

وسهلا



أهلا

يُمنع أخذ السلايدات بدون
إذن المحرر واي اجراء
يخالف ذلك يقع تحت طائلة
المسؤولية القانونية
جميع المعلومات للاستخدام
التعليمي فقط

الأستاذ الدكتور يوسف حسين

رئيس قسم التشريح والأنسجة والأجنة

كلية الطب - جامعة مؤتة - الأردن

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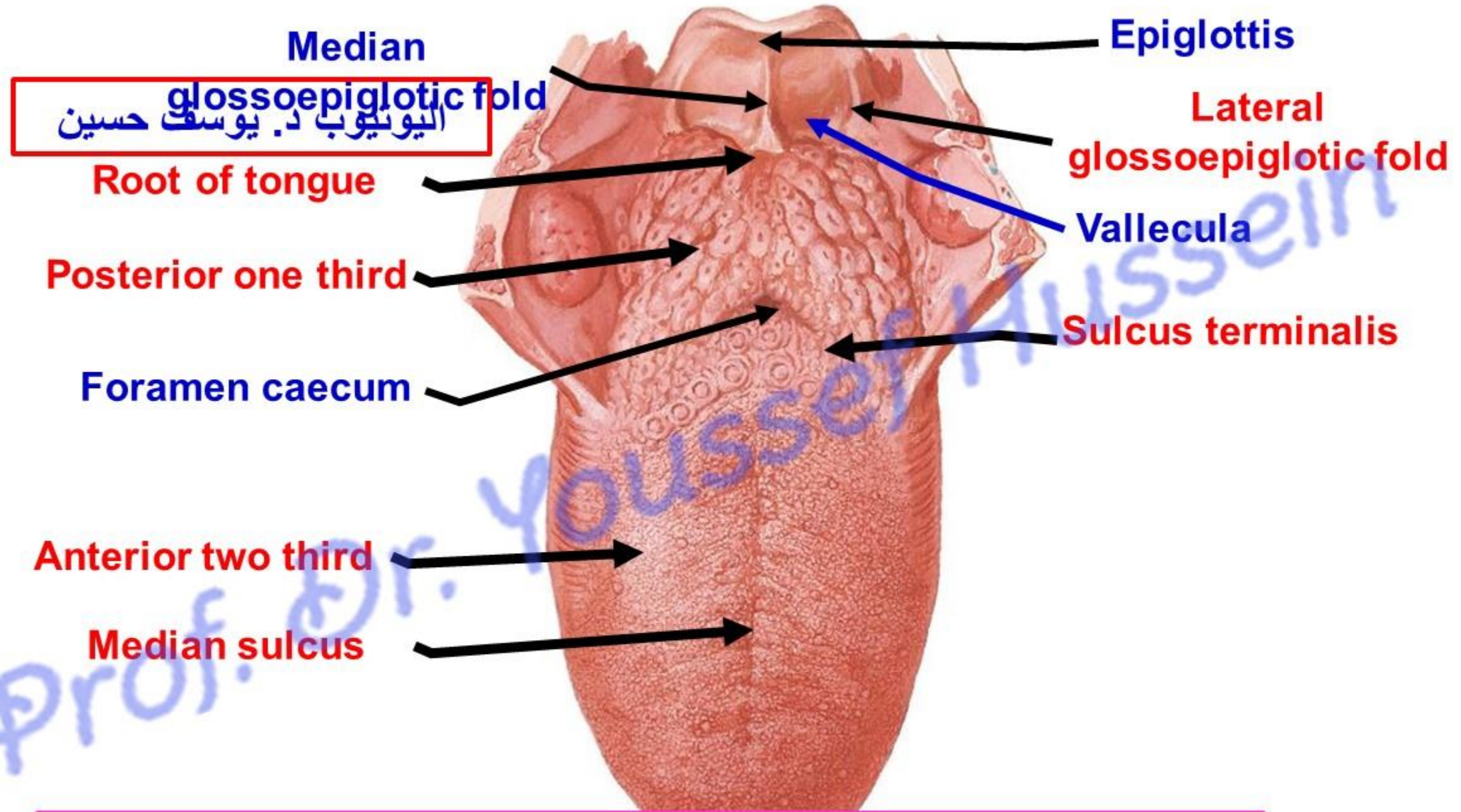
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Development of Tongue

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Median
glossoepiglottic fold
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Epiglottis

