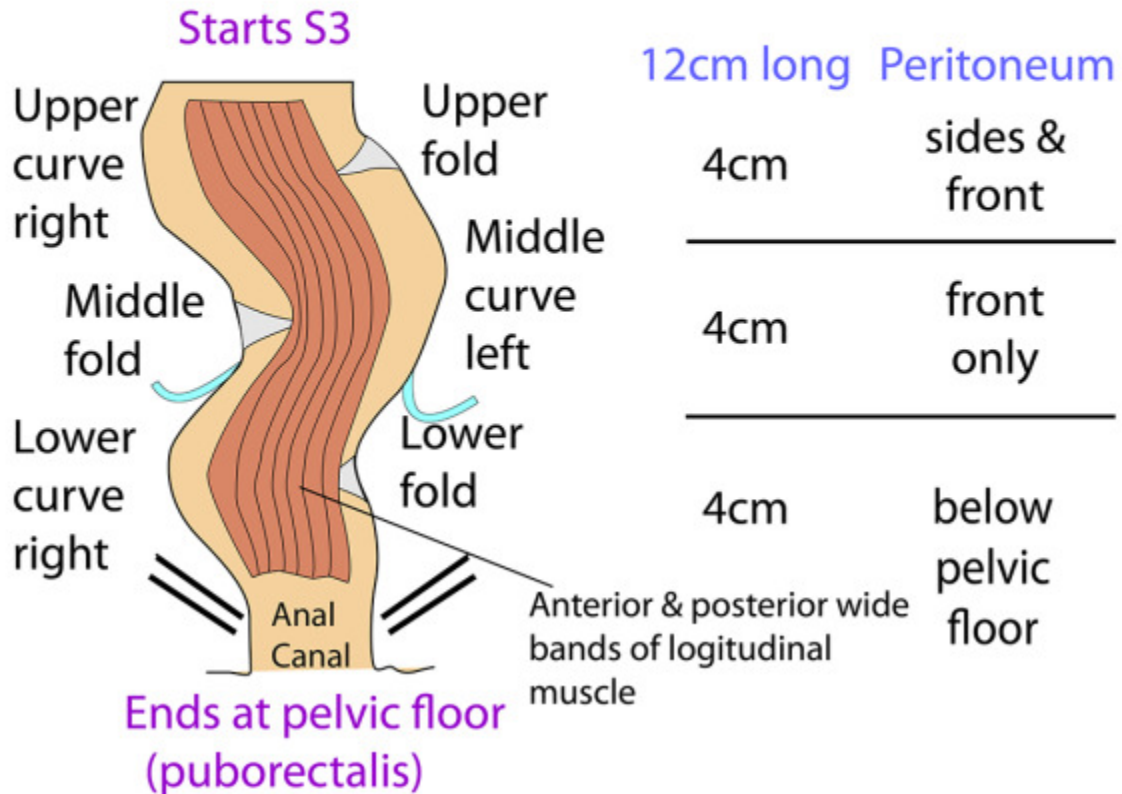


RECTUM (length & peritoneal covering)



RECTUM DETAILS

No appendices epiploicae, no sacculations, no mesentery

Nerves:

Sympathetic - contract smooth muscle sphincters, relax bowel, transmit pain

Parasympathetic - Relax smooth muscle sphincters, contract bowel, transmit feeling of fullness

Folds are mucosa & circular muscle = valves of Houston

The rectum is normally empty but fills before and during defaecation

Upper 2/3 is distensible into abdominal cavity & may store faeces in constipation

