HISTOLOGY LARGE INTESTINE

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Learning Objectives

At the end of the lecture students should be able to;

- To Know the basic anatomy of large intestine
- Review the important histological features of large intestine
- To Know the basic histological features which differentiate large intestine from small intestine
- Identify the appendix
- Recognize the characteristics of anorectal regions

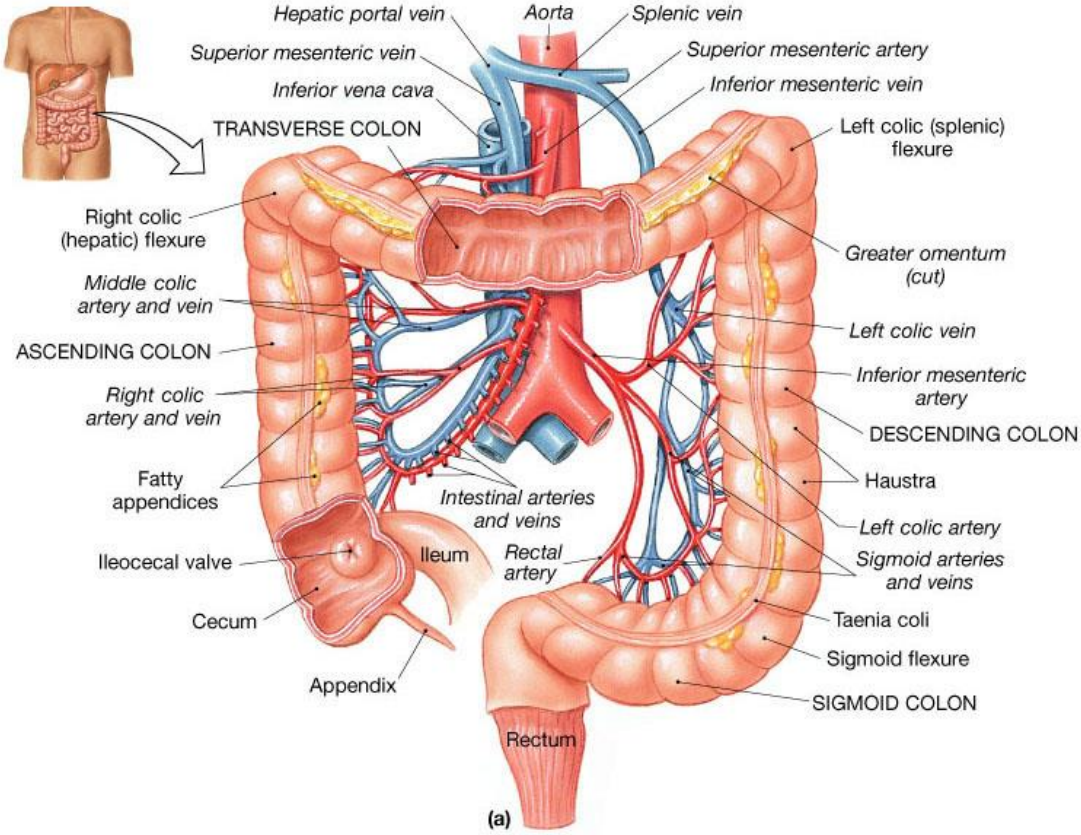
Large Intestine

Extends from ileocecal valve
to anus

REGIONS: –

- Cecum –
  Appendix –
- Colon
  - Ascending • Transverse
- Descending

- Rectum – Anal canal

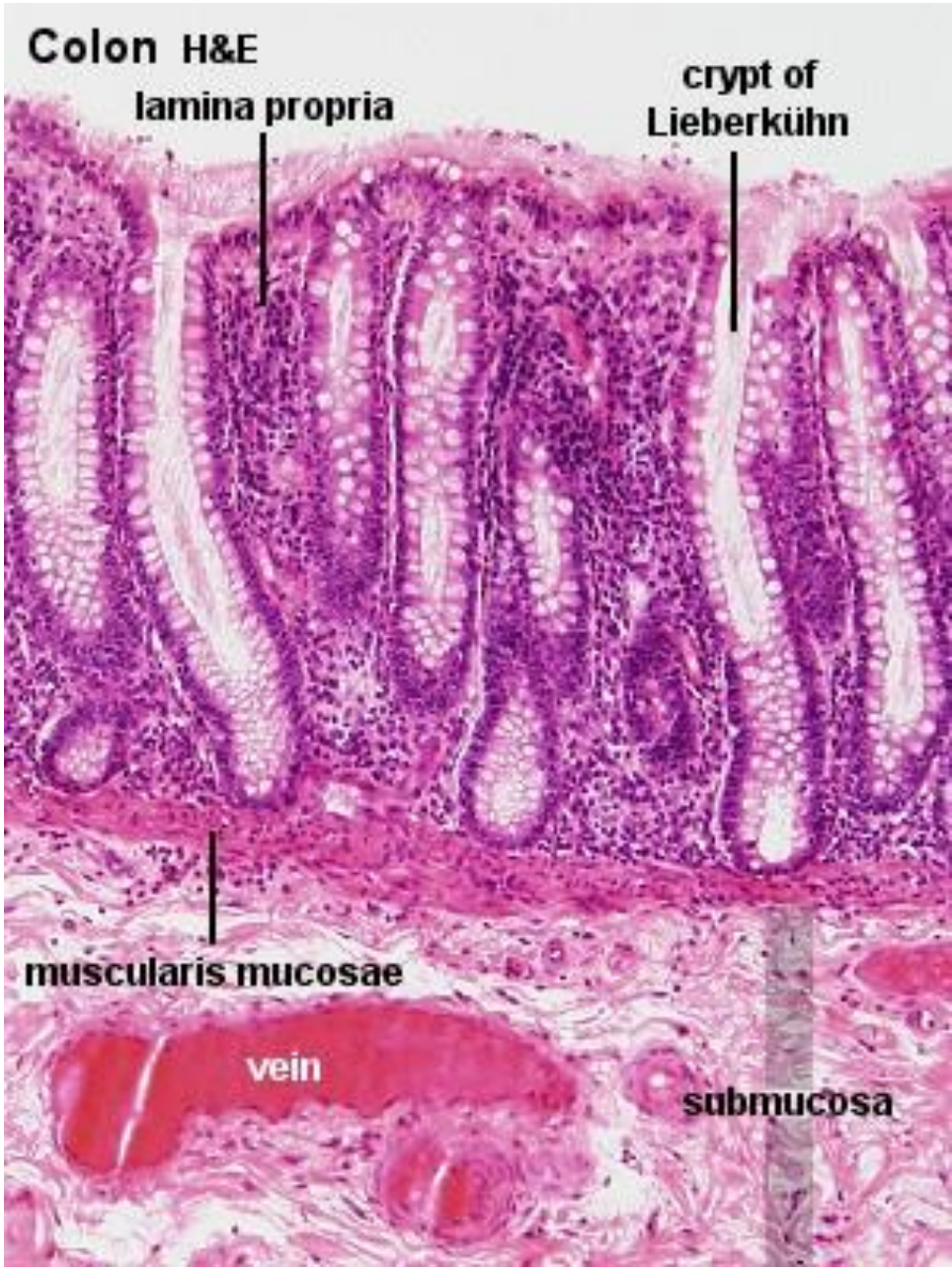


Functions of the large intestine

- Reabsorb water and convert compact material into feces
- Absorb vitamins produced by bacteria
- Store fecal matter prior to defecation

