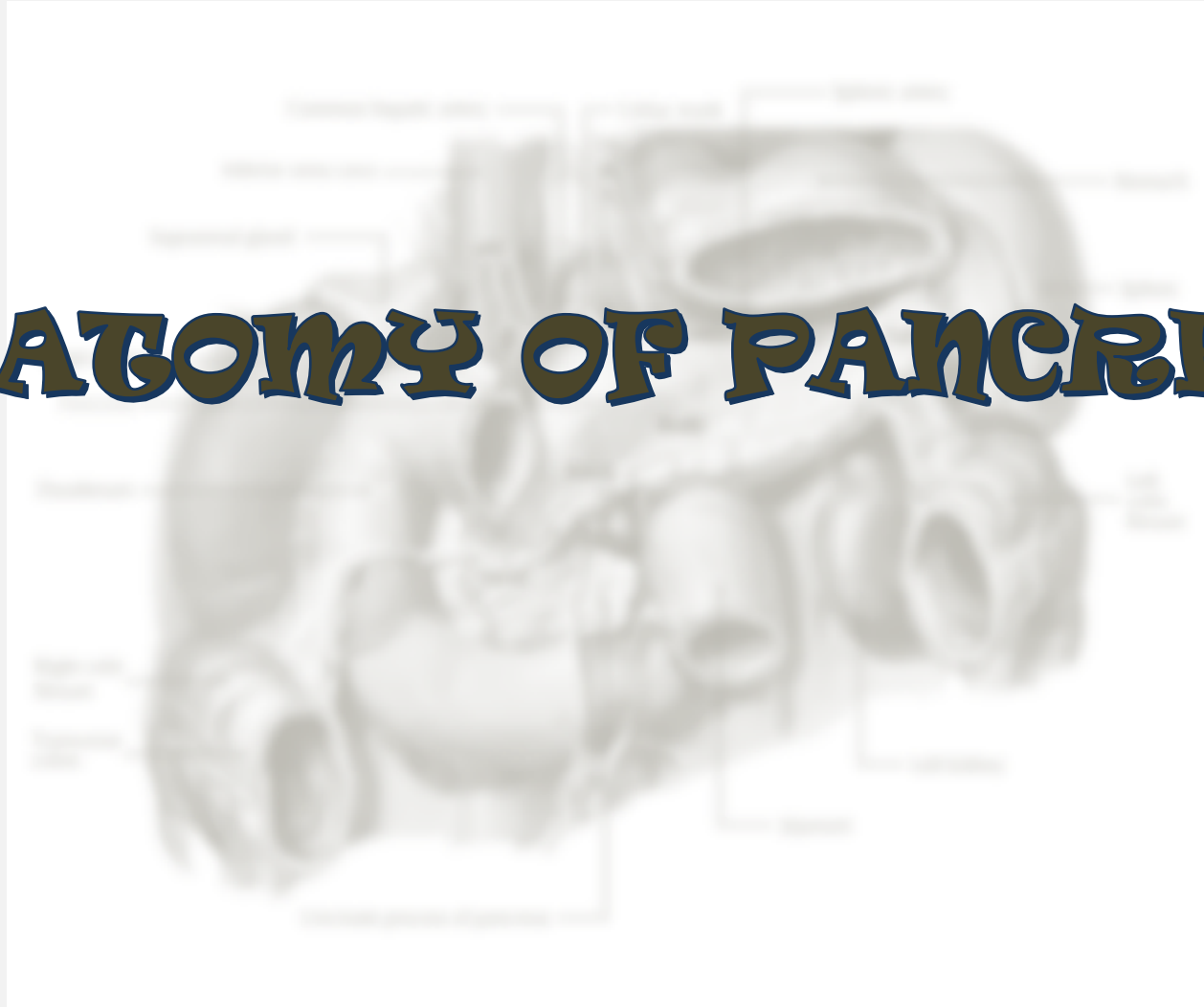




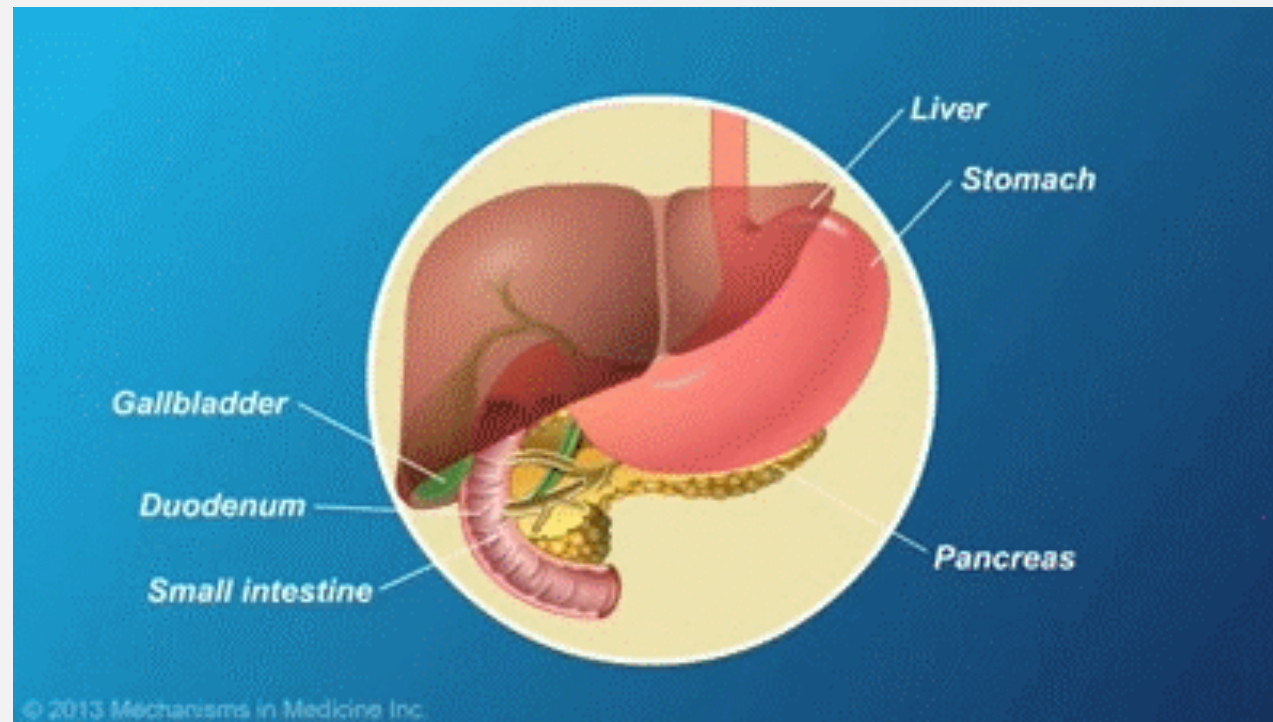
ANATOMY OF PANCREAS



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M.D; M.Phil; Ph.D

The Pancreases

“All Flesh”



The Pancreases "All Flesh"

