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Anatony of Rectum & Anal Canal

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Abstract -

Rectum Anal canal anatomy is very important in ano rectal surgery .Anal canal has three parts - upper ,middle and lower.Anal sphincter had 2 sphincter internal sphincter external sphincter.blood supply is with superior inferior and middle haemorrhoidal artery Nerve supply is with sympathetic plexus L1,L2 parasympathetic plexus S2,3,4 and pudendal nerve Anatome- to cut Logy-science

A detailed descriptive study of anatomy and physiology of the anorectum is necessary for a surgeon to reach proper diagnosis & to carry out surgery.

The Anal Canal

The anal canal is the terminal part of the large intestine which is situated below the level of the pelvic diaphragm. It is 3.8 c.m. long and it extends from the anorec- tal junction to the anal orifice.

The interior of the anal canal is divided in to three parts

Upper-mucosal part 15 mm

Middle-mucocutaneous part 15mm Lower-cutaneous part 8mm

Each column contains the terminal radical of the superior rectal artery & vein. The left lateral (30'clock), right anterior (7'clock) & right posterior (110'clock) columns contain largest radicles and are the most common sites of primary Internal haemorrhoids.

The lower ends of these columns join together by small crescentic valve like folds of mucous membrane known as anal valves above which there are small recesses known as anal sinuses. Importance of sinuses

The sinuses are deepest in the posterior wall of the canal and these may lodge foreign/facial matter to become infected very soon forming abscess in the wall of the anal canal.

These anal valves in the posterior segment are more liable to be torn by hard faeces producing an anal fissure.

Mucocutaneous part

In the region of the anal sinuses anal glands opens in to the anal canal with small depression known as anal crypt, at the dentate line.

Upper part-

In the upper part of the anal canal, the mucous membrane presents 6 to 10 vertical folds, known as anal columns of morgagni

These anal glands are usually situated deep to the internal sphincter, and the ducts of the anal glands passes throughthe internal sphincter. So these anal ducts may not be able to discharge the content/ secretion of the glands so readily due to compression of lumen by muscle tone. This causes cystic dilatation and abscess formation which is common due to stasis of secretion & abscess formation.

These glands may become infected with the result that an abscess or subsequently a fistula in ano may be developed.

Pectinate Line:-

The imaginary transverse line along which the anal valves are situated, is known as pectinate Line (pectan-cook's- comb) (dentate line)

Importance of Pectinate line:-

The epithelium above this line is supplied by sensory fibres from autonomic nervous system & therefore insensitive to painful stimuli. So the internal haemorrhoids are painless.

The epithelium below this line is innervated by spinal nerves & has somatic sensation. So the fissure in ano is always painful.

Cutaneous Part:

The lowermost part of anal canal-8 mm. There appears an intersphincteric groove demarking the separation of internal & external sphincter muscles. (white line of hilton)

Anal canal musculature:-

The muscular junction between the rectum & anal canal can be felt with the figure as the thickened ridge- "the anorectal ring" division of anorectal ring results in permanent incontinence. The muscular coat

of the anal canal consists of outer longitudinal & inner circular musde fibres.

Anal Sphincter:-

Internal sphincter:-

It is the thickened continuation of the muscular coat of the rectum. This is an involuntary muscle & surrounds the upper 3 quarters of anal canal. Its lower border can be felt at the hilton's line,Spasm & contracture of this muscle play a major part in fissure & fistula in ano

External sphincter:-

It is divided into 3 parts - Deep, Superficial, Subcutaneous. Between the internal and external sphincter muscles there is intersphinctric plane (space) which contains the basal part of 8 to 12 apocrine glands which can cause infections.

Blood supply of anal canal:-

Superior Haemorrhoidal Artery-

Branch of Inferior Mesentric Artery. Middle Haemorrhoidal Artery-

Branch of Internal iliac Artery.

Inferior Haemorrhoidal Artery - Branch of Internal Pudendal Artery.Pelvirectal

Superior to pelvic diaphragm Ischiorectal

Laterally to anal canal can accumulate large quantity of purulent debris Perineal contain the ext. haemorrhoidal plexus and subcutaneous part of external sphincter.

Venous Drainage Internal haemorrhoidal venous plexus-

It lies in the submucosa of the anal canal& extends from dentate line to that of the anorectal ring - Superior Haemorrhoidal Vein.

External haemorrhoidal venous plexus- It lies below the dentate line & beneath the skin at the anal margin- Internal Pudendal Vein, Internal iliac Vein.

Nerve supply-sympathetic plexus L1,L2 parasympatetic plexus 52,3,4 and the pudendal nerve which supplies to ext. sphincter levator ani and skin of the anal canal.

Conclusion

Knowledge of anatomy of rectum and anal canal is very much important for any surgeon for diagnosis and treatment of various anal conditions like fistula in another , fissure, external haemorrhoids , internal haemorrhoids,perianal abscess .for example cancers of anal canal below pectinate line are squamous cell carcinoma and cancers of anal canal above pectinate line are adenocarcinoma .

So without knowledge of anatomy of rectum and anal canal any surgeon can't do any surgical intervention.

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