Lateral
glossoepiglottic fold

Vallecula

Root of tongue

Posterior one third

Sulcus terminalis

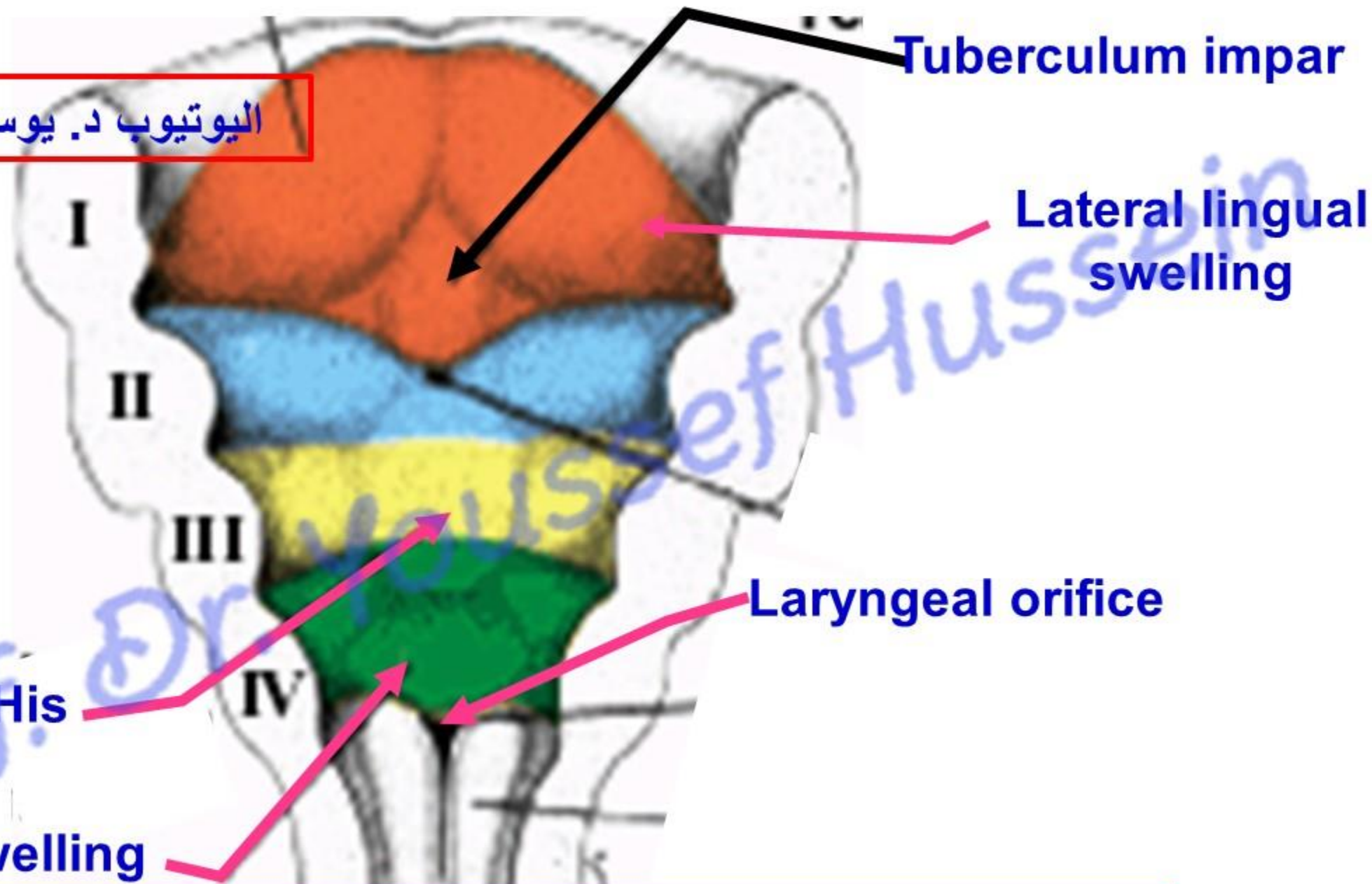
Foramen caecum

Anterior two third

Median sulcus

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Tuberculum impar

Lateral lingual swelling

Laryngeal orifice

Copula of His

Epiglottic swelling

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• **Development of the mucous membrane of the anterior 2/3 of the tongue:**

- **At 4th week 3 endodermal swellings** appears from 1st pharyngeal arches
- **1- A median swelling** called the **tuberculum impar**
- **2- Two lateral lingual swellings** proliferate and grow medially.
- In the midline, they fused together at **median sulcus** and completely covered tuberculum impar forming mucous membrane of anterior 2/3 of the tongue.
- **So the anterior 2/3 is supplied by Lingual nerve from posterior division of mandibular nerve.**

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- **Development of the mucous membrane of the posterior 1/3 of the tongue:**
- It develops as a large midline mass (**copula of His**) derived from **endoderm** of **2nd, 3rd and 4th** pharyngeal arches.
- The part of the **3rd arch** proliferates and migrates forward overlying the 2nd arch and forms **posterior 1/3 of the tongue that fused with anterior 2/3 by sulcus terminalis.**
- **So the posterior 1/3 is supplied by the glossopharyngeal nerve.**
 - **Development of the mucous membrane of the Root of the tongue;**
- **From** the part of the copula derived from the **4th pharyngeal arch**
- **So** it is supplied by the vagus nerve (internal laryngeal nerve).

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• Development of the muscles of the tongue:

- **The muscles of the tongue** are derived from the **occipital myotomes** except **palatoglossus** muscle that develop from the **mesoderm in situ**.
- **So** the muscles are supplied by the **hypoglossal nerve** except palatoglossal muscle supplied by **pharyngeal nerve plexus**

Separation of the tongue

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- At first the tongue is adherent to the floor of the mouth, then a horse-shoe (C-shaped) groove called **alveololingual groove** separates the anterior 2/3 of tongue from the floor of the mouth except in the midline where the tongue is connected to the floor by the **frenulum of the tongue**.

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** Congenital anomalies of the tongue

- **A glossa:** failure of development of the tongue,
- **Macroglossia:** large sized tongue which protrudes from the mouth (as in mongolism and cretinism).
- **Microglossia:** small sized tongue

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- **Bifid tongue:** due to failure of fusion of the 2 lingual swellings.

- **Tongue-tie (Ankyloglossia):** the tongue is adherent to the floor of the mouth.



- **Short frenulum:** due to incomplete separation of tongue (common)
- **Long frenulum:** due to excess separation of the tongue. It causes the tongue to fall back and close the pharynx and larynx (suffocation).