Lies in the upper abdomen behind the stomach

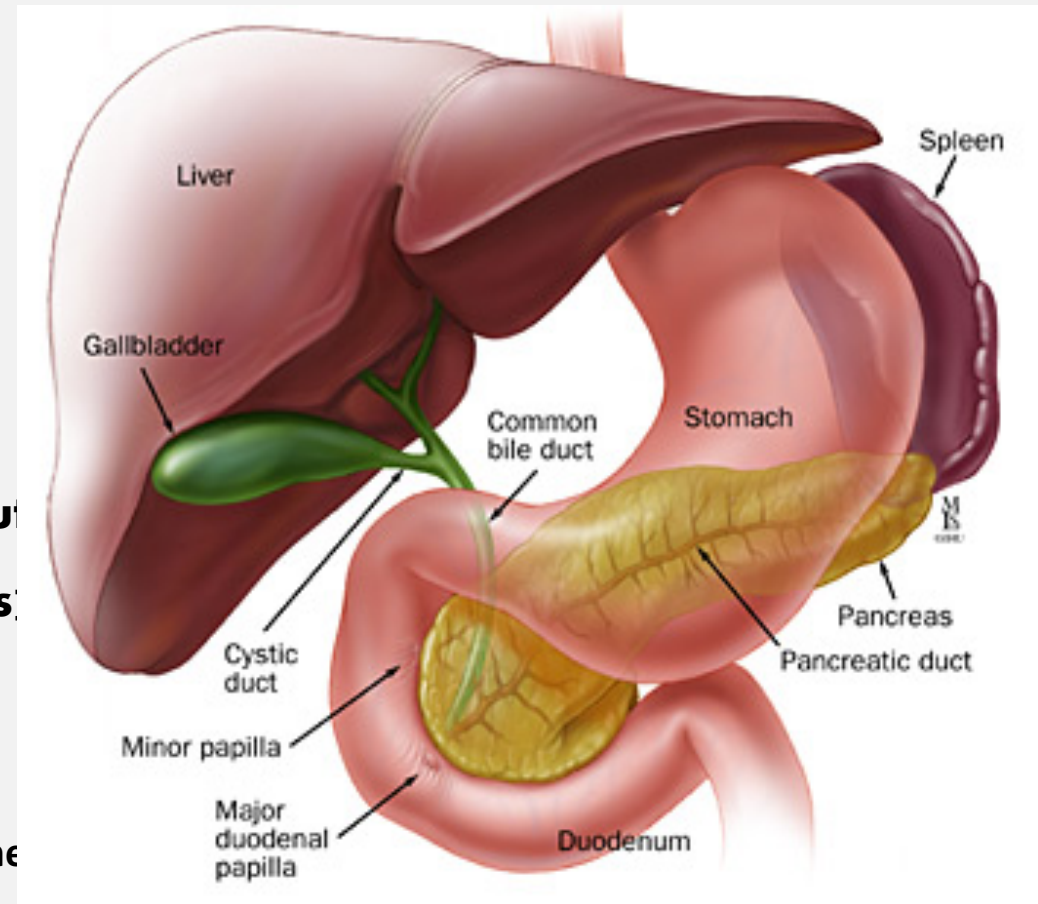
Both exocrine and endocrine functions

Endocrine component

- makes and secretes hormones (insulin, glucagon, somatostatin)
- control energy metabolism and storage throughout the body (Endocrine pancreas Islet's of Langerhans)
- comprise 1-2% of pancreatic mass.

Exocrine component

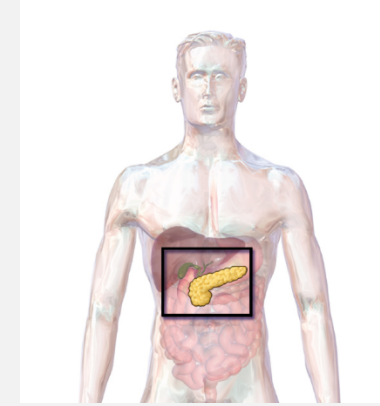
- makes and secretes digestive enzymes into the intestine (Exocrine pancreas)
- comprise more than 95% of the pancreatic mass



The Pancreases "All Flesh"

LOCATION

In the epigastric and left hypochondriac regions, (from concavity of the duodenum to the hilum of spleen opposite the level of T12– L3 vertebrae).



PERITONEUM

The greater part is **retroperitoneal** behind the lesser sac.

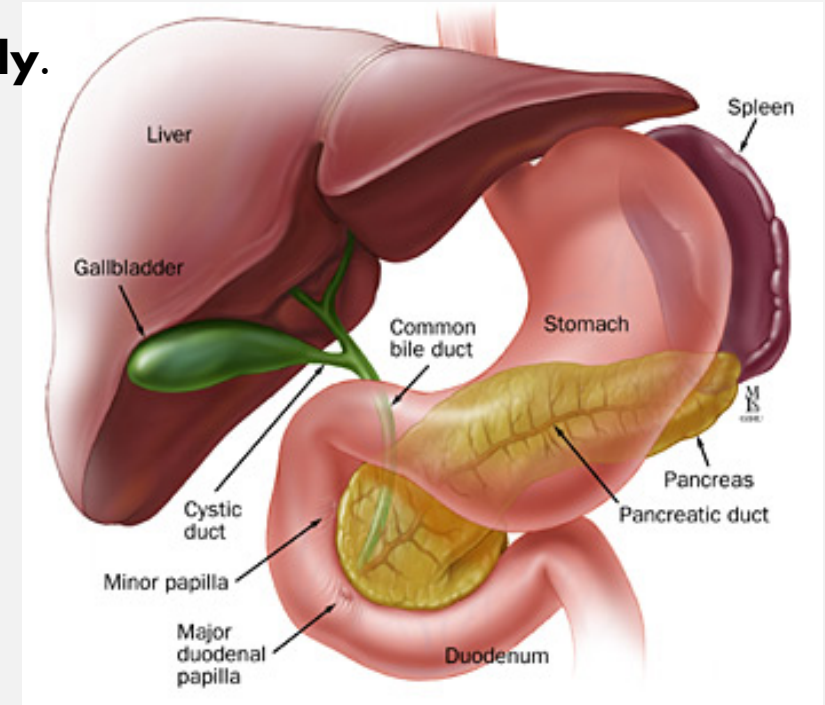
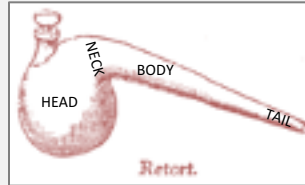
SHAPE

The pancreas is "J"-shaped or RETORT shaped being set obliquely.

SIZE

Length: 12–15 cm (6-10 inch).

Weight: 60–100 g.