Lower 1/3 normally but can distend laterally into the ischio-anal fossa

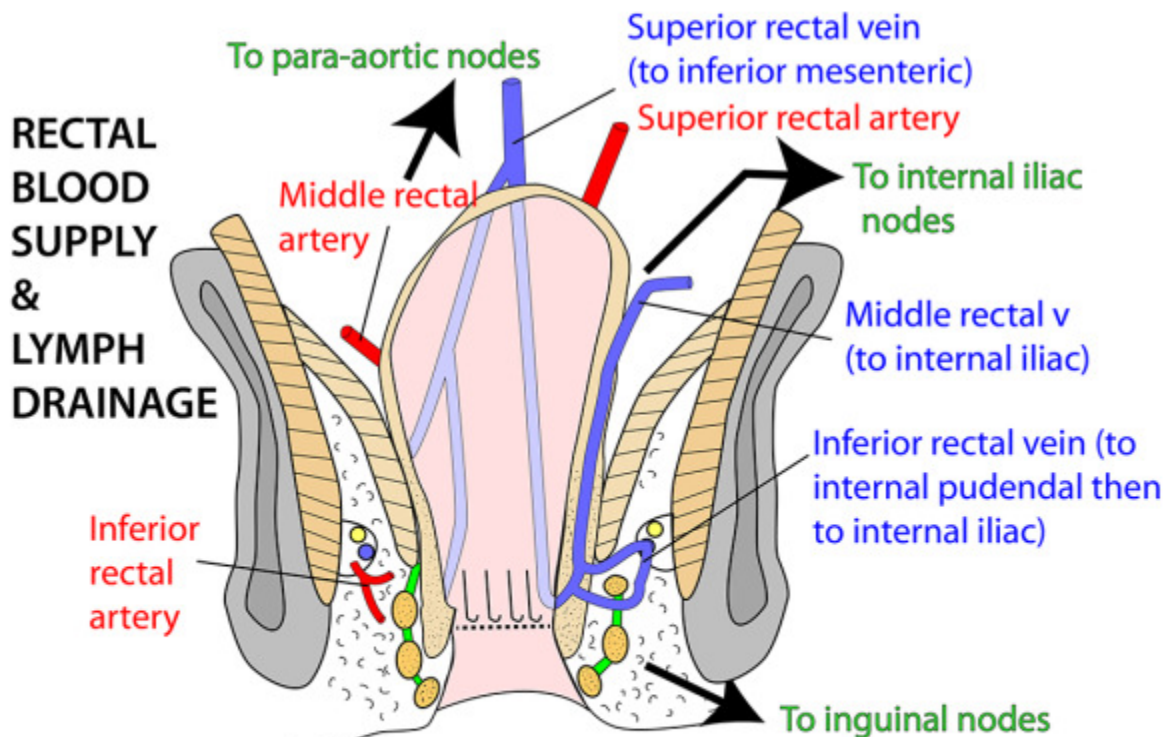
Note: **longitudinal muscle** is two wide bands anteriorly & posteriorly that become fibrous within the sphincters. **Circular muscle** complete but thickened below as internal sphincter

RECTUM - VESSELS/LYMPHATICS

Blood supply: Superior rectal artery from inferior mesenteric
 Middle rectal artery from internal iliac.
 Smaller inferior rectal artery from internal pudendal
 Median sacral may contribute
 All arteries supply all layers

Venous drainage: Superior rectal vein to inferior mesenteric which is portal. Middle rectal to internal iliac (systemic)
 Inferior rectal to internal pudendal to internal iliac (systemic). Portosystemic anastomosis in upper anal canal where internal & external venous plexuses meet.

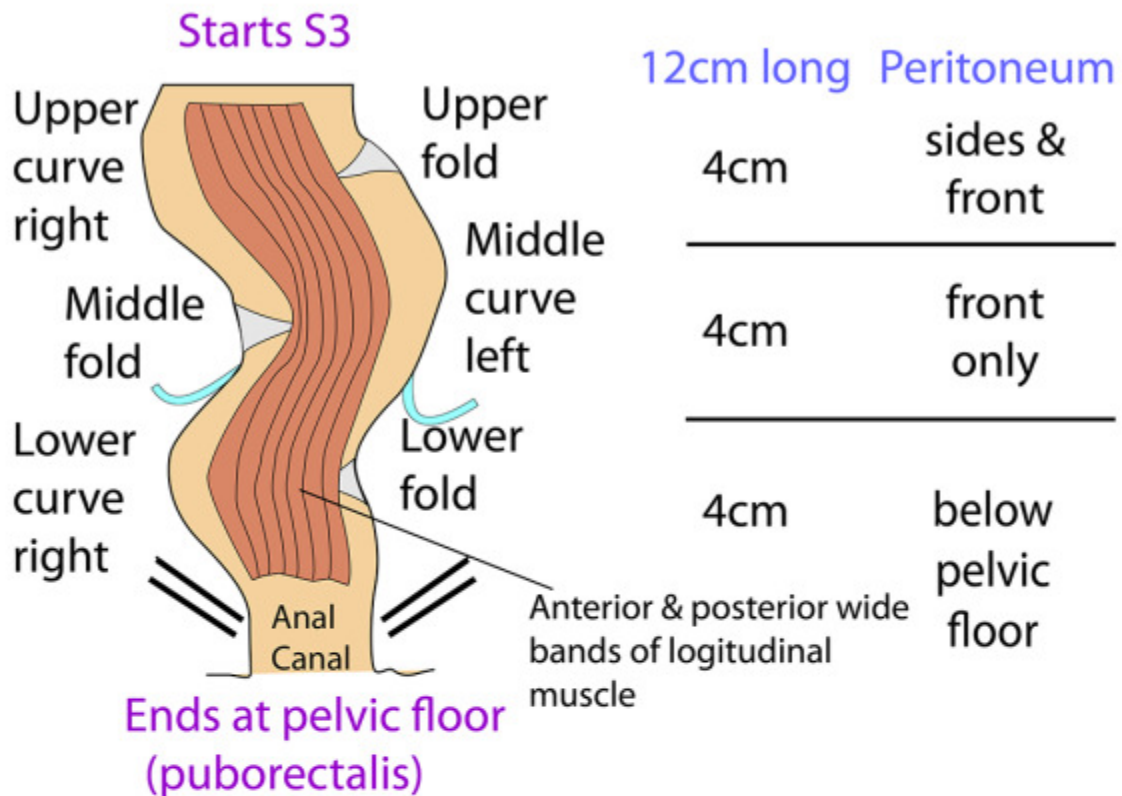
Lymphatics: Follow deep veins and arteries (black arrows below)