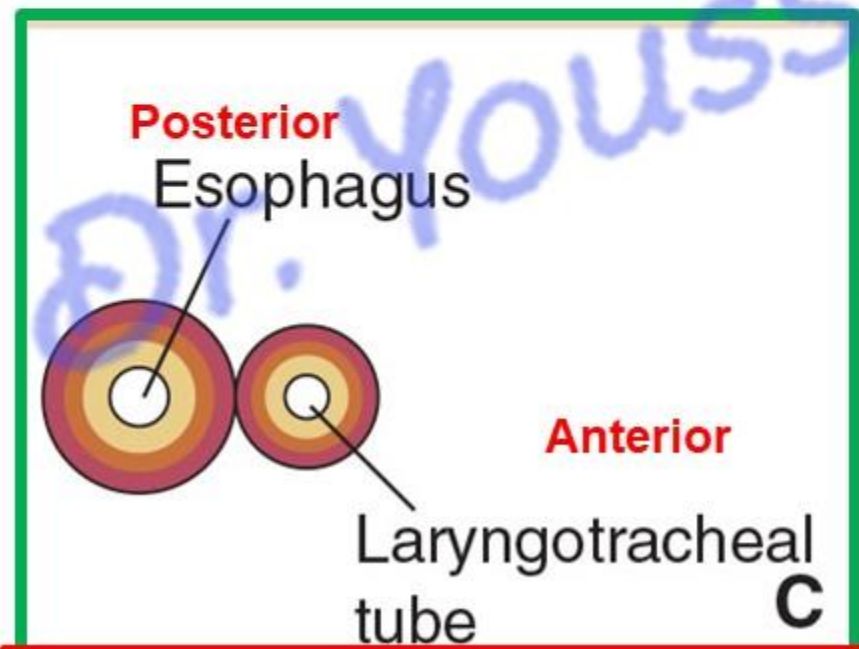
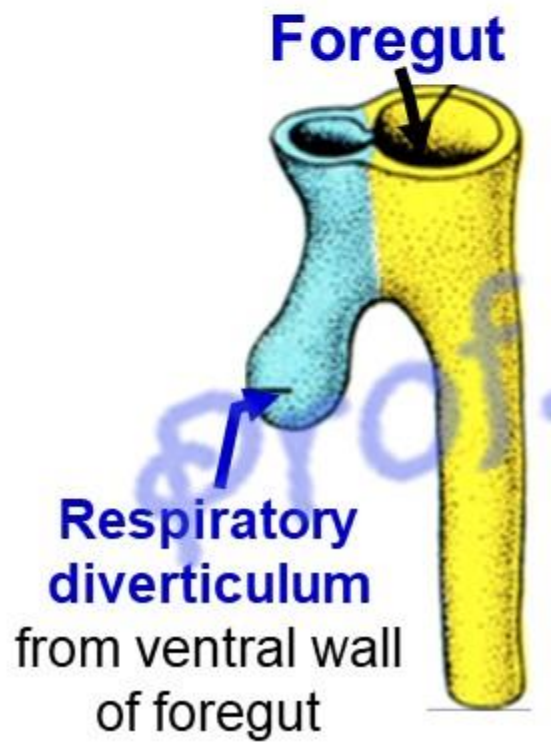
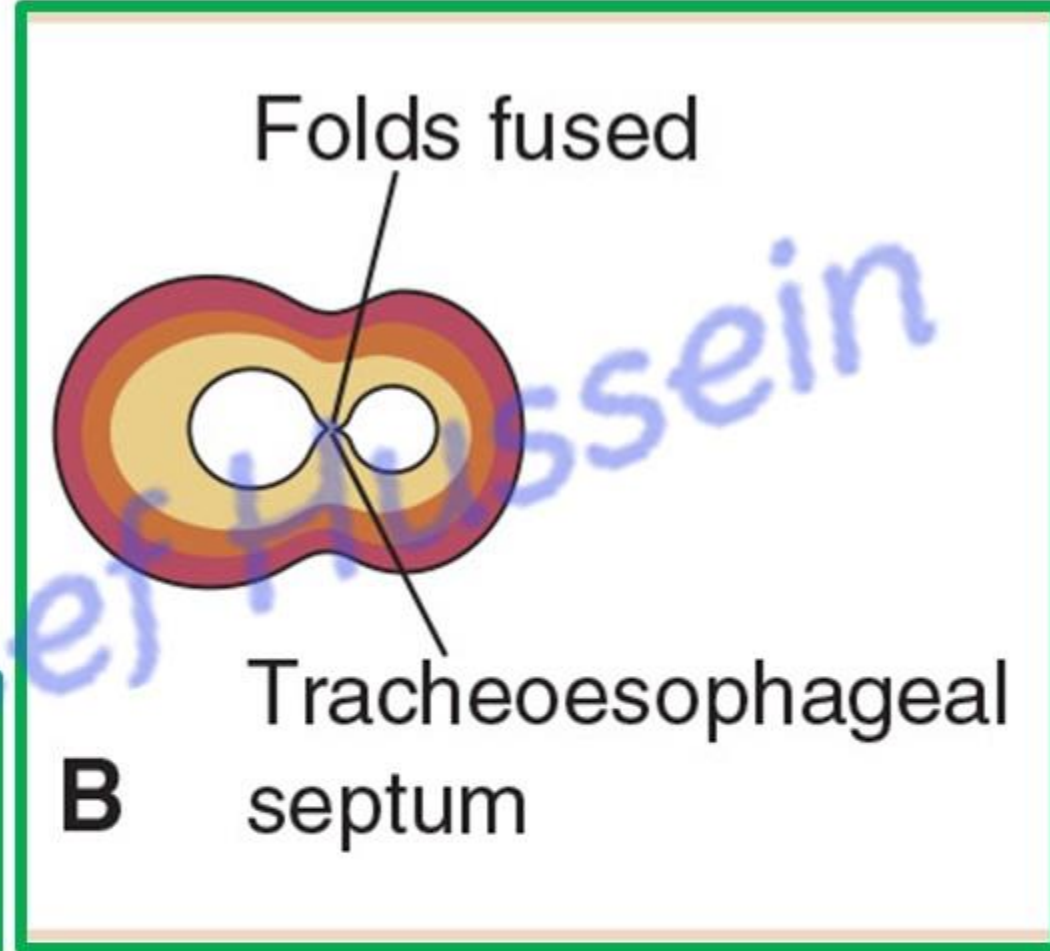
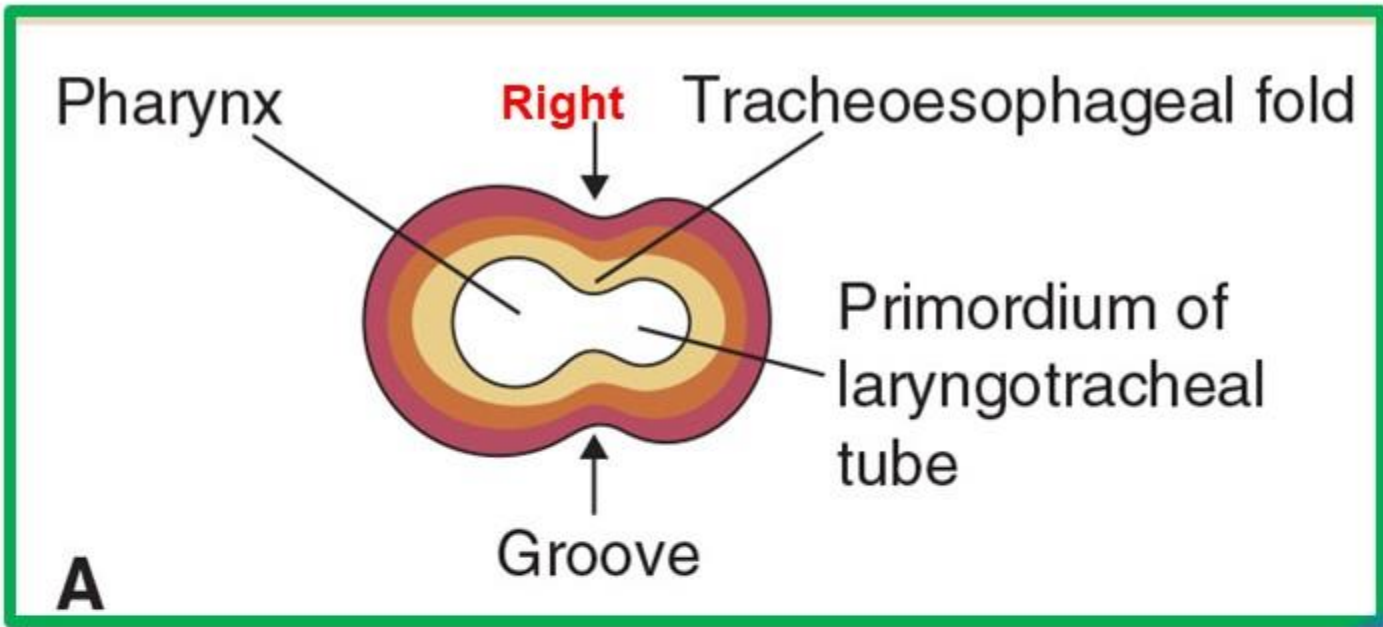
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Development of Esophagus