The Pancreases "All Flesh"

PARTS (SUBDIVISIONS)

1. **Head** (with one process— uncinata process).
2. **Neck.**
3. **Body** (with one process—tuber omentale).
4. **Tail.**

HEAD OF THE PANCREAS

- is the enlarged, disc-shaped right end of the pancreas.
- lies in the concavity of the C-shaped duodenal loop in front of the L2 vertebra

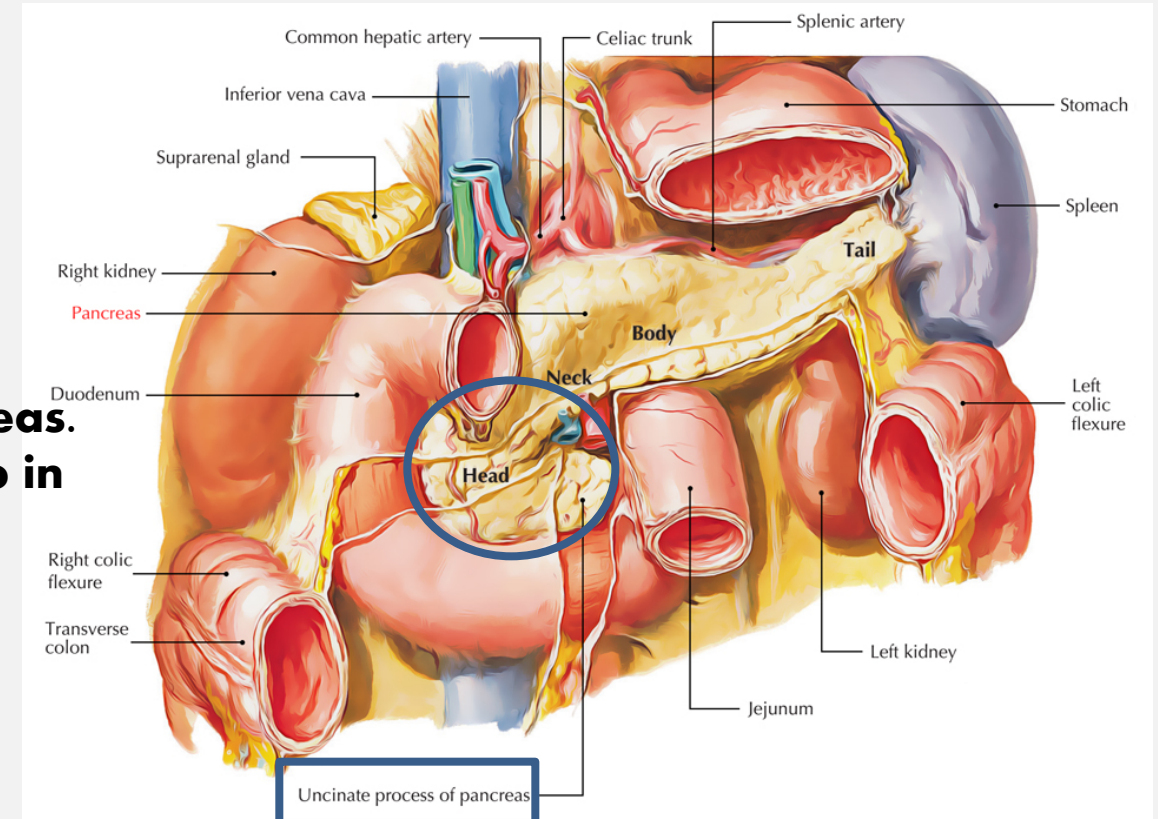
RELATIONS

Anterior surface is related from above downward to:

- The gastroduodenal artery,
- transverse colon,
- root of the transverse mesocolon and
- jejunum.

Posterior surface is related to:

- IVC,
- left renal vein,
- bile duct and
- right crus of diaphragm.



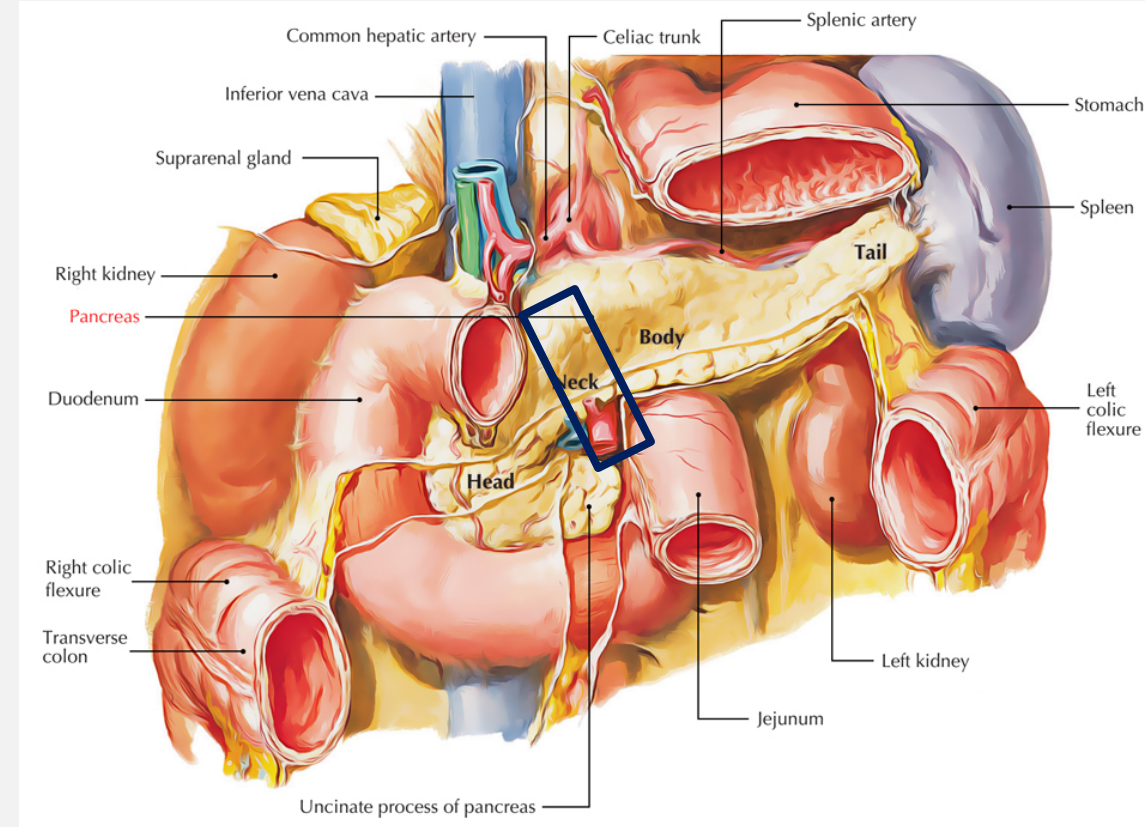
Uncinate process is related to:

- anteriorly to superior mesenteric vessels and
- posteriorly to the abdominal aorta.

