

183 Anal Canal

⇒ luminal part of L.T - 3.8 cm long.

Location → in perineum below pelvic diaphragm.

in anal Δ btw ischioanal fossae.

EXTENT . Anorectal junction - anal orifice.  
downwards & back.

Relations

Anterior

Male

Female

perineal body

perineal body.

membranous urethra.

vagina - lower part.

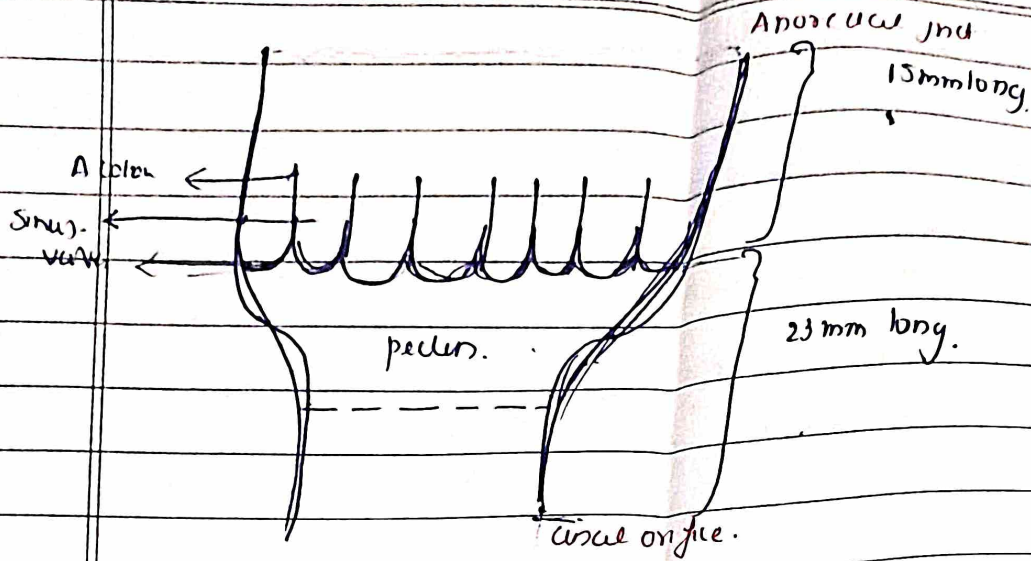
bulb of penis.

Posterior

• tip of coccyx

• anococcygeal ligament.

INTERIOR



Differences

Upper

- deve. - Endoderm of hindgut
- innervation - ANS - insensitive to pain
- Blood + Ar - Superior rectal artery
- venous - Superior rectal vein (portal)
- Lymph - Internal iliac lymph node
- Haemorrhoids - Internal
- epithelium - Simple columnar

Lower

ectoderm of proctoderm

Somatic - sensitive

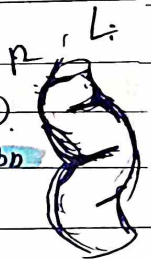
Inferior rectal artery

Inferior rectal vein (portal)

Superficial inguinal lymph node

External

strict squamous



3-M

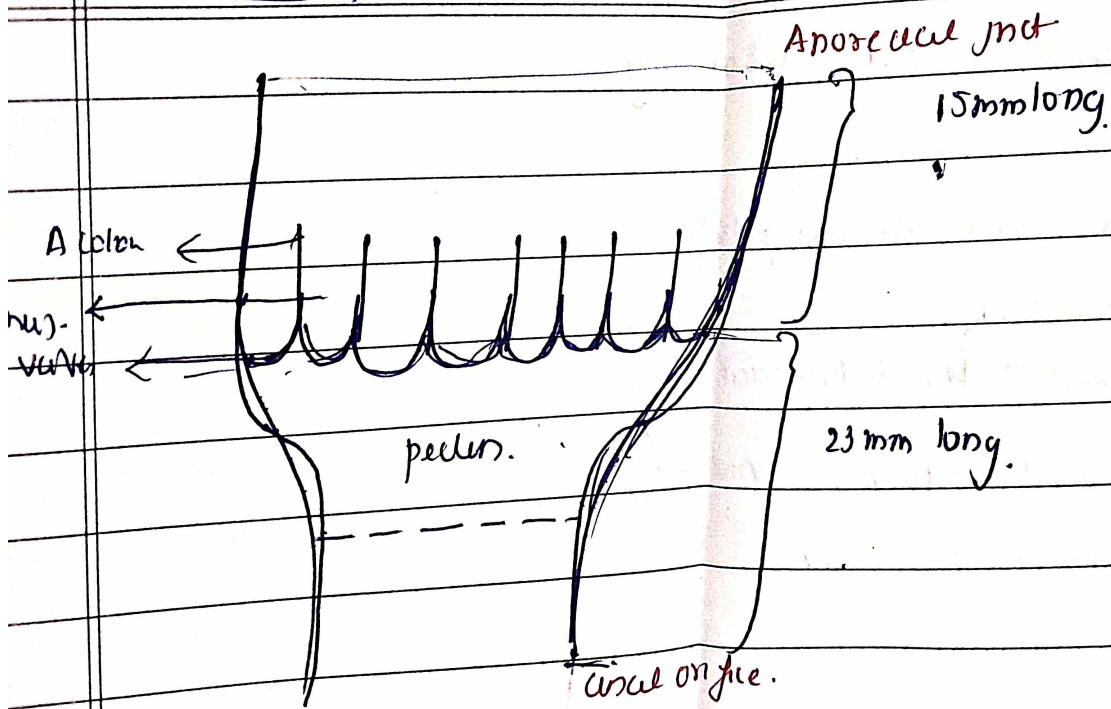
perineal line -> site of attachment of anal membrane.

