

ANAL CANAL



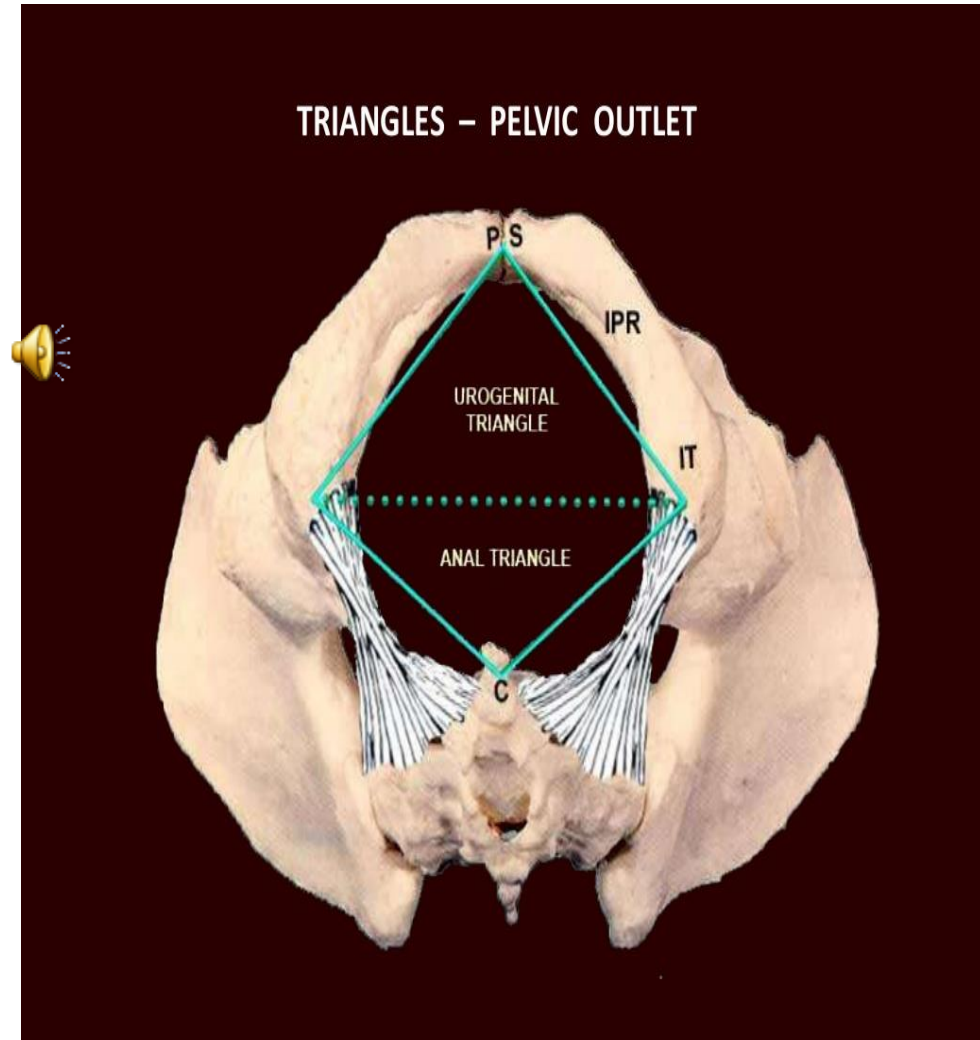
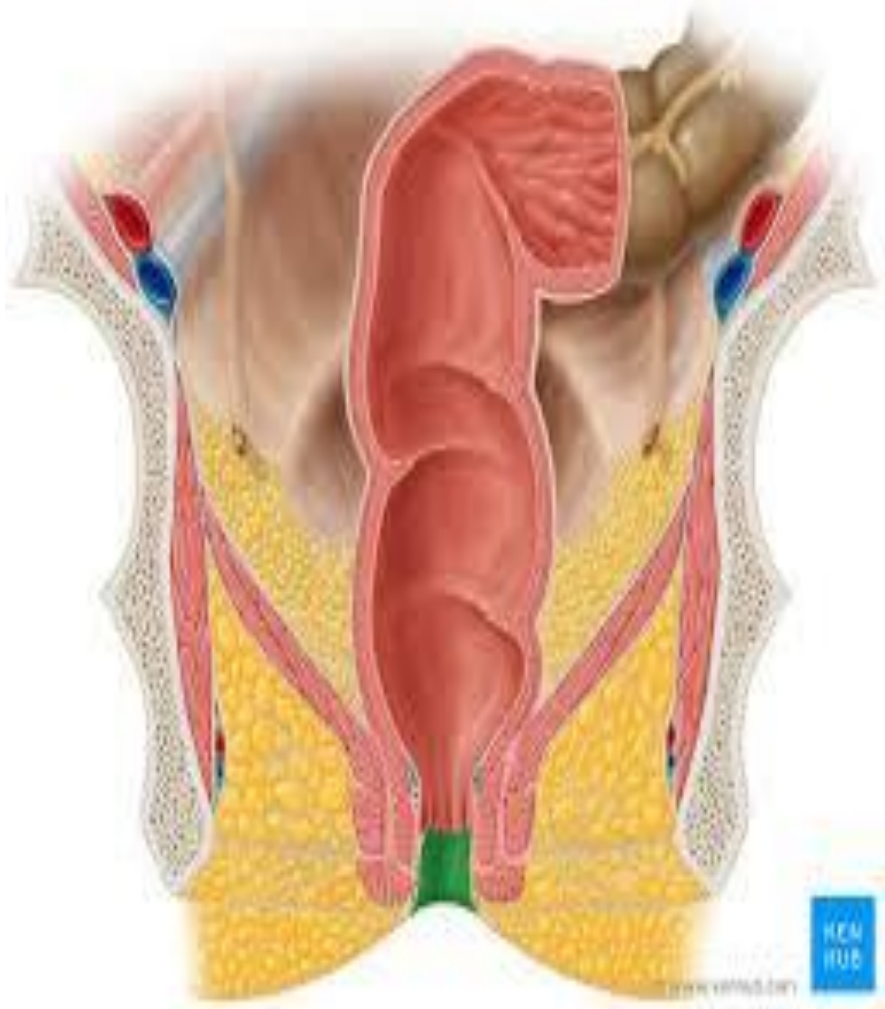
DR PRAKASH MANE
ASSITANT PROFESSOR

48.5.5 At the end of the session the Phase I student shall be able to Explain the anatomical basis of Internal and external haemorrhoids, Anal fistula,