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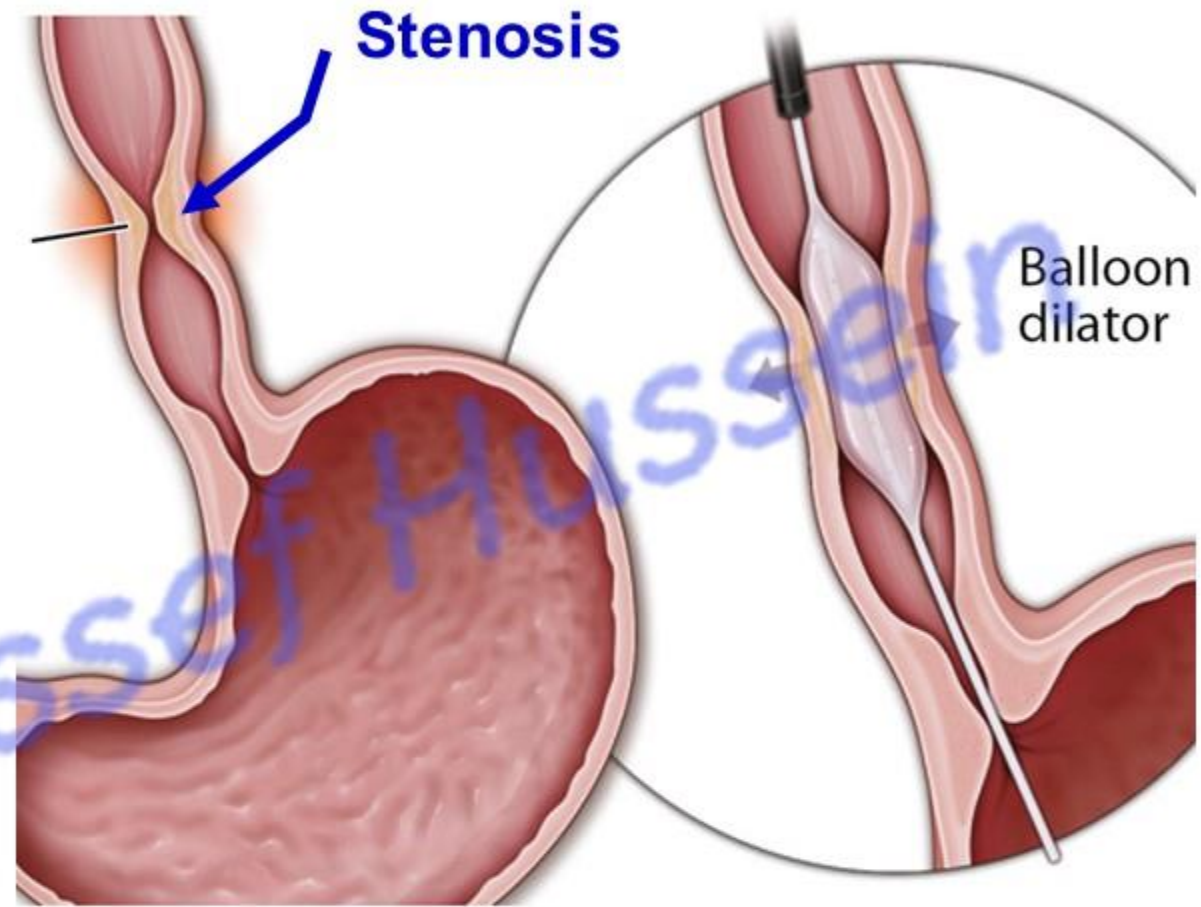
**** Congenital abnormalities of the esophagus**

- **Esophageal atresia (obstruction):** associated with polyhydramnios due to failure of swallowing of the amniotic fluid

- **Esophageal stenosis (narrow):** due to

a- Posterior displacement of tracheoesophageal septum.

b- Mechanical factors push posterior wall of the tube forward.



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- **Tracheoesophageal fistula:**

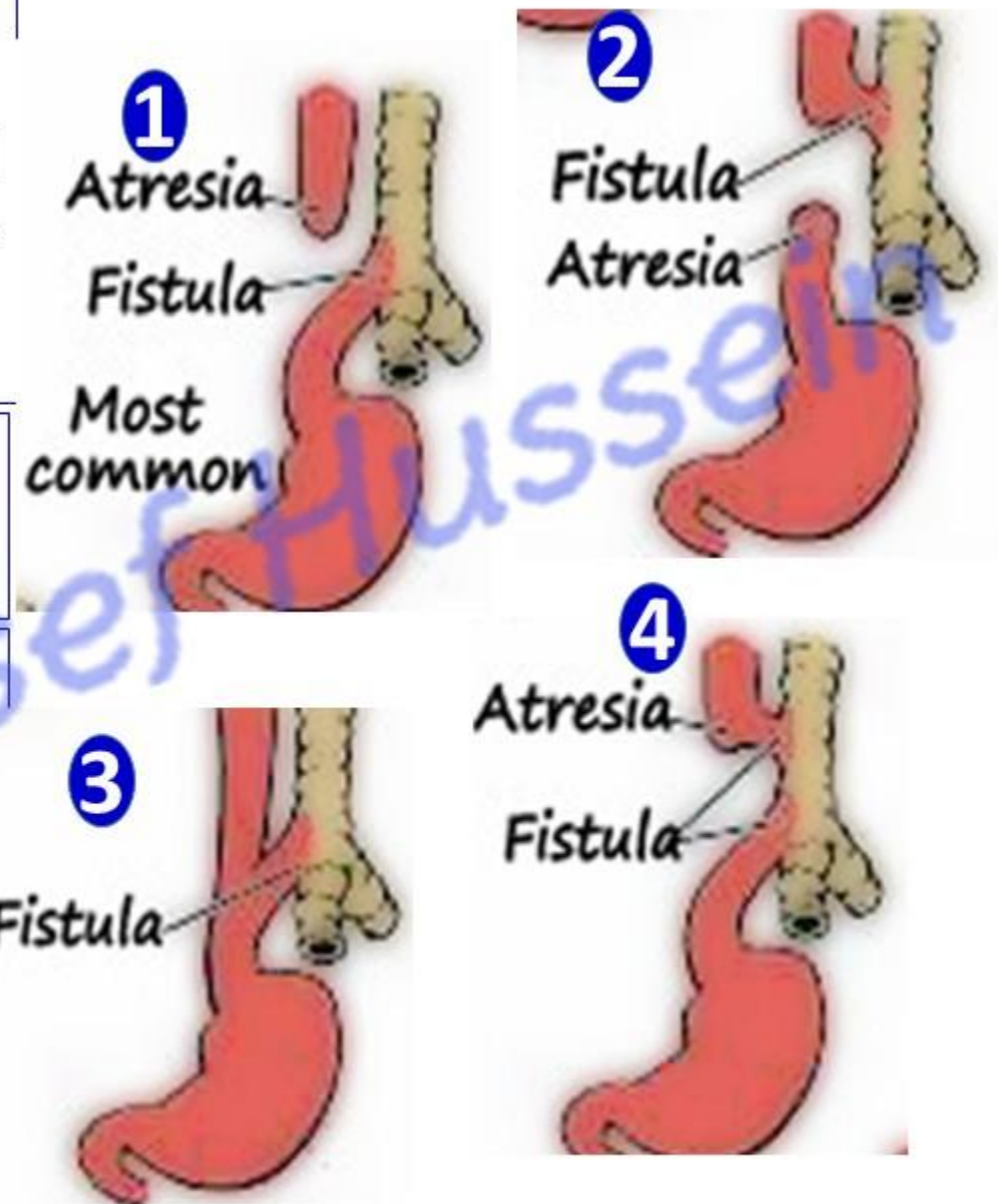
- An abnormal opening between esophagus and trachea caused by failure of complete closure of the tracheoesophageal septum.

