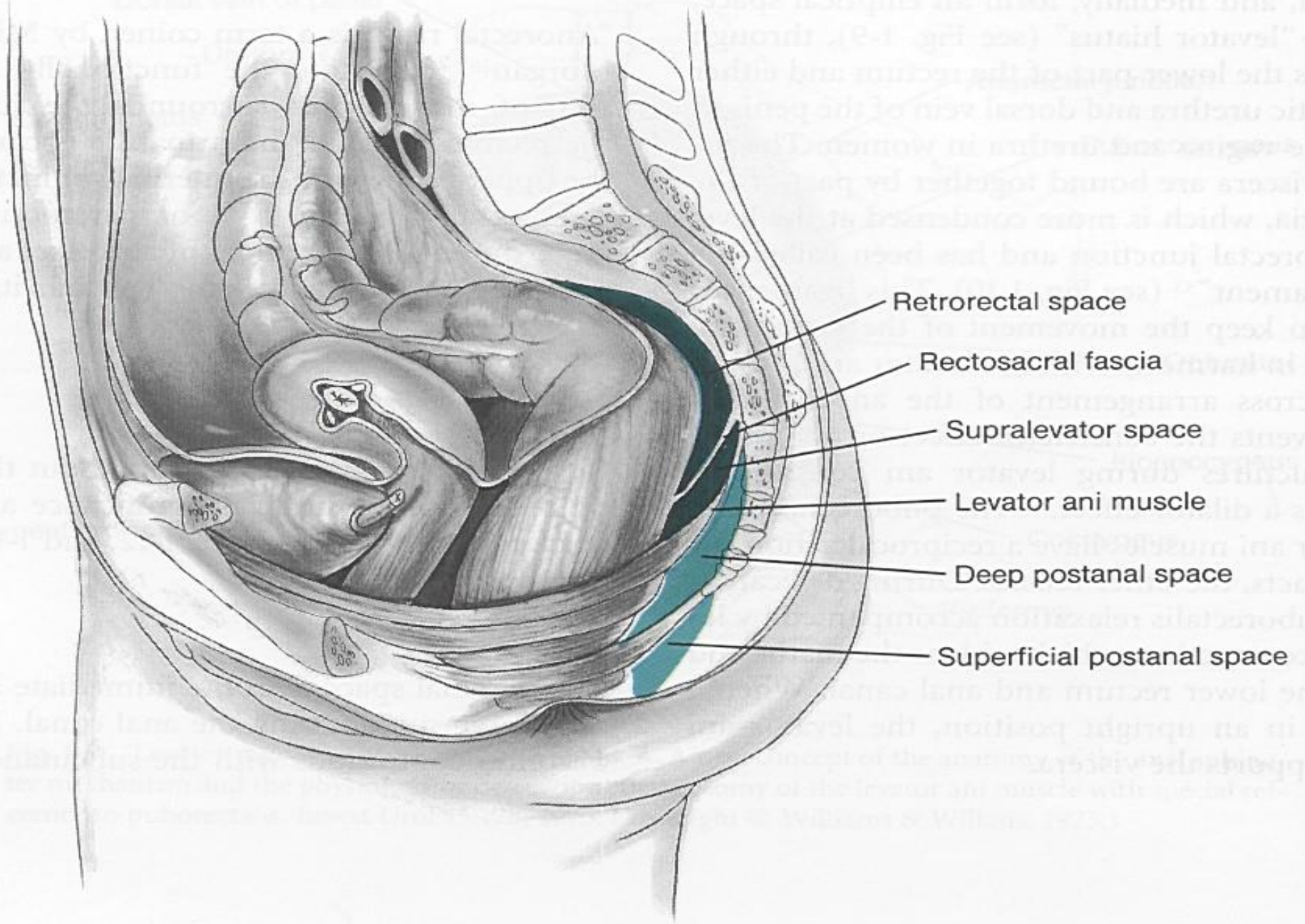


Fig. 1-12 Perianal and perirectal spaces (lateral view). (After M. Finch.)

Perianal Fistula

- Follows the abscess
- Abscess is the acute issue and fistula is the chronic problem
- 40% of drained abscesses end with fistula