49.5.3 Explain the anatomical basis of anal fissure

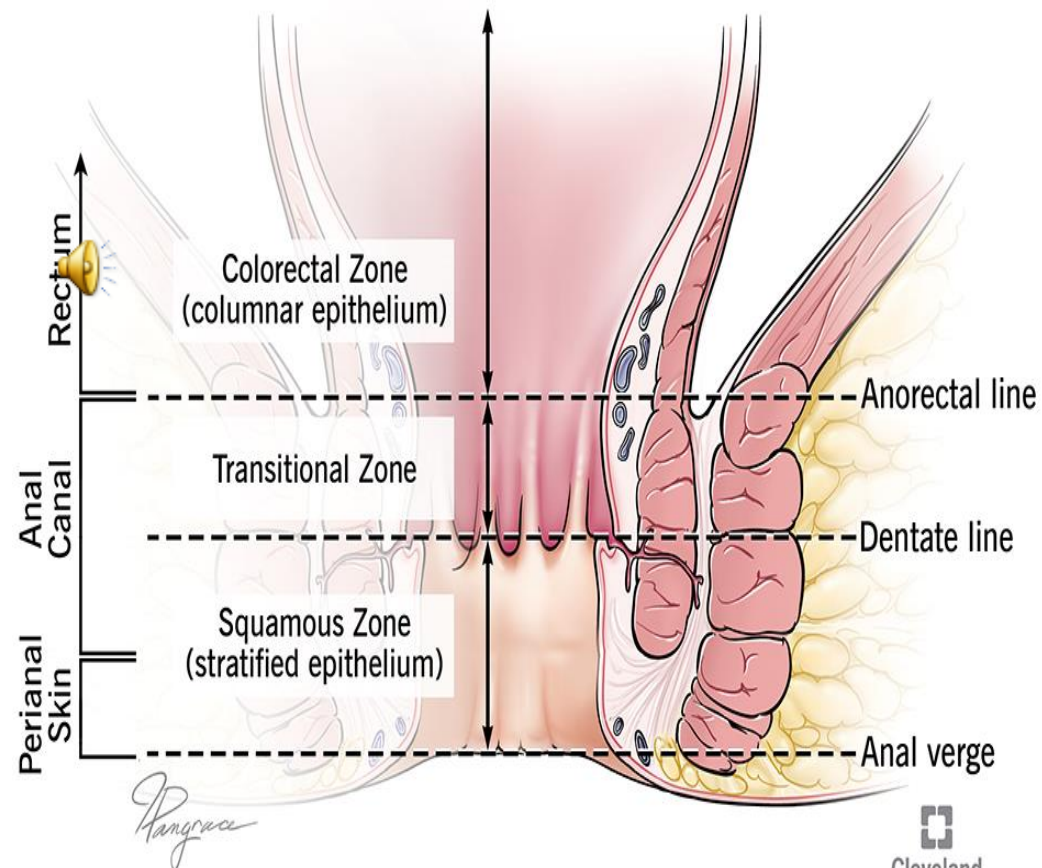


INTRODUCTION



LENGTH AND EXTENSION

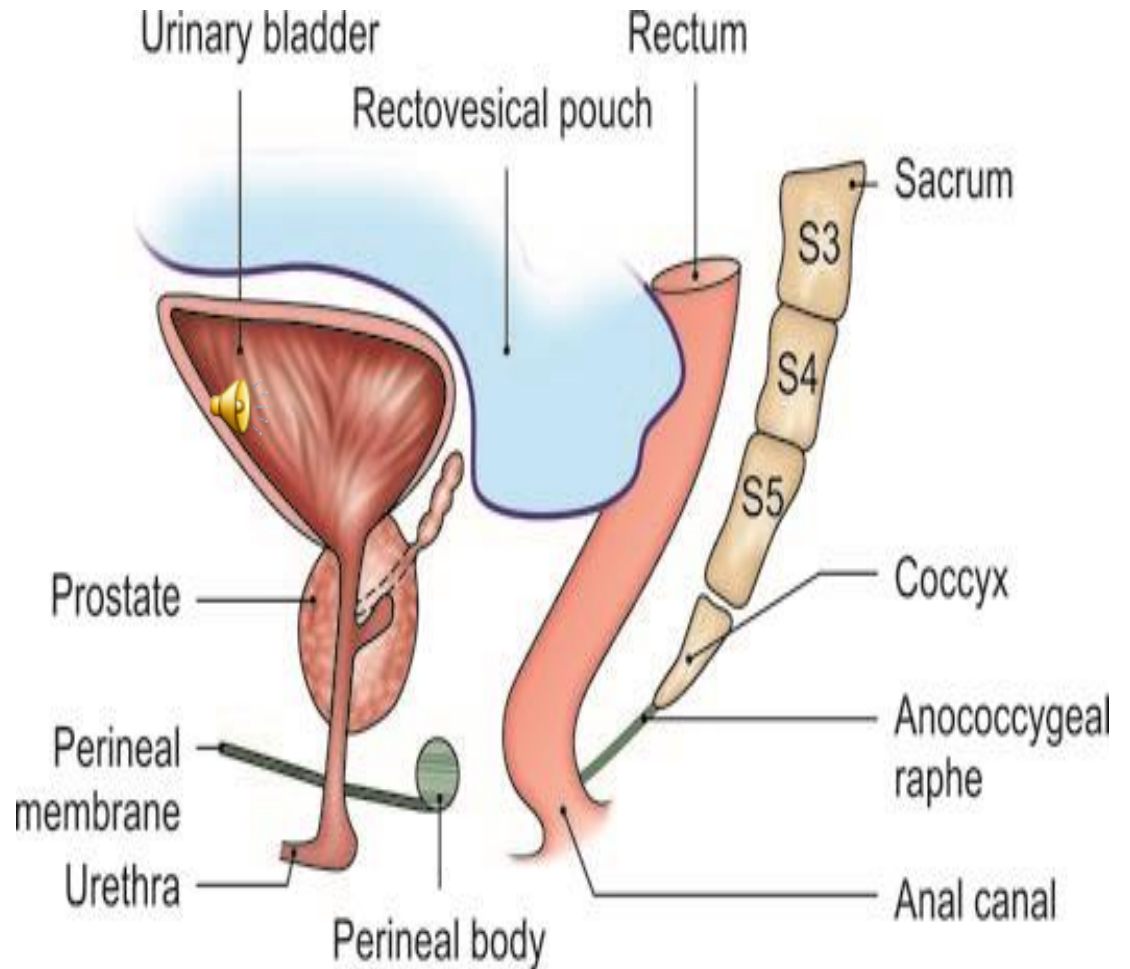
- LENGTH – 3.8 CM
- EXTENT-
ANORECTAL JUNCION
TO ANAL ORIFICE



COURSE

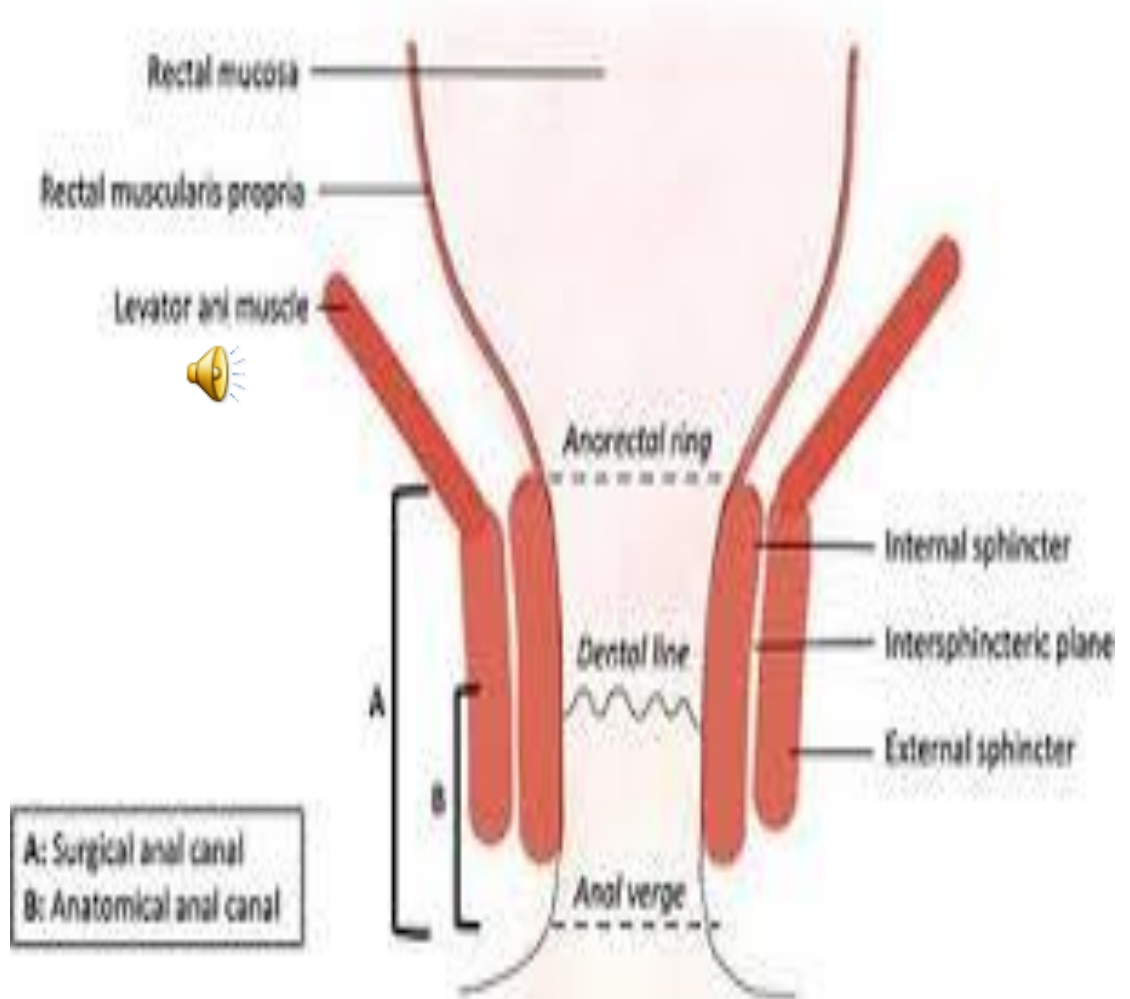
IT BEGINS 2 TO 3
CM BELOW AND
IN FRONT THE TIP
OF COCCYX

ENDS 4 CM
BELOW AND IN
FRONT THE TIP OF
COCCYX



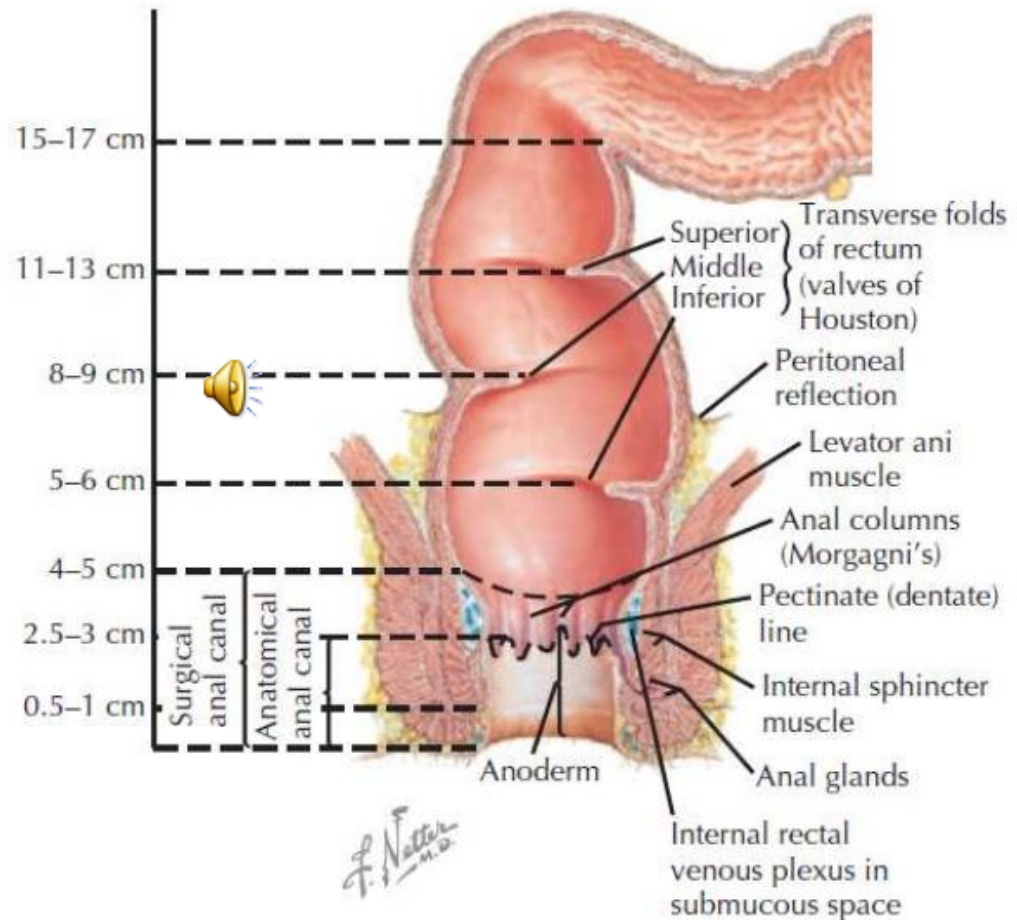
ANAL CANAL

- ANATOMICAL
- SURGICAL



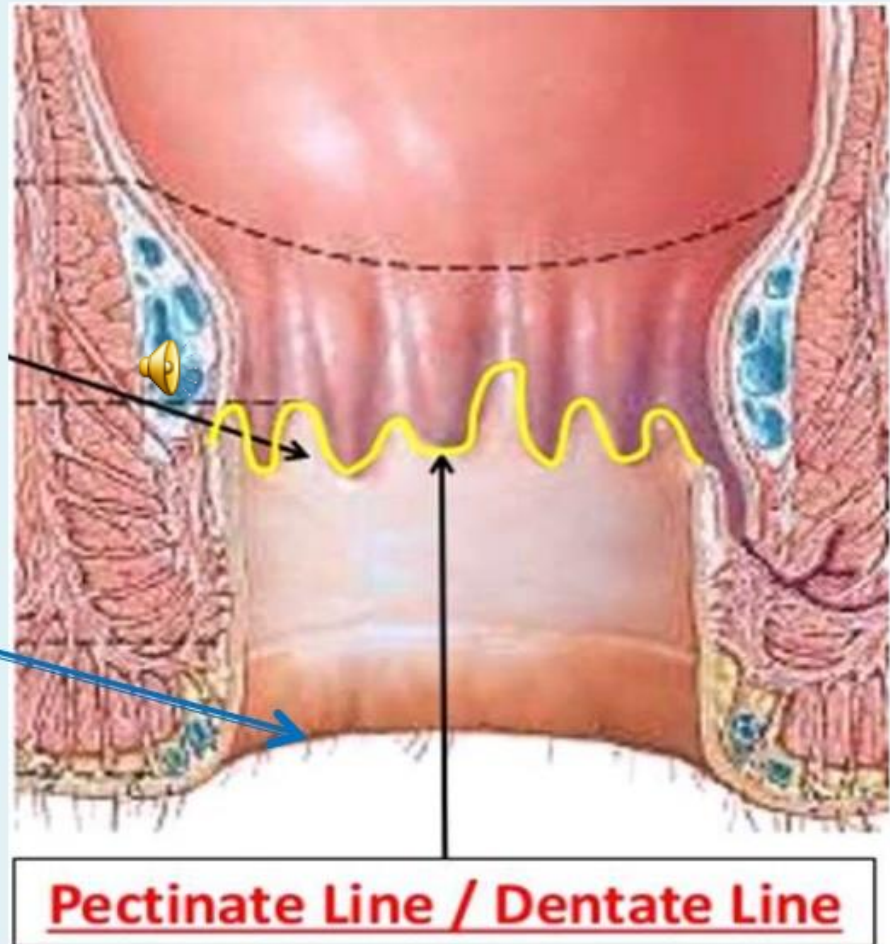
The surgical anal canal- Dimensions

- The surgical anal canal measures **2 to 4 cm** in length and is generally longer in men than in women.



The anatomic anal canal

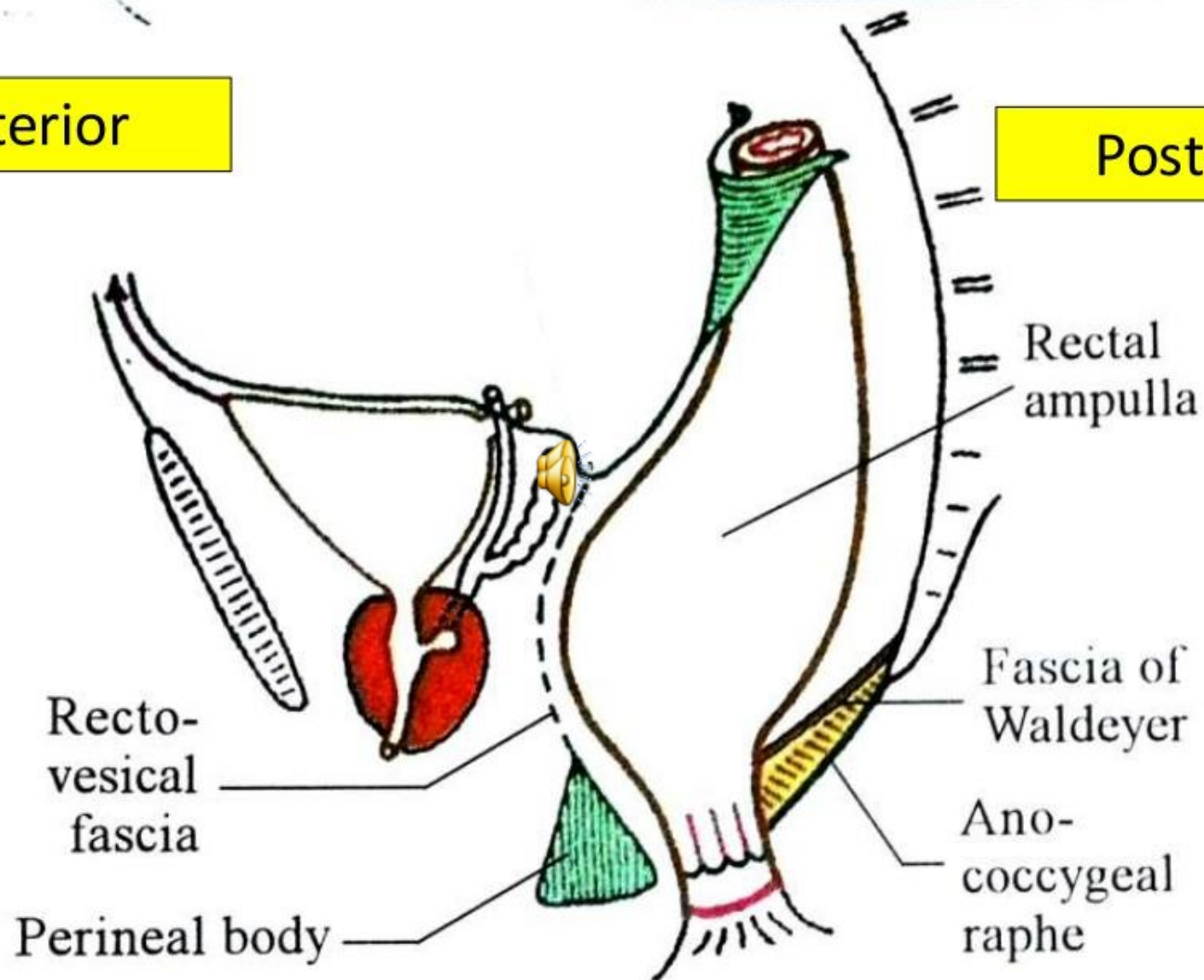
- The *anatomic anal canal* extends from **the dentate or pectinate line** to **the anal verge**.