1. **Proximal part** of esophagus ends as a **blind sac** and distal part continues with the trachea.

2- **Proximal part** of esophagus **continues** with trachea and distal part ends as blind sac.

3- Proximal and distal parts of **continue** with trachea by **single tube**.

4- Proximal and distal parts of esophagus **continue** with trachea separately by **double tubes**.



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Development of liver & Biliary system

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Gallbladder

Hepatic ducts

Common hepatic duct

Cystic duct

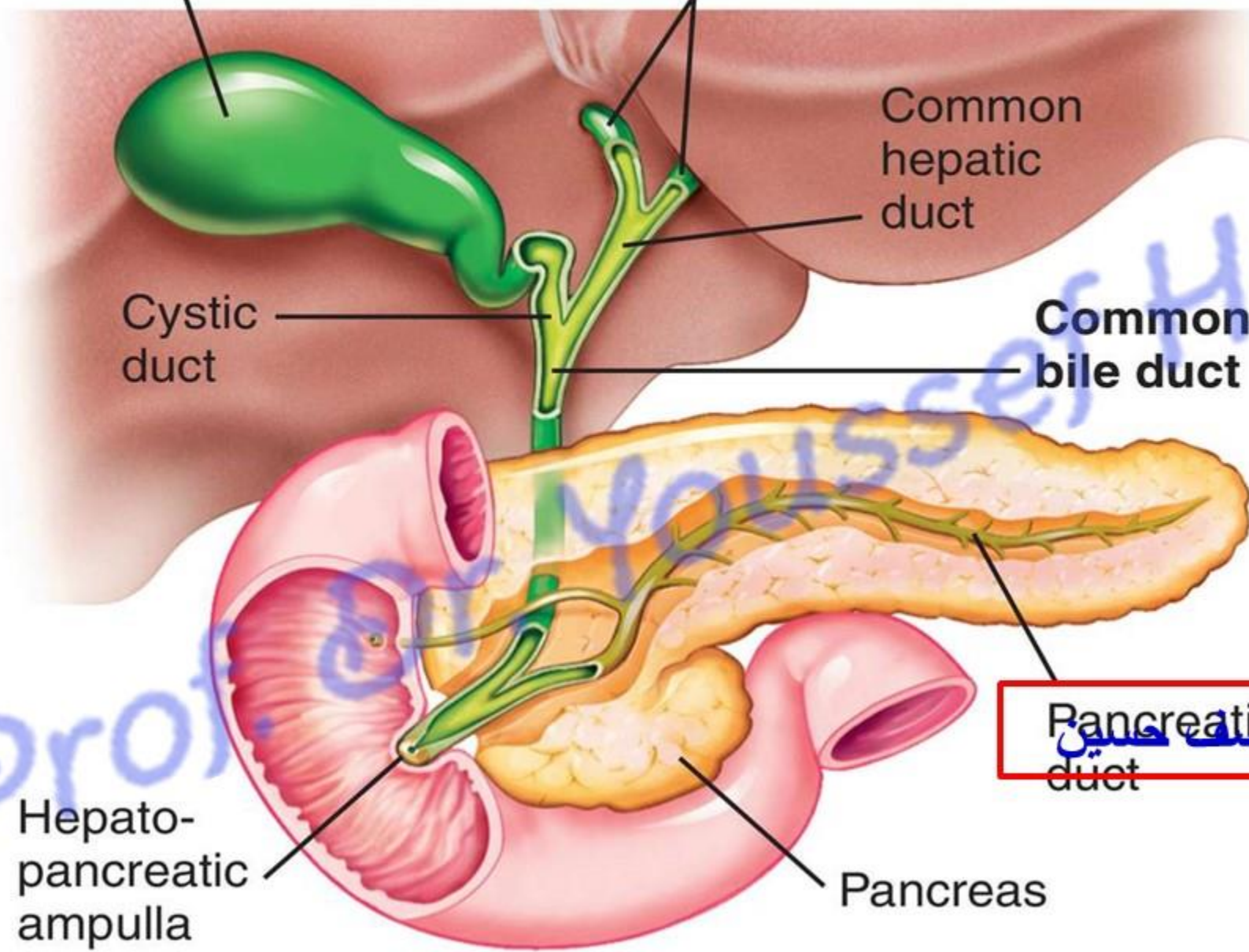
Common bile duct

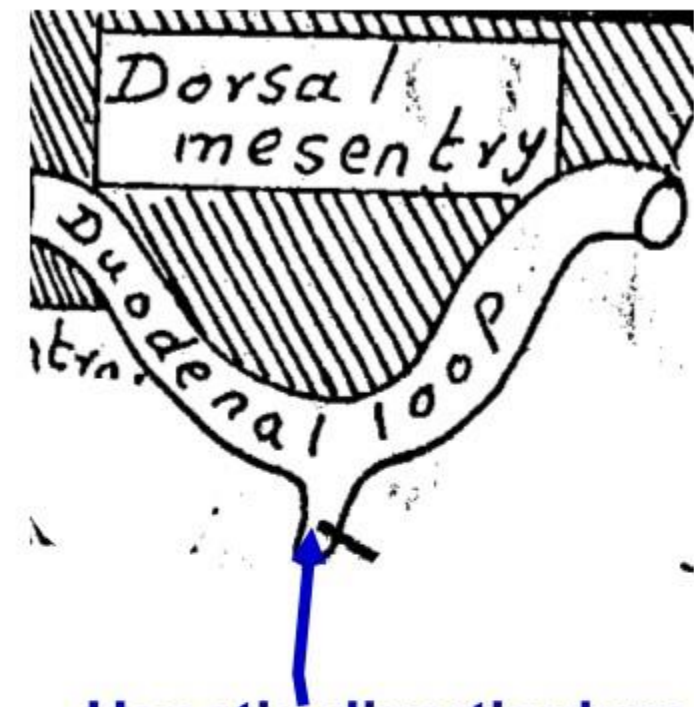
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Pancreatic duct

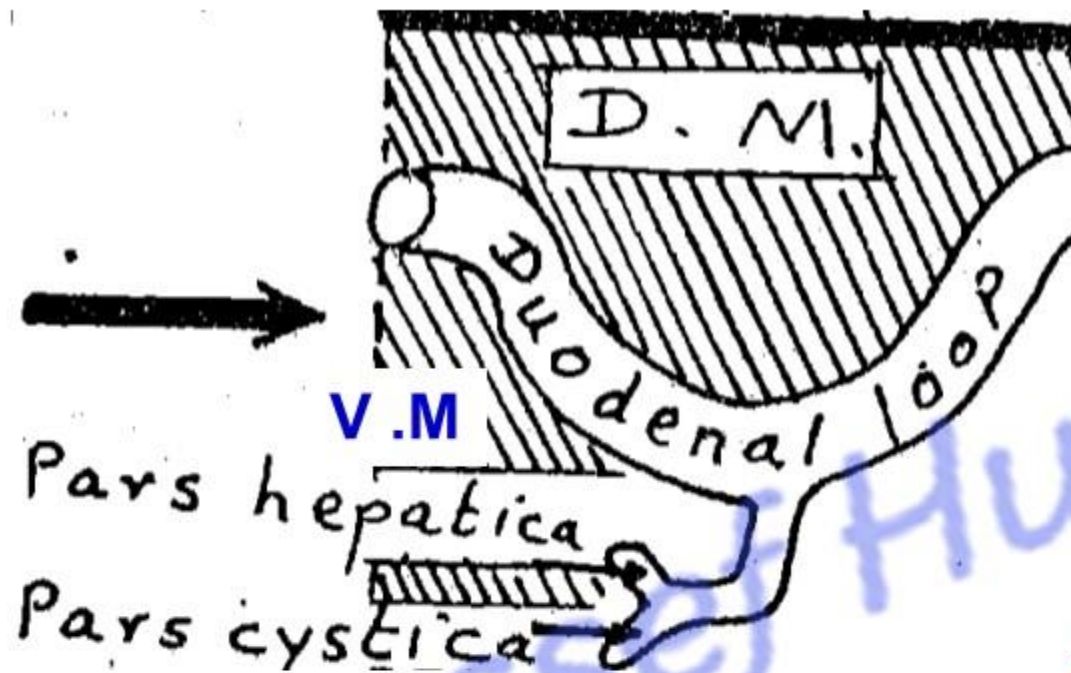
Hepato-pancreatic ampulla

Pancreas

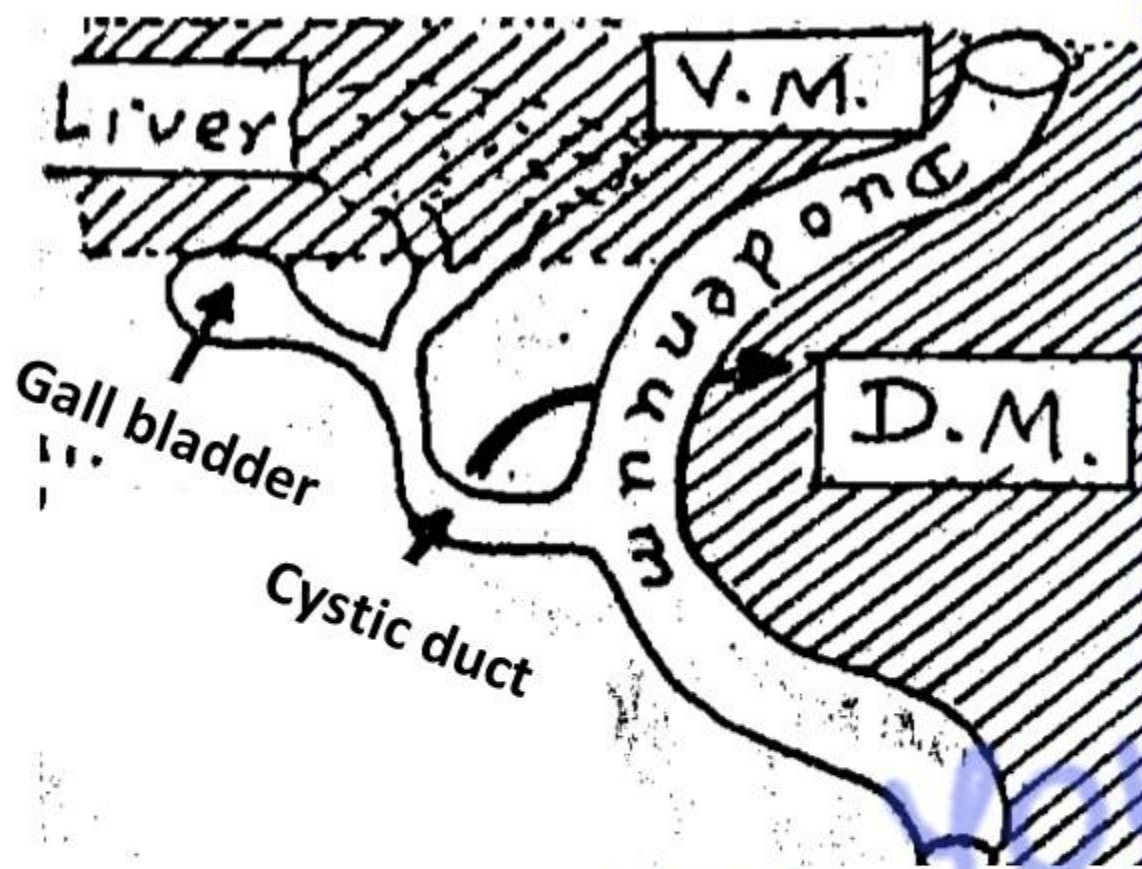




Hepatic diverticulum from the **ventral** wall of the duodenal loop by the 4th week of development