Portosystemic anastomosis in upper anal canal where internal & external venous plexuses meet

RULE: Lymphatics from viscera follow deep arteries back to nodes around the origin of the artery

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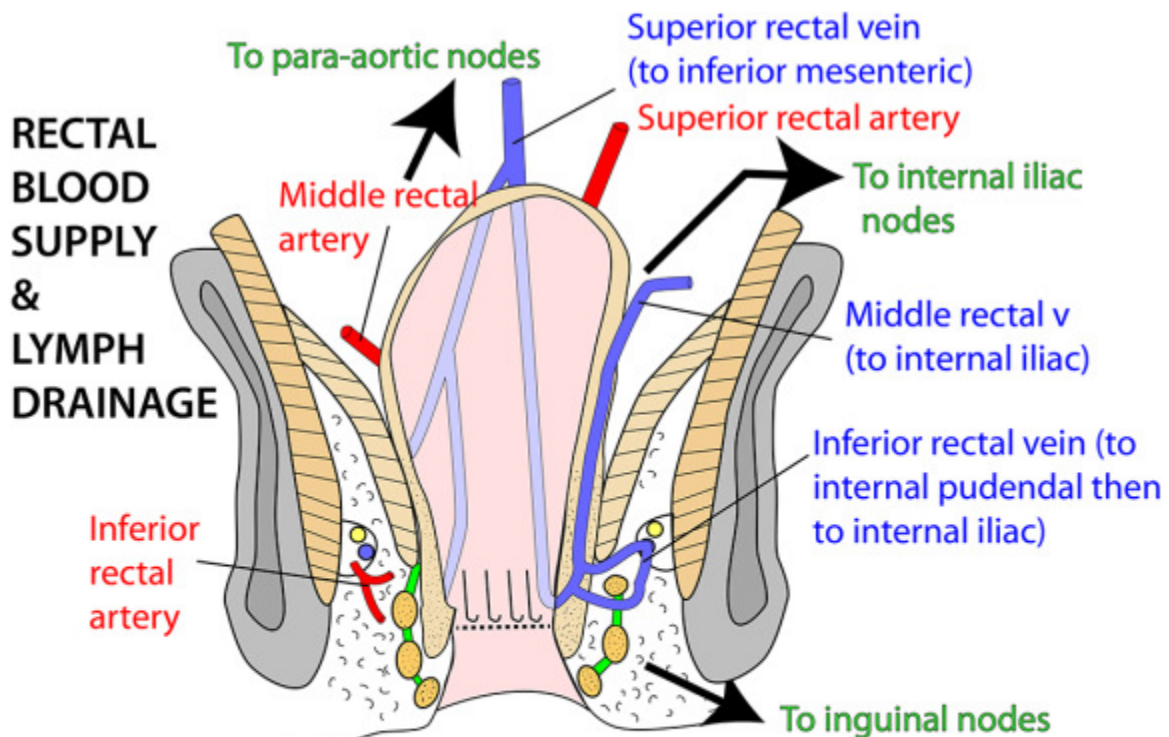
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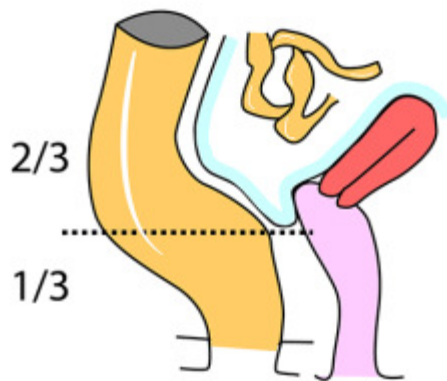