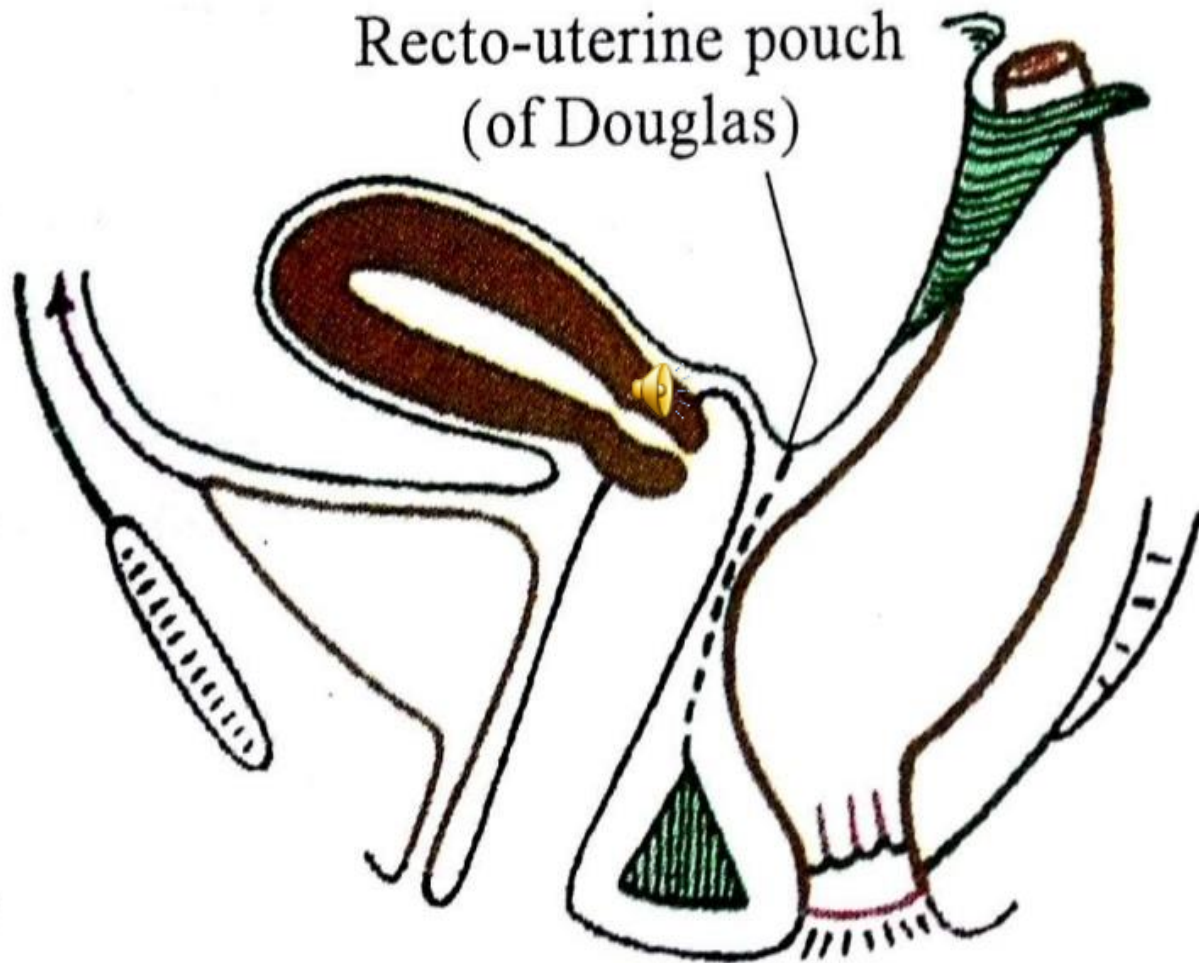
Relations - Male

Anterior

Posterior

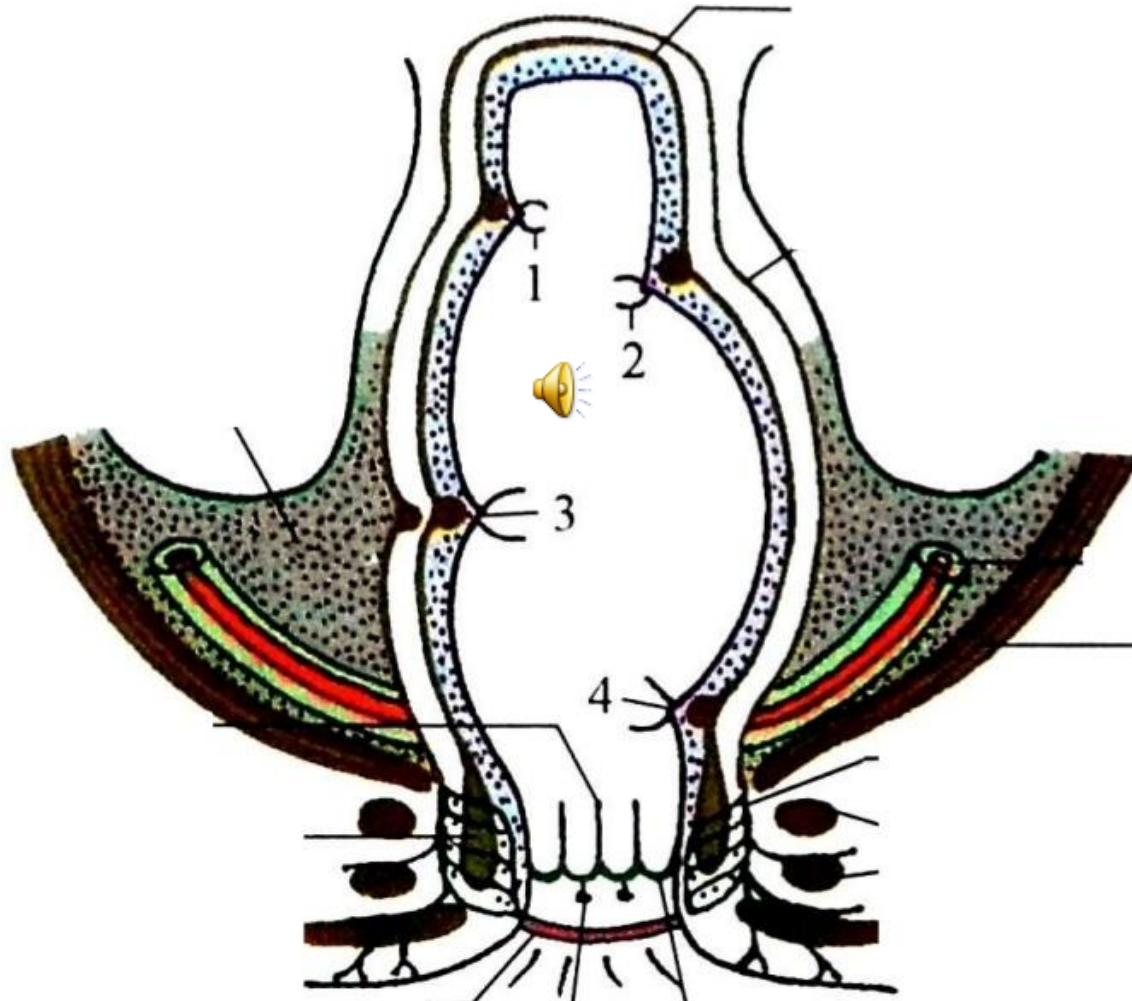


Relations - Female



Relations

On each Side



INTERIOR AND PARTS

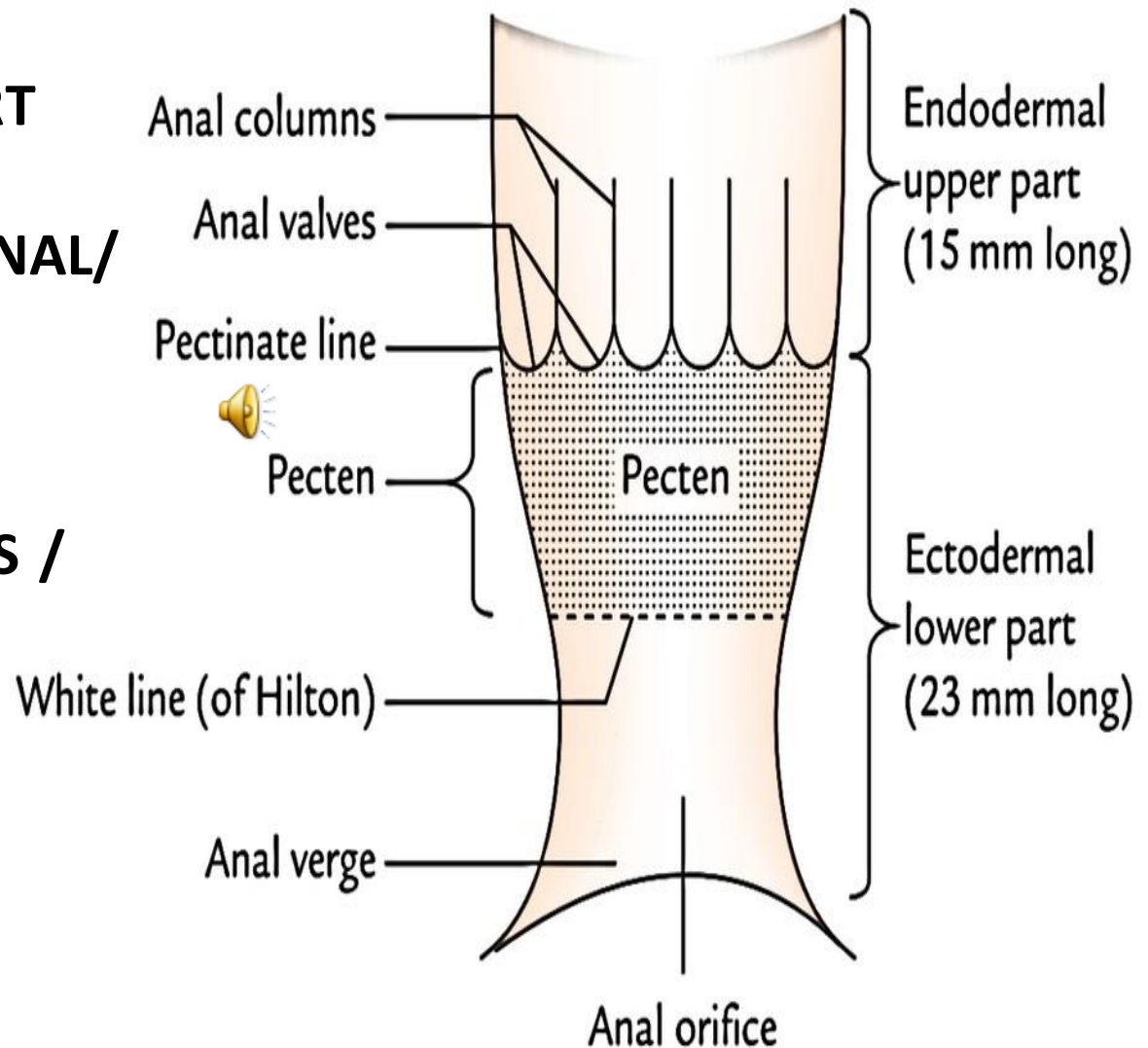
➤ **UPPER MUCOUS PART**

➤ **MIDDLE/TRANSITIONAL/**

PECTEN

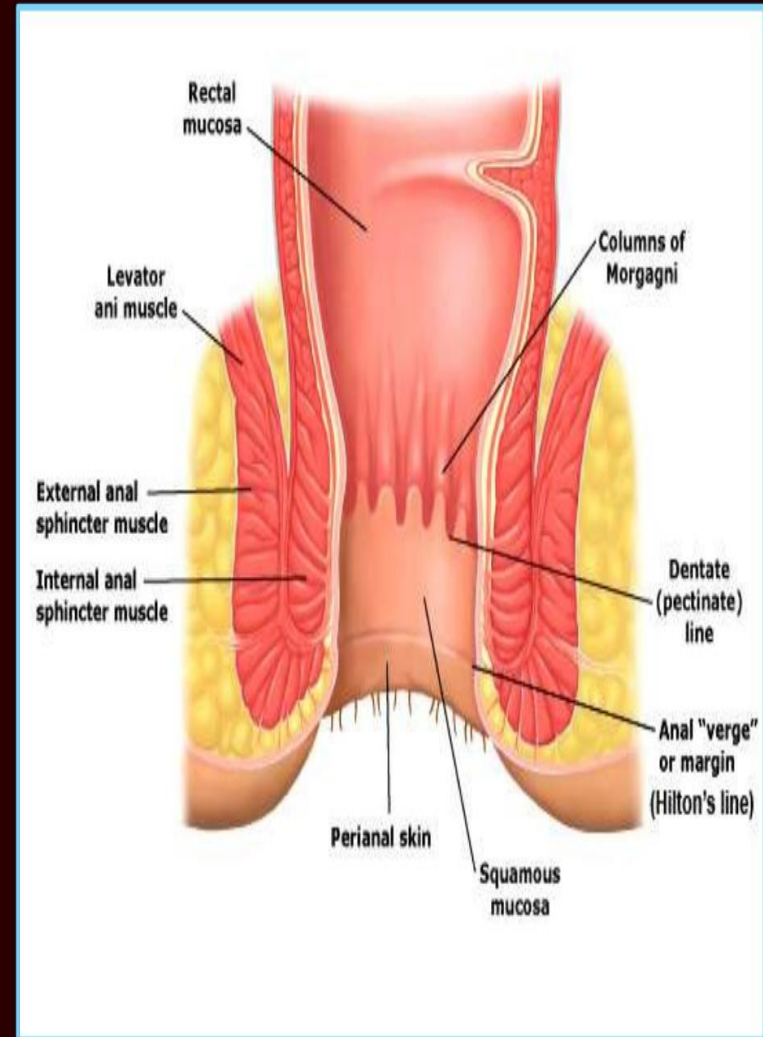
➤ **LOWER / CUTANEOUS /**

ANAL VERGE



UPPER MUCOUS PART

- 15 mm
- Endodermal Origin
- Mucous membrane lined by simple columnar / stratified columnar 
- 6 to 10 vertical ridge; or anal columns of Morgagni
- Anal valves
- Anal sinus
- Pectinate line/dentate line