- **The diverticulum** grows ventrally and cranially into ventral mesentery.
- The diverticulum divides into 2 parts:
- **Cranial** part called **pars hepatica**
- **Caudal** part called **pars cystica.**



I- Development of the liver (Pars Hepatica)

- * The cranial end of the pars hepatica divides into 2 branches that form **right and left hepatic ducts**.
- * The cranial ends of ducts divide to form hepatic cells and intrahepatic biliary tree.
- * The hepatic cells are separated by **blood sinusoids** developed from absorbed umbilical and vitelline veins.
- * The blood sinusoids are lined by mesenchymal cells and large phagocytic cells (Kupffer cells).
- * The connective tissue stroma and fibrous capsule derived from the surrounding mesoderm

II- Development of the gall bladder (Pars cystica)

- Distal part** is dilated and forms **gall bladder**.
- Proximal part** remains narrow and forms **cystic duct**.

III- Development of the common bile duct:

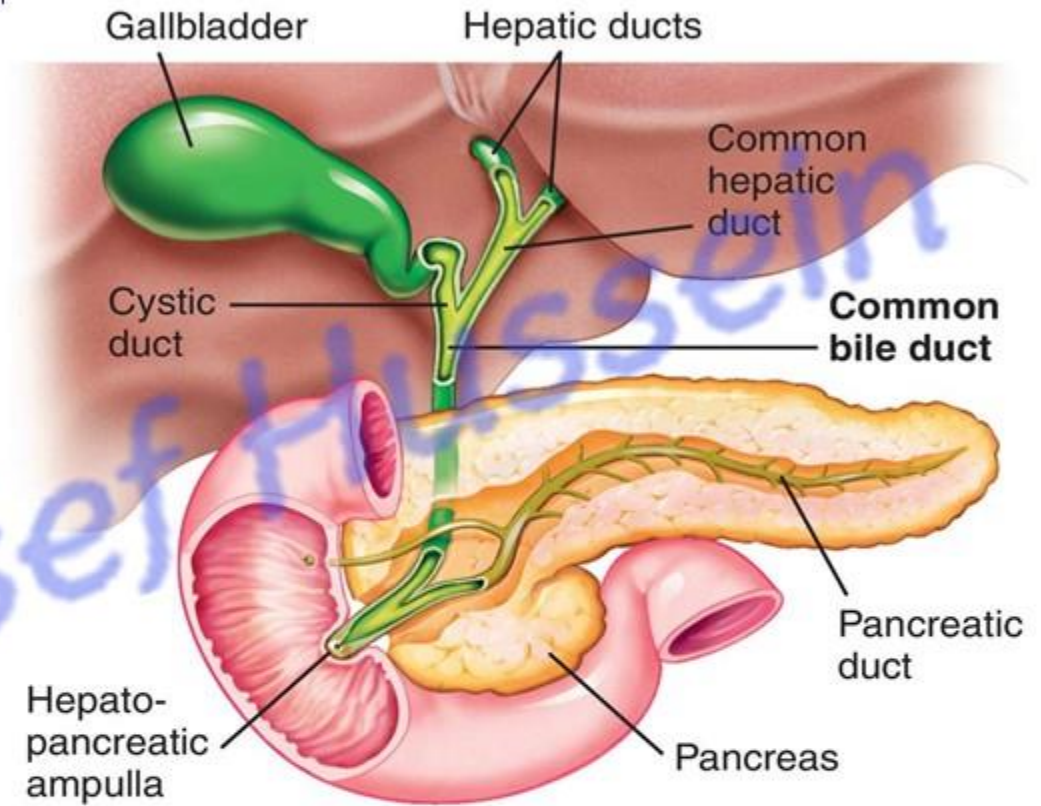
- The proximal part of the hepatic diverticulum forms the common bile duct.

**** At first**, the common bile duct opens in the ventral wall of the duodenum.

- After **rotation of the duodenal loop 90° (clockwise) and unequal growth of its walls**,

a) The opening shifts to the dorsomedial wall of the 2nd part of the duodenum.

b) The common bile duct passes behind the first part of the duodenum



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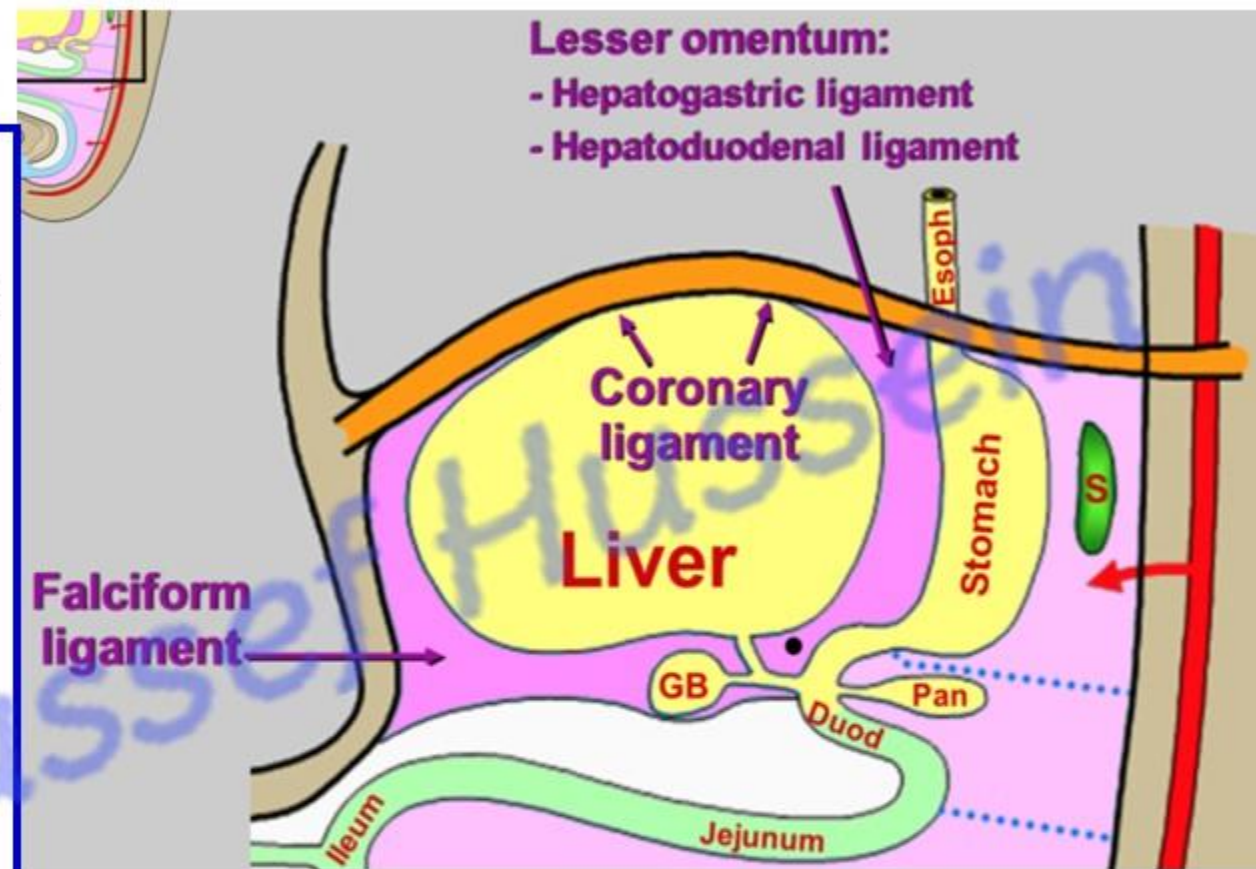
**** Development of ligaments of liver:**