Portosystemic anastomosis in upper anal canal where internal & external venous plexuses meet

RULE: Lymphatics from viscera follow deep arteries back to nodes around the origin of the artery

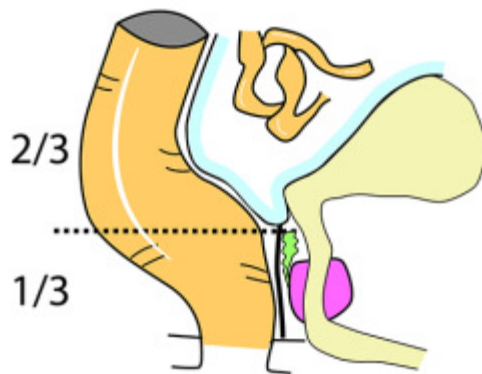
RECTUM - RELATIONS

ANTERIOR



Female

- Recto-uterine pouch (of Douglas)
- Small bowel
- Vagina (posterior fornix)
- Uterus & bladder



Male

- Rectovesical pouch
- Small bowel
- Denonvillier's fascia
- Bladder
- Vas, seminal vesicle
- Prostate

POSTERIOR

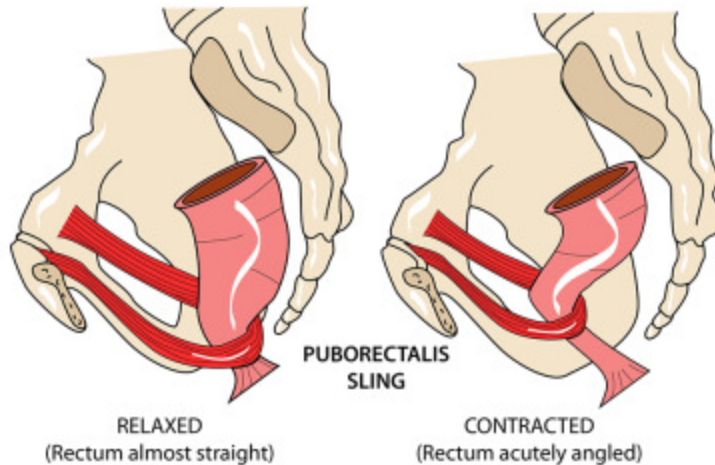
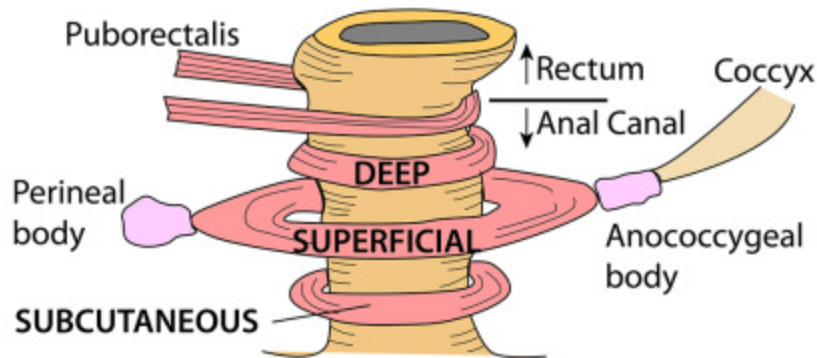
Fascia, median sacral & rectal vessels, sympathetic trunk, pelvic splanchnic nerves, piriformis, sacral & coccygeal roots, sacrum, coccyx, anococcygeal body

LATERAL

Peritoneum, fat, nodes, obturator internus & its fascia, Alcock's canal & contents, levator ani & coccygeus, ischio-anal fossa, lateral (fascial) ligaments of rectum

Denonvillier's fascia is probably a double layer of peritoneum acting as a major factor in preventing the spread of cancer in either direction