Evaluation

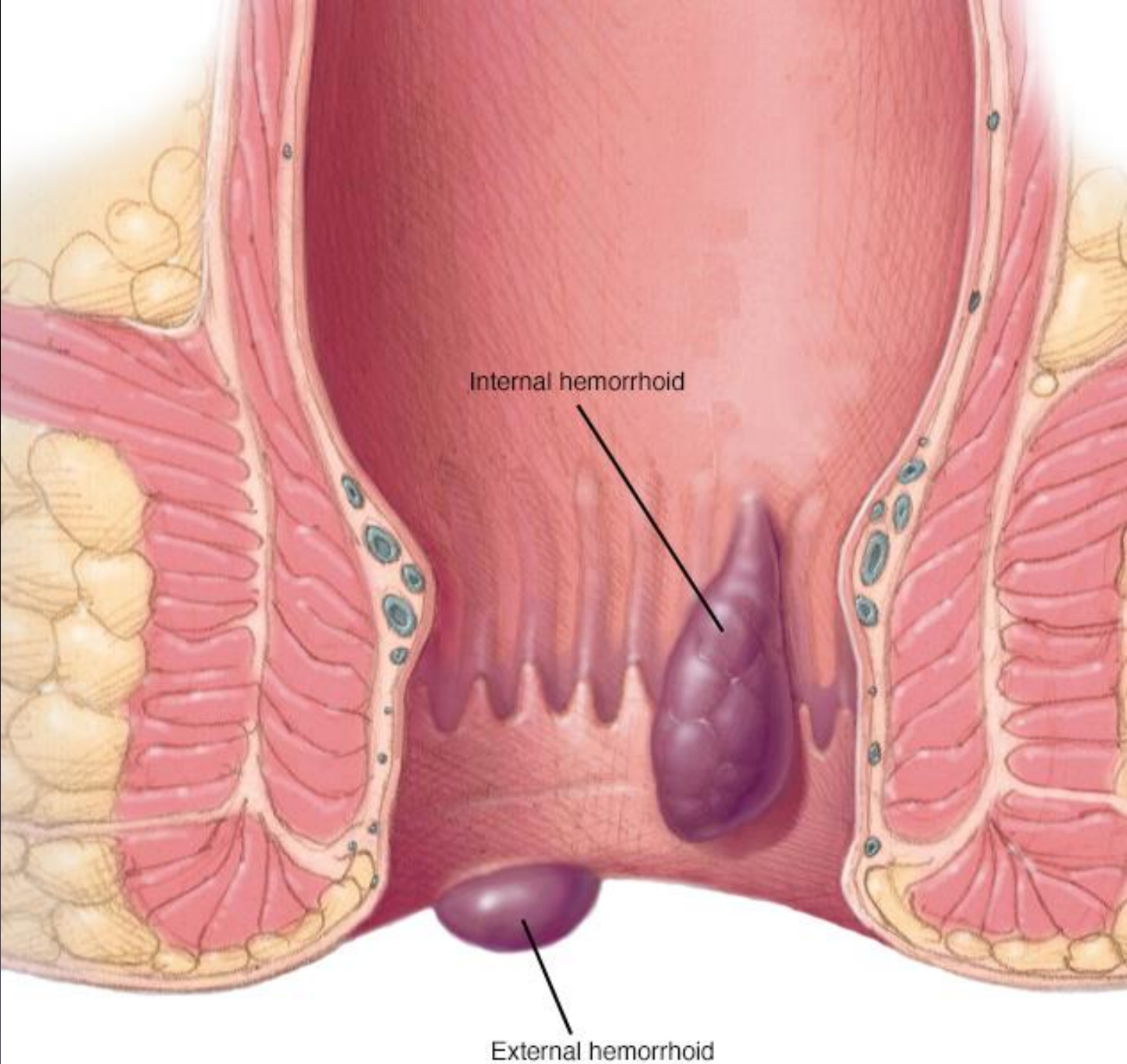
- External opening, Tract, Internal opening
- Clinical exam is the key
- Radiological imaging mainly MRI

Treatment

- Almost always surgical
- Treating the internal opening
- Treatment of underlying pathology

Haemorrhoids

- Vascular structures in the anal canal
- Helps in the continence
- Internal or External



Internal hemorrhoid

External hemorrhoid

Pathophysiology

- Increased intrapelvic pressure
- Constipation, diarrhea
- Engorgement

Grades

- Based on history
- Grade 1: Bleeding
- Grade 2: Prolapse with spontaneous reduction
- Grade 3: Manual reduction
- Grade 4: Won't go back

Treatment

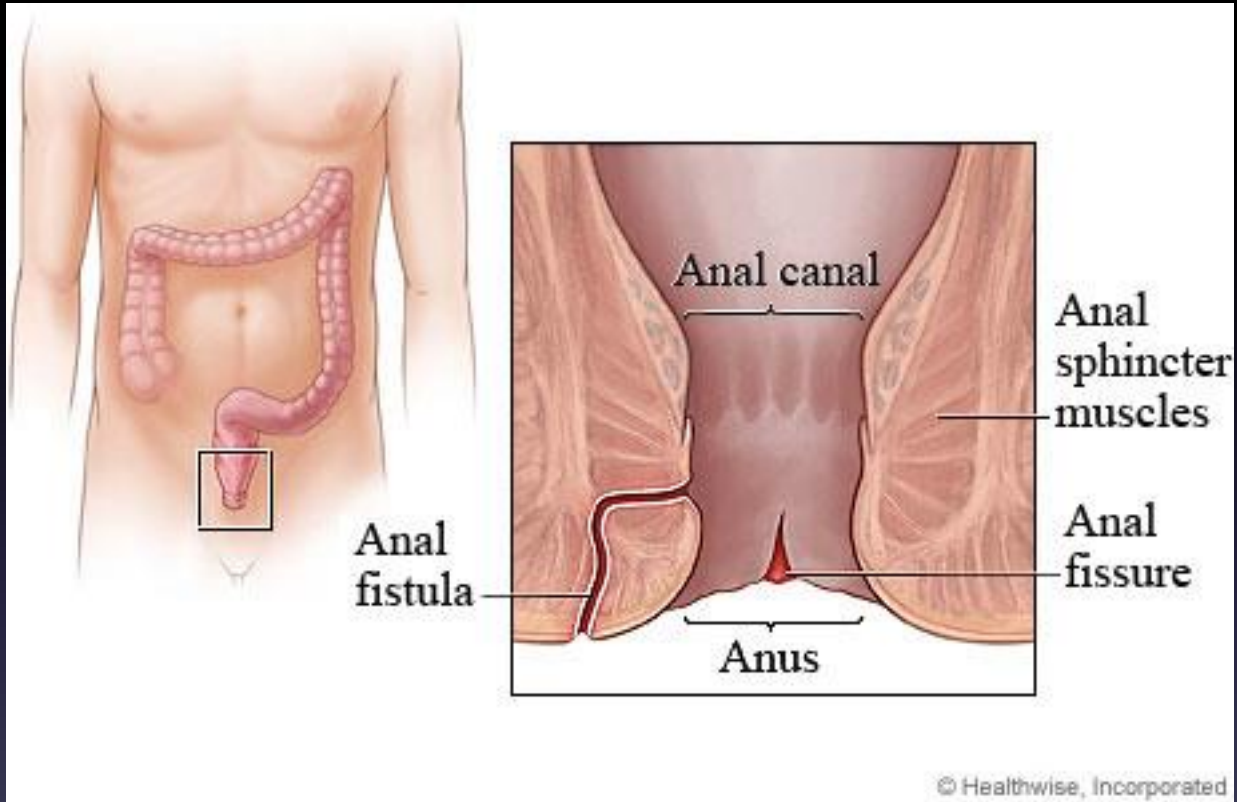
- Scope
- Treat underlying problem
- Banding
- Surgical

