

# Abdominal Anatomy

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P WIDANA PATHIRANA

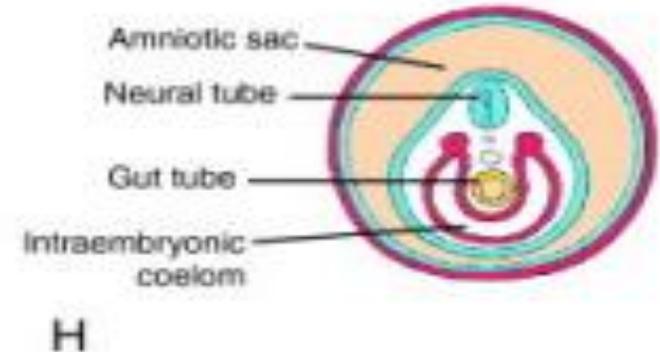
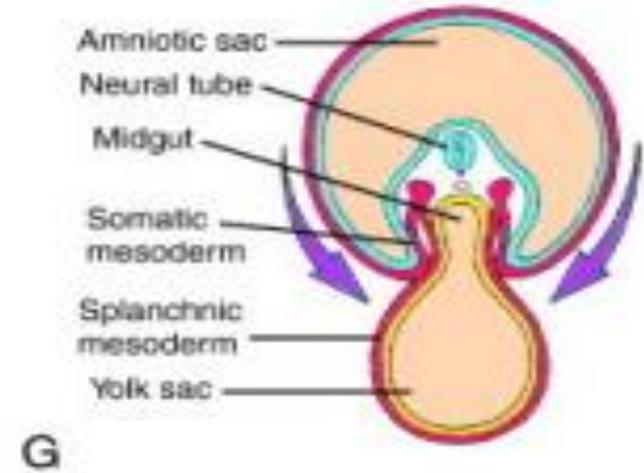
A solid blue horizontal bar at the bottom of the slide.

# Embryology

- Endoderm = epithelium
- Mesoderm = vessels, mesentery, smooth muscle
- Ectoderm = Enteric nervous system

## Trilaminar Embryo

(transverse section)



# Q

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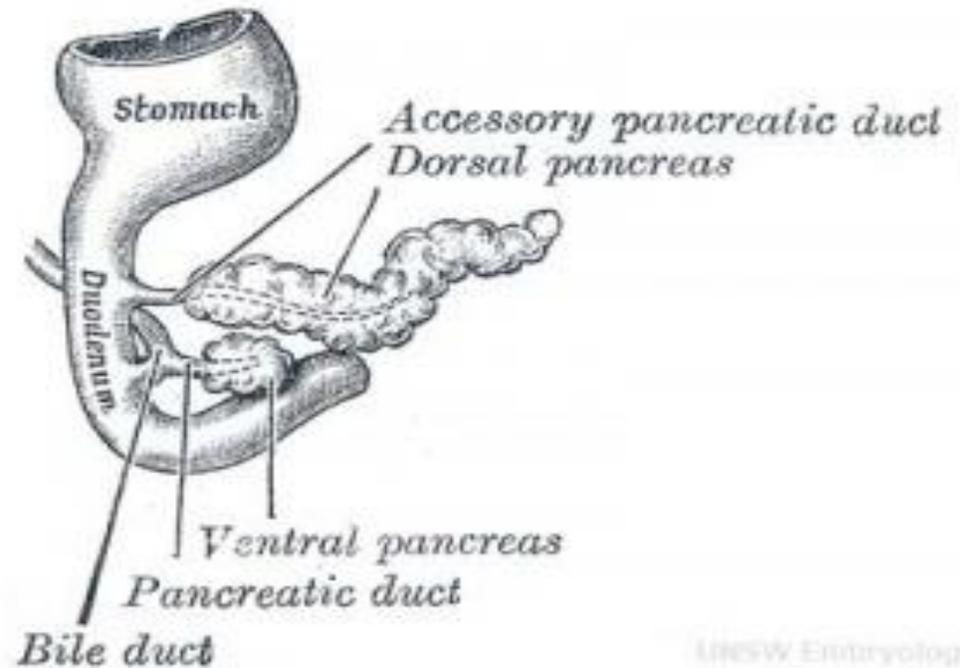
**Features of the development of the pancreas include (True or false)**

- A. Fusion of dorsal and ventral outgrowths from the gut
- B. Asymmetrical growth of the duodenal wall bringing the openings of its two ducts in line with each other
- C. Drainage of part of the head of the pancreas by an accessory pancreatic duct
- D. An interchange of drainage areas between the two ducts through anastomotic channels

# Embryology

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- Pancreas:
  - Dorsal (Larger) + Ventral pancreatic buds
  - Duodenal growth bring both together to form the pancreas + uncinata process
- Liver:
  - Hepatic bud → diverticulum in ventral mesogastrium (from septum transversum)
  - Gallbladder + Left/Right lobes



Q

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**Features of the development of the pancreas include (True or false)**

A. Fusion of dorsal and ventral outgrowths from the gut - **TRUE**

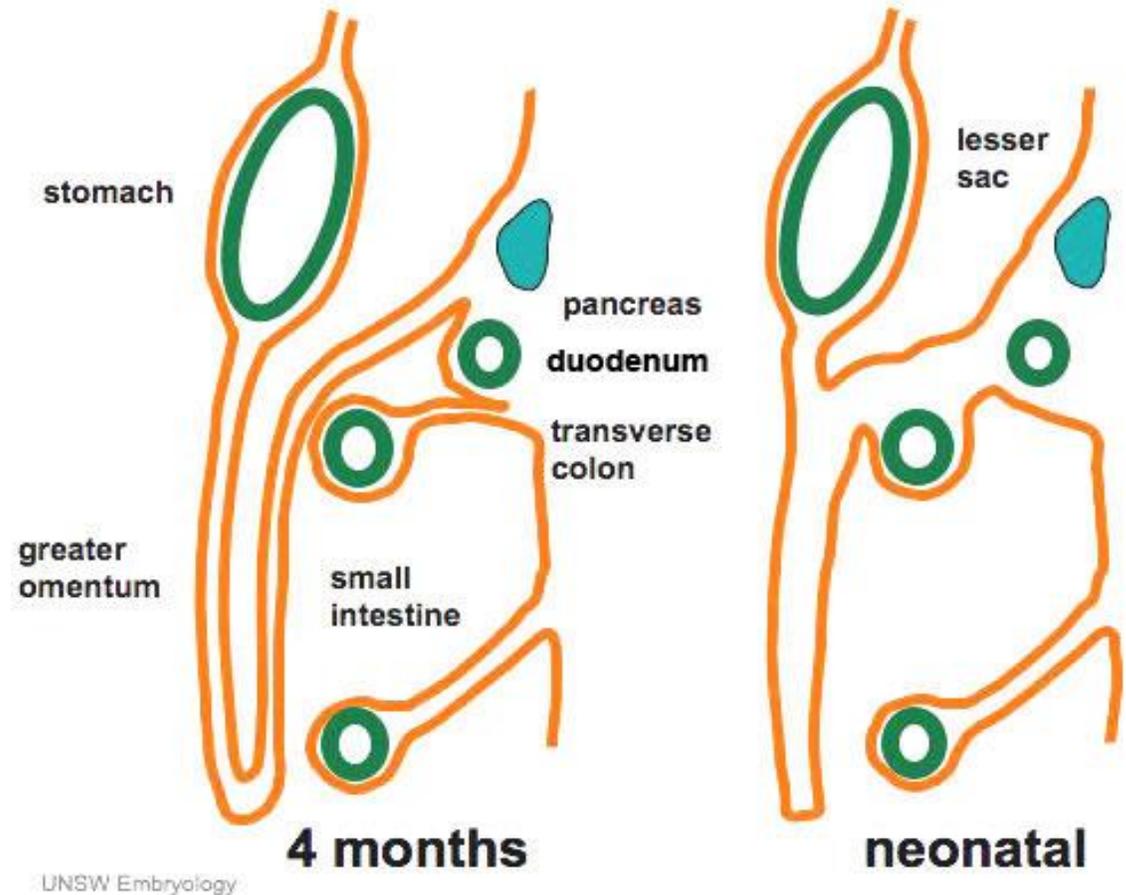
B. Asymmetrical growth of the duodenal wall bringing the openings of its two ducts in line with each other - **TRUE**

