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ANATOMY

ANA 212

**DISCUSS THE ANAL CANAL**

The anal canal is the terminal segment of the large intestine between the rectum and anus, located below the level of the pelvic diaphragm. It is located within the anal triangle of perineum, between the right and left ischioanal fossa. As the final functional segment of the bowel, it functions to regulate release of excrement by two muscular sphincter complexes. It has an important role in defecation and maintaining faecal continence.The aperture at the terminal portion of the anal canal is known as the anus.

**ANATOMICAL POSITION**

The anal canal is located within the anal triangle of the perineum between the right and left ischioanal fossae. It is the final segment of the gastrointestinal tract, around 4cm in length. The canal begins as a continuation of the rectum, and passes inferoposteriorly to terminate at the anus.

**ANAL SPHINCTERS**

The anal canal is surrounded by internal and external anal sphincters, which play a crucial role in the maintenance of faecal continence:

**Internal anal sphincter:**

Surrounds the upper 2/3 of the anal canal. It is formed from a thickening of the involuntary circular smooth muscle in the bowel wall.

**External anal sphincter:**

Voluntary muscle that surrounds the lower 2/3 of the anal canal (and so overlaps with the internal sphincter). It blends superiorly with the puborectalis muscle of the pelvic floor.

At the junction of the rectum and the anal canal, there is a muscular ring known as the **anorectal ring**. It is formed by the fusion of the internal anal sphincter, external anal sphincter and puborectalis muscle, and is palpable on digital rectal examination.

**DIVISIONS**

Anal canal is traditionally divided into two segments, upper and lower, separated by the pectinate line (also known as the dentate line):

**Upper Zone (Zona Columnaris)**

Mucosa is lined by simple columnar epithelium. Features longitudinal folds or elevations of tunica mucosa which are joined together inferiorly by folds of mucous membrane known as anal valves.Supplied by the superior rectal artery (a branch of the inferior mesenteric artery)

**Lower Zone**

Divided into two smaller zones, separated by a white line known Hilton's line:

**Zona Hemorrhagica** - lined by stratified squamous non-keratinized epithelium

**Zona Cutanea** - lined stratified squamous keratinized epithelium, which blends with the surrounding perianal skin. Supplied by the inferior rectal artery (a branch of the internal pudendal artery)

**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