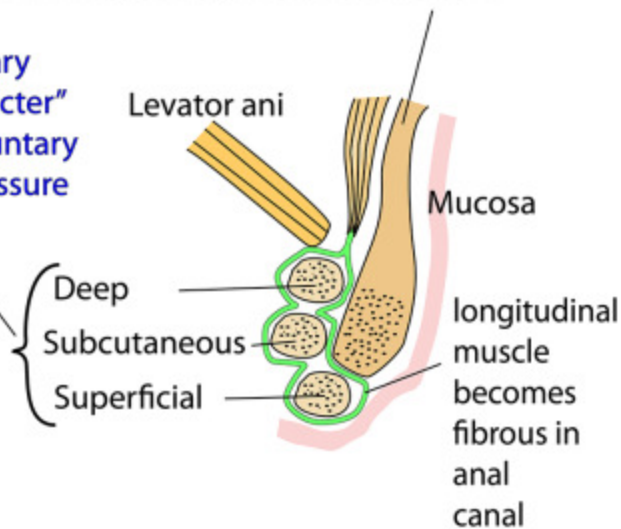
ANAL CANAL - SPHINCTERS



Circular muscle becomes the “involuntary internal anal sphincter” which relaxes with moderate pressure from above

Part of the “voluntary external anal sphincter” that reflexly or voluntarily relax with high pressure from above

INTERNAL & EXTERNAL ANAL SPHINCTERS



CONTINENCE

- Internal sphincter (involuntary)
- External sphincter (voluntary)
- Recto-anal angle (puborectalis)
- Anal cushions & mucosal folds
- Abdominal pressure on upper anterior part of lower rectum

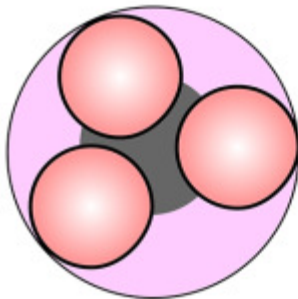
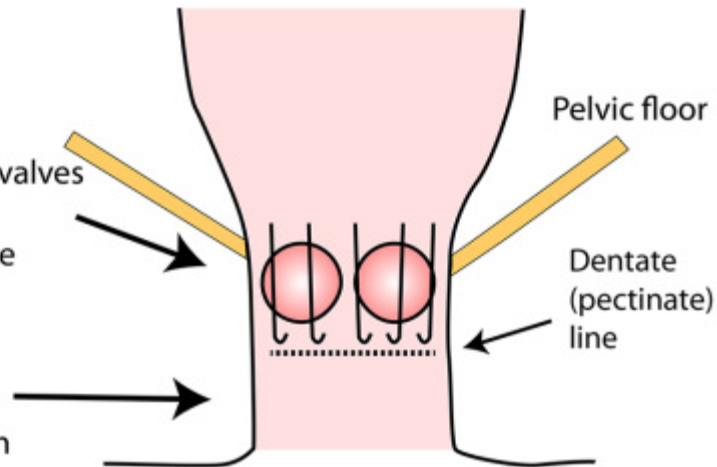
NOTE:

Incontinence can be due to overflow around impacted faeces in constipation

ANAL CANAL - GENERAL

- 4cm long, from pelvic floor (puborectalis) to outside
- Two distinct halves of 2cm separated by dentate (pectinate) line

- **Upper half** (2cm)
- 12 anal columns/valves
- 3 cushions
- Largely insensitive to touch
- **Lower half** (2cm)
- Skin
- Sensitive to touch



3 spongy muscosal cushions are in the upper half, at 3, 7 & 11 o'clock. They contain bright red capillary blood.

They help with continence, air tightness & mucus production.

Enlargement leads to haemorrhoids (piles).

NOTE: Although they are at the same level as the venous plexuses (which can enlarge in a portosystemic anastomosis) they are quite separate from them

UPPER HALF

- Endoderm origin
- Columnar mucosa
- Columns, valves & cushions
- Autonomic nerves
- Mainly superior rectal artery
- Portal venous drainage
- Para-aortic lymph nodes
- Adenocarcinoma
- Site of haemorrhoids

LOWER HALF

- Ectoderm origin
- Squamous mucosa
- Skin
- Somatic nerves
- Mainly inferior rectal artery
- Systemic venous drainage
- Superficial inguinal nodes
- Squamous carcinoma
- No haemorrhoids

Anocutaneous reflex: Touching the skin near the anus (S2,3,4) gives a reflex contraction of the external anal sphincters