Rubber Band Ligation



Fissure

- Tear in the anal canal
- Causes severe pain, sometimes bleeding
- Related to ischemia
- 90 – 99% posterior midline



Treatment

- Treat the constipation
- Vasodilators
- Botox
- Surgery

Rectum

Location & description:

- About 13 cm long
- Start in the front of the third sacral vertebra
- Follow the curve of the sacrum & coccyx
- Ends at the tip of the coccyx
- The lower part dilated to form **rectal ampulla**

Peritoneal cover:

- **Upper 1/3: Cover anterior & lateral surface**
- **Middle 1/3: Cover the anterior surface only**
- **Lower 1/3: No peritoneal cover**



Continue :

- **Anterior Relations in MALE:**
 - Upper 2/3 :SIGMOID COLON &COILS of ileum
 - Lower 1/3:
 - Siminal vesicles
 - Vas deference
 - Bladder
 - Prostate
 - **Posterior:**
 - Sacrum &coccyx
 - Levator anai –pirifomis &coccygeus
 - Sacral plexus &sympathatic chain
- Anterior relations in female
 - Upper 2/3:sigmoid &coils of ileum
 - Lower 1/3:
 - Posterior surface of the vagina
- Posterior :
same



Continue

Blood Supply:

Arteries:

- Superior rectal artery.....from....Inferior mesenteric a.
- Middle rectal artery.....From...Internal iliac a.
- Inferior rectal artery....From....internal pudendal a.

Veins:

- Superior rectal vein...to..portal vein
- Middle rectal vein...to..internal iliac vein
- Inferior rectal vein...to...internal pudendal vein



Anal canal

Surgeons: Begins at the anorectal junction (when pass through the levator ani muscles) about 4 cm down to the anal verge.

Anatomist: part of the intestinal tract that start at dentate line to the anal verge.

- The musculature of the anorectal tube regarded as two tubes, one surrounding the other.

Continue...Anal canal

Linings of the canal:

- Dentate line about 2cm above the anal verge
- **Columns of Morgagni:** 6-14 longitudinal folds at dentate line with Small anal crypts at the lower end & between the the adjacent folds
- **Surgical significance:**
 - Foreign material may lodge in them, obstructing the ducts & cause sepsis

Anal mucosa:

- Above dentate line : Columnal epithelium
- Below Dentate line: Squamous epithelium

• *TRANSITIONAL ZONE:*

- Interposed between uninterrupted colorectal & anal epithelium

Anoderm:

The area below the dentate line .Not a true skin because it is devoid the accessory skin structure(hair .sebaceous glands)

Anorectal spaces:

1. Perianal space
2. Ischioanal Space
3. Intersphincteric Space
4. Supralevator Space
5. Submucous space
6. Superficial Postanal space
7. Deep postanal space
8. Retrorectal space



Superior rectal artery

- Direct continuation of the inferior mesenteric artery
- Chief arterial supply for the MUCOSA of the rectum
- It enters the pelvis by descending in the root of the sigmoid mesocolon
- Pierce the Muscular coat & supply the mucosa
- Anastomose with Inferior & Middle Rectal Arteries

Middle rectal artery

- Branch of the Internal iliac artery
- Supply the muscular coat of the rectum
- Can not solely provide the blood supply to the rectum in case of superior rectal artery ligation

Inferior rectal artery

- Rise from Internal pudendal artery
- Travel the ischiorectal fossa & supply the anal canal & external sphincter muscles

Median Sacral Artery

- Arise from the back of the AORTA at 1.5 cm above the bifurcation
- Descends over the last two lumbar vertebrae, the sacrum, and the coccyx
- The **SURGICAL SIGNIFICANCE** of the median sacral artery is that during rectal excision. The vessel exposed in the front of the sacrum, This vessel may demonstrate troublesome bleeding