C. Drainage of part of the head of the pancreas by an accessory pancreatic duct - **TRUE**

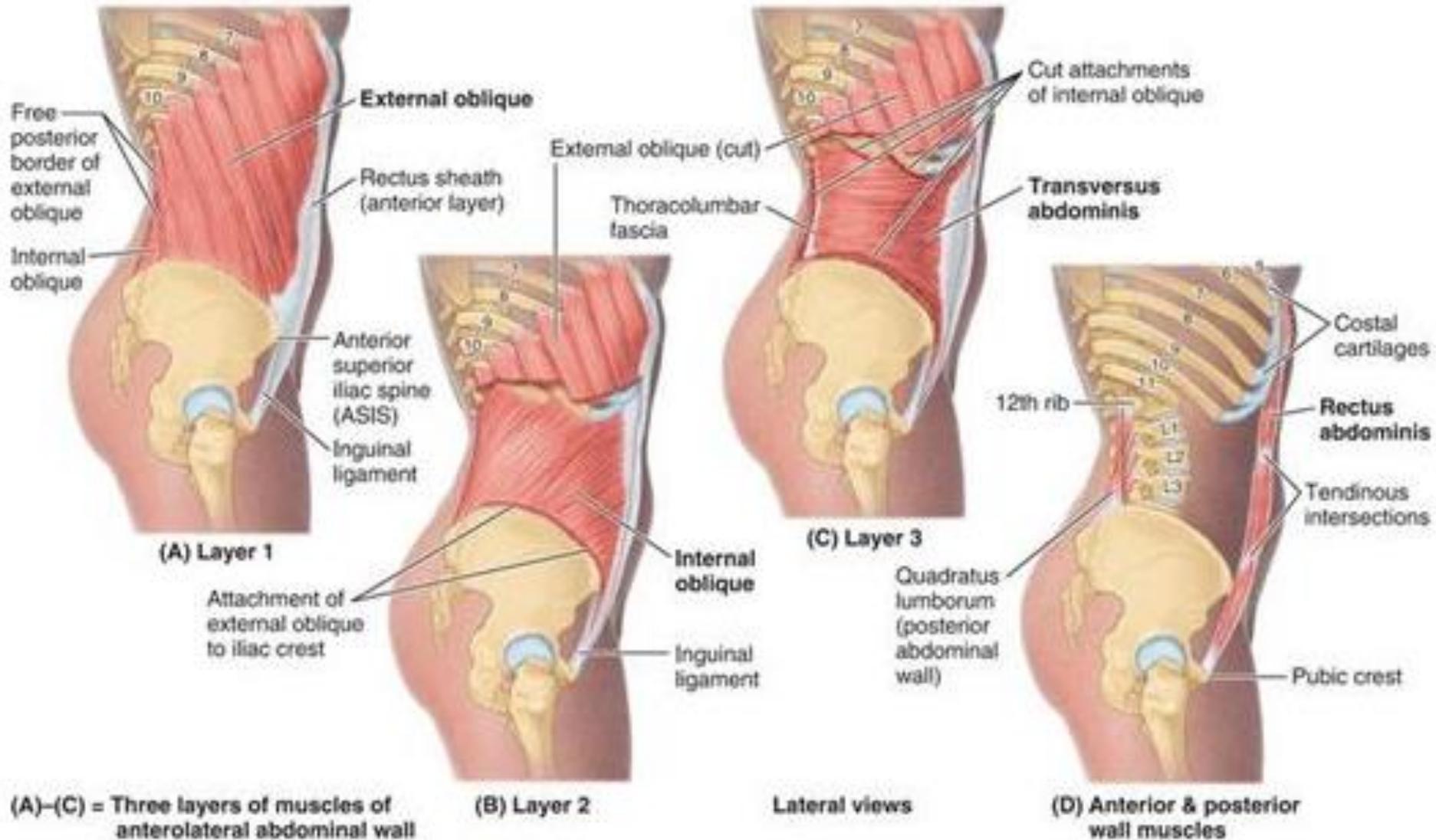
D. An interchange of drainage areas between the two ducts through anastomotic channels - **TRUE**

# Embryology

- Ventral mesentery:
  - Lesser sac
  - Falciform ligament
- Midgut is continuous with the yolk sac → no ventral mesenteric attachments



# Abdominal wall



# Q

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## **The internal oblique muscle**

- A. is attached to the lateral 2/3 of the inguinal ligament
- B. becomes aponeurotic in the lumbar region
- C. forms the posterior rectus sheath immediately above the inguinal ligament
- D. has a free upper muscular border
- E. is innervated by the 7 -12 intercostal nerves exclusively

Q

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**The internal oblique muscle**

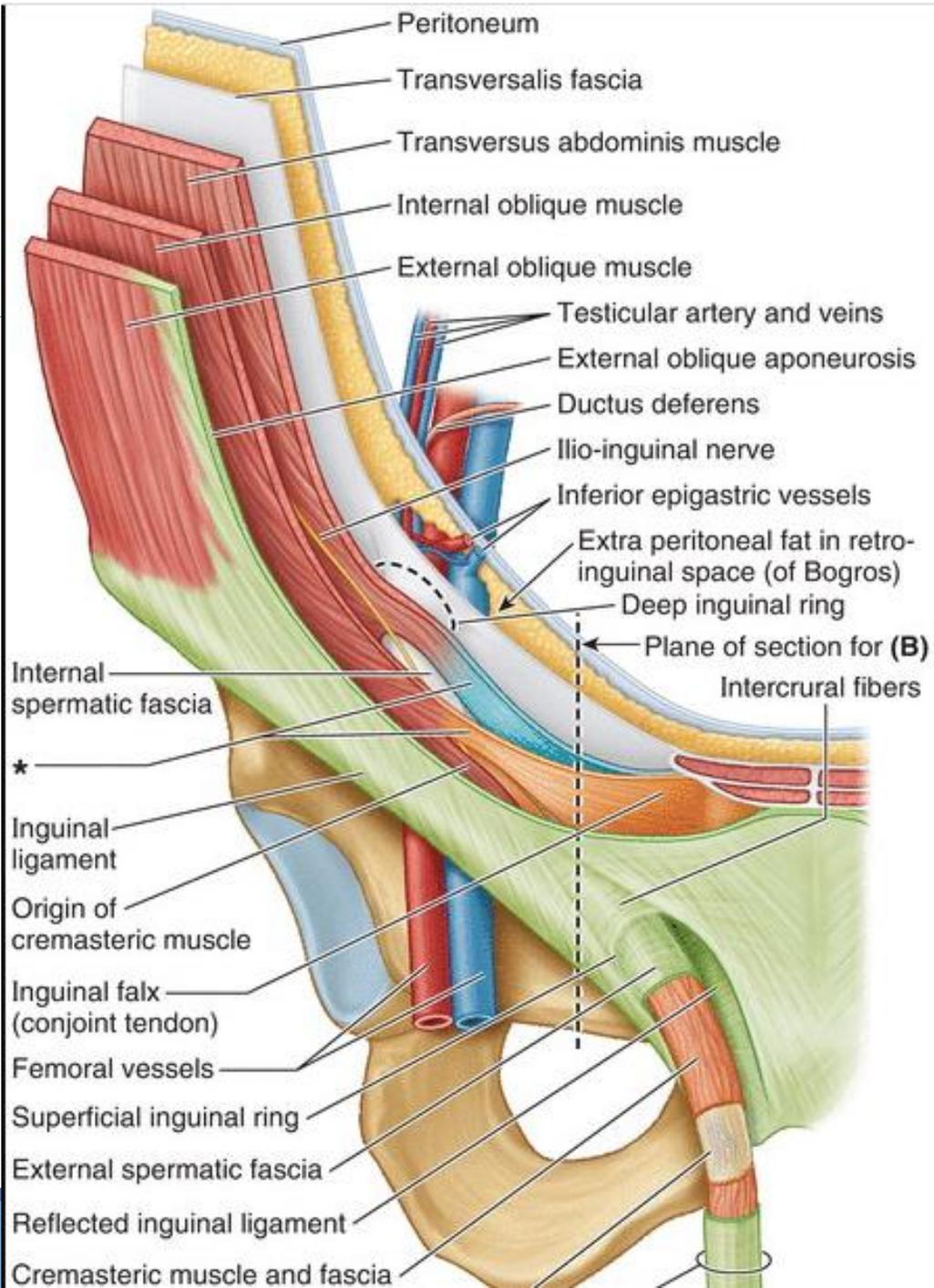
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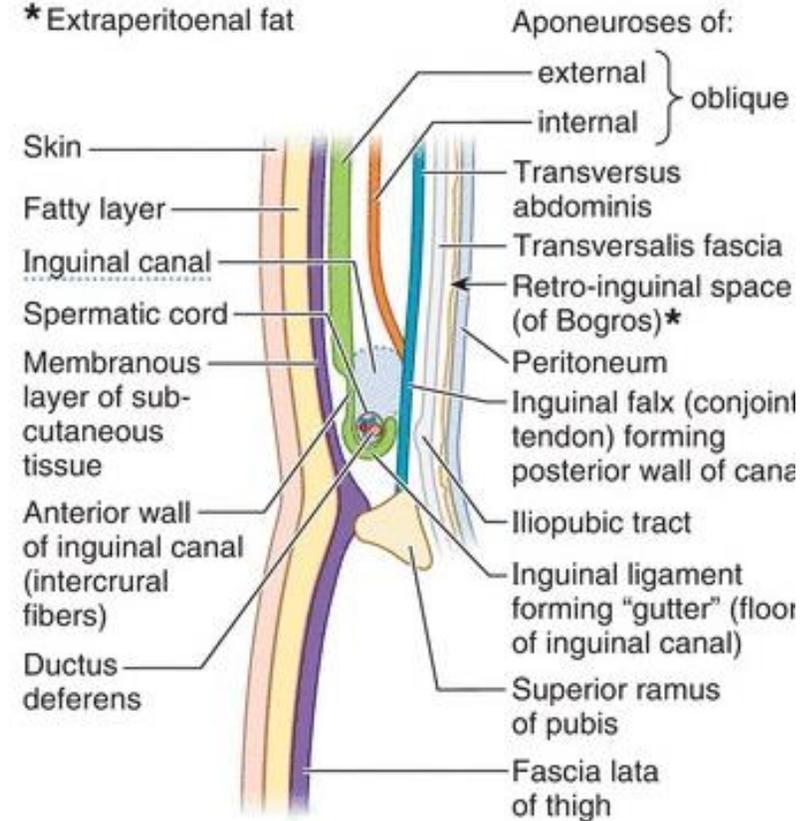
C. forms the posterior rectus sheath immediately above the inguinal ligament