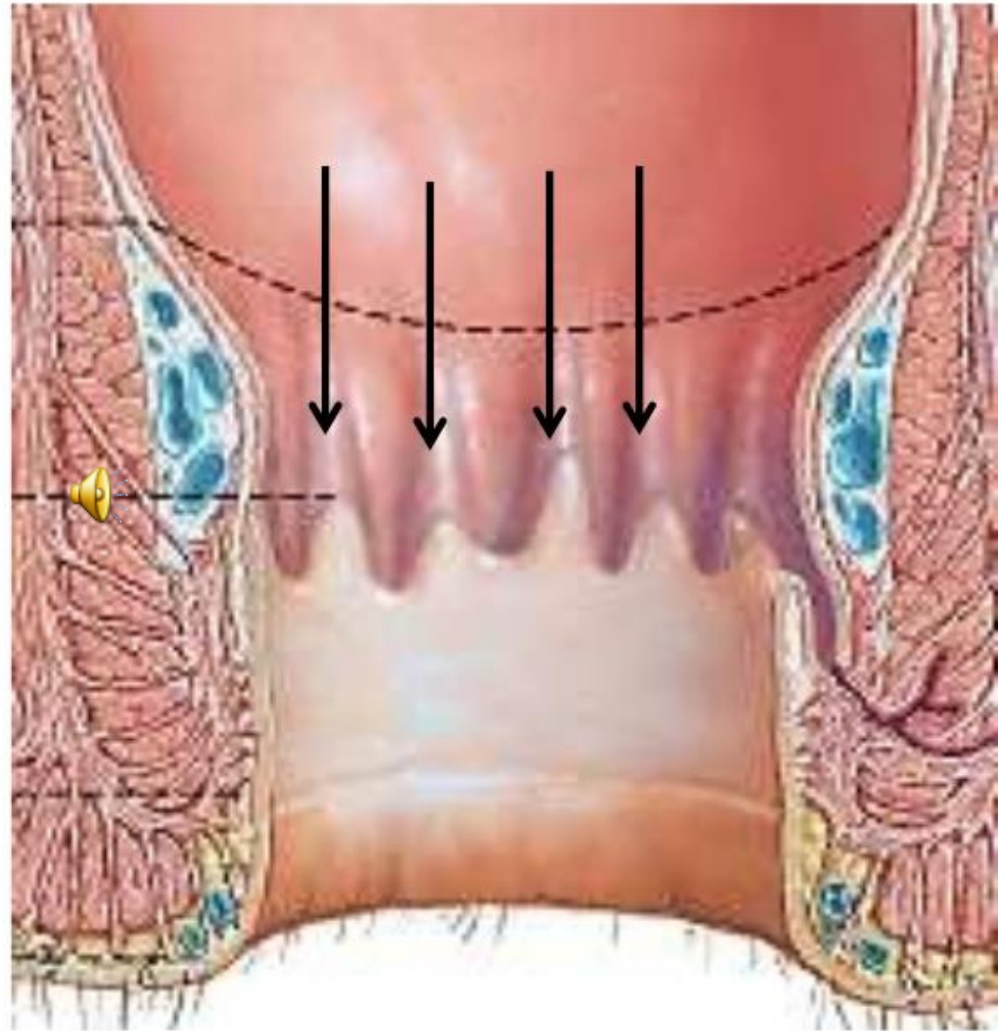
Upper Muscular part - Features

Anal Columns / Columns of Morgagni

Permanent longitudinal mucosal folds

Reduplication of mucous membrane

Contains Radicals of Sup rectal veins



Upper Muscular part - Features

Injury – Anal Fissure

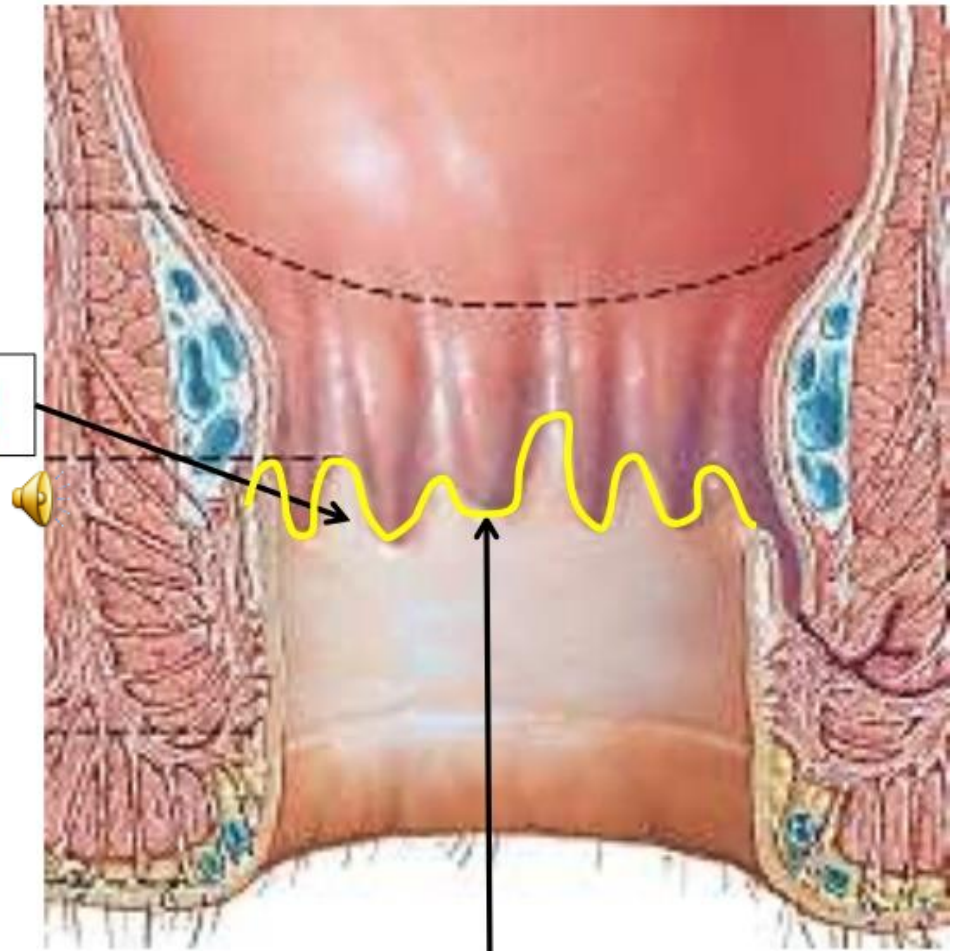
Anal Valves / Valves of Ball

Crescentic mucosal folds

Connect lower ends of
anal columns

Upper surface

Lower surface



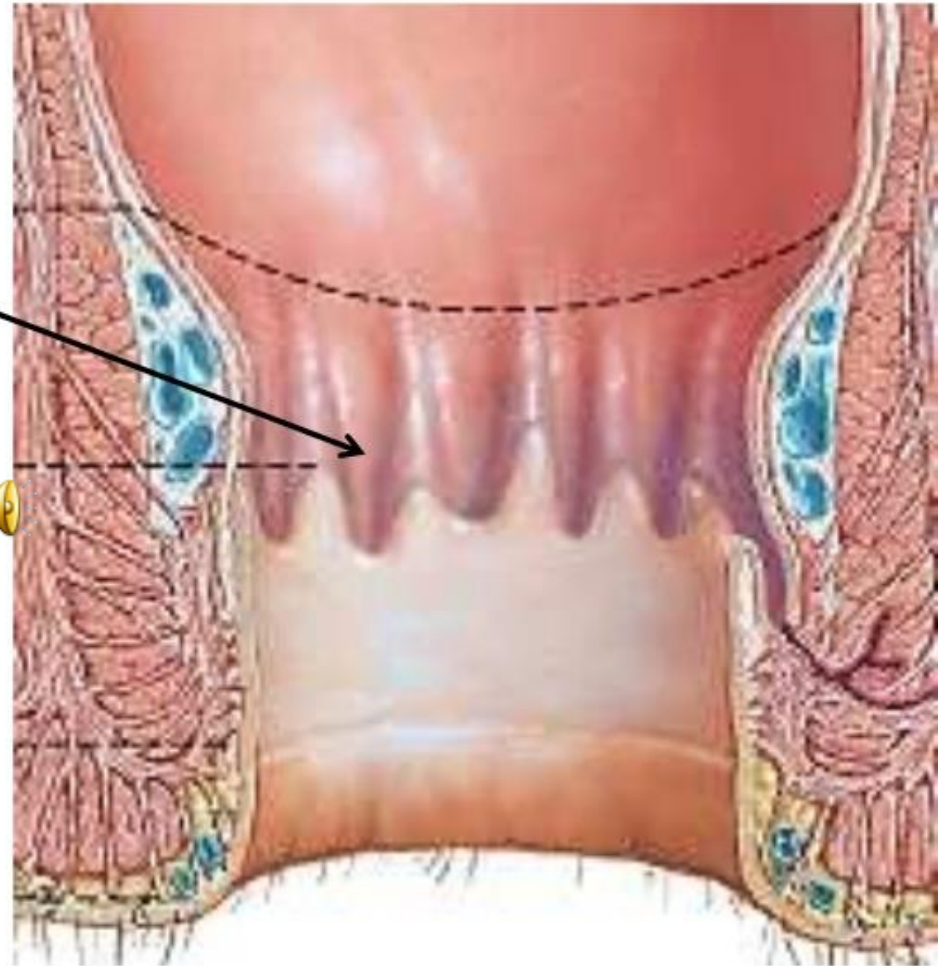
Pectinate Line / Dentate Line

Upper Muscular part - Features

Anal Sinuses

Recesses above valves
between anal columns

Foreign body

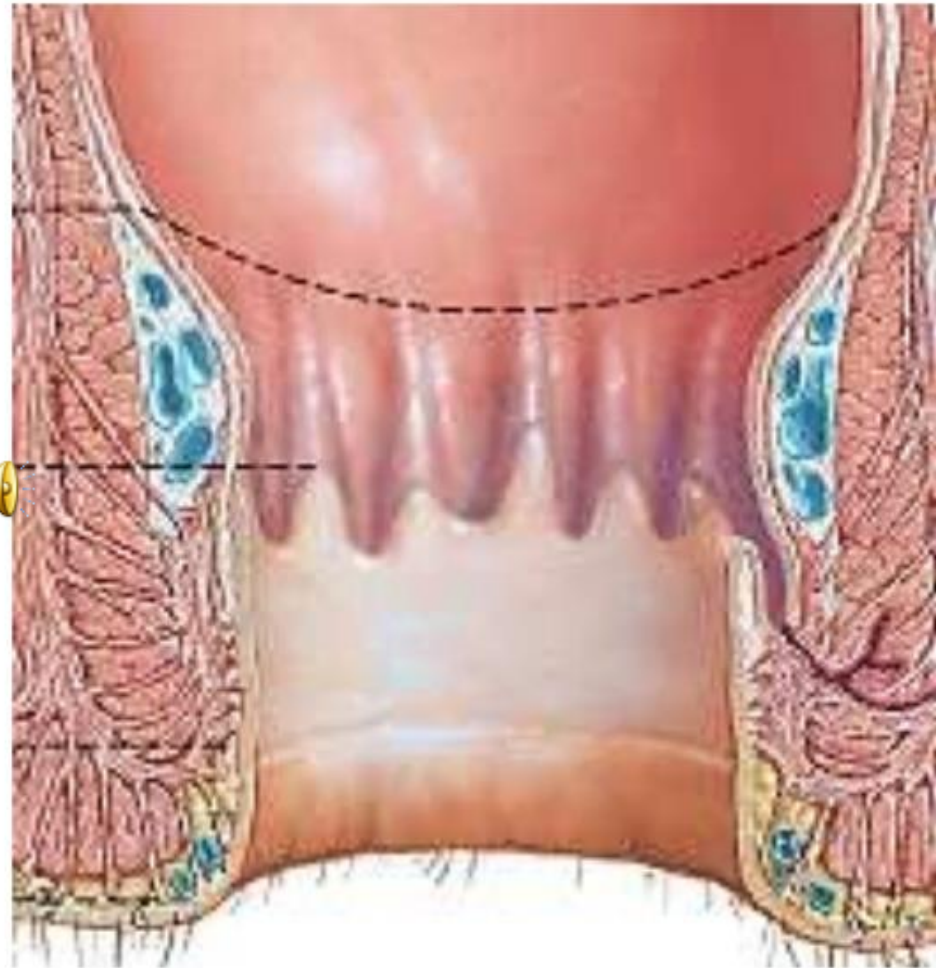


Upper Muscular part - Features

Anal Glands

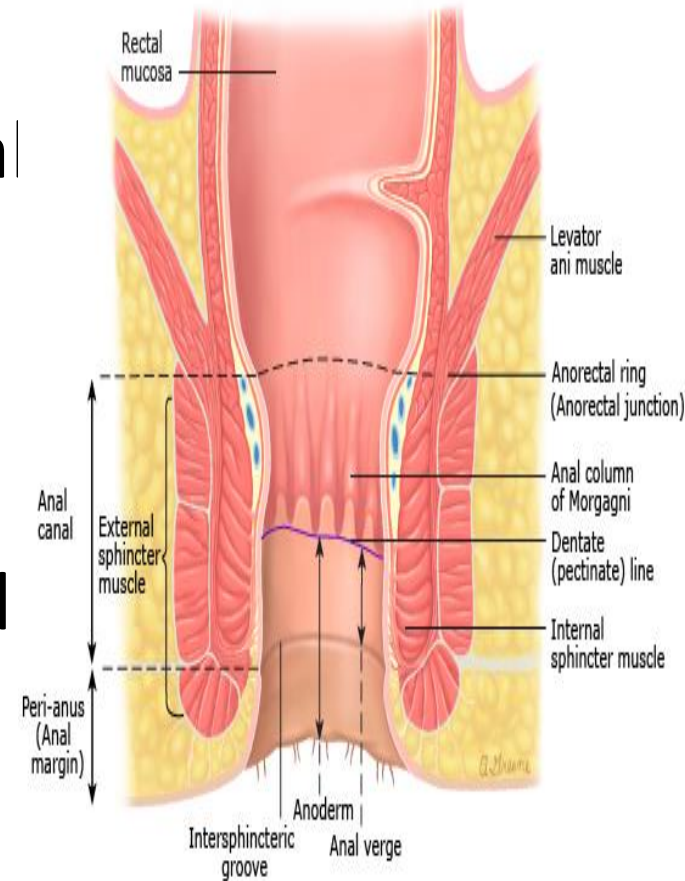
Open in floor of sinuses

Infection - Fistula



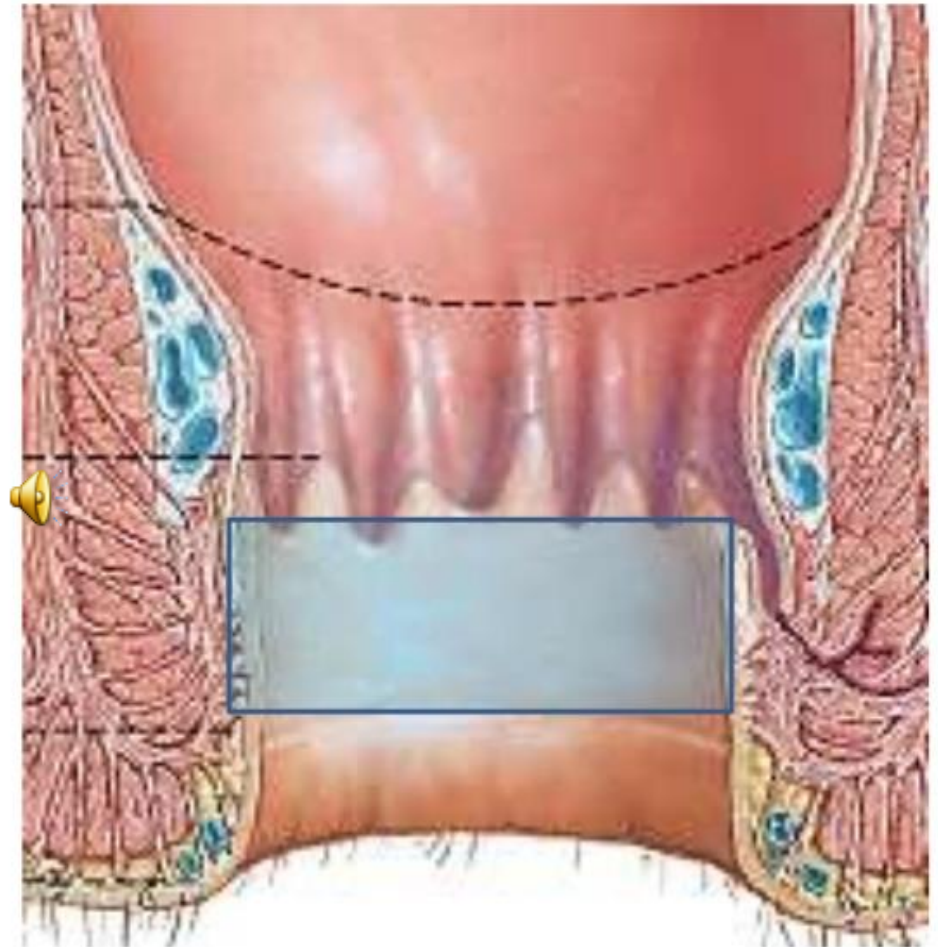
Importance Of Pectinate Line