Large intestine Mucosa

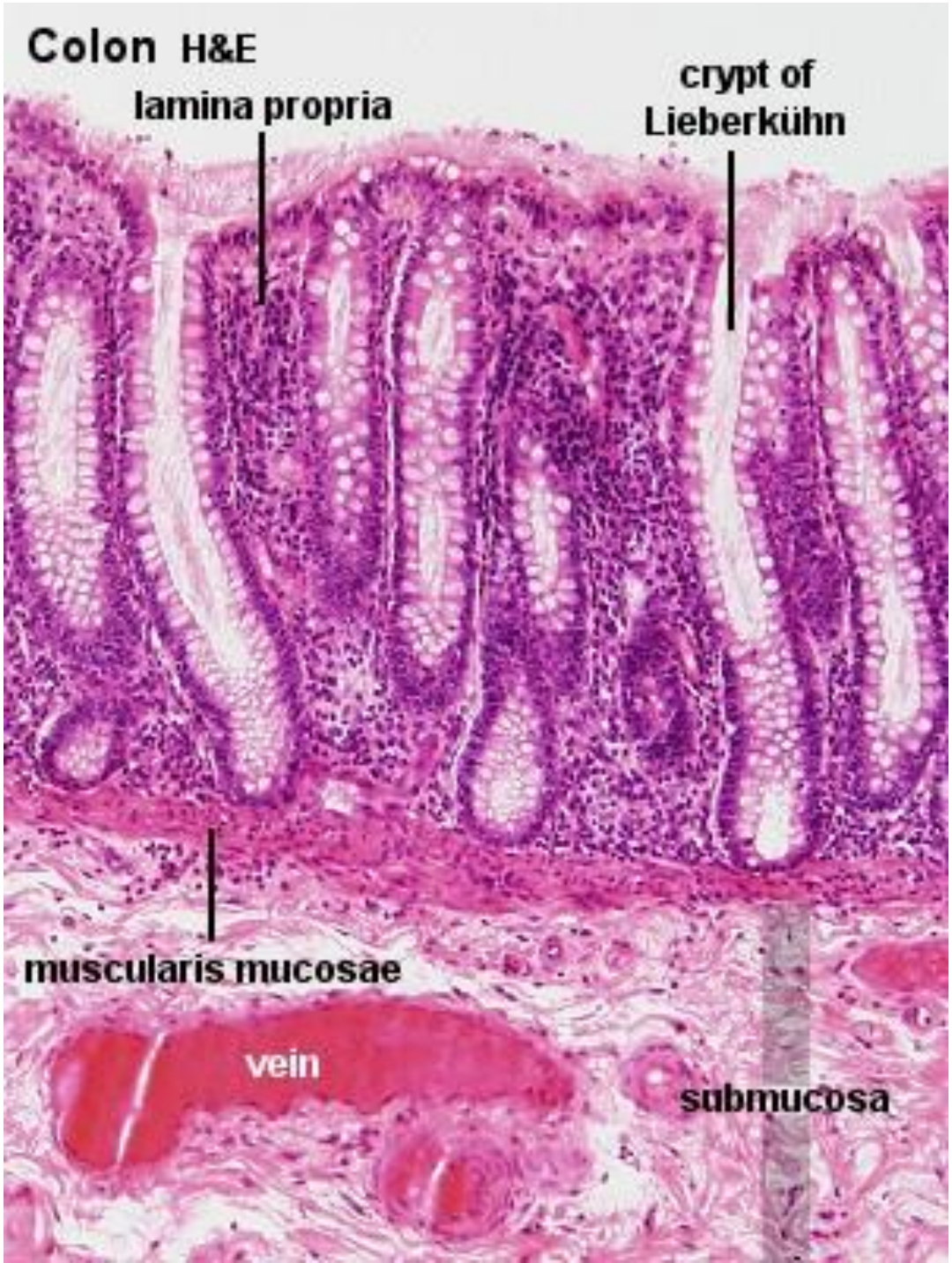
- The mucosa appears smooth at the gross level because it has no villi
- Numerous straight, tubular glands are present. They extend all the way to the muscularis mucosae. – The glands and the surface are lined with simple columnar epithelium .
- However Paneth cells are usually absent . and enteroendocrine cells are rare.
- – Columnar absorptive cells and goblet cells are abundant.



Large intestine Mucosa (Continous)

The lamina propria :-

- Is highly cellular. – It is particularly rich in lymphoid cells and lymph nodules may interrupt the regular spacing of the crypts and extend into the submucosa (this is particularly evident in the appendix).
- The muscularis mucosa – has a circular and longitudinal layer.