D. has a free upper muscular border

E. is innervated by the 7 -12 intercostal nerves exclusively



\* Extraperitoneal fat



(B) Schematic sagittal section of inguinal canal

Q

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**S Accidental damage to the ilio-inguinal nerve can occur during open appendicectomy Because  
R the ilio-inguinal nerve runs obliquely superior the iliacus on the posterior abdominal wall in the right iliac fossa**

- A. S is true, R is true and a valid explanation of S
- B. S is true, R is true but is not a valid explanation of S
- C. S is true and R is false
- D. S is false and R is true
- E. Both S and R are false

Q

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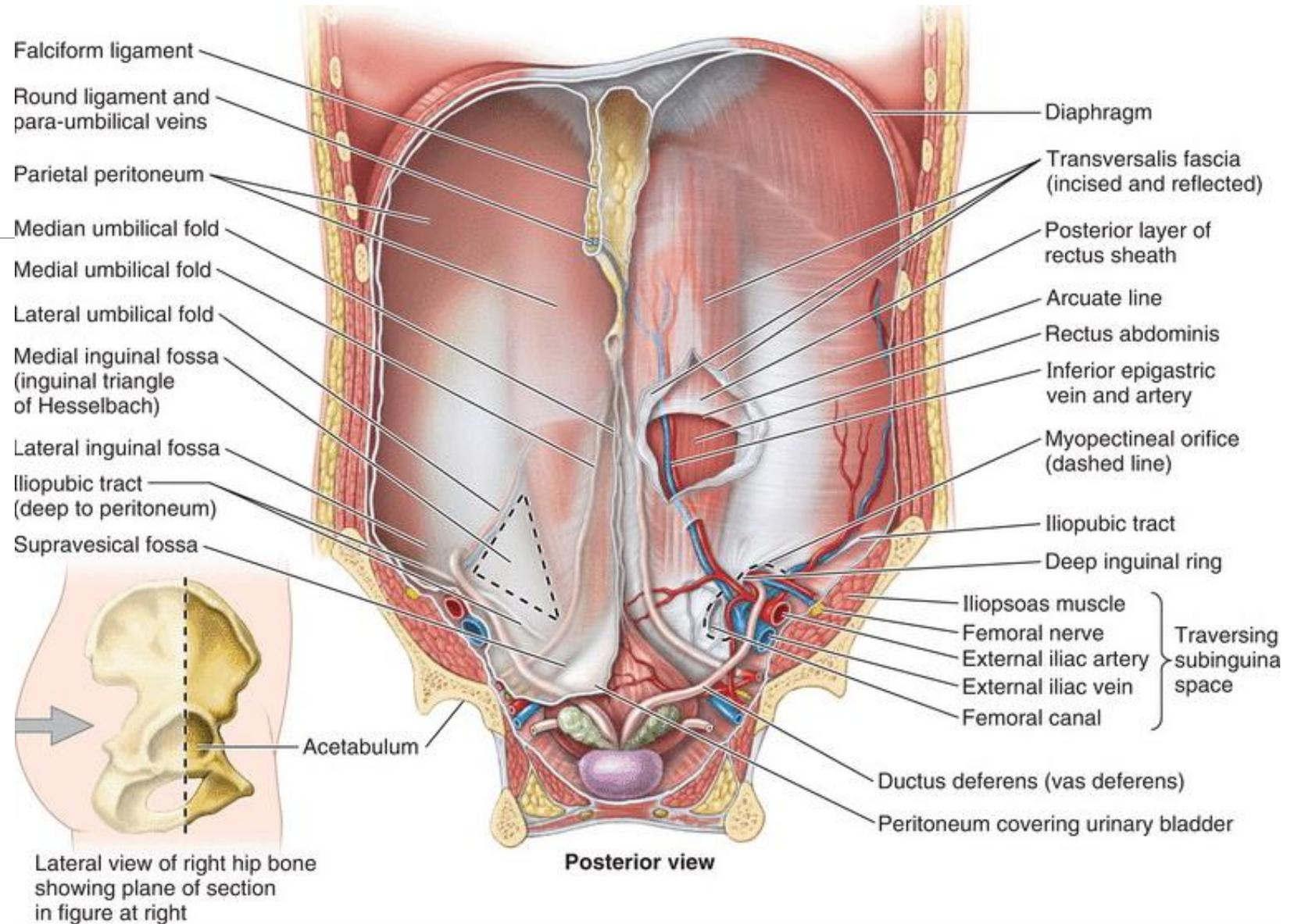
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**The medial umbilical fold contains the**

- A. urachus.
- B. inferior epigastric artery.
- C. obliterated umbilical artery.
- D. umbilical vein.
- E. falciform ligament.

# Abdominal Cavity

- Median fold – urachus
- Medial – umbilical a
- Lateral – inf. Epigastric a
- Falciform – L Umbilical v



Q

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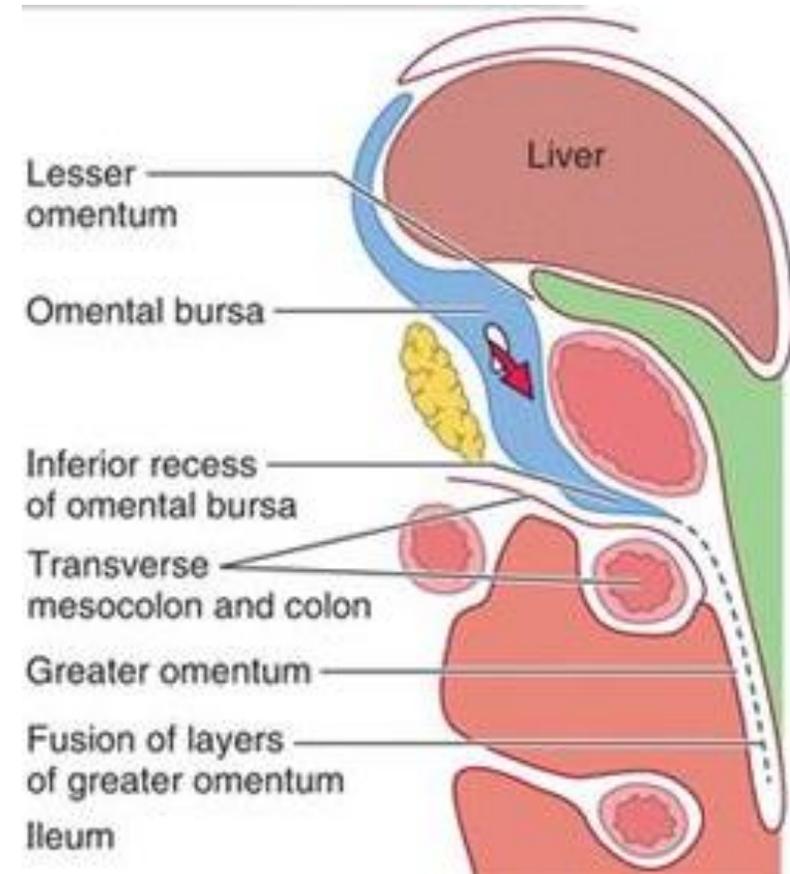
D. umbilical vein.