- Muco-cutaneous junction of anal canal
- Corresponds with position of anal valve
- Situated at middle of internal sphincter
- Divides anal canal into upper and lower which are different development, blood supply, venous drainage, lymphatic drainage and nerve supply



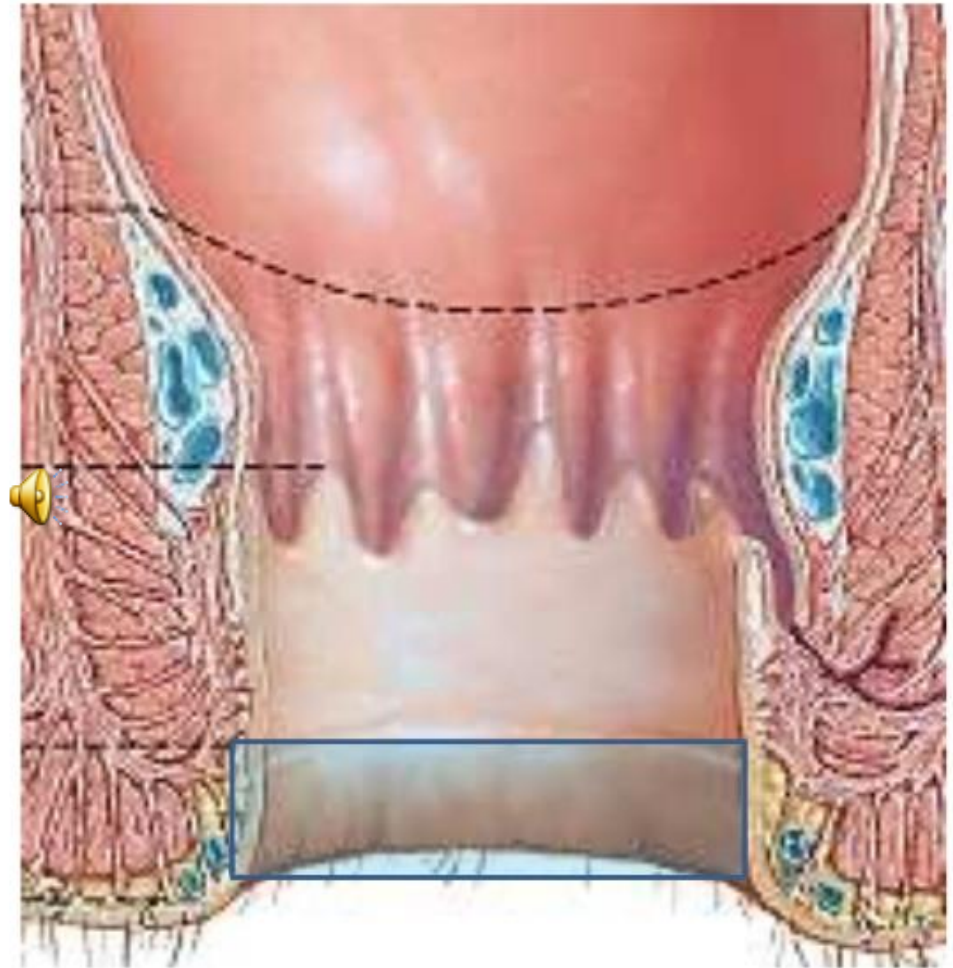
Intermediate area / Area of Pectane

- 15 mm
- Ectodermal origin
- Anal column: Absent
- Bluish pink appearance of mucosa
- St sq epithelium
- **No** sweat / Sebaceous gland



Lower area / Anal Verge

- 8 mm
- Ectodermal origin
- True skin with pigmentation
- Corrugation due to corrugator cutis ani
- Course hairs



Musculature Anal Canal

- **Anal Sphincters:**

- **Internal:**

- Thickened lower circular muscle of rectum
- Involuntary

- **External:**

- Striated muscles
- Voluntary,
- 3 parts:
 - 1) Subcutaneous
 - 2) Superficial
 - 3) Deep