- Development of the liver between the layers of the **ventral mesentery** divides it into:

a- Ventral part connects liver to anterior abdominal wall (**falciform ligament**).

b- Dorsal part connects liver to stomach (lesser omentum)

c- Cranial part forming triangular and coronary ligaments



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**** Congenital Anomalies of the liver and biliary system:**

- I. Agenesis or hypo-genesis of the liver:** due to failure of formation of the hepatic diverticulum or due to incomplete development of the hepatic bud.
- II. Abnormal number of the liver lobes:** due to abnormal division of the pars hepatica.
- III. Agenesis of the gall bladder:** failure of development of the cystic bud
- IV. Double gall bladder:** abnormal division of the cystic bud into 2 parts.
- V. Mobile gall bladder:** the gall bladder is completely separated from the liver and completely covered with peritoneum.
- VI. Atresia (narrowing) of the biliary ducts:** due to failure of their canalization. It is associated later with congenital jaundice

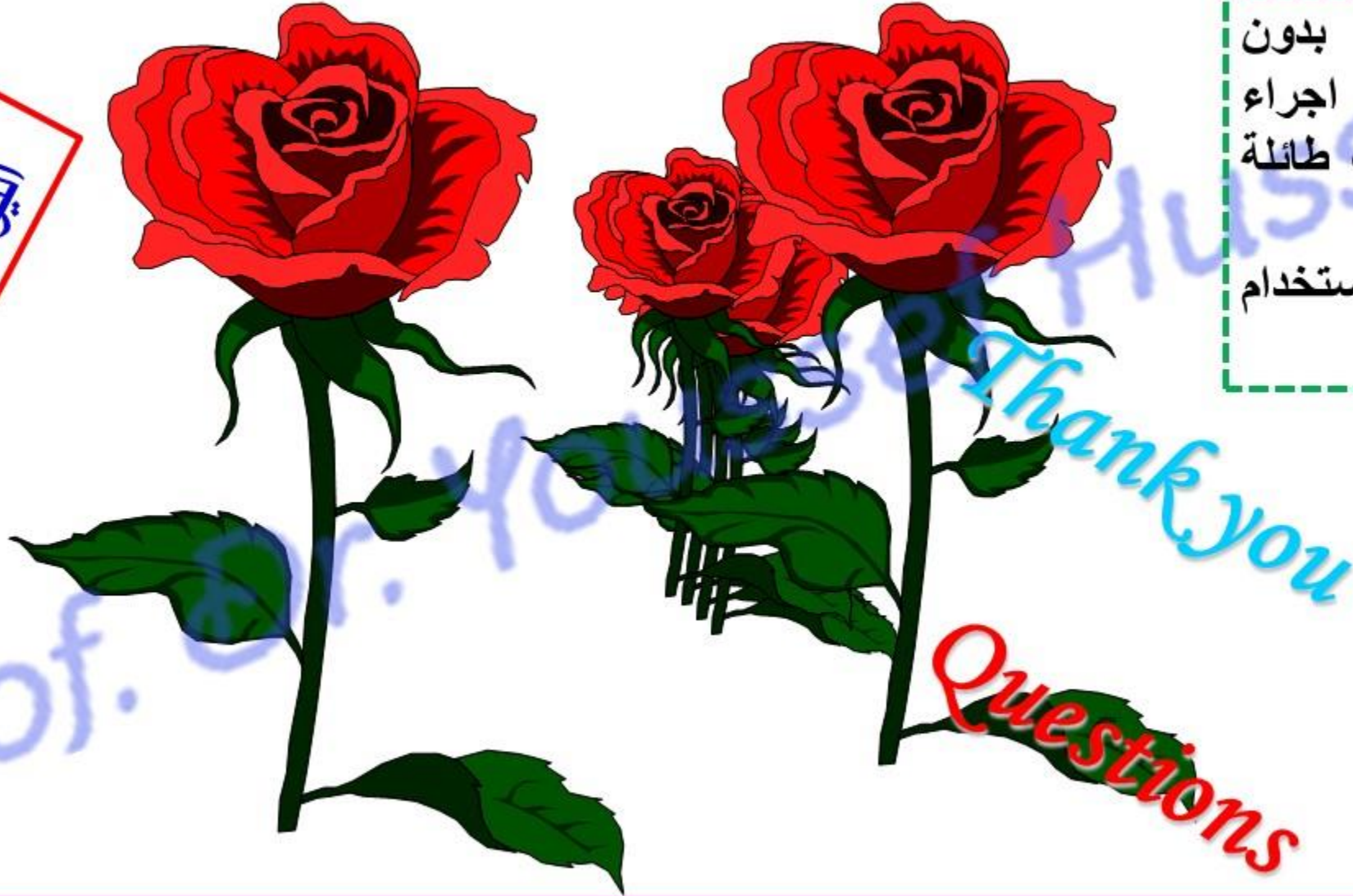
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