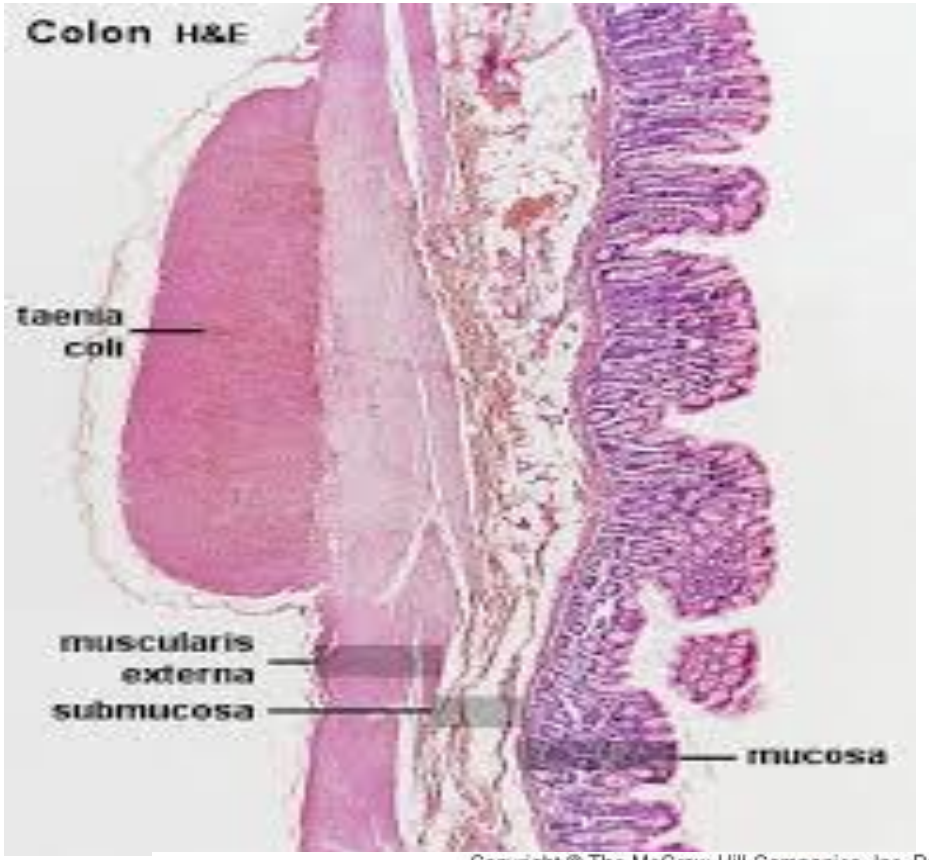


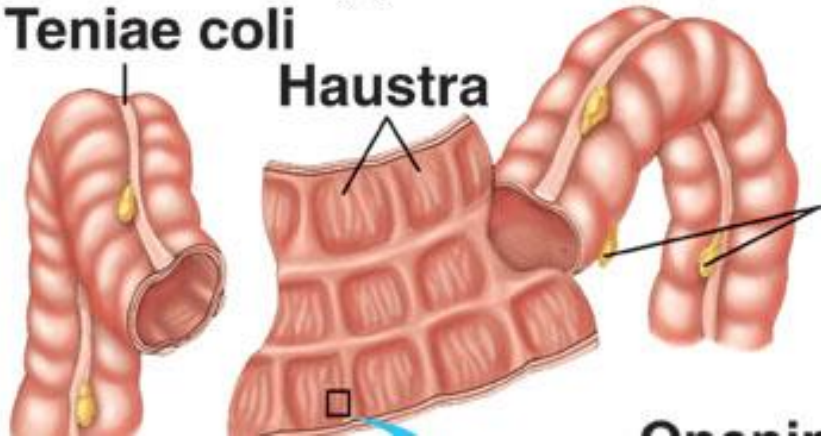
Large intestine Submucosa

- The submucosa is quite dense, similar to that of the small intestine. – Considerable amounts of fat and blood vessel found may be found in the submucosa.

Muscularis Externa

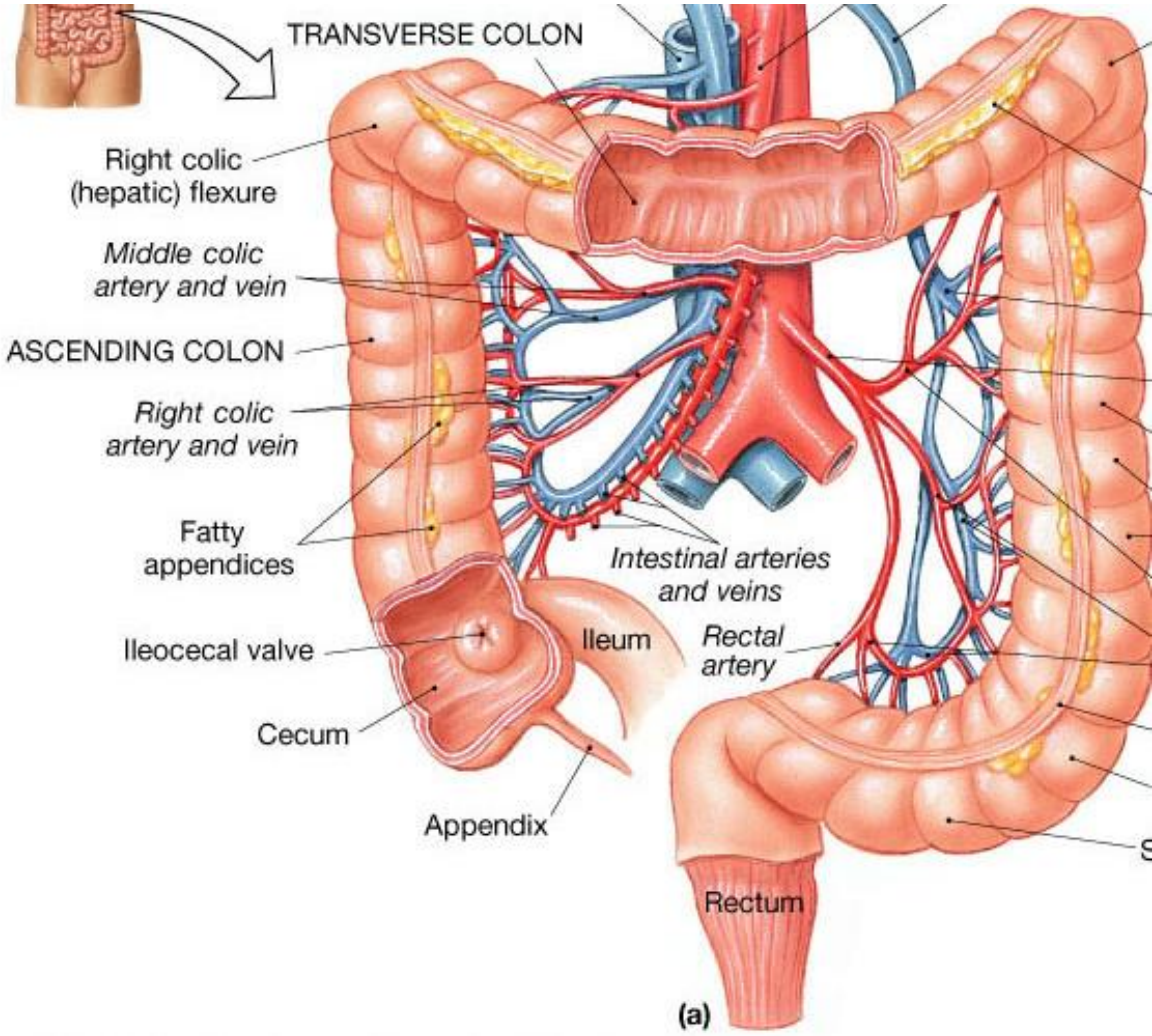
- The appearance of the muscularis externa is different from that of the small intestine.
- The inner circular layer of muscle forms the usual sheath around the large intestine.
- The outer longitudinal muscle layer forms three flattened strands, the taenia coli.
- The entire transverse colon is covered with a serosa.
- whereas parts of the ascending and descending colon have an adventitia.





