MICROANATOMY OF SNALL INTESTINE AND LARGE INTESTINE

Small intestine is the site of absorption and terminal food digestion. It's is lined by simple columnar epithelium and is 5cm in length. There is presence of villi and microvilli that absorbs fluid to form semisolid for excretion. The small intestine is divided into three parts: duodenum, jejenum and ileum.

FUNCTIONS

Duodenum: receives partially digested food known as chyme from the stomach and plays a vital role in the chemical digestion of chyme in preparation for absorption in the small intestine. It is responsible for breakdown of food in the small intestine using enzymes and also regulates the rate of emptying the stomach via hormonal pathways.

Jejenum: where sugars, amino acids and fatty acids are absorbed.

Ileum: the main function is to absorb vitamin B12, bile salts and whatever products of digestion were not absorbed by the jejenum.

SEGMENTS

Duodenum: can be divided into superior, descending, inferior and ascending that together form a C shape 25cm long that wraps around the pancreas head.

Jejenum: extends from the pyloric sphincter of the stomach to the ileocecal valve that connects the small intestine to the large intestine.

Ileum: the ileum is separated from the large intestine, into which it opens, by the ileocecal valve.

LAYERS

The duodenum, jejenum and ileum have layers from the right to left which are mucosa, submucosa, muscularis and serosa.

FEATURES

Duodenum: glands line the duodenum known as Brunner's gland or duodenal gland close to the lamina propria which secrets mucus and bicarbonate inorder to neutralize stomach acids.

Jejenum: appears like branches and has many large circular folds in it's submucosa called pilcae circulares that increases the surface area for nutrient absorption.

Ileum: made up of a simple squamous epithelium and connective tissue layer underneath (lamina propria serosae). Has more fat inside the mesentery than the jejenum. The diameter of it's lumen is smaller and has thinner walls than the jejenum. It's circular folds are smaller and absent in the terminal part of the ileum.

EPITHELIUM

Duodenum: simple columnar epithelium

The jejenum and ileum are lined by simple squamous epithelium.

The large intestine is lined by simple columnar epithelium and is divided into four parts: descending colon, ascending colon, transverse colon and sigmoid colon.

FUNCTIONS

Descending colon: to store waste until it can be removed from the body in solid form, when a person has a bowel movement. The stools gradually solidify as they move along into the ascending colon.

Ascending colon: to absorb the remaining water and other key nutrients from the indigestible material, solidifying it to form stool.

Transverse colon: as digestion continues, the ingested matter moves up the ascending colon and into the transverse colon. It is also responsible for moving the waste material forward to the rectum using peristalsis and haustral churning absorbing water and electrolytes.

Sigmoid colon: to expel solid and gaseous waste from the gastrointestinal tract. The curving path it takes toward the anus allows it to store gas in the superior arched position, enabling the colon to expel gas without excreting faeces simultaneously.

LAYERS

The four layers of the large intestine from the lumen outward are the mucosa, submucosa, muscular layer and serosa. The muscular layer is made up of two layers of smooth muscle, the inner, circular layer and the outer, longitudinal layer.

EPITHELIUM

The mucosa of the colon is lined by a simple columnar epithelium with a thin brush holder and a numerous goblet cells.

FEATURES AND SEGMENTS

Descending colon: the part of the large intestine from the splenic flexure to the beginning of the sigmoid colon.

Ascending colon: the first of the four main sections of the large intestine. It is connected to the small intestine by a section of bowel called the cecum. The ascending colon runs upwards the

abdominal cavity towards the transverse colon for approximately 8 inches(20cm).

Transverse colon: the longest and most movable part of the colon. It crosses the abdomen from the ascending colon at the hepatic or right colic flexure with a downward convexity to the descending colon when it curves sharply on itself beneath the lower end of the spleen forming the splenic or left colic flexure.

Sigmoid colon or pelvic colon: the part of the large intestine that is closest to the rectum and anus. It forms a loop that averages about 35-40cm(13.78-15.75inches) in length.