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NECK OF THE PANCREAS

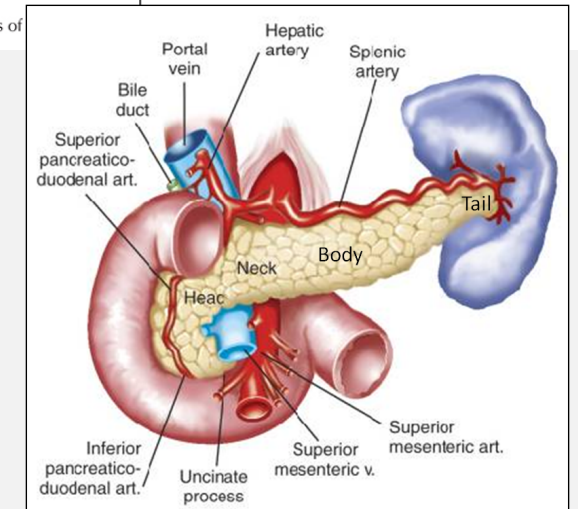
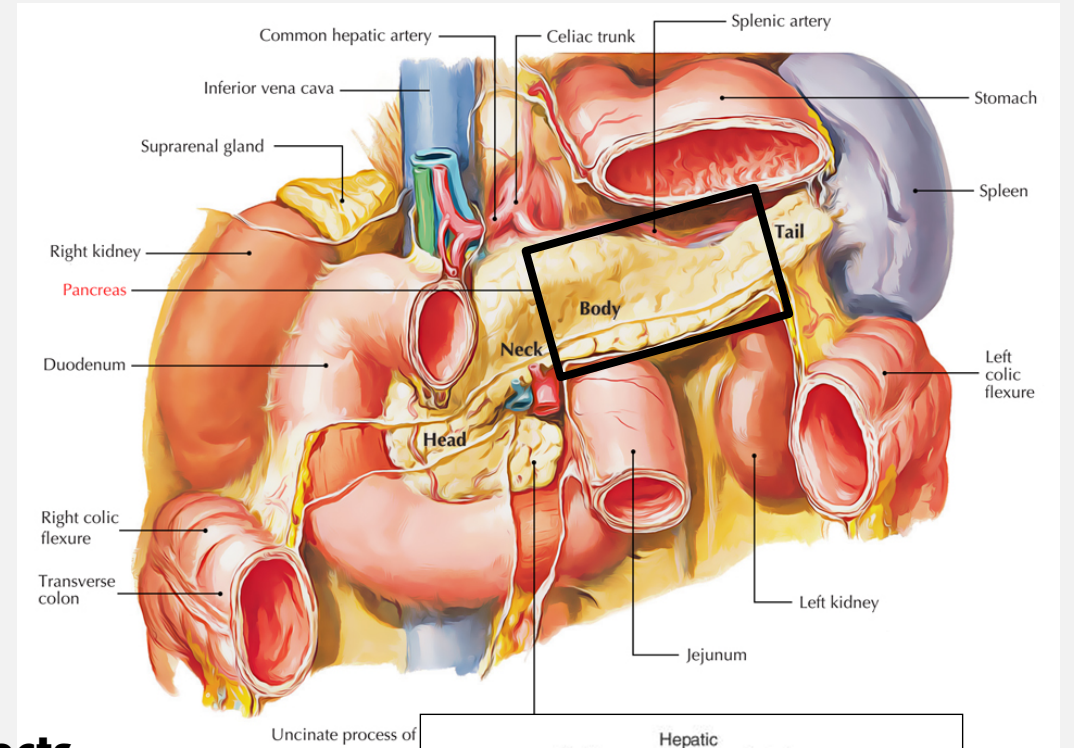
- **Best defined as "narrow band of pancreatic tissue that Lies in front of superior mesenteric and the portal vein"**
- **Its antero-superior surface supports/related to the pylorus**
- **The superior mesenteric vessels emerge from its inferior border**



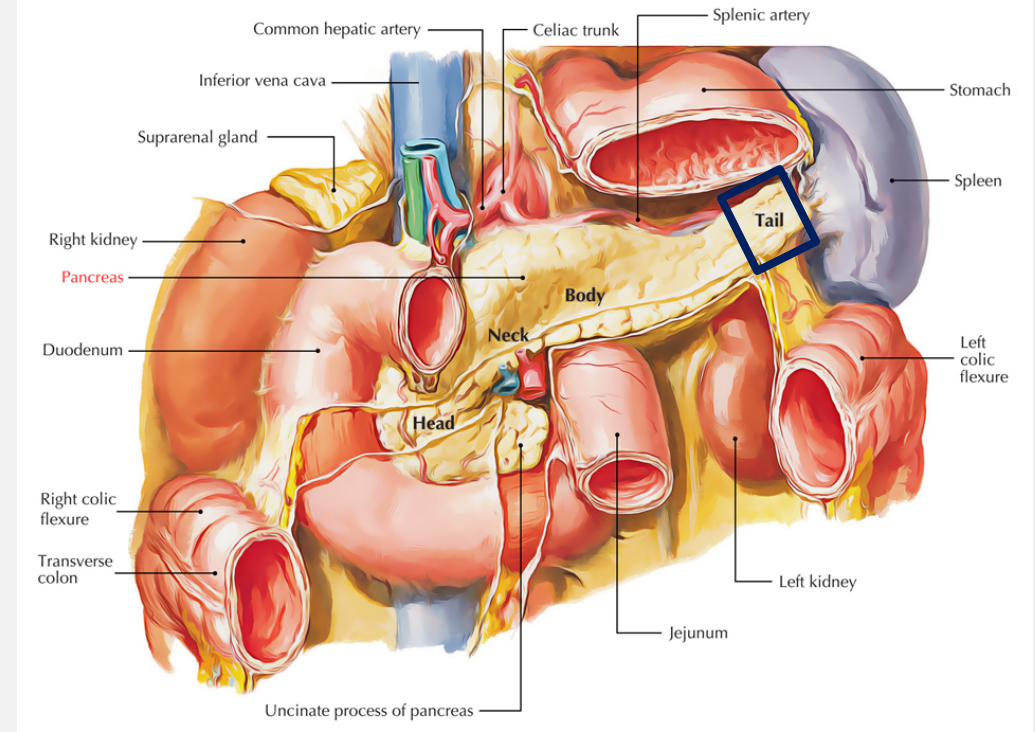
BODY OF THE PANCREAS

- runs upward and to the left.
- lies in front of the vertebral column at or just below the transpyloric plane.
- is triangular in cross section.
- The splenic vein is embedded in its posterior surface
- The splenic artery runs over its upper border

• ~~One process: Tuber omentale (a part of the body projects above the lesser curvature of the stomach and comes in contact with the lesser omentum across the lesser sac).~~



The Pancreases "All Flesh"