Vermiform Appendix

- Described as worm like structure,in gross apperance.
- Arises from cecum and forms sac about 8cm long.



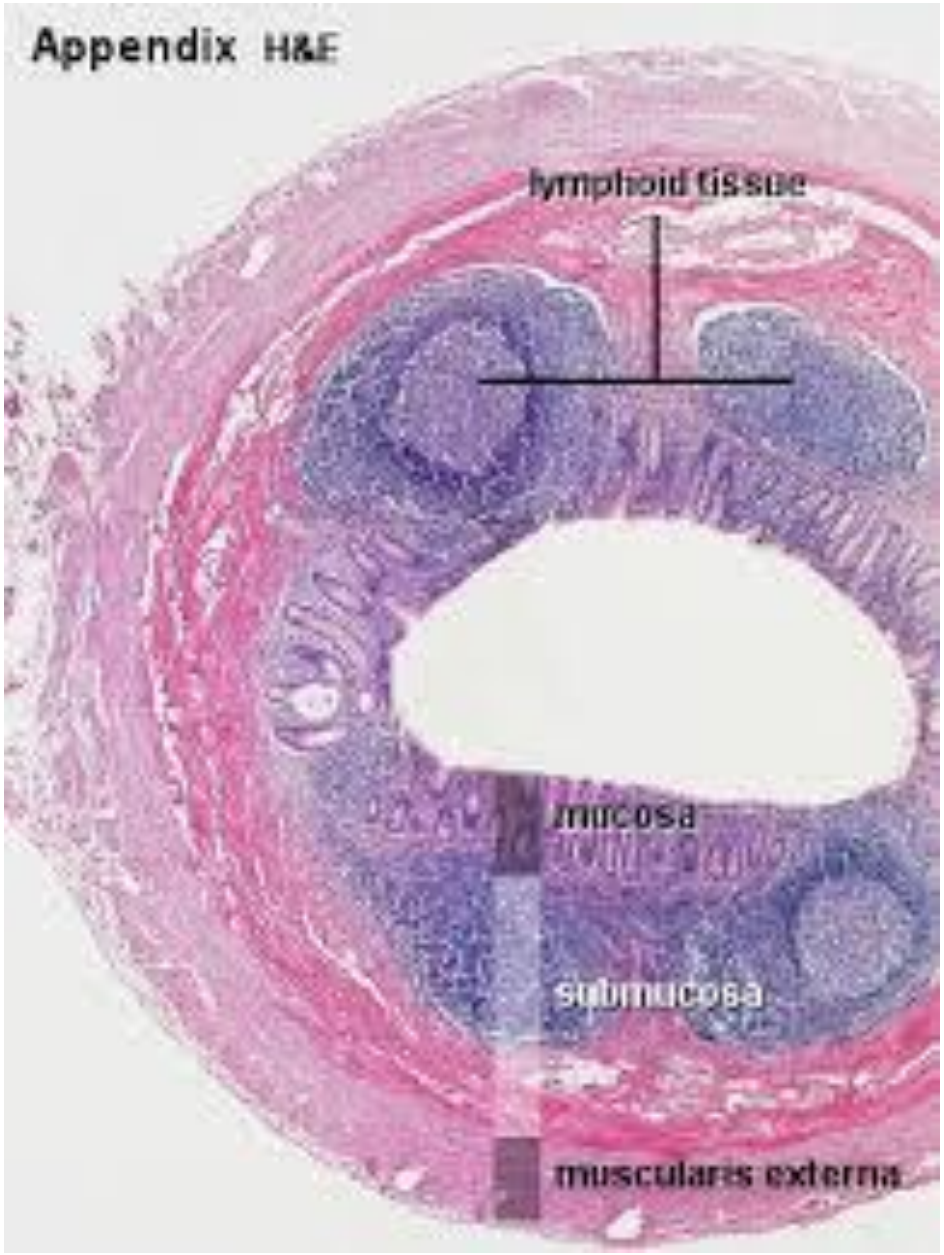
Vermiform Appendix

- No valves or villi, so in that respect, resembles colon

