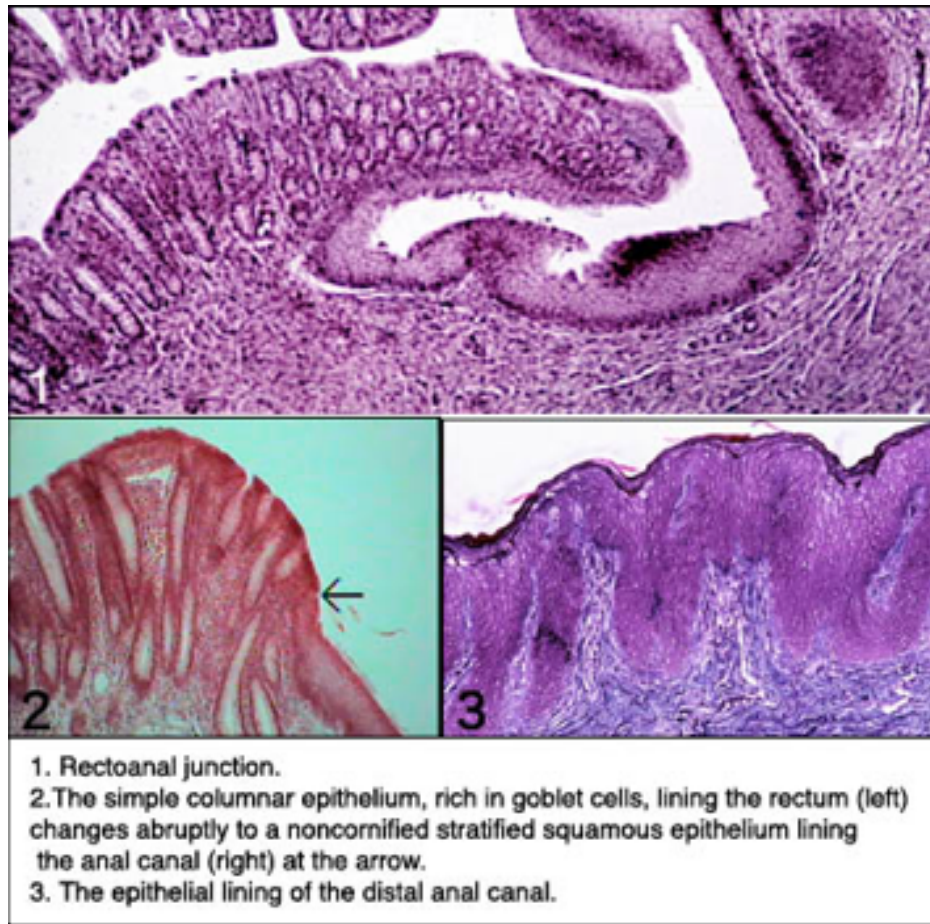


Anal Canal



The rectum is a relatively straight continuation of the colon about 12 cm in length. Three internal transverse rectal valves (of Houston) occur in the distal rectum. Infoldings of the submucosa and the inner circular layer of the muscularis externa form these permanent sickle-shaped structures. The valves function in the separation of flatus from the developing fecal mass. The mucosa of the first part of the rectum is similar to that of the colon except that the intestinal glands are slightly longer and the lining epithelium is composed primarily of goblet cells. The distal 2 to 3 cm of the rectum forms the anal canal, which ends at the anus. Immediately proximal to the pectinate line, the intestinal glands become shorter and then disappear. At the pectinate line, the simple columnar intestinal epithelium makes an abrupt transition to noncornified stratified squamous epithelium. After a short transition, the noncornified stratified squamous epithelium becomes continuous with the keratinized stratified squamous epithelium of the skin at the level of the external anal sphincter. Beneath the epithelium of this region are simple tubular apocrine sweat glands, the circumanal glands. Proximal to the pectinate line, the mucosa of the anal canal forms large longitudinal folds called rectal columns (of Morgagni). The distal ends of the rectal columns are united by transverse mucosal folds, the anal valves. The recess above each valve forms a small anal sinus. It is at the level of the anal valves that the muscularis mucosae becomes discontinuous and then disappears. The submucosa of the anal canal contains numerous veins that form a large hemorrhoidal plexus. When distended (varicosed), these vessels protrude into the overlying mucosa and form internal hemorrhoids (piles). The inner circular layer of the

muscularis externa increases in thickness and ends as the internal anal sphincter. In the distal rectum the taeniae coli come together to invest the rectum as a complete outer longitudinal layer. This thin outer longitudinal muscular layer breaks up and ends by blending with the surrounding connective tissue and muscle of the pelvic diaphragm. Skeletal muscle fibers circumscribe the distal anal canal as it passes through the pelvic diaphragm and form the external anal sphincter, which is under voluntary control.

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