TAIL OF THE PANCREAS

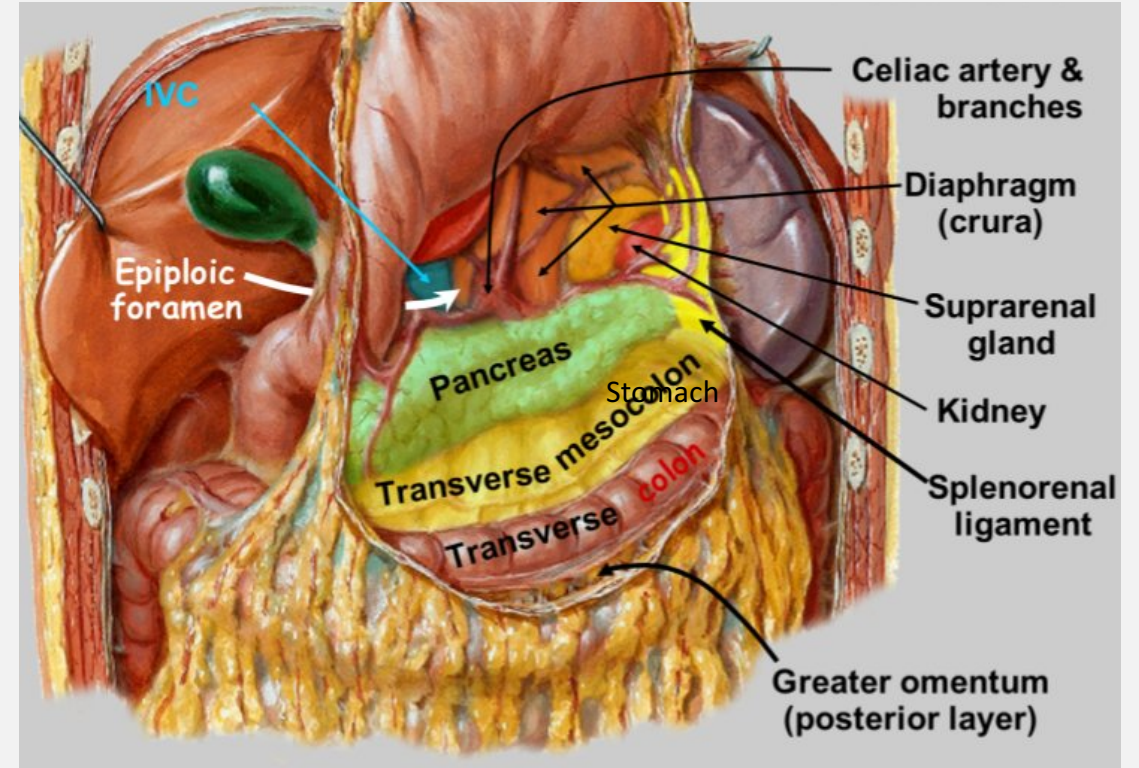
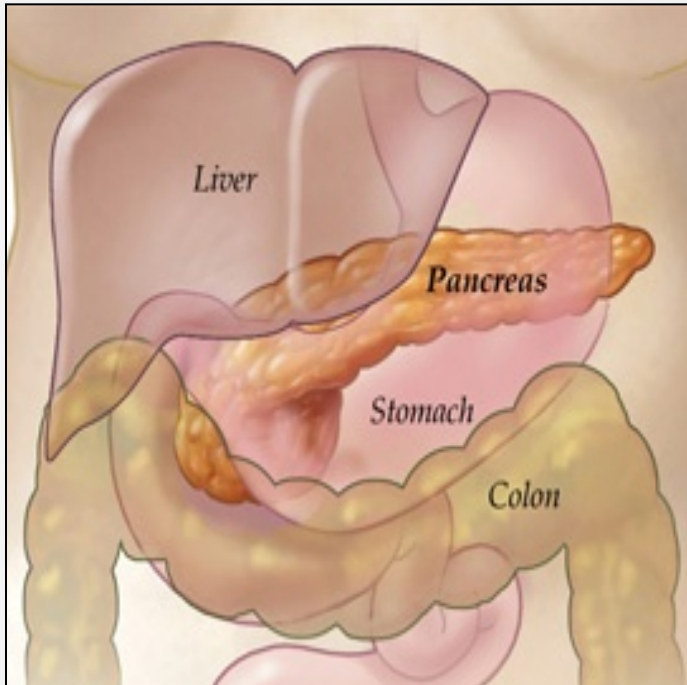
- **Narrow, short segment, ending at the splenic hilum**
- **It is mobile unlike the other major retroperitoneal parts of the gland.**
- **contains the largest number of islets of Langerhans**
- **Lies in the splenicorenal (lienorenal) ligament (*may get injured during splenectomy*) along with splenic vessels, at the level of the T₁₂ vertebra**
- **Anteriorly, related to splenic flexure of colon**