Mucosa

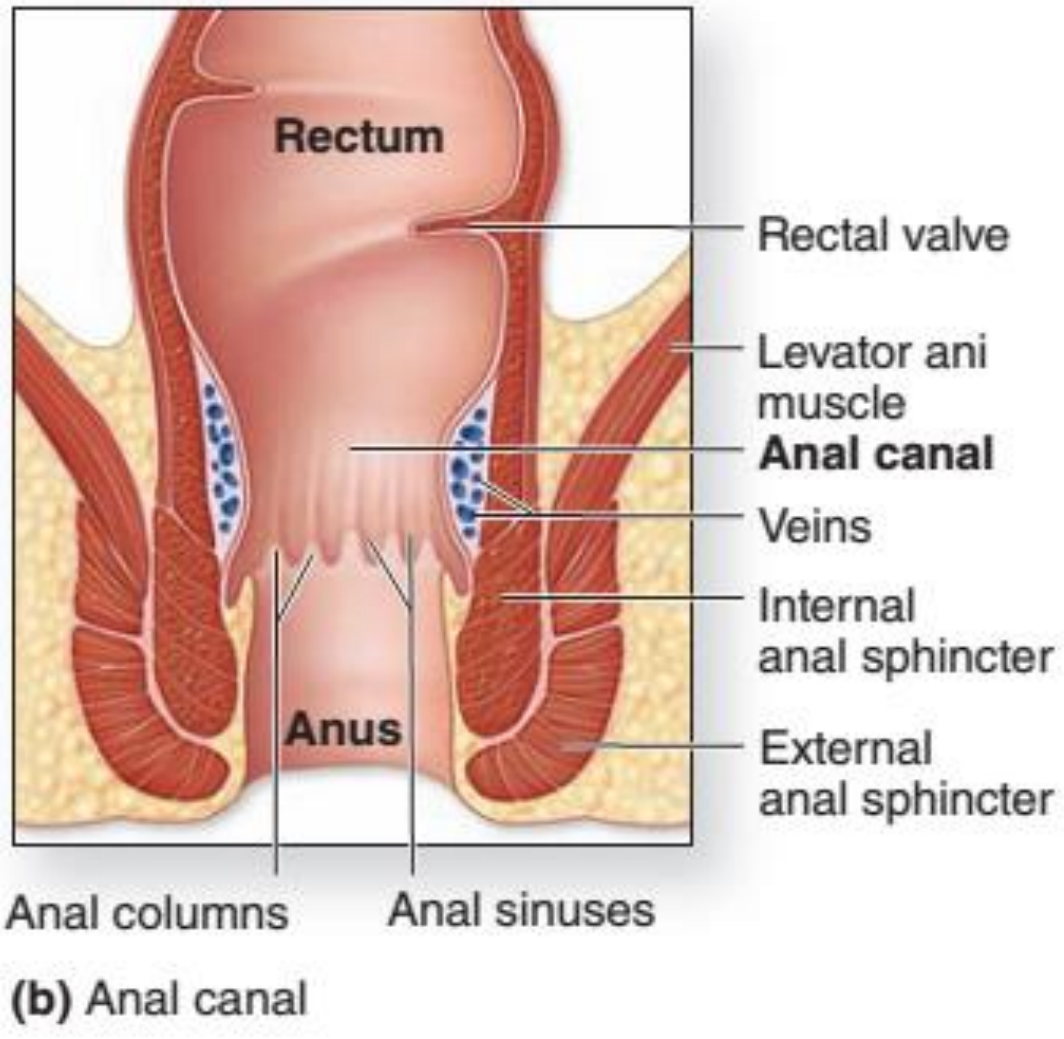
- simple columnar epithelium with goblet cells and enterocytes
- LP – sometimes invaginates into submucosa and
- Muscular. Mucosae

(which is barely visible in some areas, and is discontinuous)



