# ORAL CAVITY, ESOPHAGUS & STOMACH

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This summary covers the whole lecture completely

# Oral cavity

Oral cavity

- vestibule
- Mouth cavity proper

The mouth extends from lips to oropharyngeal isthmus (the junction between mouth &the pharynx).

| vestibule | Mouth cavity proper |
|---|---|
| lies between teeth & gums internally and lips & cheeks externally. | lies within the alveolar arches, gums, and teeth. |
| | Roof:<br>Formed by the hard & soft palate. |
| It receives the opening of parotid duct opposite the upper 2nd molar tooth. | ***Floor:***<br>Formed by the anterior 2/3 of the tongue |
| | communicates with the vestibule behind the 3rd molar tooth |

## Under Surface Of The Tongue

| Frenulum lingualae | Orifice of the Submandibular Duct | Sublingual Folds |
|---|---|---|
| in the midline.<br>It connects tongue's under surface to the floor of the mouth. | opens on each side of the frenulum. | formed by the underlying sublingual gland.<br>is the most lateral. |

## palate (roof of the oral cavity)

### Hard palate(anteriorly)

formed by (4 bones):
- Palatine processes of the maxillae.
- Horizontal plates of palatine bones.

Bounded Laterally by the alveolar arches.

continuous with the soft palate posteriorly.

forms the floor of the nasal cavity.

### Soft palate(posteriorly)

It is a mobile fold formed of a bag of mucous membrane filled with striated muscles.

attached to the posterior border of the hard palate.

Its free posterior border is a conical projection called the uvula.

Clinical note:
Motor innervation of soft palate can be tested by saying 'Ah', normally soft palate rises upward and the uvula moves backward in the middle.

### Motor supply of soft palate

| Muscles of the soft palate | innervation |
|---|---|
| Levator veli palatini | pharyngeal plexus |
| Palatoglossus | |
| Palatopharyngeus | |
| Musculus uvulae | |
| Tensor veli palatini | Mandibular N. |

### Sensory supply of soft palate:

Trigeminal>maxillary>lesser & greater palatine and nasopalatine Ns.
9th (glossopharyngeal)cranial nerve.

# Tongue

| What? | Functions |
|---|---|
| a mass of striated muscles covered with mucous membrane | • articulation of the jaw.<br>• Taste<br>• Swallowing<br>• Speech<br>• Manipulation of food |

## location & sensory supply

| | location | Sensory supply | | |
|---|---|---|---|---|
| anterior 2/3 | Mouth cavity | General | (without vallate papillae) | lingual |
| | | Taste | | Chorda Tympani |
| posterior 1/3 | pharynx | General & Taste | (includes vallate papillae) | 9th (glossopharyngeal) |
| Root of the tongue and Epiglottis | | | | 10th (vagus) |

## Muscles

### intrinsic

| | |
|---|---|
| Characteristic: | Restricted to tongue & not attached to bones |
| Muscles: | • Transverse<br>• Longitudinal<br>• vertical |
| Function: | Alter the shape of the tongue |
| Innervation: | 12th (hypoglossal) |

### extrinsic

| | | |
|---|---|---|
| Characteristic: | attached to bones and the soft palate (4 pairs) | |
| Muscles: | names | innervation |
| | • Styloglossus,<br>• Genioglossus<br>• Hyoglossus | 12th (hypoglossal) |
| | • Palatoglossus | Pharyngeal plexus |

**Mnemonics:**

muscles of soft palate:
(1st litter of each ms)
**T**om **L**ikes **P**ancakes,
**P**otatochips, & **M**arshmallows

Extinitic muscles of tongue:
(1st litter of each ms)
Please Stay Genuine &
Honest