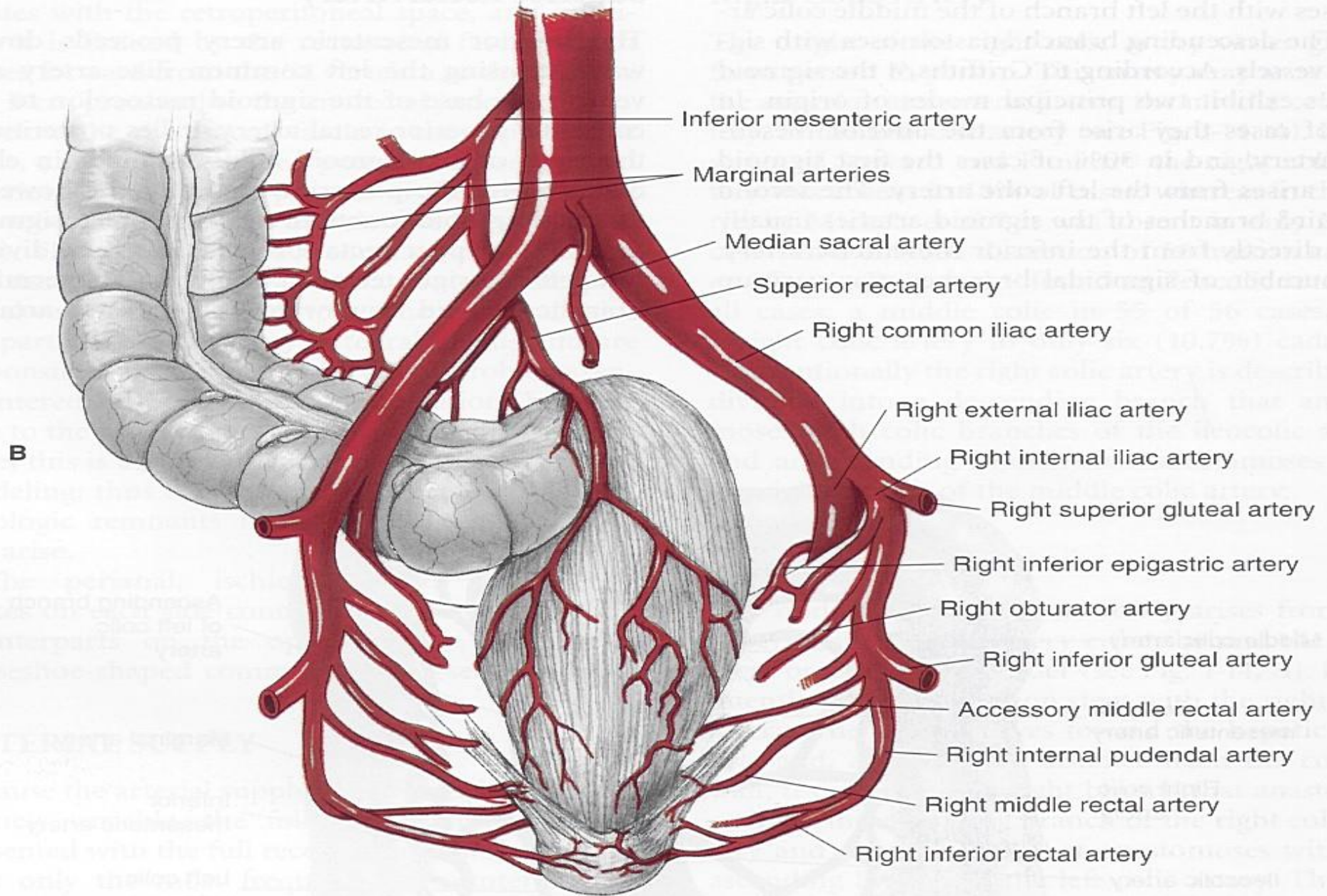


Fig. 1-14, cont'd Arterial supply. **B**, Supply to the rectum (posterior view). (A modified from Pernkopf E. Atlas der topographischen und angewandten Anatomie des Menschen. München-Wien-Baltimore: Urban & Schwarzenberg, 1963.)

VENOUS DRAINAGE OF THE COLON & RECTUM

Superior Mesenteric Vein:

- Drain Veins from Rt.colon & Transverse colon lies Rt.&front to S.M.A.
- Joined the Splenic vein to form Portal vein

Inferior Mesenteric Vein:

- Drain the superior rectal vein
- Receive blood from the left colon, rectum & the upper part of the anal canal

Conti.Venous drainage:

Superior rectal vein:

Drain the rectum & upper part of the anal canal, where the internal hemorrhoidal plexus is situated to portal vein

Middle rectal vein:

Drain the rectum & upper part of the anal canal to SYSTEMIC circulation by internal iliac veins

Inferior rectal vein:

Drain the lower part of the anal canal, where the external hemorrhoidal plexus is located, via internal pudendal vein then to internal iliac vein
...SYSTEMIC circulation