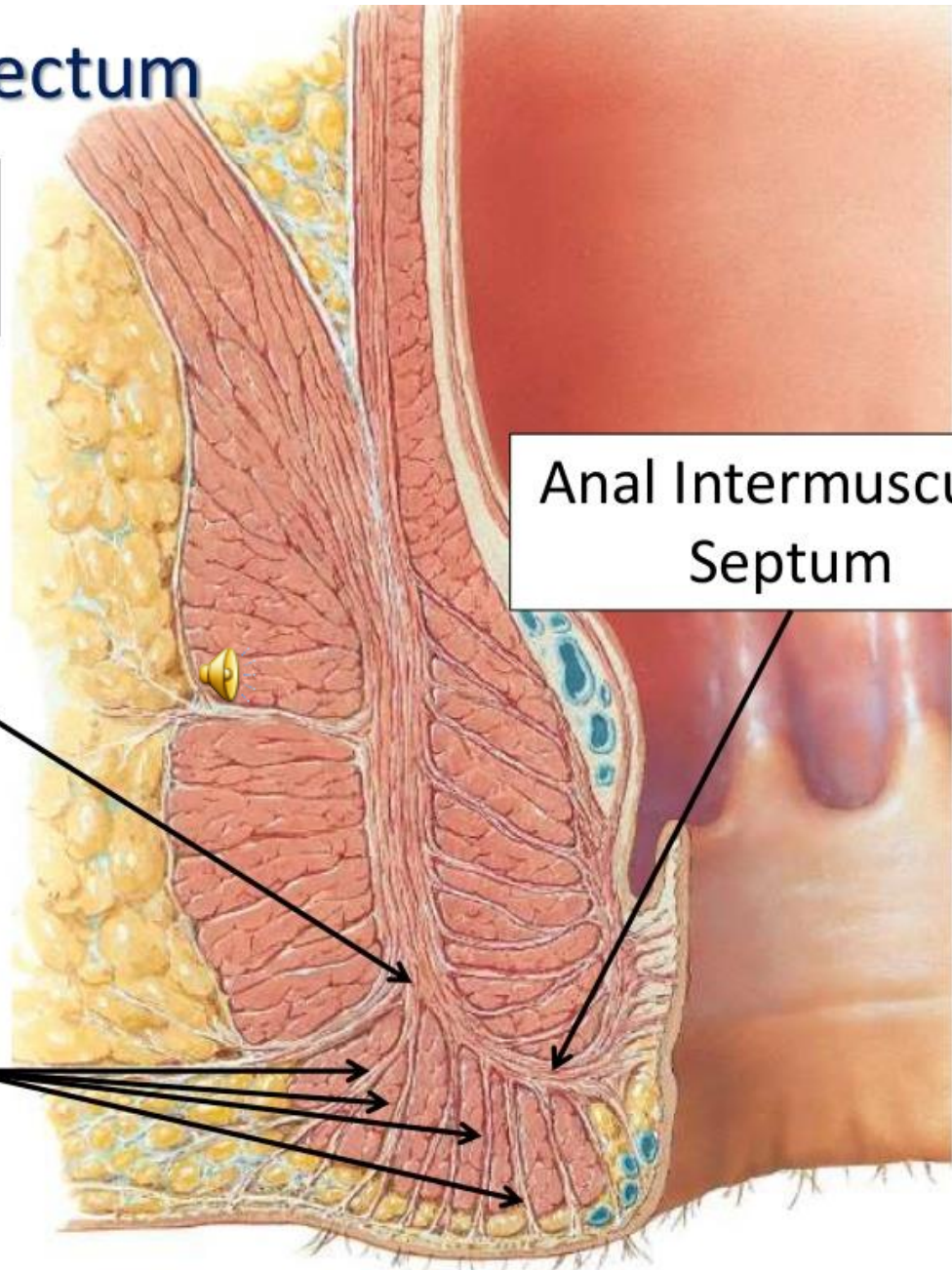
Musculature of Rectum

Conjoint Fibro-elastic sheath

Splits into
number of septa

Corrugator Cutis
Ani

Anal Intermuscular
Septum



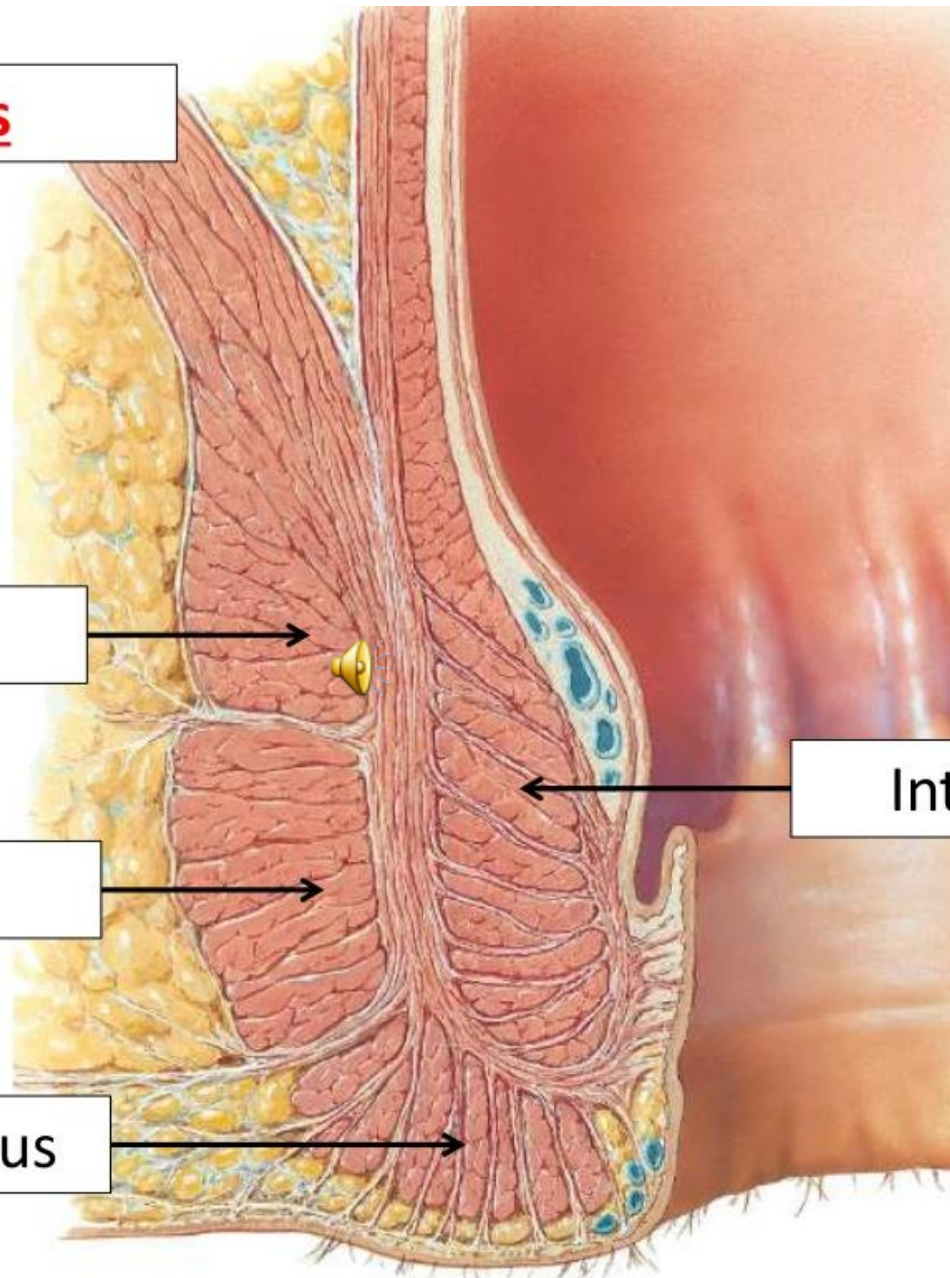
Sphincters

Deep

Superficial

Subcutaneous

Internal



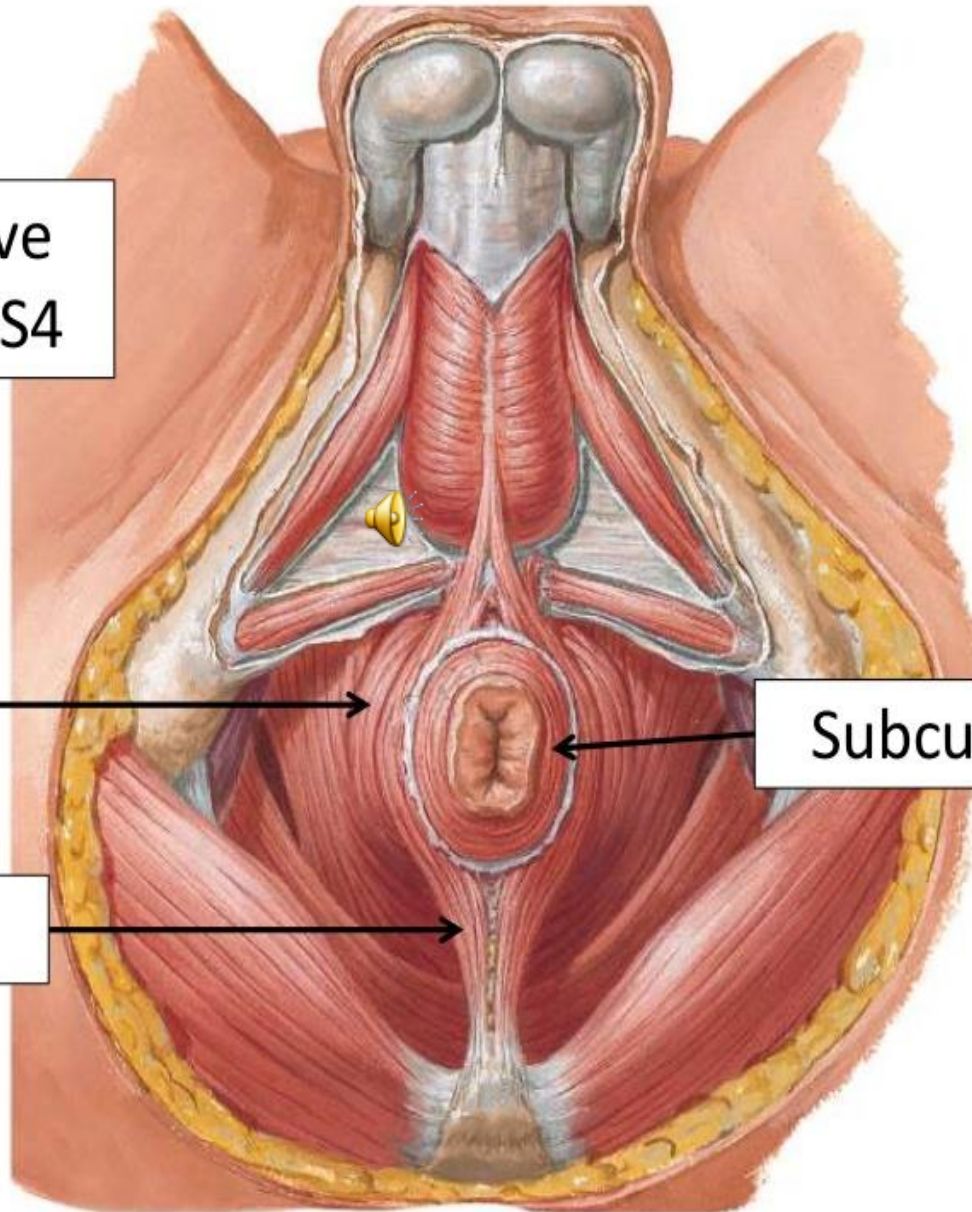
External Anal Sphincter

Inf Rectal nerve
Perineal Br of S4

Deep

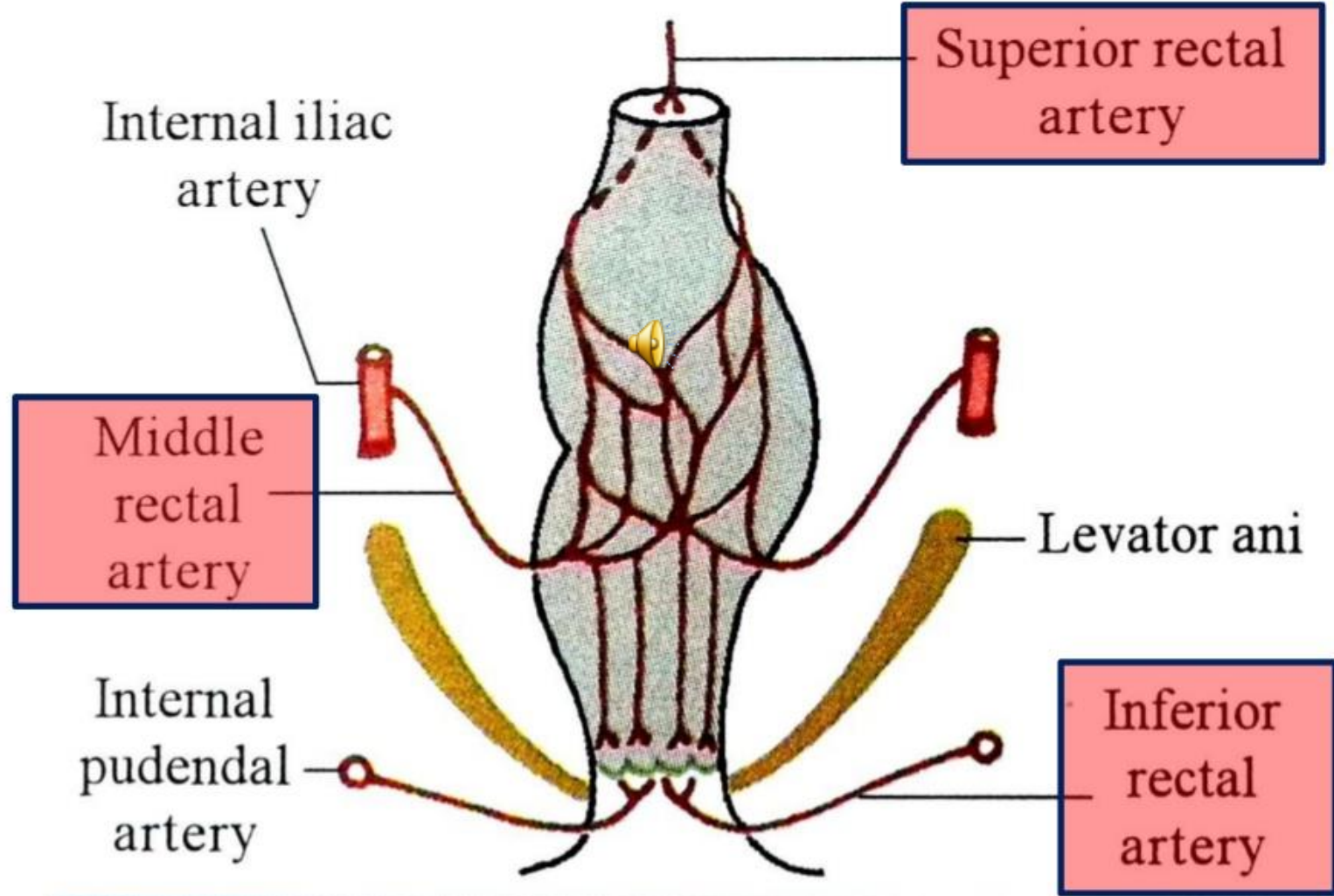
Superficial

Subcutaneous

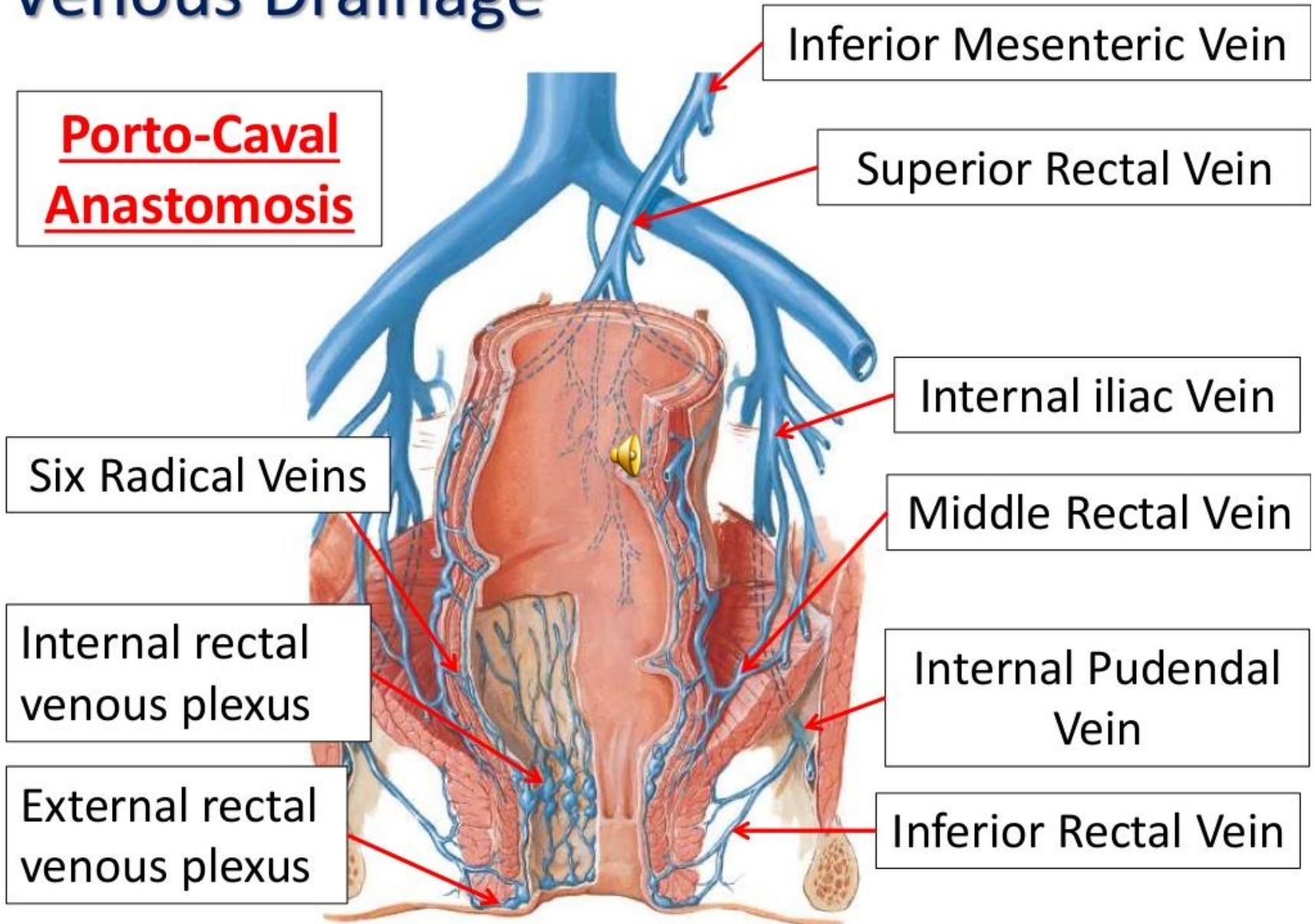


Arterial Supply

Five rectal arteries