Pharyngeal movement:
What is the Pharyngeal isthmus?
- the communication between the nasal & oral pharynx.
- the space between the two palatopharyngeal arches.
How pharyngeal isthmus gets closed?
By rising the soft palate upwards
How to raise the soft palate upwards?
by the contraction of 2 ms:
- levator veli palatini
- Palatopharyngeus
What is the mechanisim of the closure?
the superior wall of the pharynx is pulled forward & The palatopharyngeus muscles on both sides also contract so that the palatopharyngeal arches are pulled medially, like side curtain.
When we need to close the pharyngeal isthmus?
during the production of explosive consonants in speech and swallowing.
What is the porpuse of the pharyngeal isthmus closure?
To close the nasal part off of the pharyn from the oral part

**Attachment of tongue**:
attached to the styloid process & soft palate above

to the mandible & the hyoid bone below

Note:
trigeminal>mandibular>lingual
Facial>in he facial canal>chorda tympani

## Esophagus

a tubular structure about 25 cm long

| | | | |
|---|---|---|---|
| C 6th vertebra | begins as the continuation of the pharynx | parts | cervical |
| T 10th | pierces the diaphragm + joins the stomach | | thoracic |
| T 11th | termination | | abdominal |
| thorax | passes downward and to the left through superior & posterior mediastinum | | |
| T 4th or sternal angle | aortic arch pushes the esophagus again to the midline | | |

## Cervical part relations

| | |
|---|---|
| Posteriorly | Vertebral column |
| Anteriorly | Trachea and the recurrent laryngeal nerves. |
| Laterally | lobes of the thyroid gland |

## Thoracic part relations

| anterior | posterior | lateral | |
|---|---|---|---|
| | | right | left |
| • Trachea<br>• Left recurrent laryngeal nerve<br>• Left principal bronchus<br>• Pericardium<br>• Left atrium | • thoracic vertebrae<br>• Thoracic duct<br>• Azygos vein<br>• Right posterior intercostal arteries<br>• Descending thoracic aorta (at the lower end) | • Mediastinal pleura<br>• Terminal part of the azygos vein | • Mediastinal pleura.<br>• Left subclavian artery.<br>• Aortic arch.<br>• Thoracic duct |

## Anatomic Esophageal constrictions

| constriction | site | level |
|---|---|---|
| First | at the junction with the pharynx | C6 |
| Second | at the crossing with the aortic arch and the left main bronchus | T4 |
| third | at the junction with the stomach | T11 |

### clinical application:

A barium swallow in the esophagus will help the physician to assess the size of the left atrium (Dilation) as in case of a heart failure

### Clinical significance of the esophageal constriction

① Difficult to pass the esophagoscope in these regions
② Areas of worst burning and stricture development in cases of swallowing caustic liquids (children)
③ Common sites of esophageal carcinoma
④ They mark certain lengths in the scale from the upper incisor teeth (These measurements are clinically important for endoscopy and endoscopic surgeries of the esophagus.)

## Abdominal part relations

In the abdomen, the esophagus descends for 1.3 cm and joins the stomach

| anterior | posterior |
|---|---|
| left lobe of the liver. | left crus of the diaphragm. |

Abdominal part:
Fibers from the right crus of the diaphragm form a sling around the esophagus.

- the opening of the diaphragm, the esophagus is accompanied by:
- The two vagi
- Branches of the left gastric vessels
- Lymphatic vessels.

## Esophageal nerve supply

| | |
|---|---|
| sympathetic | sympathetic trunks |
| parasympathetic | vagus nerves |

Inferior to the roots of the lungs, the vagus nerves join the sympathetic nerves to form the esophageal plexus.

The left vagus lies anterior to the esophagus.
The right vagus lies posterior to it.