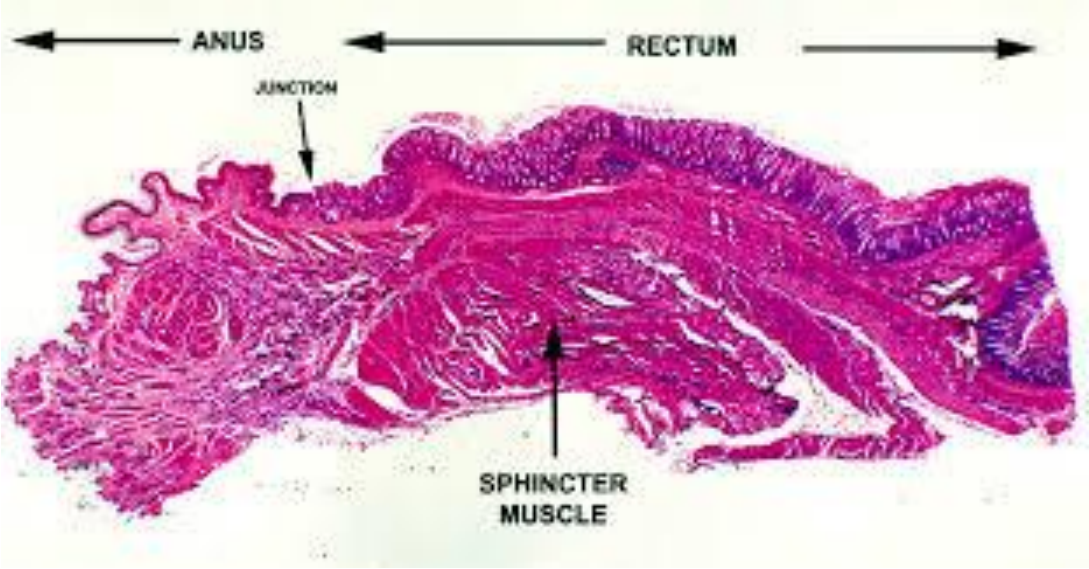
Anal Canal

- The anal canal is 2.5-4 cm long terminal part of the digestive tract.
- The mucosa has a characteristic surface relief of 5-10 longitudinal folds, the anal columns.
- Each column contains a terminal branch of the superior rectal artery and vein.
- Small mucosal folds between the anal columns (anal valves) form the pectinate line. (Muco cutanous junction)



Anal Canal

- Crypts disappear below the pectinate line
- The epithelium changes from the tall, columnar type seen in other parts of the large intestine to a stratified squamous epithelium.
- The muscularis externa gradually becomes thicker and forms the involuntary internal anal sphincter.



Colorectal cancer

Adenocarcinoma :-

- Develops initially from benign adenomatous polyps in the mucosal epithelium.
- Such polyps usually occur in epithelium of rectum, sigmoid colon, or distal descending colon

Cause

- Common in individuals with low-fiber diets, which reduce the bulk of fecal material, and this in turn prolongs contact of the mucosa with toxins in feces.
- Screens for colorectal cancer include:-

  Sigmoidoscopy or colonoscopy to see polyps
- Tests for fecal occult blood resulting from mucosal bleeding as an adenocarcinoma invades more deeply into the mucosa.

Herniation or outpocketing

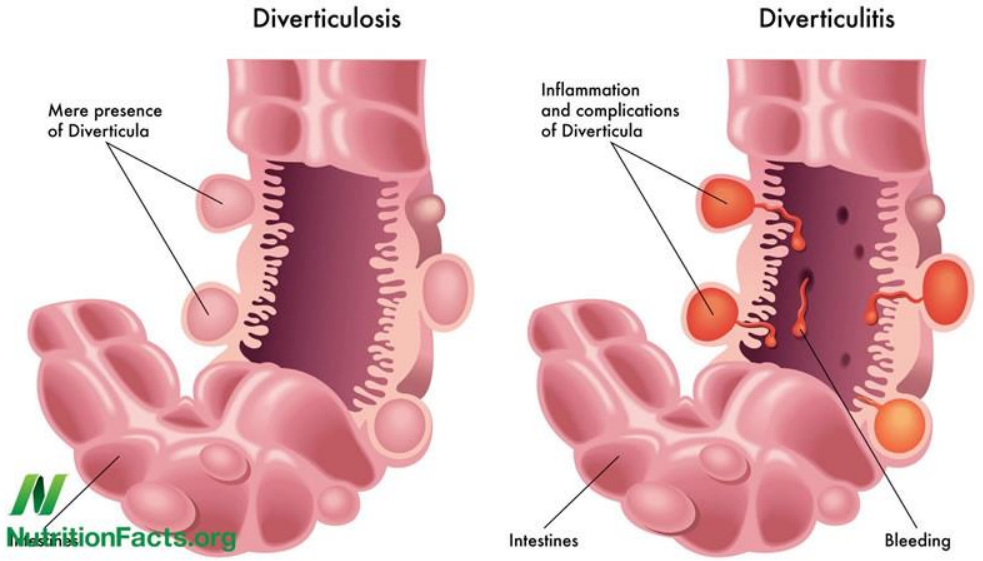
- The mucosa and submucosa of the colon occur between the teniae coli, forming bulges (diverticula) and a condition called diverticulosis.

