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**Department: Anatomy**

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**Question**

Discuss the Anal canal

**Answers**

The anal canal is the most terminal part of the large intestine, which lies between the anal verge (anal orifice, anus) in the perineum below and the rectum above. It is about 3 to 4 cm long and lies completely **extraperitoneally.**

The anal canal may be subdivided into the columnar, intermediate and cutaneous zone.

* Columnar Zone

The lumen has folds of mucous membrane **(anal columns)** produced by arterial cavernous bodies **(anal cushions)** in the submucosa. These columns are connected to each other at their distal ends by transverse folds **(anal valves)**. Behind the anal valves lie into which the excretory ducts of the anal glands open. All anal valves together form the **dentate line**, a serrated line where the intestinal mucosa merges with the squamous epithelium of the anal canal.

* Intermediate Zone

Distally from the dentate line lies a 1 cm long zone with anal mucosa.

* **Cutaneous zone**

This zone below the anal verge is a hollow between the internal and external anal sphincter and has regular perianal skin. The tension of the corrugator cutis ani muscle gives it its fan-like structure.

**Blood Supply**

The rectum and anal canal are supplied by the superior rectal artery with assistance from the middle and inferior rectal arteries, and by the median sacral artery. The submucosal venous plexus above the pectinate line drains into the superior rectal veins , which may become varicose, resulting in internal hemorrhoids.

### Innervation

Parasympathetic fibers supply the smooth muscle, including the internal sphincter. Sympathetic fibers are mainly vasomotor. Somatic motor fibers supply the external sphincter. Sensory fibers are concerned with the reflex control of the sphincters and with pain.

**Function**

The external anal sphincter muscle is the voluntary muscle that surrounds and adheres to the anus at the lower margin of the anal canal. This muscle is in a state of tonic contraction, but during defecation, it relaxes to allow the release of feces. Movement of the feces is also controlled by the involuntarily controlled internal anal sphincter which is an extension of the circular muscle surrounding the anal canal. It relaxes to expel feces from the rectum and anal canal.