## esophageal Blood supply, drainage and lymphatics

| parts | artery | vein | lymphatics |
|---|---|---|---|
| Upper 1/3 | inferior thyroid | | deep cervical |
| Middle 1/3 | thoracic aorta | azygos veins | superior and inferior mediastinal |
| Lower 1/3 | left gastric | | celiac |

# stomach

| | | | | |
|---|---|---|---|---|
| the most dilated part of the alimentary canal | located in the upper part of the abdomen | extends from beneath the left costal region into the epigastric and umbilical regions | Much of the stomach is protected by the lower ribs | roughly J-shaped |

## Anterior relations

- Anterior abdominal wall
- Left costal margin
- Left lobe of the liver
- Diaphragm
- Left pleura & lung

## Posterior relations

- Part of left kidney
- Spleen
- Splenic artery
- Pancreas
- Transverse mesocolon
- Transverse colon
- Lesser sac
- Left suprarenal gland
- Left crus of diaphragm

All these posterior structures form the stomach bed.

All are separated from the stomach by peritoneum of lesser sac except the spleen by greater sac

# Stomach has:

| | | | |
|---|---|---|---|
| 2 Orifices | • Cardiac | • site of the gastro- esophageal sphincter<br>• physiological sphincter<br>• Consists of circular layer of smooth muscle (under vagal and hormonal control<br>• lies opposite the left seventh costal cartilage 2.5 cm. from the sternum ,(T10)<br>• Prevents esophageal regurgitation (reflux) | |
| | • Pyloric | Between the pyloric part of the stomach and the ileum | |
| 2 Borders | | lesser | greater |
| | Forming | right border | left border |
| | Extension | from the cardiac orifice to the pylorus. | |
| | Attachment | to the liver by the lesser omentum | Its upper part is attached to the spleen by gastrosplenic ligament Its lower part is attached to the transverse colon by the greater omentum. |
| 2 Surfaces | • Anterior<br>• Posterior | - | |
| 3 Parts | • Fundus<br>• Body | Fundus: Dome-shaped, Located to the left of the cardiac orifice, full of gazes, reaches to the left 5th intercostal space a little below the apex of the heart<br>Body: Extends from:The level of the fundus, toThe level of Incisura angularis<br>Incisura angularis: is a constant notch on the lesser curvature | |
| | • Pylorus:<br>Pyloric canal<br>Pyloric antrum<br>Pyloric sphincter | The pyloric antrum extends from Incisura angularis to the pylorus.<br>The pylorus is a tubular part of the stomach<br>It lies in the transpyloric plane (L1), 1 cm to the right of the middle line.<br>It has a thick muscular end called pyloric sphincter.<br>The cavity of the pylorus is the pyloric canal. | |

# Stomach arterial supply

| Name | Left gastric artery | Right gastric artery | Short gastric arteries | Left gastroepeploic | Right gastroepeploic |
|---|---|---|---|---|---|
| Arise from | celiac | hepatic of celiac | splenic | Splenic | Gastroduodenal of hepatic |
| Corse | Runs along the lesser curvature | Runs to the left along the lesser curvature. | Pass in the gastrosplenic ligament to the fundus | Pass in the gastrosplenic ligament, along the greater curvature | Passes to the left along the greater curvature |

# STOMACH INNERVATION

| Sympathetic fibers | Parasympathetic fibers | |
|---|---|---|
| • Vasoconstrictors<br>• Antiperistaltic<br>• carry pain sensation | Motility & secretory | |
| celiac plexus | Anterior vagal trunk | Posterior vagal trunk |
| | •Formed from the left vagus<br>•Supply the anterior surface of the stomach<br>•Gives off a hepatic branch and from it, a branch to the pylorus. | •Formed from the right vagus<br>•Supply the posterior surface of the stomach<br>•Gives off a large branch to the celiac and the superior mesenteric plexuses |

## Venous drainage of stomach

All of them drain into the portal circulation directly or indirectly

| vein | directly | indirectly |
|---|---|---|
| Left & right Gastric | Into portal circulation | - |
| short gastric veins & left gastroepiploic vein | - | Via splenic vein |
| right gastroepiploic vein | - | Via superior mesenteric |

### Stomach Lymohatics:

The lymph vessels follow the arteries.
They first drain to the:

- Left and right gastric nodes.
- Left and right gastroepiploic
- Short gastric nodes.