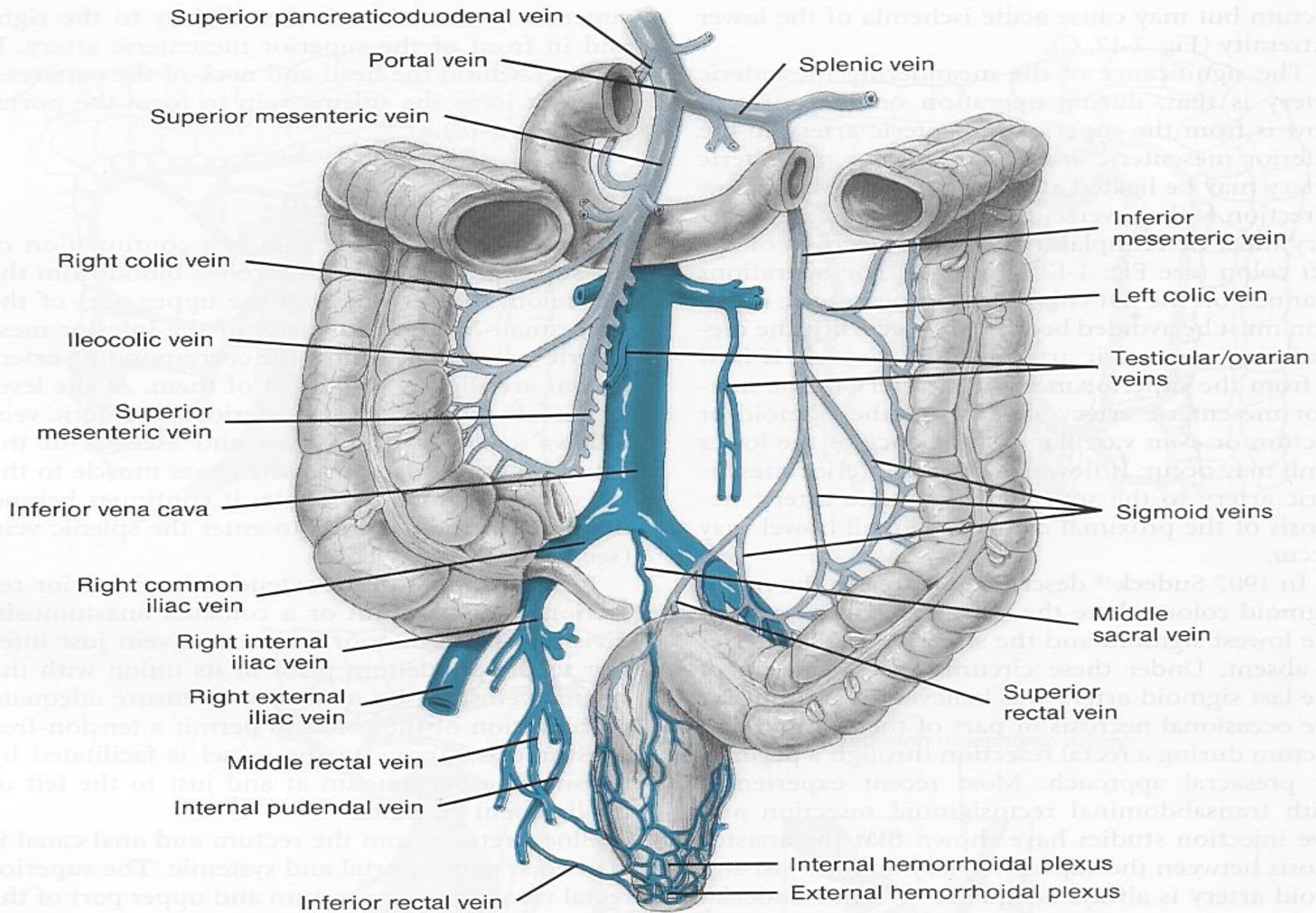


Fig. 1-18 Venous drainage of the colon and rectum. (Dark blue represents systemic venous drainage. Light blue shows portal venous drainage.)