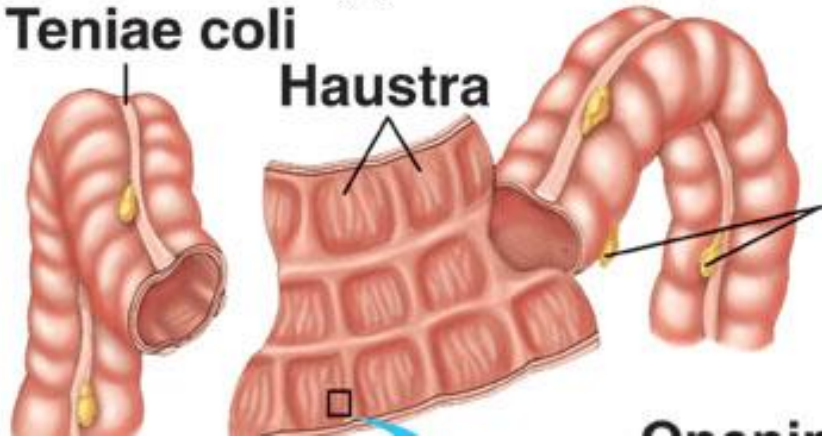
Cause

- This disorder can result from structural defects in the colon wall

Or

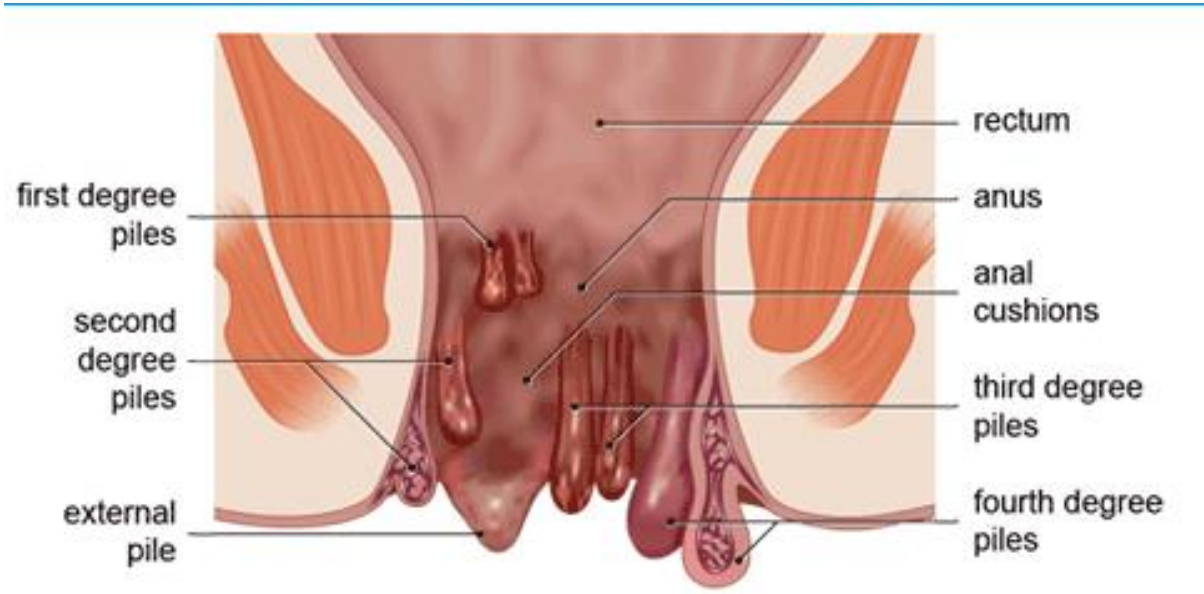
- From high intraluminal pressure
  Due to constipation.
- Fecal material can become immobilized in the diverticula and cause localized inflammation or diverticulitis.





Hemorrhoids.

- Swollen blood vessels in the mucosa or submucosa of the anal canal can cause a painful disorder called hemorrhoids.
- Results from a low-fiber diet, constipation, prolonged sitting, or straining at defecation, conditions that produce increased pressure on these blood vessels.

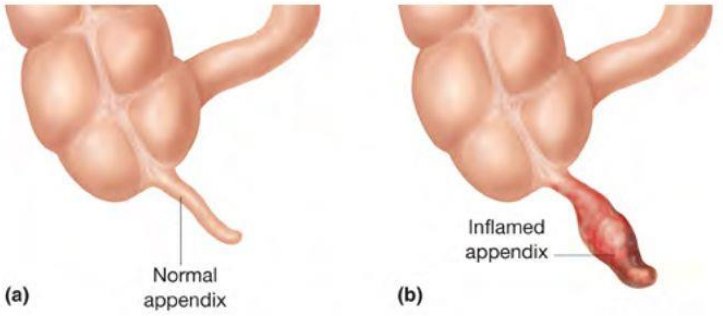


Appendicitis

- An extreme proliferation of lymphocytes (lymphoid hyperplasia)
- As a consequence of bacterial or viral stimulation
- May lead to the obstruction of the lumen of the appendix and thereby cause appendicitis,

other causes may be

- Food particle
- Worms

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