Ultimately, all the lymph from the stomach is collected at the celiac nodes.

gastroepeploic= gastroomental

1.which one of the following is related to esophagus in cervical region anteriorly :
A-recurrent laryngeal nerve .
B- thoracic duct
C-left atrium .
D-thyroid gland

2.oeophagus begins as continuation of pharynx at the level of :
A-C4
B-C5
C-C6
D-T6

3.all of the following are the arterial supply of the osophagus except:
A-inferior thyroid
B-thoracic aorta
C-left gastric
D-right gastric

4-lesser curvature of the stomach extend from ….. to ……
A-Fundus, Incisura Angularis
B-cardiac orifice , pylorus
C-cardiac orifice, Pyloric sphincter

5-which one of the following posterior relations is NOT separated from stomach by peritonium :
A-Spleen
B-splenic artery
C-pancreas
D-left kidney

6-Pyloric orifice located …….. at level of
A-transpyloric plane, t10
B-transpyloric plane, l1
C-fifth intercostal space, l1.
D-fifth intercostal space, t1

7.Which one of the following veins drain directly into portal vein?
A. Right gastric vein
B. Left gastroepiploic vein
C. Right gastroepiploic vein
D. Short gastric vein

8.Upper third of esophagus supplied by:
A- Thoracic aorta.
B- Inferior thyroid artery
C- Left gastric artery
D- right gastric artery

9.Which one of the following is not posterior to stomach (not componant of stomach bed):
A- left kidney
B- transverse mesocolon
C- left pleura
D- pancreas

10.Right gastric artery that runs to the left along the lesser Curvature. is branch of ??
A. celiac artery
B. hepatic of celiac artery
C. splenic artery
D. gastrodudenal of hepatic

11- The abdominal cavity is divided into 9 compartments By:

A- vertical and 2 horizontal planes .

B- Subcostal and Intertubercular lines .

C- 2 Midclavicular lines .

D- B and C

12- what is the correct relation to the cervical part of esophagus :

A- Vertebral column Posteriorly, carotid sheath medially, Trachea Anteriorly .

B- Vertebral column Posteriorly ,carotid sheath laterally ,Trachea Anteriorly .

C- Vertebral column Posteriorly , prevertebral muscle Posteriorly,lobe of thyroid laterally .

D- B and C .

13- what is the correct relation to the Thoracic part of esophagus :

A-Left recurrent laryngeal nerve , Left principal bronchus , Left atrium Anteriorly .

B- Bodies of the thoracic vertebrae , Thoracic duct , Left subclavian artery Posteriorly.

C- Terminal part of the azygos vein On the left side laterally .

D- All of them .

14- what is the correct relation to the Abdomen part of esophagus :

A- Anteriorly, left crus of the diaphragm.

B- Posteriorly , left lobe of the liver .

C- A and b

D- None all of them .

15- what is ARTERIAL SUPPLY of esophagus :

A. Upper 1/3rd by the thoracic aorta.

B. The middle third by the inferior thyroid artery.

C. The lower third by the right gastric artery .

D. None all of them .

16- what is VENOUS DRAINAGE of esophagus

A- The upper third drains in into the inferior thyroid veins .

B- The middle third into the azygos artey .

C- The lower third into the left gastric vein, which is a tributary of the renal vein.

D. A and C .

17- what is the LYMPH DRAINAGE of esophagus :

A- The upper third is drained in the deep celiac nodes .

B- The middle third is drained into the superior and anterior mediastinal nodes .

C- The lower third is drained in the cervical lymph nodes in the abdomen

D- none of them .

18- which one of these statement is not wrong :

A- It is supplied by sympathetic trunks and vagus (esophageal plexus ) .

B- The left vagus lies posterior to the esophagus .

C- The right vagus lies anterior to the esophagus .