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RELATIONS OF THE PANCREAS

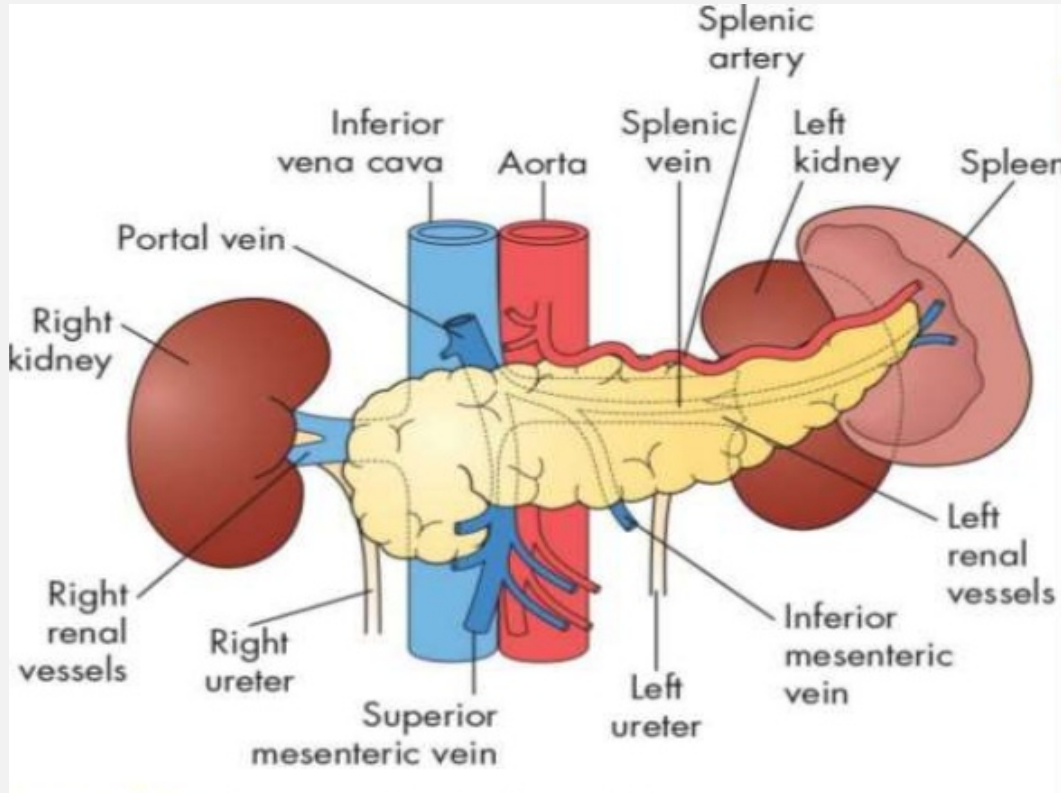
Anterior Relations

- Stomach separated by lesser sac
- Transverse colon &
- Transverse mesocolon



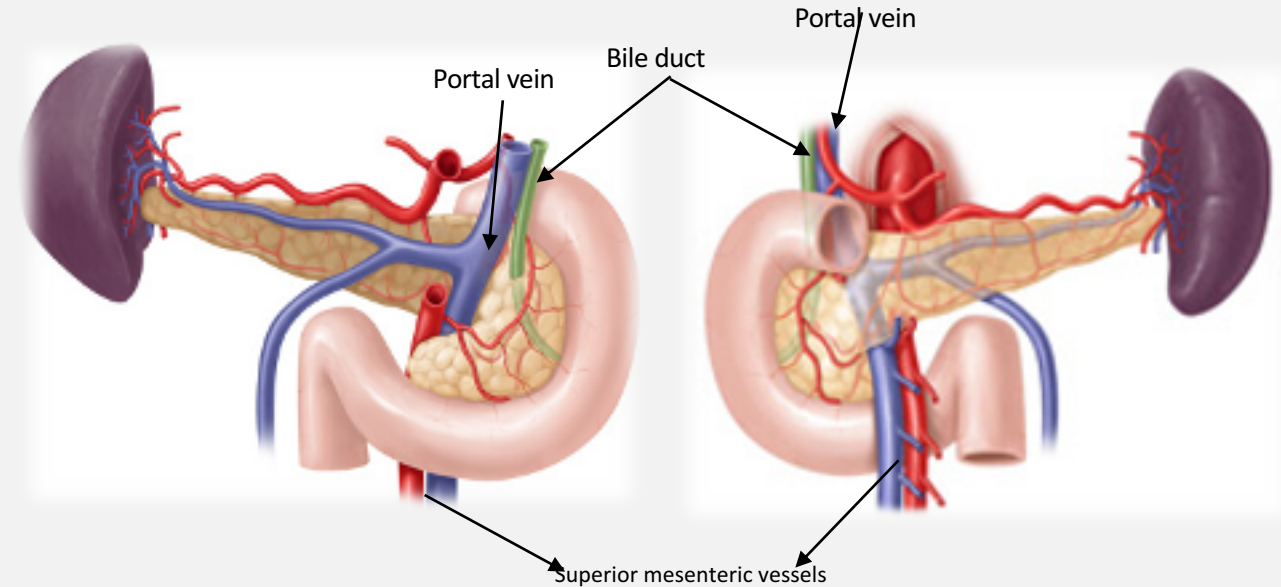
The Pancreases "All Flesh"

RELATIONS OF THE PANCREAS



Posterior Relations (from right to left)

- Bile duct, portal & splenic veins,
- inferior vena cava,
- aorta & origin of SMA
- Left psoas muscle,
- left renal vessels & left kidney
- Hilum of the spleen.



Posterior view

Anterior view

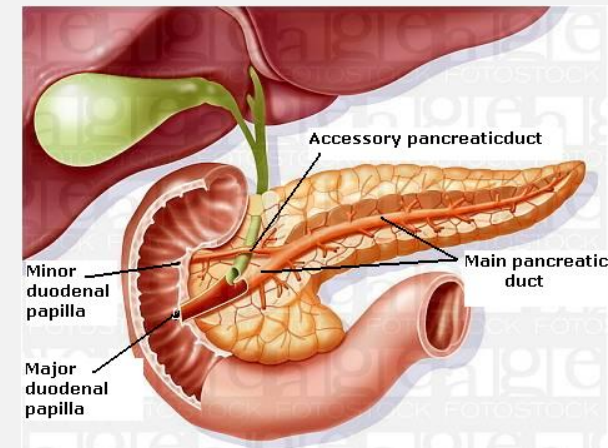
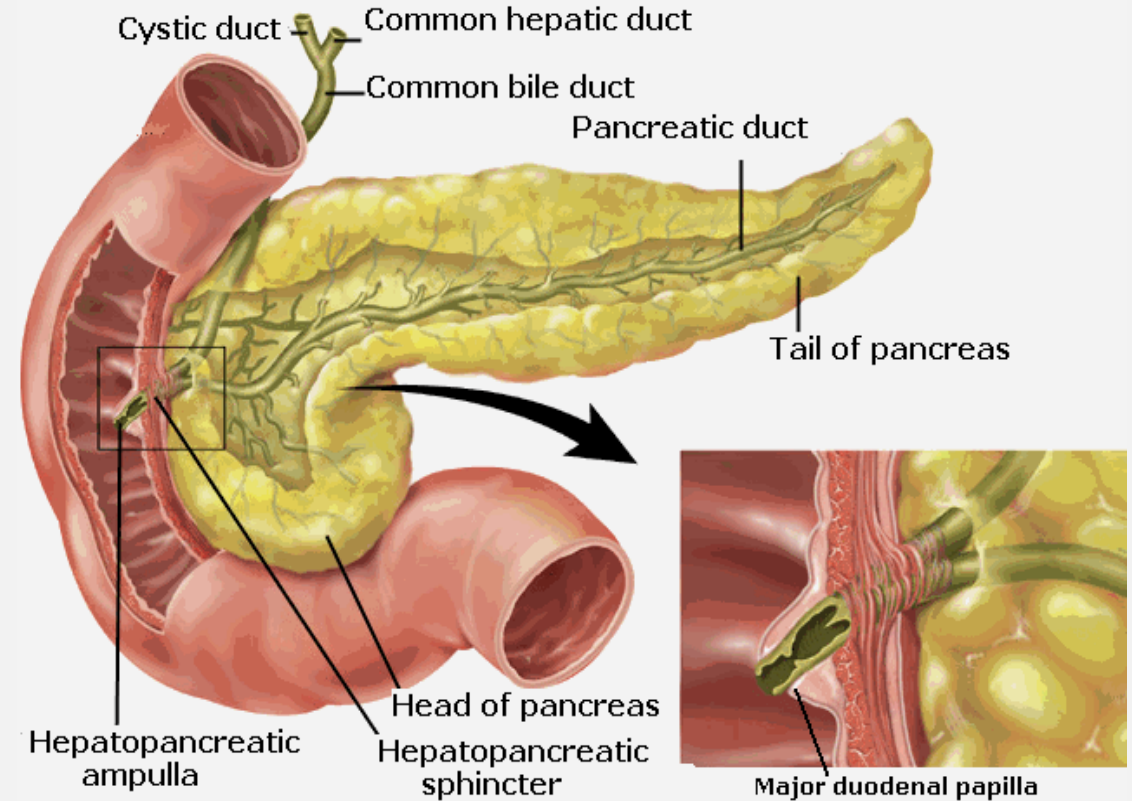
The Pancreases "All Flesh"

PANCREATIC DUCTS

- Main duct (of Wirsung)
- Accessory duct (of Santorini)

Main duct (of Wirsung)

- runs the entire length of pancreas beginning from the tail.
- It drain whole pancreas **EXCEPT** upper portion of the head i.e. tail, body, neck, inferior portion of head & uncinete process.
- Joins common bile duct & together they open into a small **hepatopancreatic ampulla (Ampulla of Vater)** in the 2nd part of the duodenum.
- The ampulla opens by a narrow mouth on the summit of major duodenal papilla **8-10 cm distal to the pylorus.**