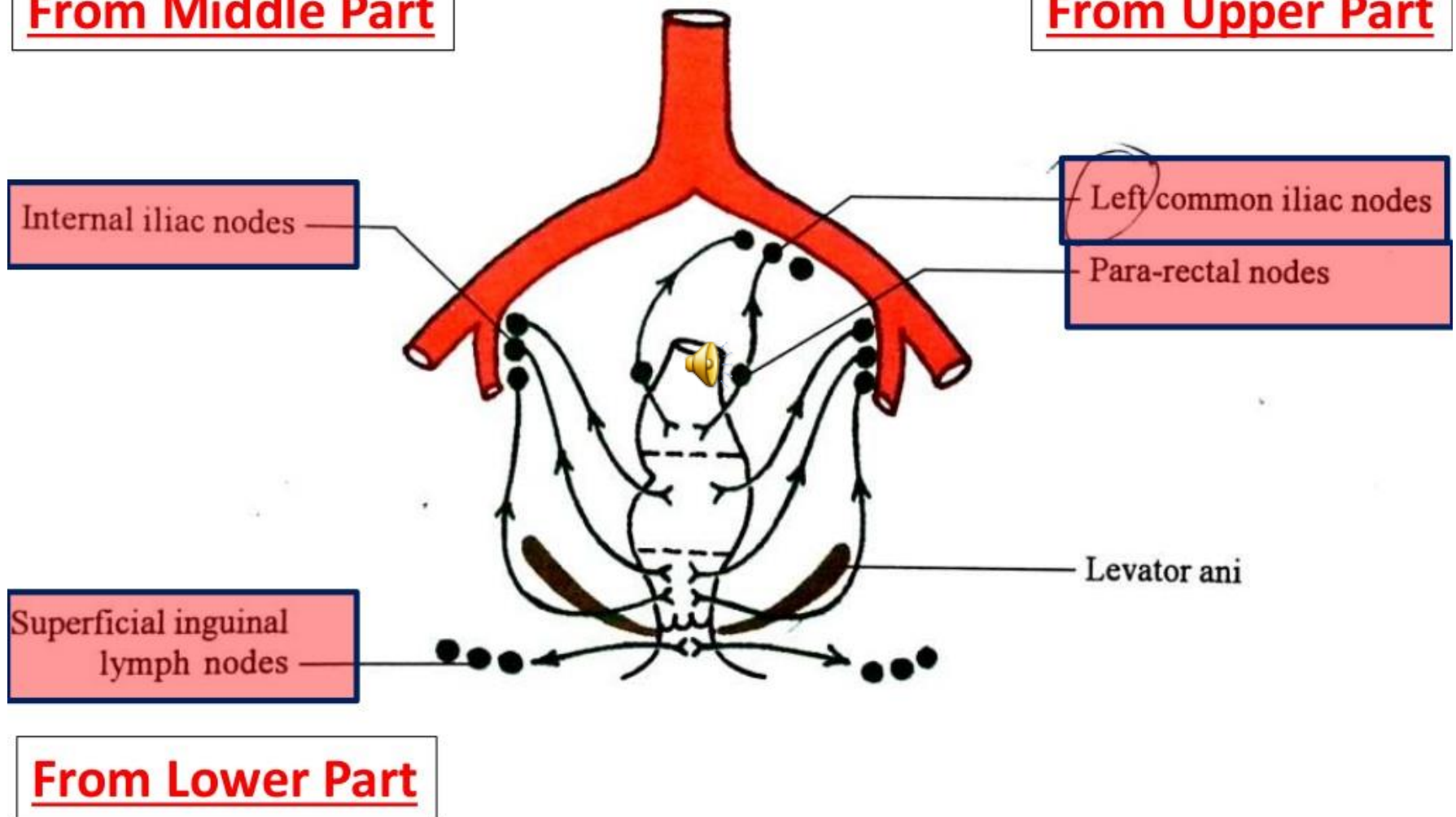
Venous Drainage



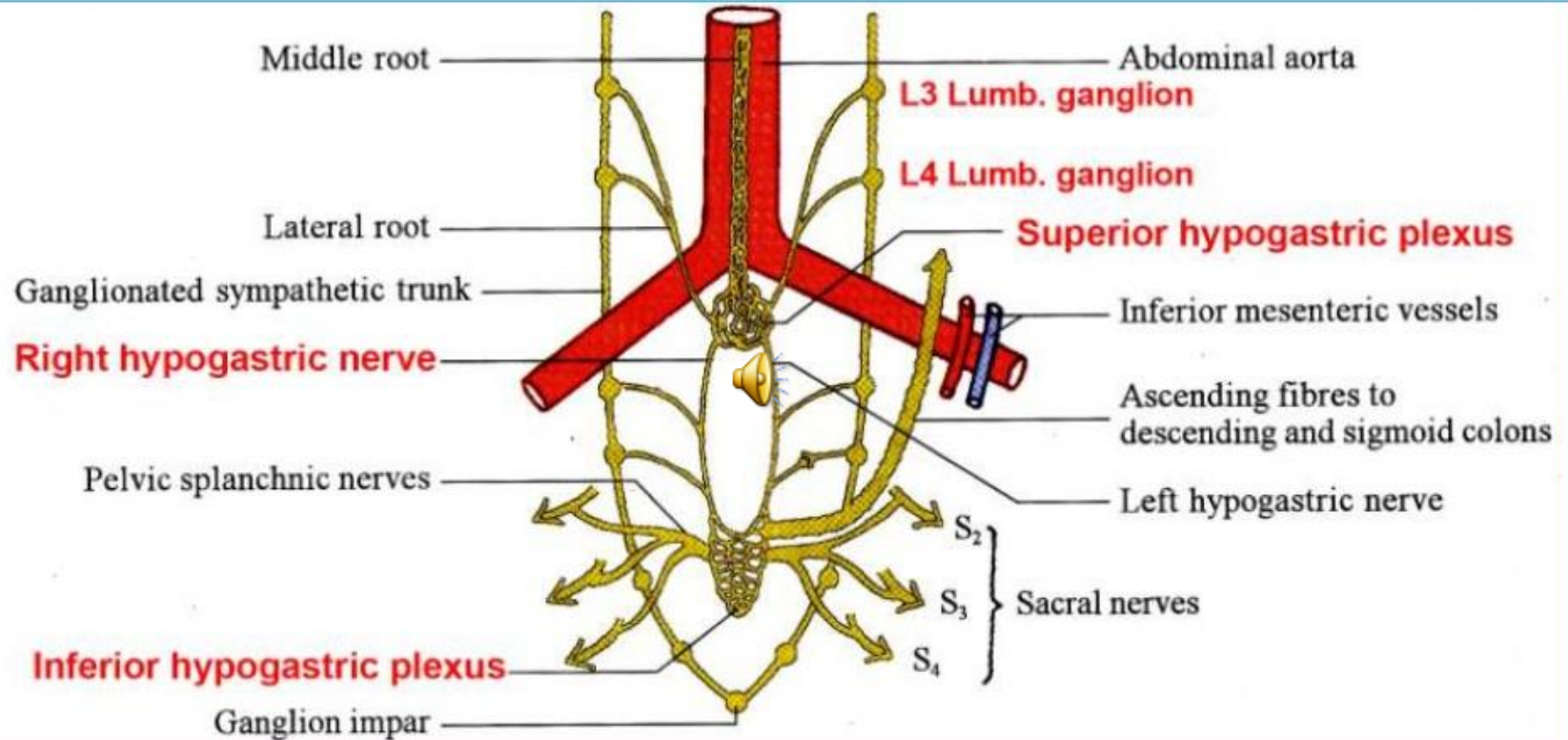
Lymphatic Drainage

From Middle Part

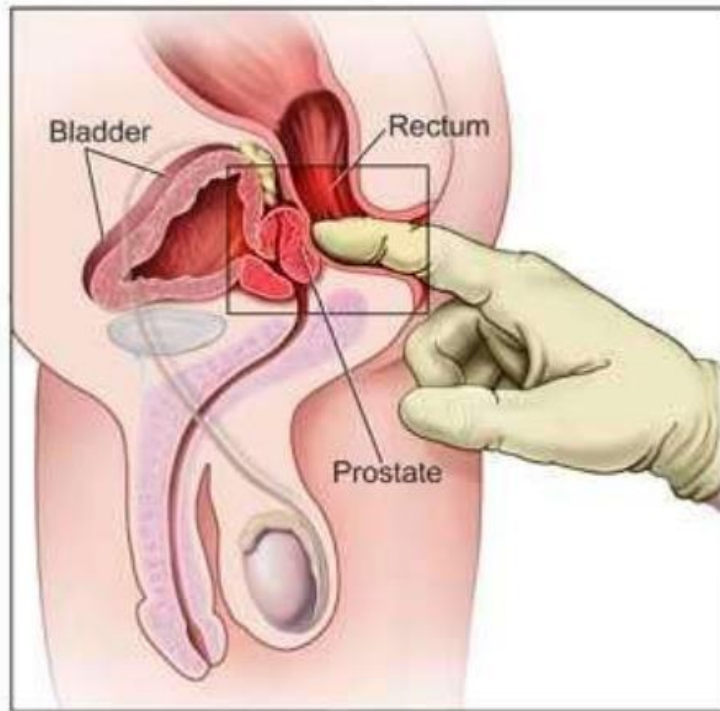
From Upper Part



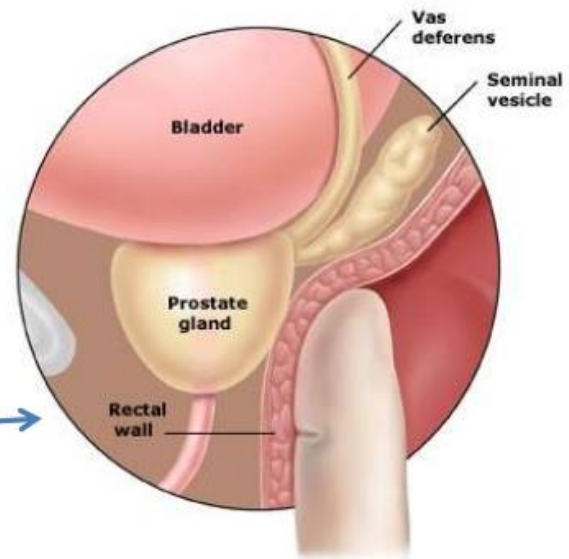
NERVE SUPPLY - SYMPATHETIC & PARASYMPATHETIC



Applied anatomy



DPRE



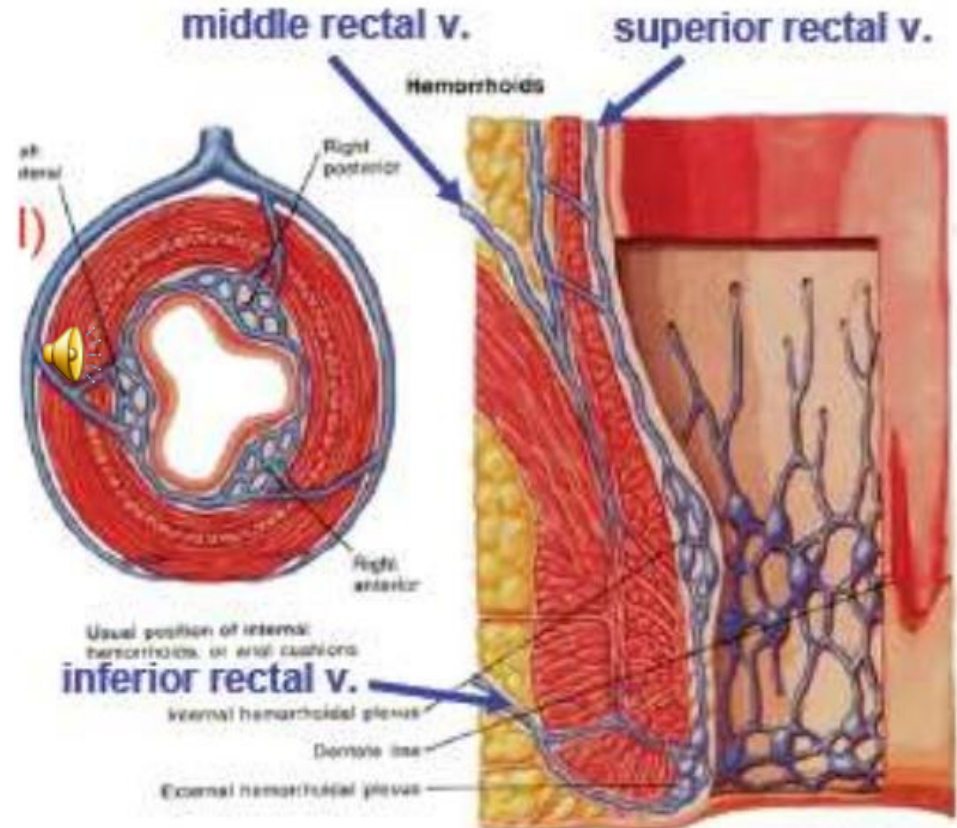
Hemorrhoids / Piles

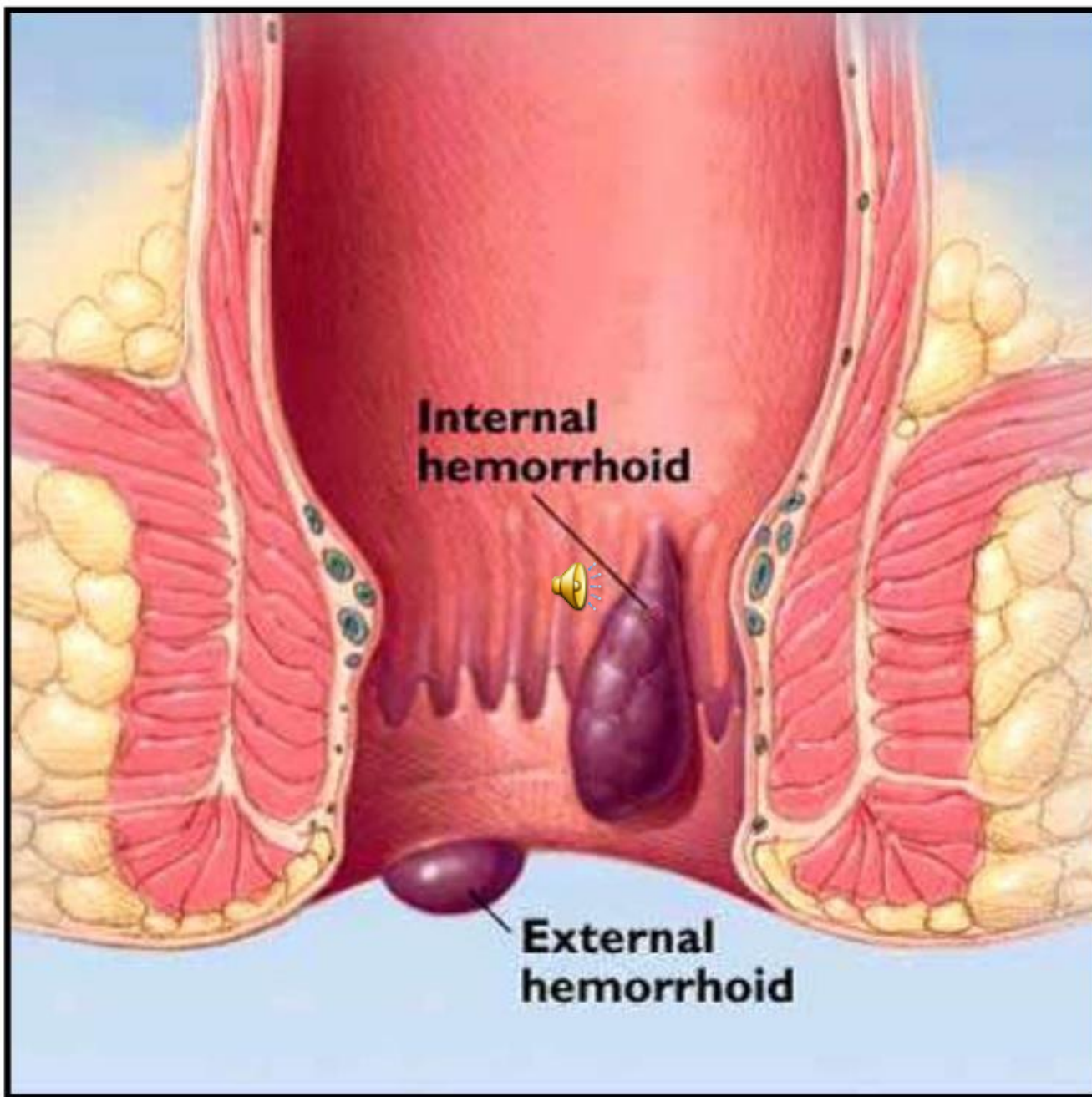
Internal hemorrhoids:

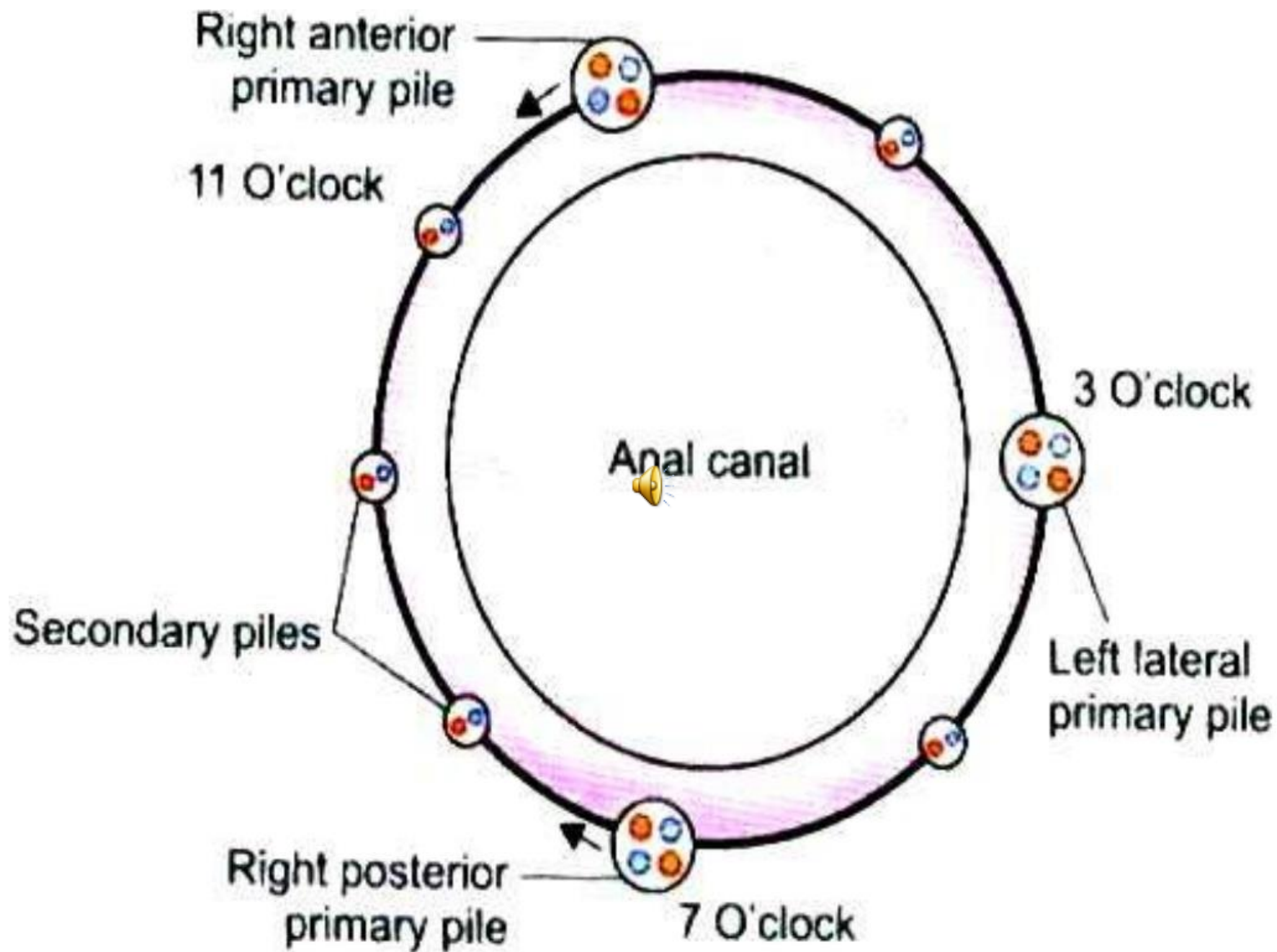
- Tributary of sup rectal
- Above white line
- Generally painless

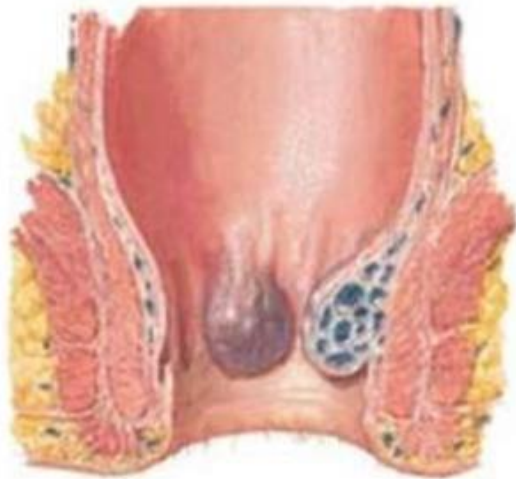