D- All of them .

19-Consists of a circular layer of smooth muscle (under vagal and hormonal control ), Prevents (GER) regurgitation (reflux):

A. cardiac orifice .

B. b. pyloric sphincter .

C. c. body .

D. d. incisura angularis .

20- Which one of the following is true about lesser curvature:
A- Forms the right border of the stomach , Attached to the liver by the greater omentum .
B. Forms the left border of the stomach .
C. Forms the left border of the stomach , , Attached to the liver by the lesser omentum .
D. Extends from the cardiac orifice to the pylorus .

21-which one of the following is true about greater curvature :
A-Forms the left border of the stomach .
B. Its upper part attached to the liver by gastrosplenic ligament .
C. Its lower part is attached to the ascending colon by the greater omentum . D. All of them

22-which one is not from the anterior relations of stomach :
A- Anterior abdominal wall , Left costal margin , Left pleura & left lung .
B. Diaphragm , Left lobe of the liver .
C. Pericardium .
D. None of them

23- which one is from the posterior relations of stomach:
A-Right crus of diaphragm.
B-Splenic vein .
C-Transverse mesocolon .
D-None of them .

24- ARTERIAL SUPPLY of stomach is derived from :
A- from the foregut , all are branches of the cervical trunk .
B- from the medgut, all are branches of the celiac trunk
C- from the medgut, all are branches of the lumbar trunk .
D- from the foregut,all are branches of the celiac trunk .

25- Left gastric artery:
A- It is a branch of celiac artery,Runs to the left along the lesser curvature .
B- From the hepatic of celiac,Runs along the lesser curvature .
C- It is a branch of celiac artery,Runs along the lesser curvature .
D- None of them

26- Right gastric artery:
A- From the hepatic of celiac , Runs along the lesser curvature .
B- from the splenic artery,Pass in the gastrosplenic ligament to the fundus
C. from the gastroduodenal artery of hepatic , Passes to the left along the greater curvature .
D. From the hepatic of celiac , Runs to the left along the lesser curvature

27- Short gastric arteries :
A- arise from the splenic artery , Passes to the left along the greater curvature .
B- arise from the splenic artery , Pass in the gastrosplenic ligament, along the greater curvature .
C- From the hepatic of celiac , Runs along the lesser curvature .
D- arise from the splenic artery , Pass in the gastrosplenic ligament to the fundus

28- Left gastroepiploic artery:
A- arise from the splenic artery , Passes to the left along the greater curvature .
B. arise from the splenic artery , Pass in the gastrosplenic ligament, along the greater curvature .
C. from the gastroduodenal artery of hepatic .
D. It is a branch of celiac artery , Runs along the lesser curvature

29-Right gastroepiploic artery
A-from the gastroduodenal artery of hepatic , Runs along the lesser curvature .
B-arise from the splenic artery , Pass in the gastrosplenic ligament, along the greater curvature .
C- Passes to the left along the greater curvature , from the gastroduodenal artery of hepatic .
D- It is a branch of celiac artery , Runs along the lesser curvature

30-which one of these is true about veins :
A. The right and left gastric veins drain directly into the portal vein .
B. The short gastric veins and the left gastroepiploic vein join the splenic vein .
C. The right gastroepiploic vein drain in the superior mesenteric vein .
D. All of them .

31- LYMPH DRAINAGE of stomach first drain to the:
A. Left and right gastric nodes .
B. Left and right gastroepiploic nodes .
C. Short gastric nodes .
D. All of them .

32- all the lymph from the stomach is collected at the:
A. Cervical nodes .
B. celiac nodes .
C. lumbar nodes .
D. sacral nodes .