E. falciform ligament.

# Abdominal compartments

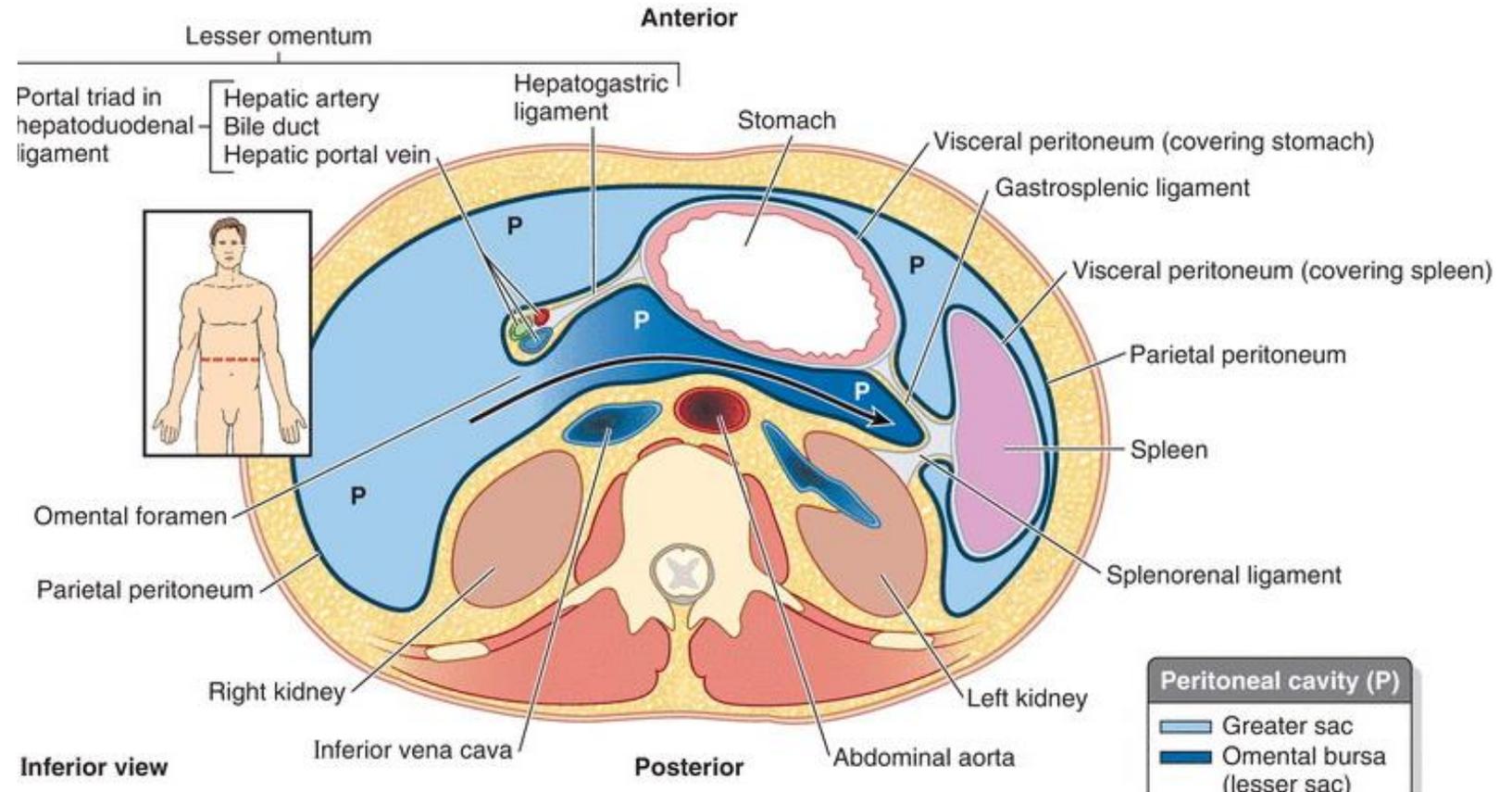
Lesser sac relations:

- Ant: Stomach + lesser omentum
- Inf: Transverse colon
- Left : Splenic hilum (Lienorenal leg + gastrosplenic lig)
- Right: Epiploic foramen
- Sup: Caudate lobe
- Post: Diaphragm, pancreas, L Kidney + adrenal, transverse mesocolon, aorta



# Epiploic foramen

- Sup: Caudate lobe
- Inf: 1<sup>st</sup> part of duodenum
- Post : IVC
- Ant: hepaticoduodenal lig/  
free margin of lesser sac
  - CBD
  - Hepatic a proper
  - Portal v



Q

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**S: Caput medusae is a feature of portal hypertension BECAUSE R:the left umbilical vein joins the left branch of the portal vein.**