External hemorrhoids:

- Tributary of inf rectal
- Below white line
- Generally painful

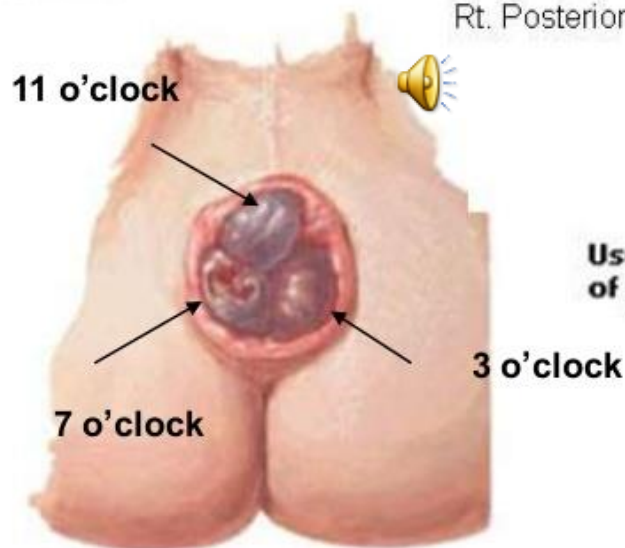
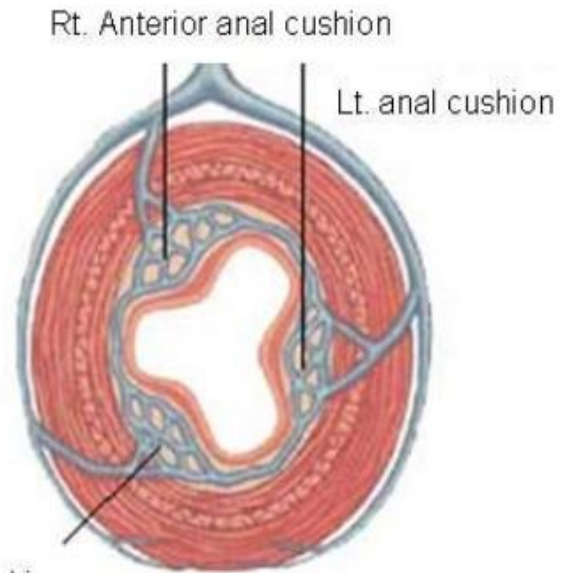








Enlarged anal cushions

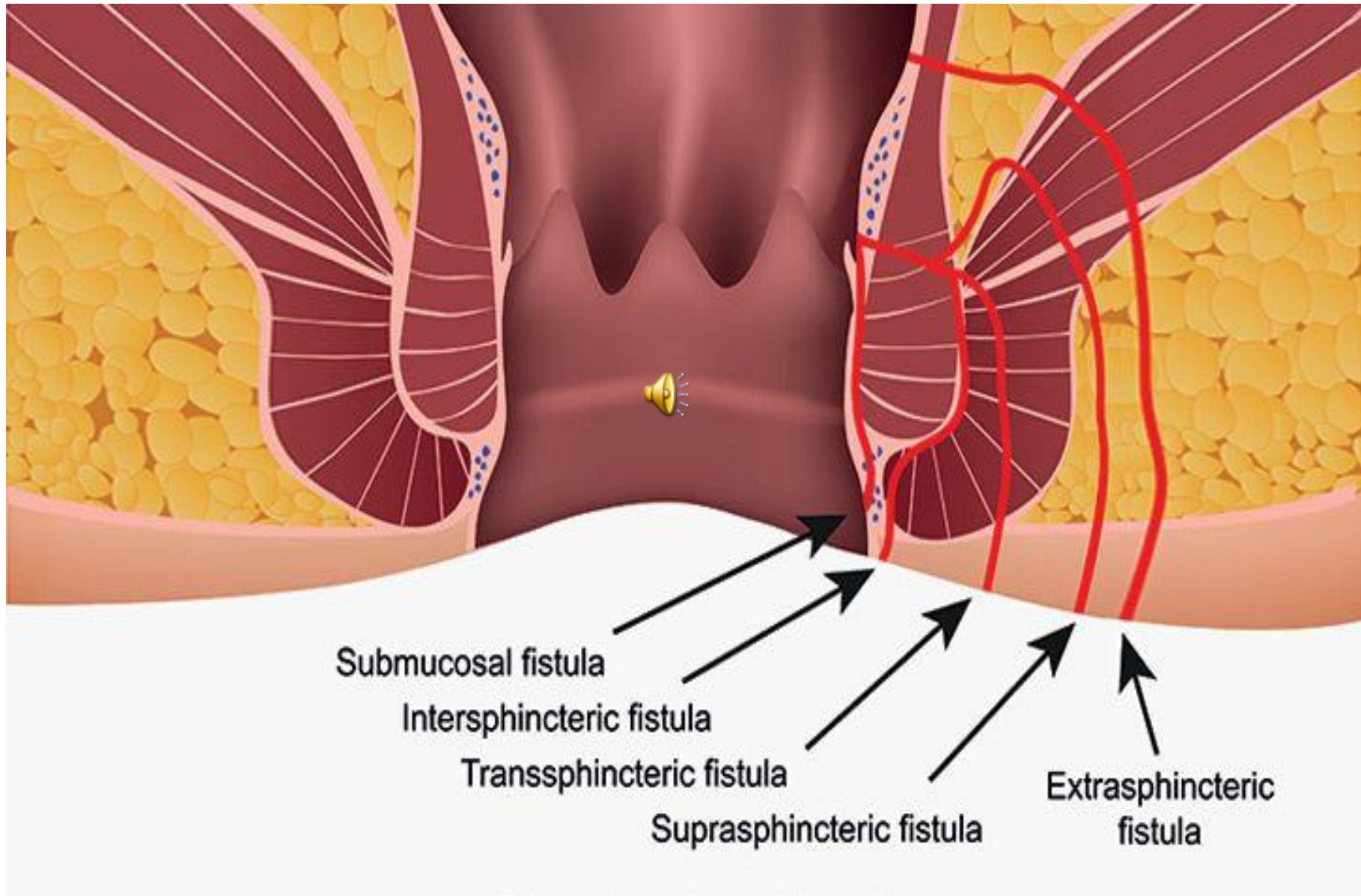


Prolapsed "rosette" of internal hemorrhoids

Usual position of anal cushions and sites of prolapse for internal hemorrhoids

Internal Hemorrhoids

Fistulla



Fissure



Assignment

- **LAQ**
- **Describe anal under following headings**
- **Gross anatomy**
- **Development**
- **Applied**