anal Canal -> divided to upper and lower parts by -> pectinate line.

lower part -> into two -> Hilton line white line.

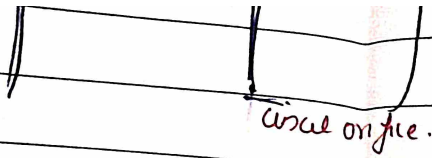
INTERIOR

187



Difference)

Lower



Differences

Upper

Lower

deve.	- endoderm of hindgut	ectoderm of proctodeum
Innervation	- ANS → insensitive to pain.	Somatic → sensitive.
Blood + Ar	- Superior rectal artery.	Inferior rectal artery
veins	- Superior rectal vein (portal)	Inferior rectal vein (caval)
Lymph.	- Internal iliac lymph node	Superficial inguinal lymph node
Haemorrhoids	- Internal	External,
epithelium.	- Simple columnar	strat squamous.



(3-M)

perineal line → side of attachment of anal membrane.

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anal Canal → divided to upper anal lower parts by → perineal line.

lower part → into two → Hilton line white line.

↓ symphy III

anal

Upper part

① Anal columns of Morgagni → permanent longitudinal mucous folds  
6-10.

→ contain nuclei of Superior rectal vein.

② Anal valves → crescentic folds of mucous membrane  
of Morgagni. connect lower end of adjacent anal columns.

⇒ Anal sinuses

lower part → further divisions  
diff btw them.

## Anal Sphincter

### Internal & External

① ~~2 parts~~

- Internal**
- upper  $\frac{2}{3}$  of anal canal → by thickening of Circular smooth muscles in rectal wall.
  - reaches upto whole line of Hilton
  - surrounded laterally by External anal sphincter.

### External Anal Sphincter

- Surrounds whole length of anal canal.

3 parts → deep

Superficial.

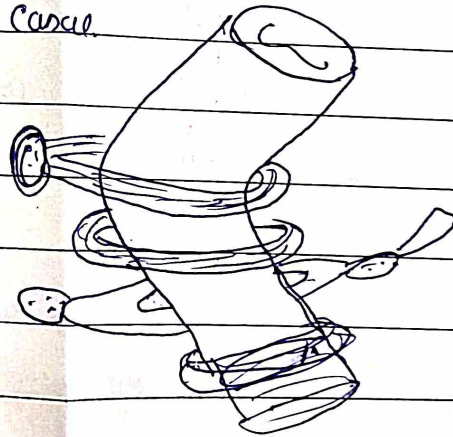
Subcutaneous

deep → no bony attachment.

encircles upper part of anal canal.

puborectalis blends with deep part

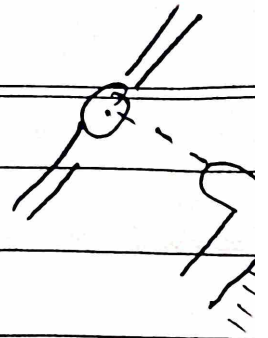
↓  
forms ring around anorectal junction  
↓  
pubic symphysis attachment.



Superficial.

attached to tip of coccyx - behind  
perineal body → front.

→ Surrounds lower part of  
Internal anal sphincter.



### Subcutaneous sphincter

- encircles anal orifice.
- no body attachment.

External sphincter is made of  
striated muscle.

↓ NS

Somatic nerve → inferior rectal nerve.

perineal branch of 4th sacral

↓

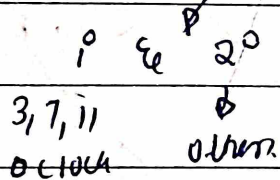
∴ under voluntary control.

Internal sphincter → smooth muscle

- ANS supply

Applied → Anal fissure → rupture of anal veins

Hemorrhoids → Internal → Sacular dilatation of tributaries of superior rectal vein.



above pectinate line

painless but bleed profusely on strain

External → dilatation of tributaries of external

superior rectal vein.

below pectinate line.

very painful, don't bleed