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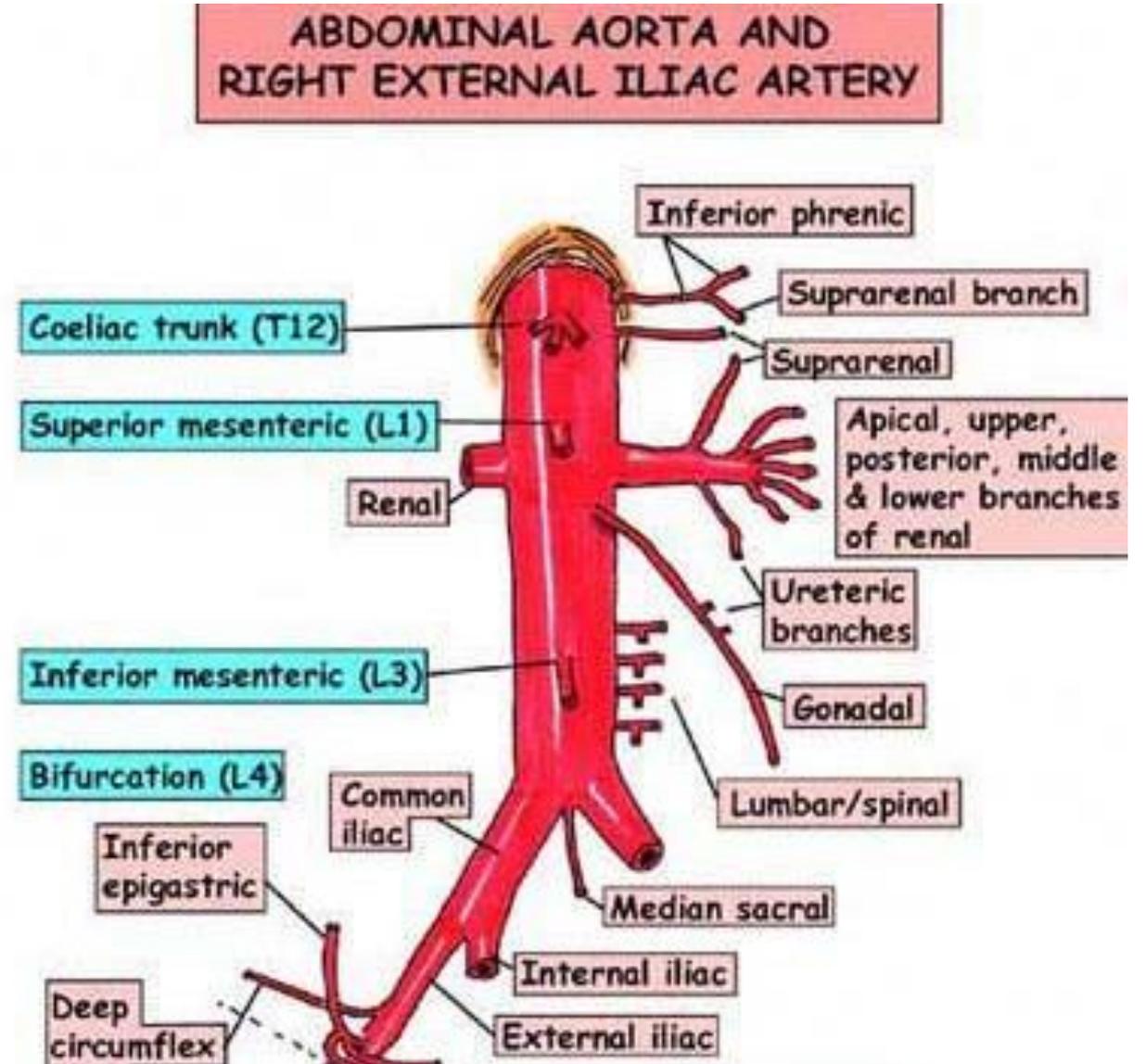
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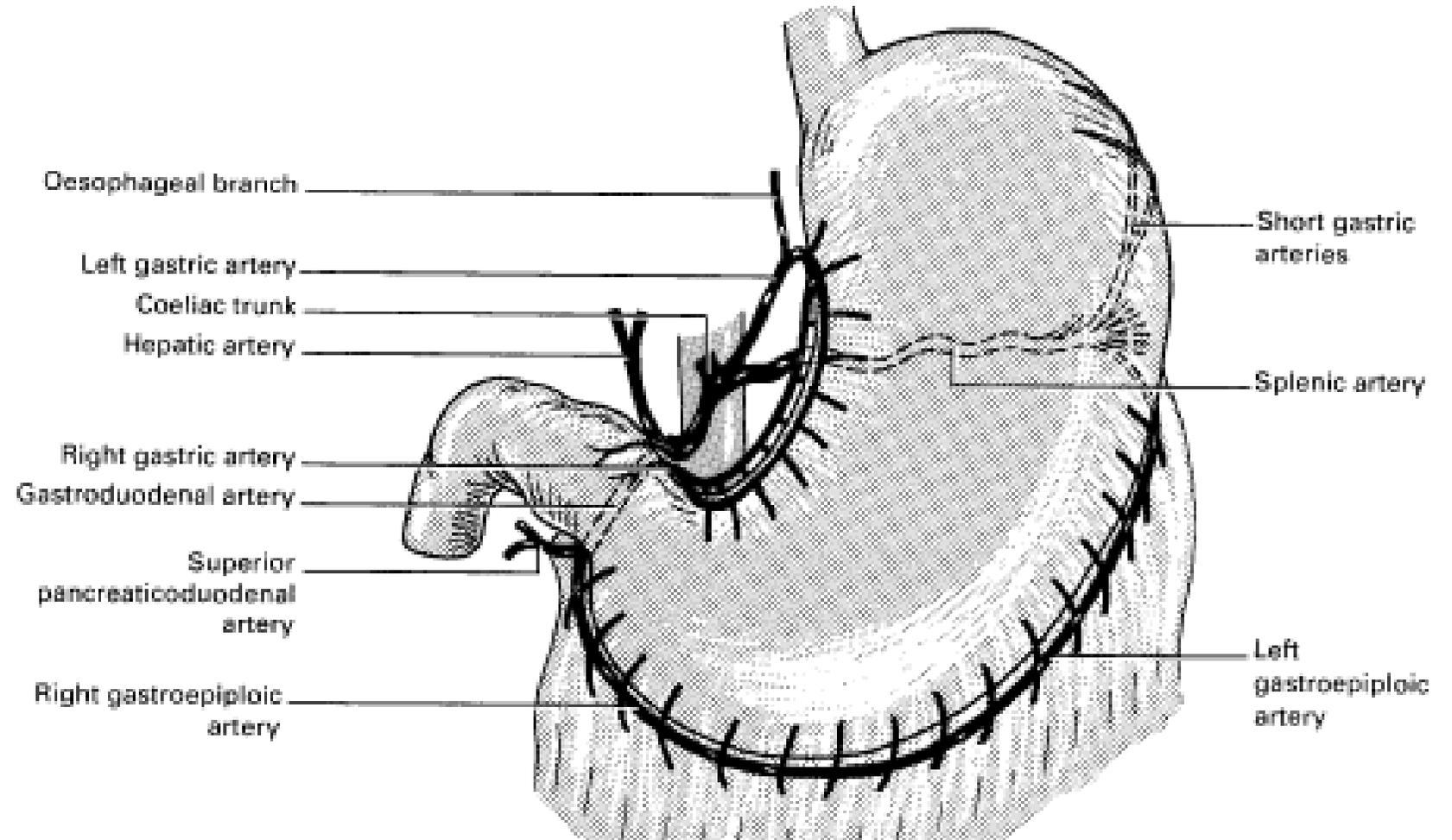
# Abdominal aorta

- Posterior:
  - Median sacral a
- Ventral:
  - Coeliac
  - SMA
  - IMA
- Paired lateral:
  - Inferior phrenic
  - Suprarenal
  - Renal
  - Gonadal
  - Lumbar x4



# Foregut

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Q

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**Regarding the lesser omentum which of the following is correct?**

- A. contains the splenic artery
- B. contains the right gastro-epiploic artery
- C. contains the left gastric artery
- D. is attached to the fissure for the ligamentum teres
- E. has none of the above properties

Q

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Q

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**The common hepatic artery usually (True or False)**

- A. gives off the gastro-duodenal artery
- B. is entirely retroperitoneal
- C. gives off the cystic artery
- D. divides into right and left branches in the porta hepatis

Q

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**The common hepatic artery usually**

A. gives off the gastro-duodenal artery - **TRUE**

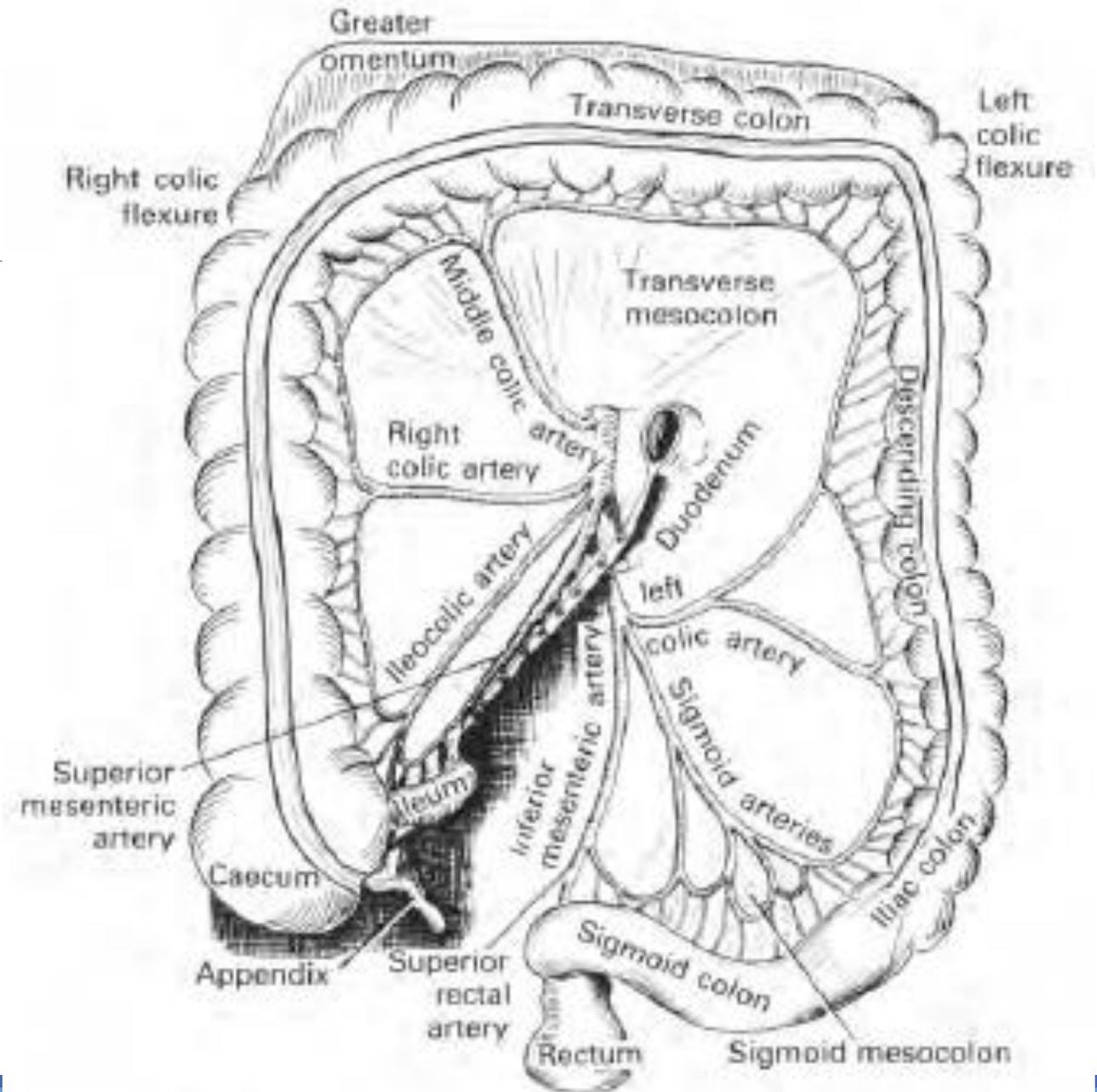
B. is entirely retroperitoneal - **TRUE**