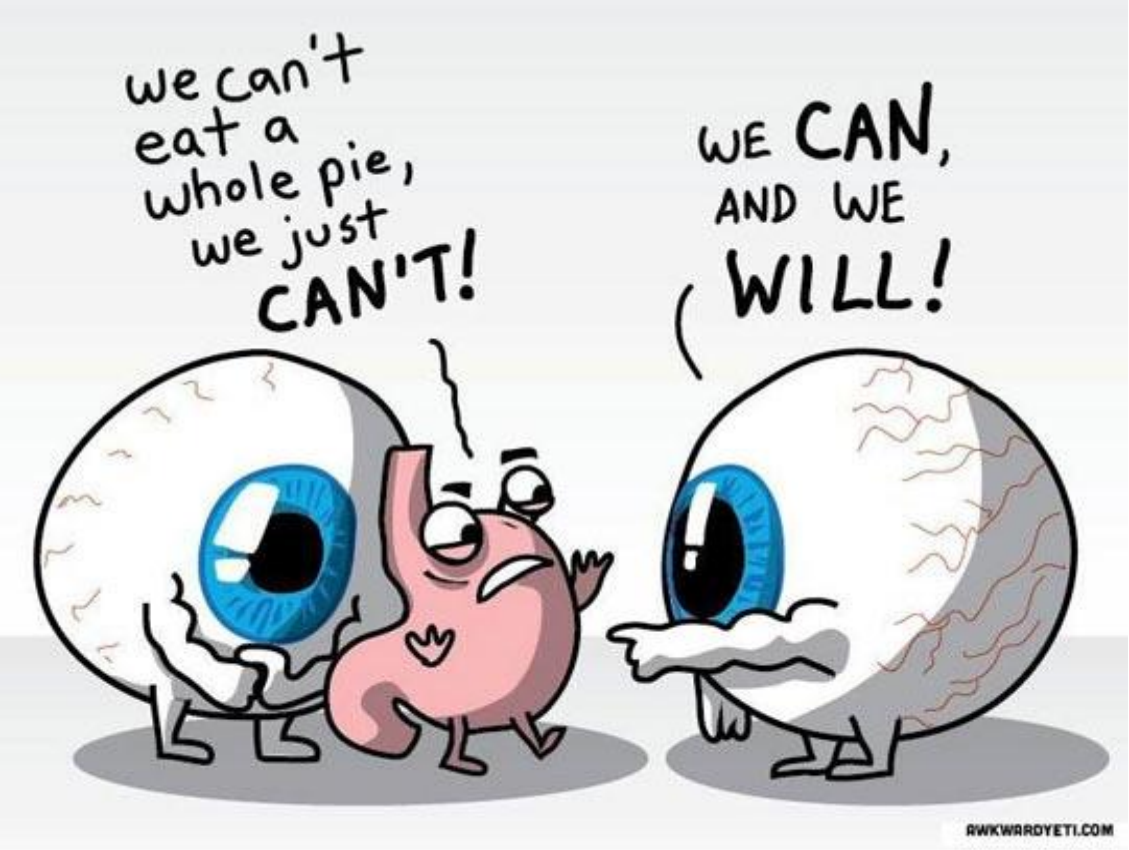
33- what is the nerve supply of stomach:
A. Sympathetic .
B. Parasympathetic .
C. A and B .
D. None of them .

34- which one of these statement is not wrong about Anterior vagal trunk :
A. Formed from the right vagus .
B. Supply the posterior surface of the stomach .
C. Gives off a hepatic branch and from it - a branch to the pylorus .
D. All of them

# GOOD LUCK DOCTORS

Key answers

| | |
|---|---|
| 1.A | 18.A |
| 2.C | 19.A |
| 3.D | 20.D |
| 4.B | 21A |
| 5.A | 22.D |
| 6.B | 23.C |
| 7.A | 24.D |
| 8.B | 25.C |
| 9.C | 26.D |
| 10.B | 27.D |
| 11.D | 28.B |
| 12.D | 29.C |
| 13.A | 30.D |
| 14.D | 31.D |
| 15.D | 32.B |
| 16.A | 33.C |
| 17.D | 34.C |

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