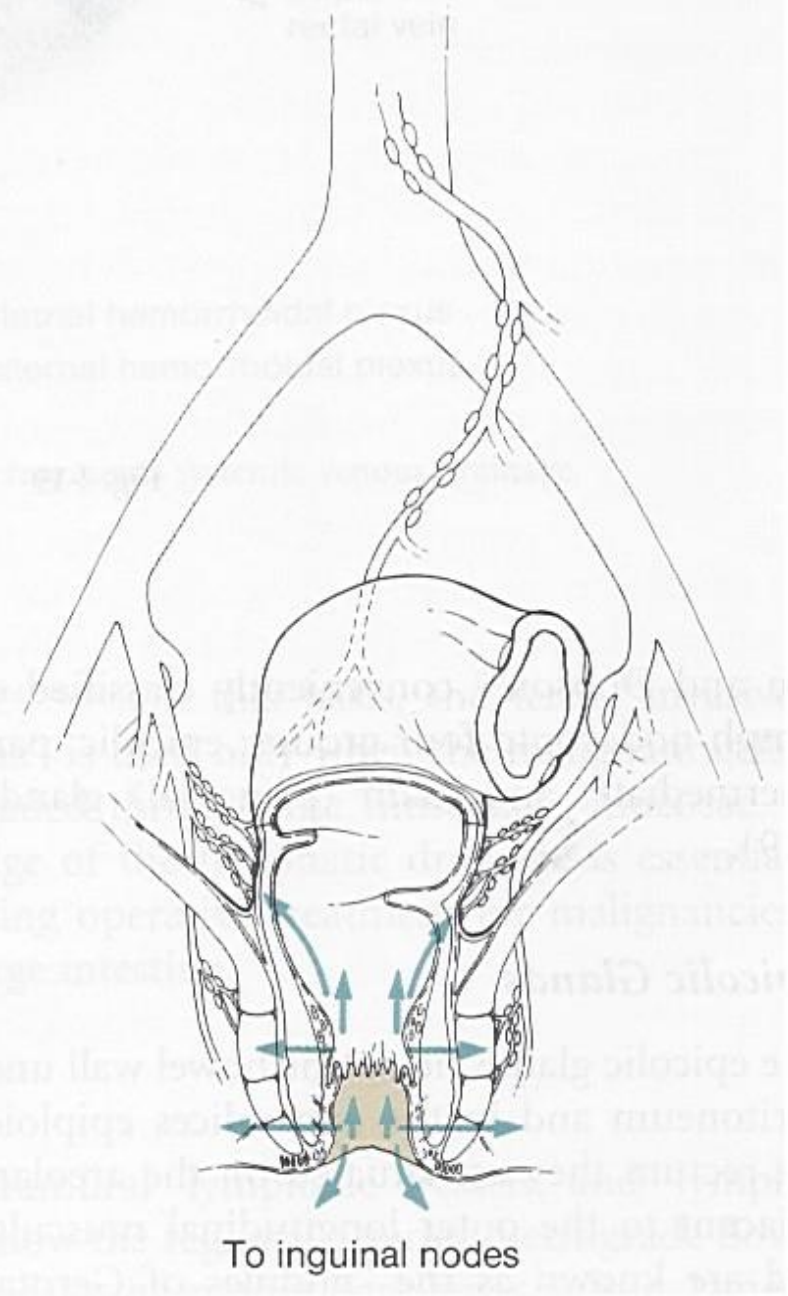
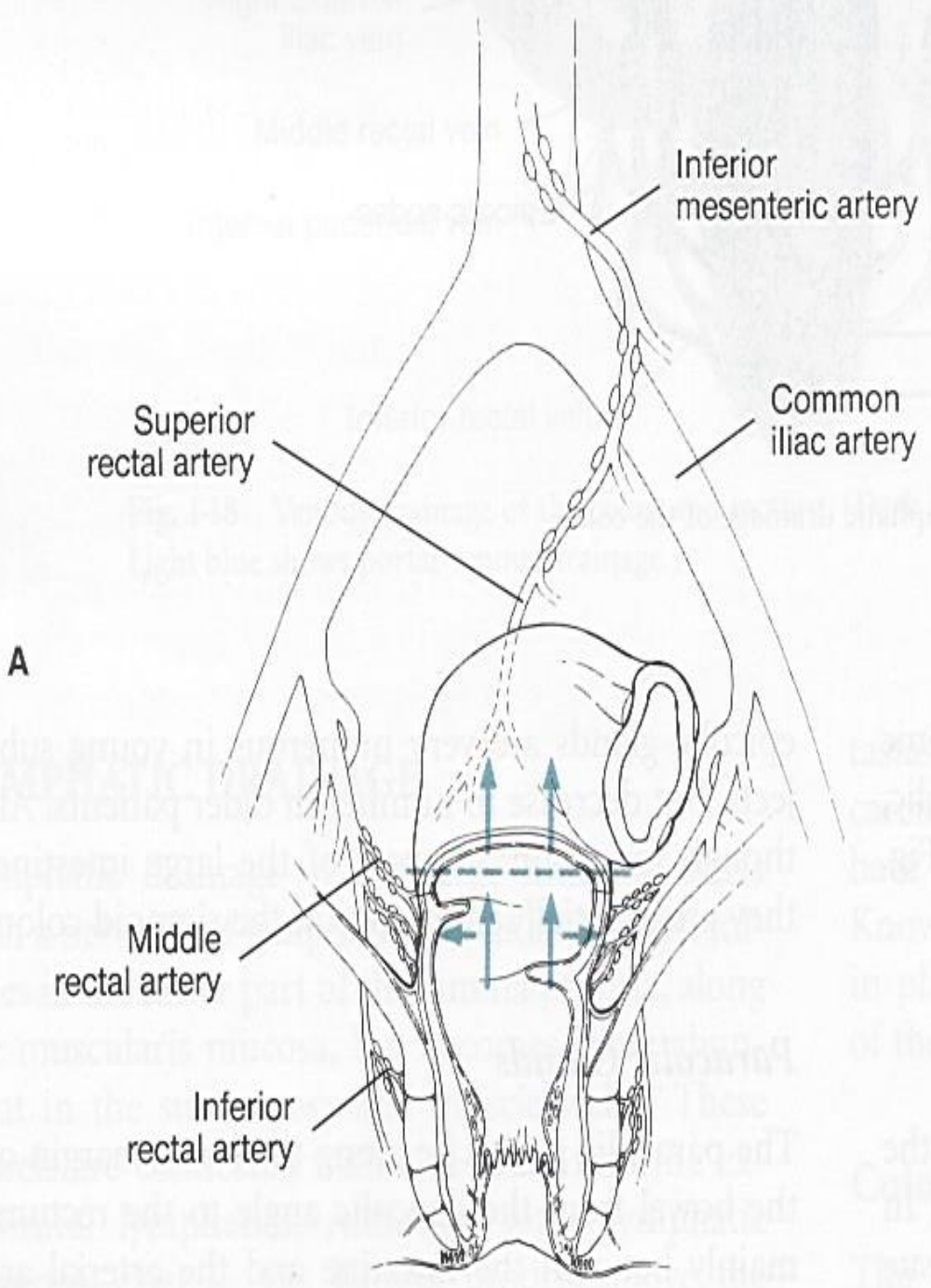