C. gives off the cystic artery - **FALSE**

D. divides into right and left branches in the porta hepatis - **FALSE**

# Mid/Hindgut

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Q

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**The 3rd part of the duodenum (True or False)**

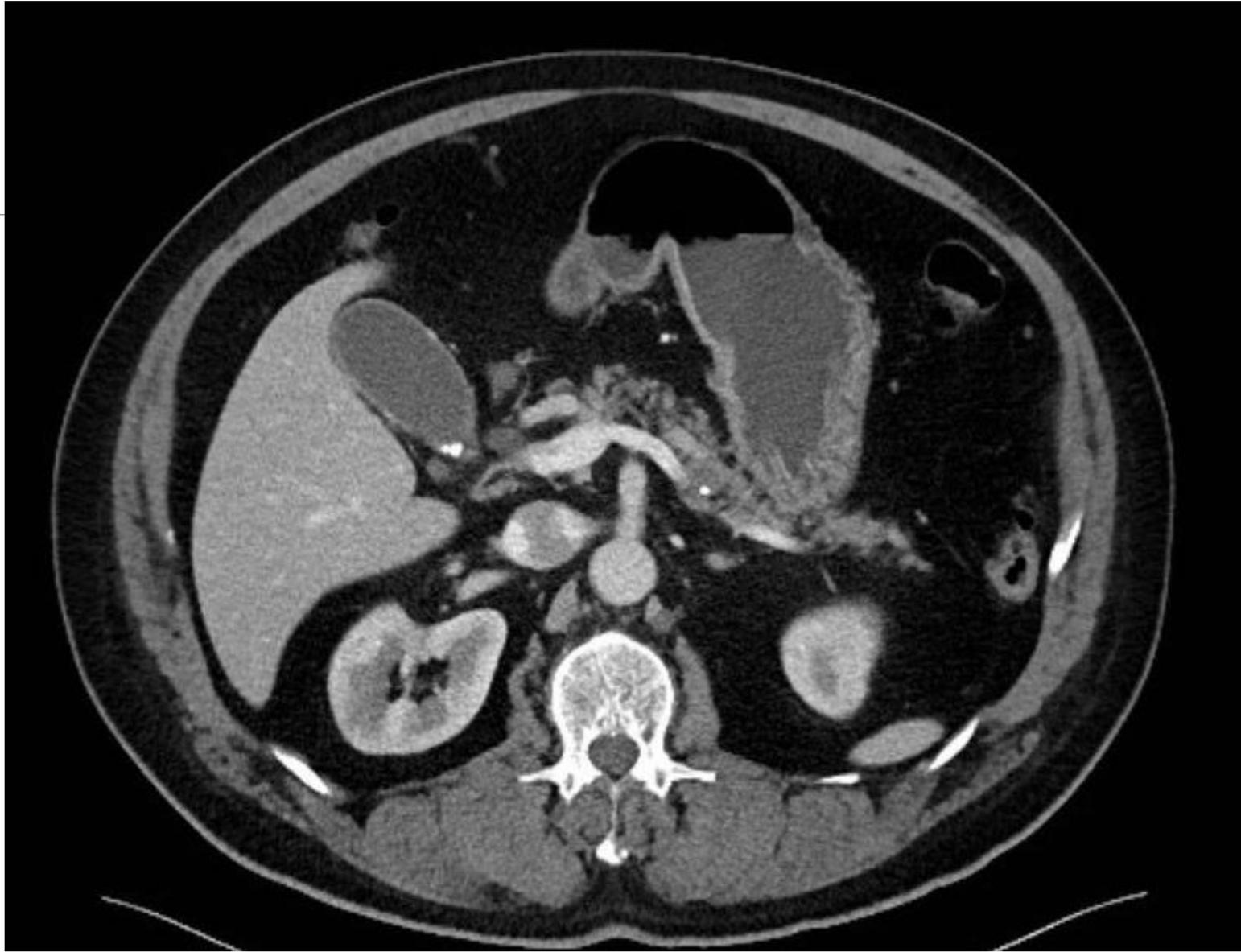
- A. is anterior to the inferior mesenteric vein
- B. is anterior to the right ureter
- C. is crossed by the root of the mesentery
- D. is posterior to the superior mesenteric vessels

Q

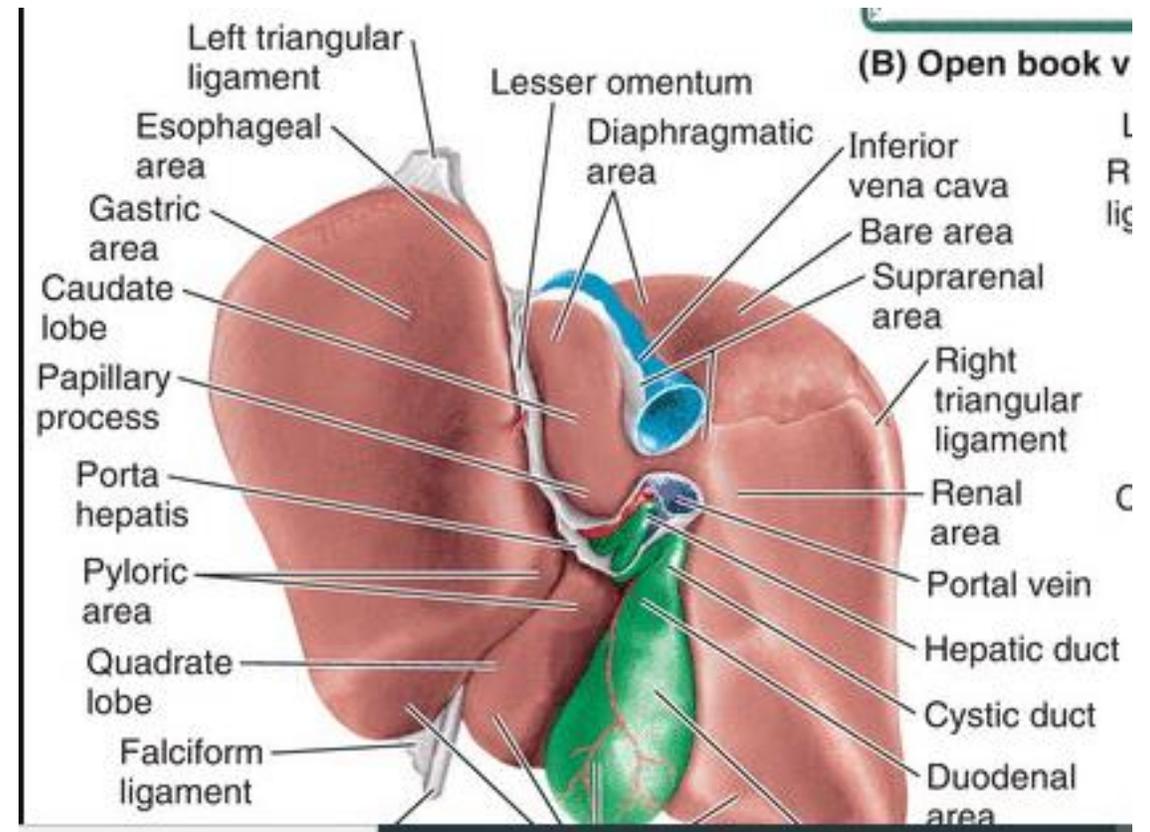
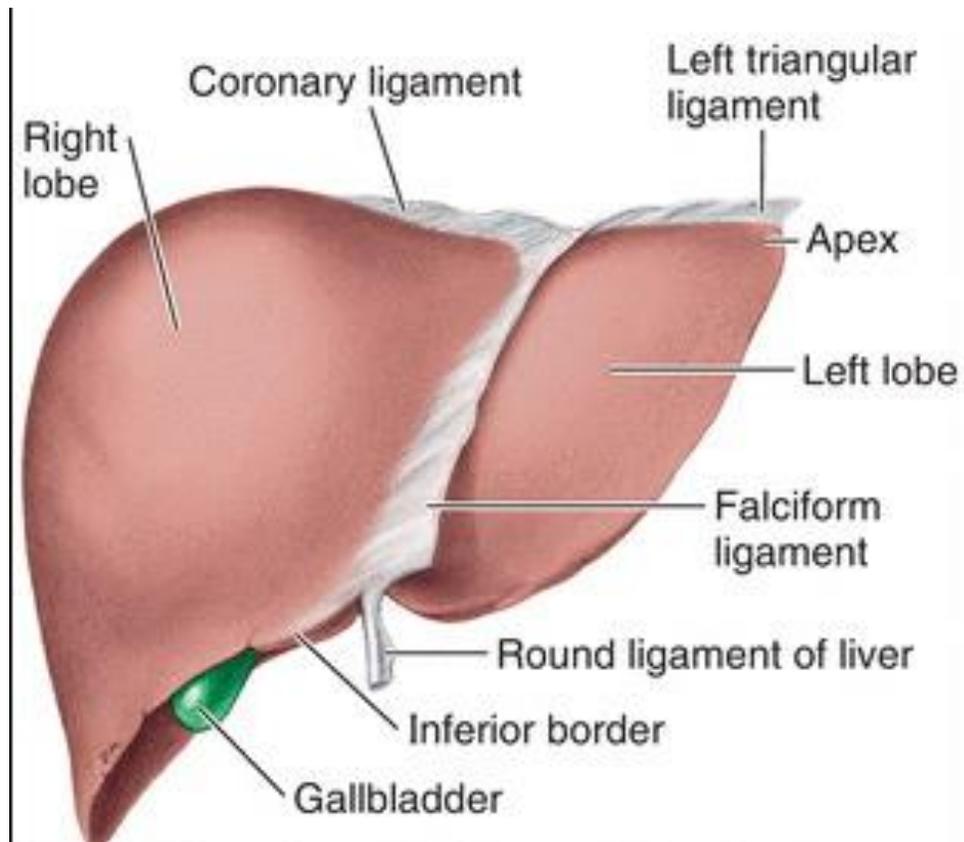
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### The 3rd part of the duodenum

- A. is anterior to the inferior mesenteric vein - **FALSE**
- B. is anterior to the right ureter - **TRUE**
- C. is crossed by the root of the mesentery - **TRUE**
- D. is posterior to the superior mesenteric vessels - **TRUE**



# Liver



# Q

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## The lesser omentum (True or False)

- A. contains the hepatic branches of the anterior vagal trunk
- B. has a L shaped attachment to the lower surface of the liver
- C. has an anterior layer which is continuous with the posterior layer of the left triangular ligament
- D. develops from the ventral mesogastrium

# Q

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## The lesser omentum

- A. contains the hepatic branches of the anterior vagal trunk - **TRUE**
- B. has a L shaped attachment to the lower surface of the liver - **TRUE**
- C. has an anterior layer which is continuous with the posterior layer of the left triangular ligament - **TRUE**
- D. develops from the ventral mesogastrium - **TRUE**

# Q

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**From a functional perspective, the liver is divided into eight segments. Which of the following responses is MOST correct?**

- A. The falciform ligament represents the division into right and left sides of the liver.
- B. The division between the right and left sides of the liver is through the gallbladder bed.
- C. There are six segments on the right side and two on the left side.
- D. The quadrate lobe is identical with segment 1.
- E. The right side of the liver is fed by the portal vein and the left side by the hepatic artery.

Q

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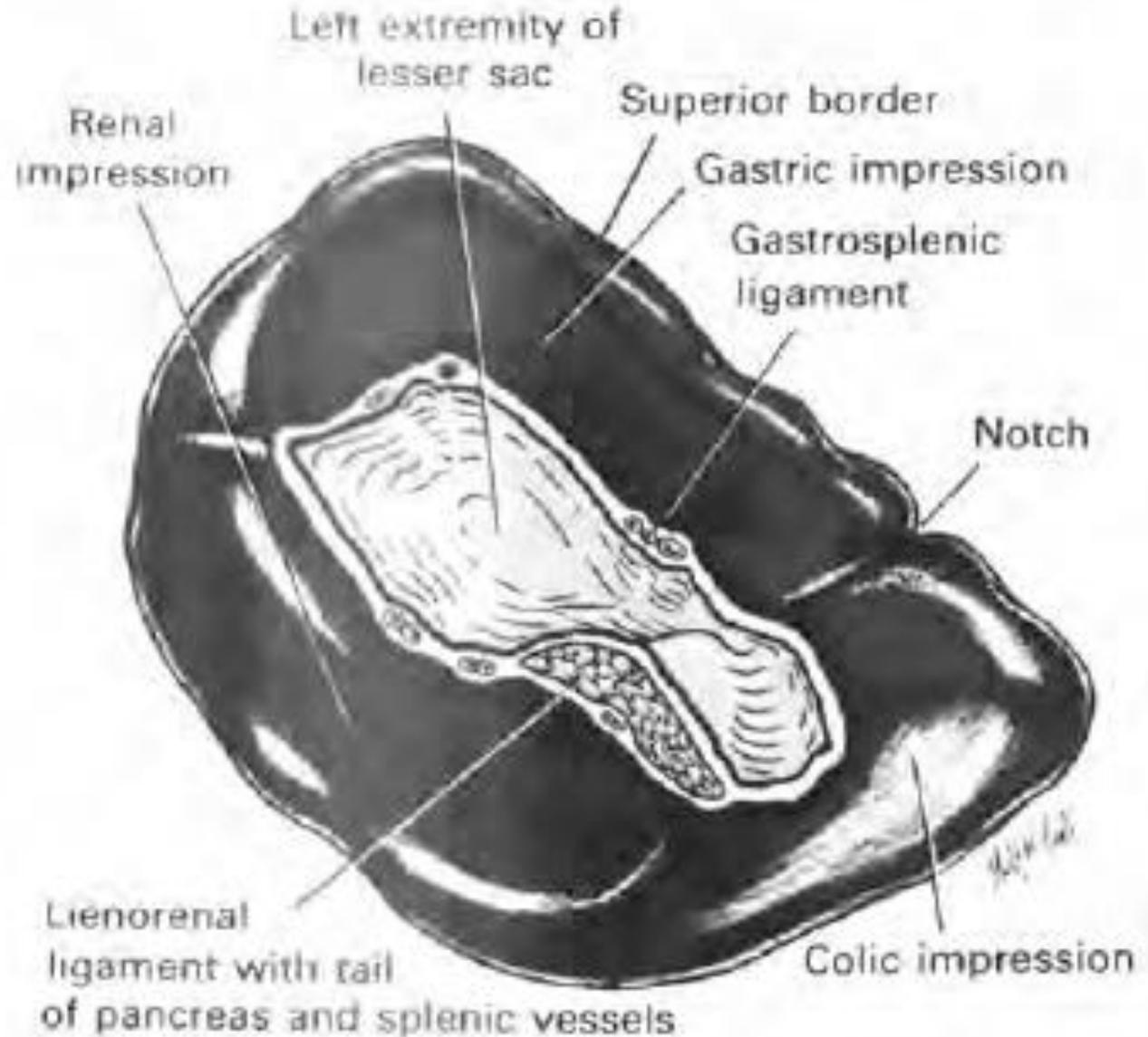
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D. The quadrate lobe is identical with segment 1.