Fig. 1-20 Lymphatic drainage of the rectum (A) and anal canal (B). (After M. Finch.)

Rectum lymphatic draining

Upper & middle Rectum:

- Lymph drain along the superior rectal artery into inferior ***mesenteric lymph nodes***

Lower Rectum:

- Superiorly drain to ***inferior mesenteric lymph nodes***
- Laterally, via lymph vessels along the middle rectal vein into ***internal iliac nodes***

Rectal epicolic lymph nodes located on the areolar tissue adjacent to longitudinal muscle coat & known as (nodules of Gerota)

Anal canal lymphatics

ABOVE the dentate line :

Drain up through superior rectal lymphatics to inferior mesenteric nodes

Drain laterally via middle & inferior rectal lymphatics through ischioanal fossa to the internal iliac nodes

BELOW the dentate line:

Drain to the inguinal nodes

Clinical Significance-Spread of Ca-rectum:

1. Lymphatic drain 5 cm from the anal verge spread to....posterior vaginal wall-uterus-cervix-Broad ligament-fallopian tubes-ovaries & clu-de-sac
2. 10 cm above the anal verge spread only to broad ligament & clu-de-sac
3. 15 cm no spread to the genital organs

NERVE SUPPLY:

Colon:

- Sympathatic & parasympathatic (Vagus) innervation from the superior mesenteric lymph plexus till the proximal 2/3 of the transverse colon
- Innervation for the distal 1/3 of the transverse colon down to sigmoid colon driven from pelvic splanchnic nerves through the inferior mesenteric plexus

Sigmoide colon & rectum:

- Inferior hypogastric plexus which is sensitive only to stretch

Anal canal:

• Upper half:

Sensitive to stretch only, innervated by hypogastric plexus

• Lower half:

Sensitive to pain-pressure-touch-temp, innervated by inferior rectal nerve

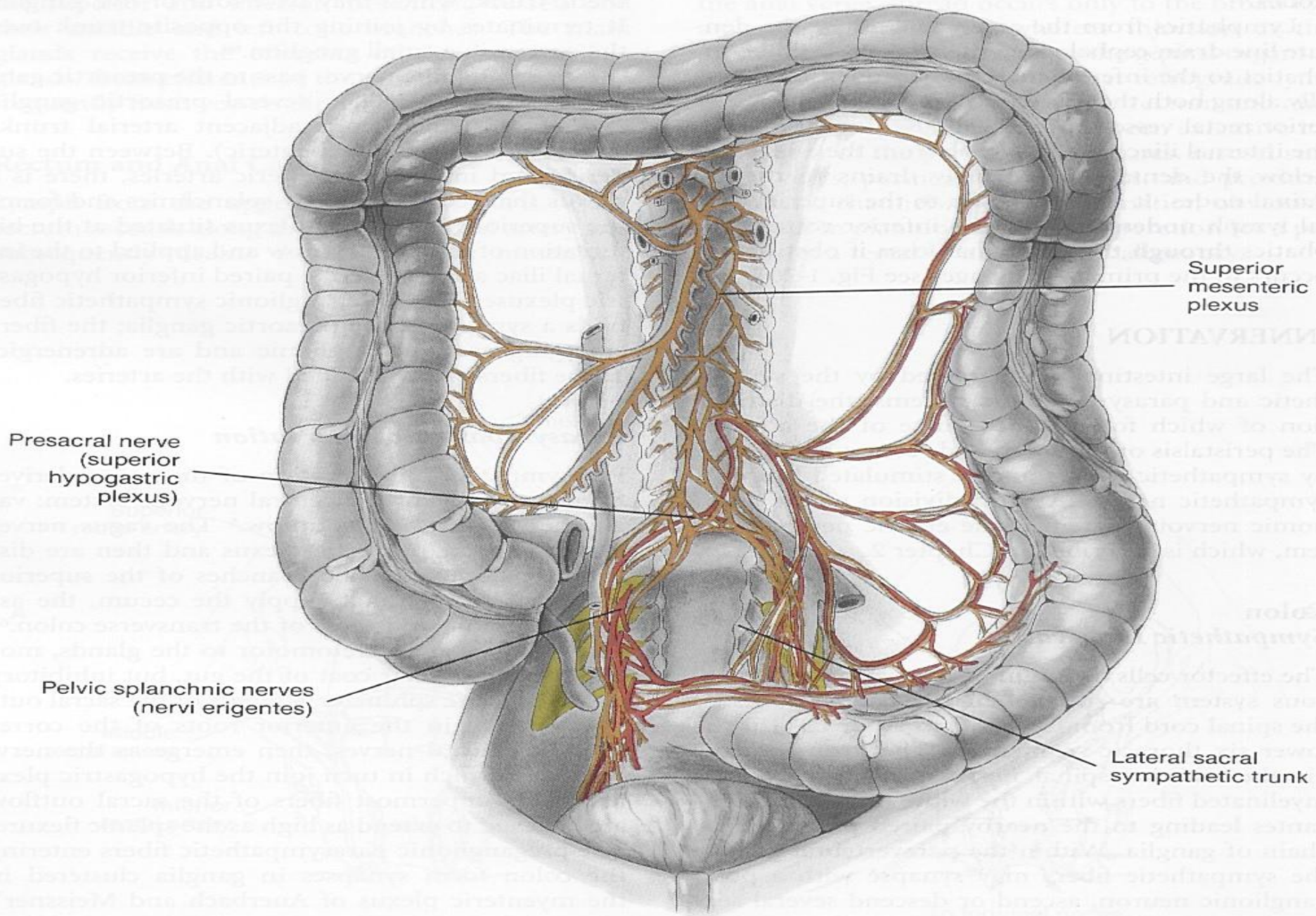


Fig. 1-21 Nerve supply to the rectum (frontal view).



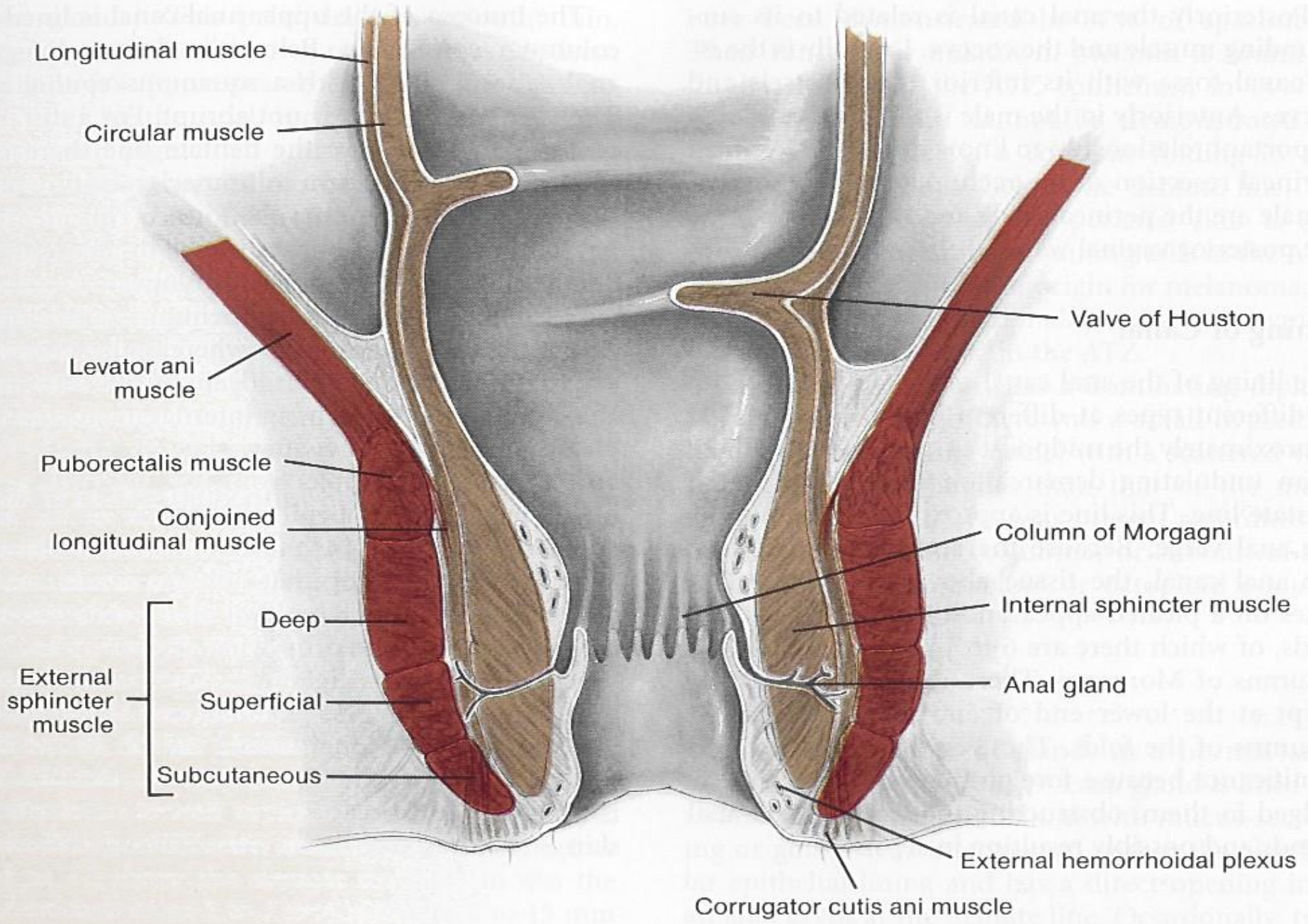


Fig. 1-5 Anal canal.