E. The right side of the liver is fed by the portal vein and the left side by the hepatic artery.

# Spleen

- Long axis along 10<sup>th</sup> rib



# Q

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## The spleen

- A. has a convex surface related to the diaphragm and quadratus lumborum muscles
- B. has a long axis which lies along the line of the seventh rib
- C. projects into the lesser sac
- D. is in the supra colic compartment
- E. develops from the ventral mesogastrium

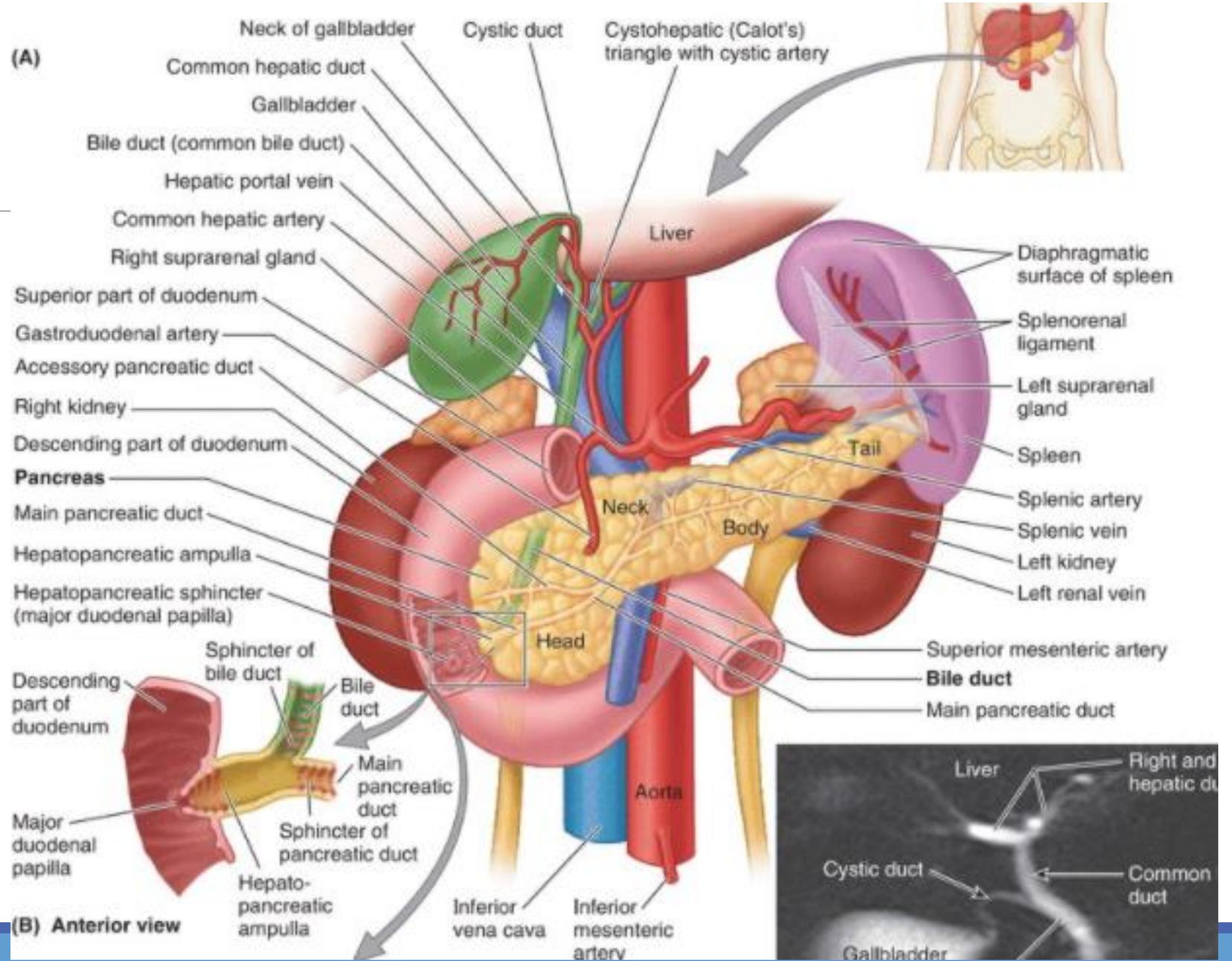
# Q

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# Pancreas



# Q

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**The common bile duct (True or False)**

- A. is formed by the junction of the right and left hepatic ducts
- B. lies in the free edge of the lesser omentum
- C. lies behind the neck of the pancreas
- D. opens at the ampulla, 10 cm. from the pylorus

Q

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**The common bile duct**

A. is formed by the junction of the right and left hepatic ducts - **FALSE**

B. lies in the free edge of the lesser omentum - **TRUE**

C. lies behind the neck of the pancreas - **FALSE**

D. opens at the ampulla, 10 cm. from the pylorus - **TRUE**

# Q

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## **The pancreas (True or False)**

- A. has the splenic vein as a posterior relation.
- B. has a neck which is anterior to the origin of the portal vein.
- C. has the splenic artery running above its upper border.
- D. is related to the lesser sac.

Q

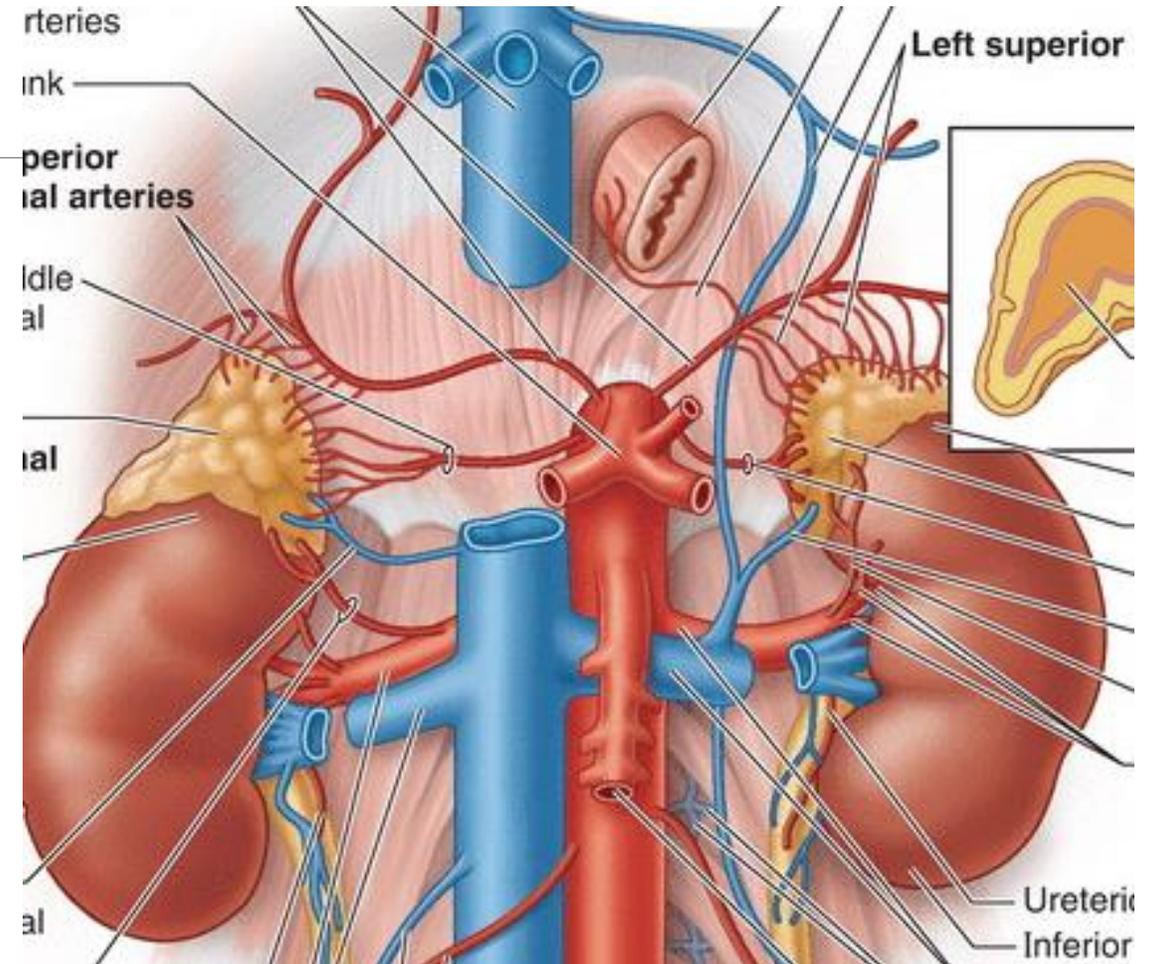
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## The pancreas

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- C. has the splenic artery running above its upper border. - **TRUE**
- D. is related to the lesser sac. - **TRUE**

# Suprarenal glands

- R suprarenal gland:
  - Pyramidal
  - Superior to R kidney
  - Posterior to hepatorenal space
- L Suprarenal gland:
  - Crescent
  - Medial to L kidney
  - Posterior to lesser sac
- Separated from kidneys by renal fascia



# Q

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## **The left suprarenal gland (True or False)**

- A. Surmounts the upper pole of the left kidney
- B. Is partially covered by peritoneum of the lesser sac
- C. Lies lateral to the left crus of the diaphragm
- D. Is crossed by the splenic artery

# Q

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## The left suprarenal gland

- A. Surmounts the upper pole of the left kidney - **FALSE**
- B. Is partially covered by peritoneum of the lesser sac - **TRUE**
- C. Lies lateral to the left crus of the diaphragm - **FALSE**
- D. Is crossed by the splenic artery - **TRUE**

Thank you

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