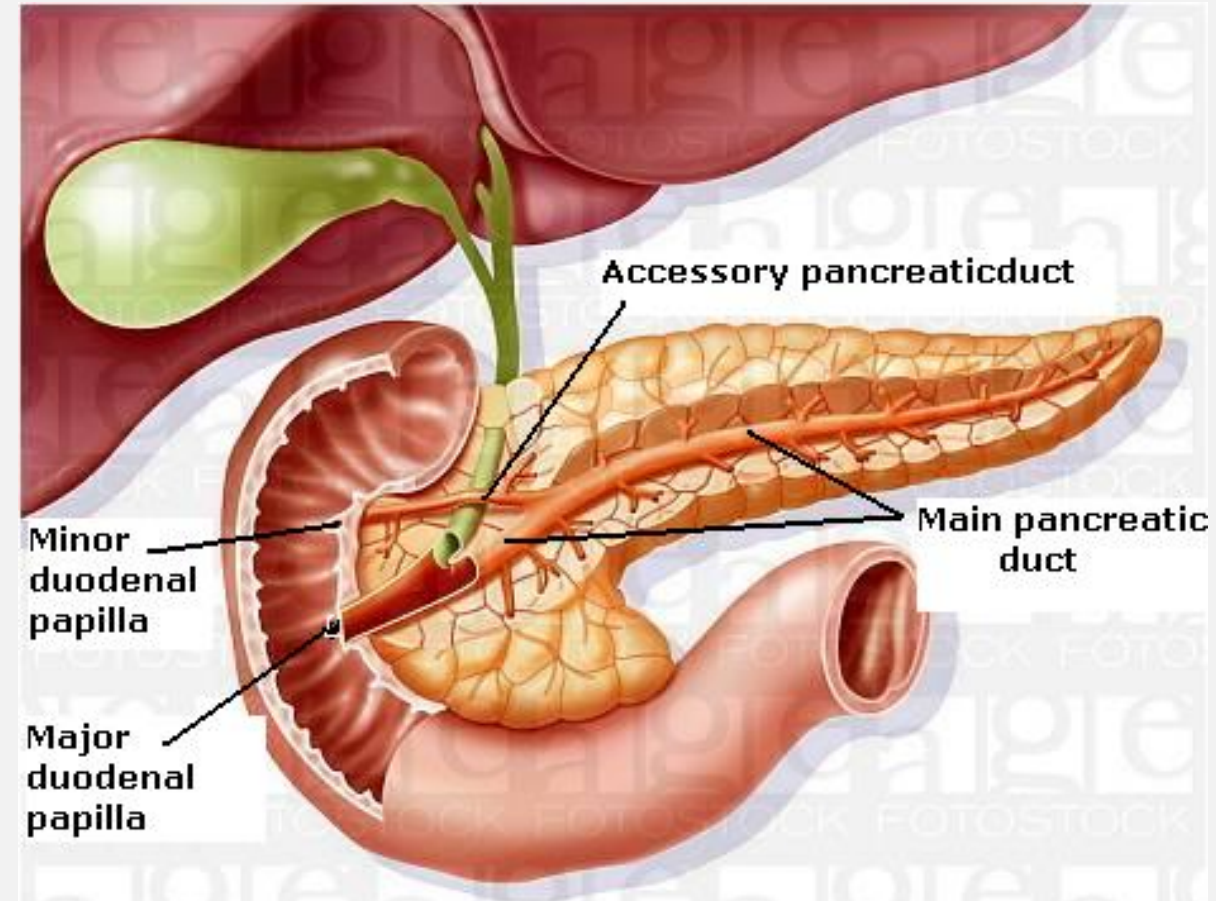
The Pancreases "All Flesh"

PANCREATIC DUCTS

- **Main duct (of Wirsung)**
- **Accessory duct (of Santorini)**

Accessory duct (of Santorini)

- drains superior portion of the head
- empties separately into 2nd part of duodenum at (minor duodenal papilla) about 2-3 cm above the opening of main pancreatic duct (6-8 cm distal to pylorus)



The Pancreases "All Flesh"

BLOOD SUPPLY OF THE PANCREAS

Arterial Supply

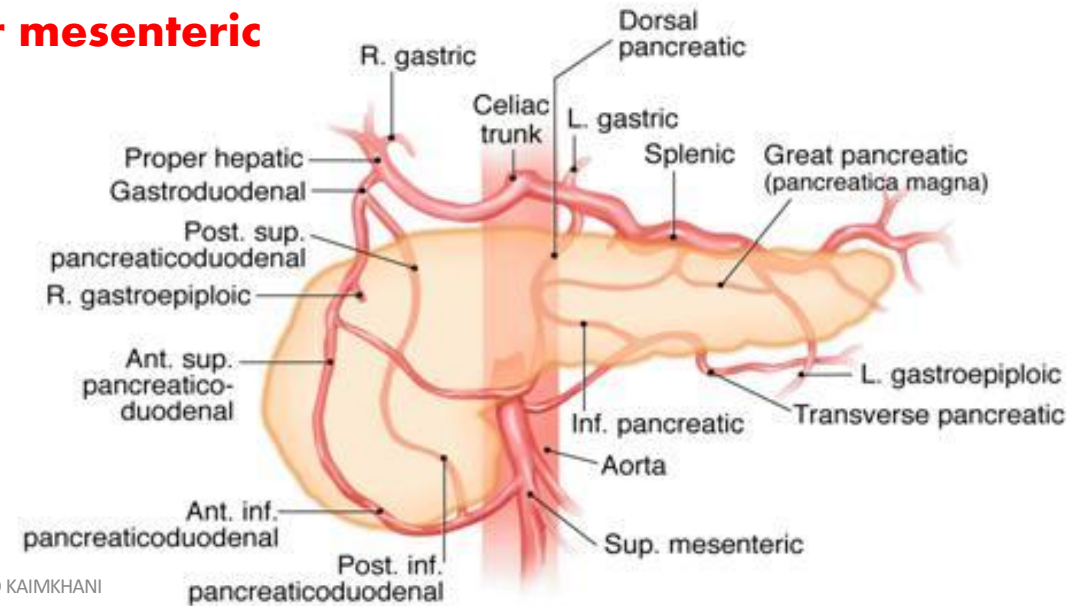
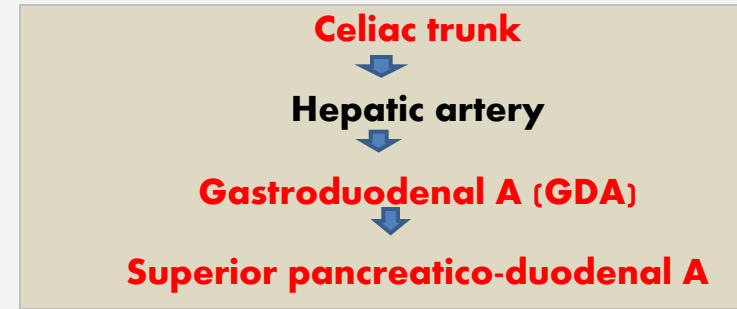
○ Head & Neck

Supplied by branches from:

1. **Superior pancreaticoduodenal artery** br of gastroduodenal artery (GDA), branch of hepatic artery branch of **Celiac trunk**
2. **Inferior pancreaticoduodenal artery** branch of **Superior mesenteric artery**

○ Body and tail:

Supplied by **Splenic artery (main artery)** through 8-10 branches



ZAHID KAIMKHANI

The Pancreases "All Flesh"

BLOOD SUPPLY OF THE PANCERAS

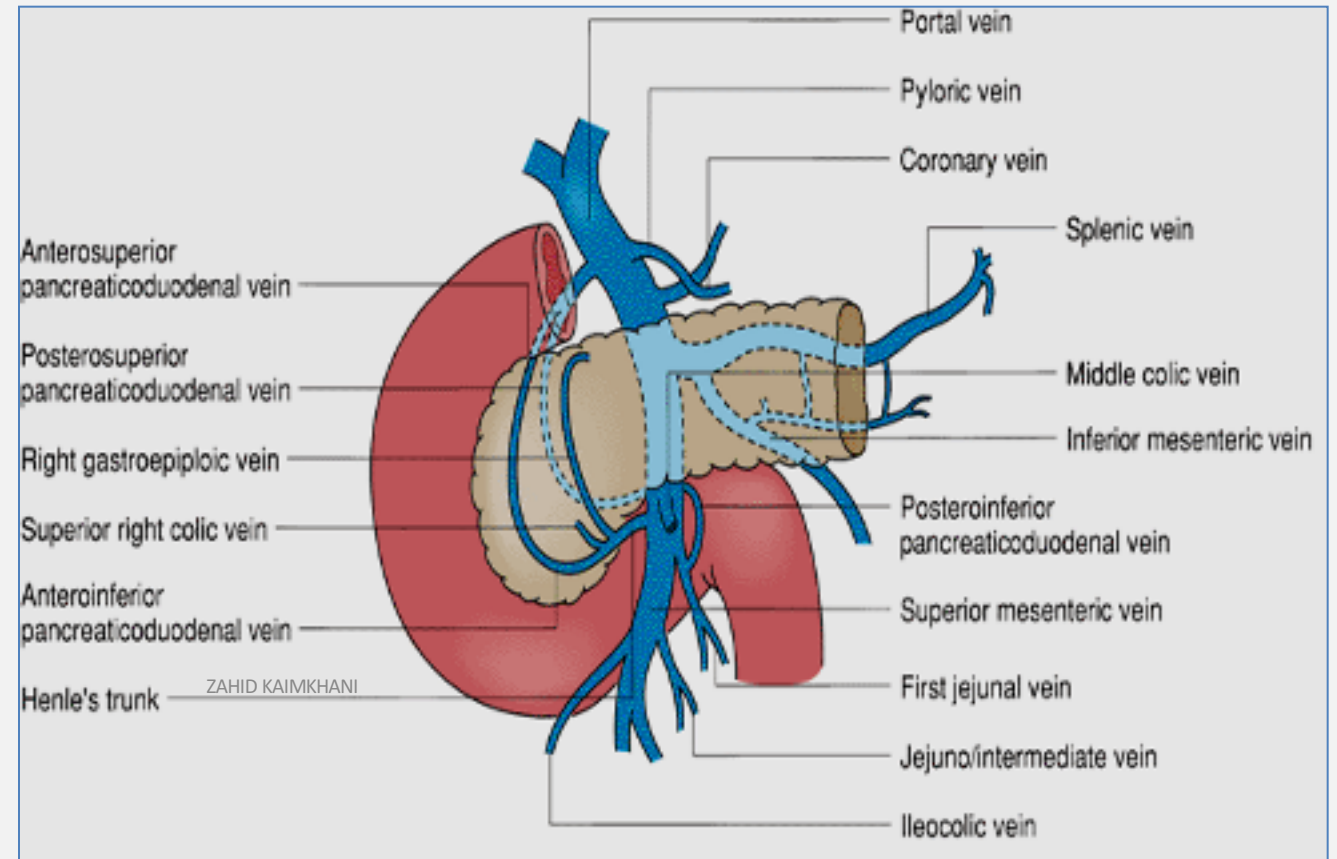
VENOUS DRAINAGE

○ Head & Neck

- Drained by anterior and posterior venous arcades that form **the superior & inferior pancreaticoduodenal veins** which follow the corresponding arteries.

○ Body and tail:

Drained by **the splenic vein**, which is a tributary of **the portal vein**



The Pancreases "All Flesh"

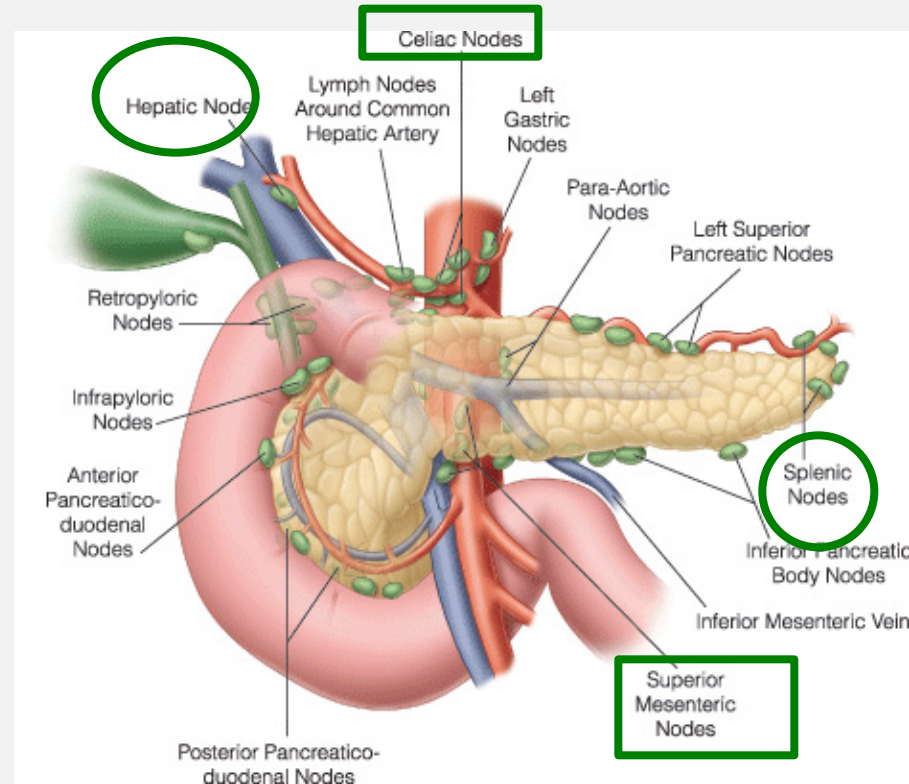
LYMPHATIC DRAINAGE

Rich network that drains into:

- Pyloric
- Hepatic &
- Splenic nodes

Ultimately the efferent vessels drain into:

- the celiac &
- superior mesenteric lymph nodes.



INNERVATION

• Sympathetic fibers

- from the thoracic splanchnic nerves.
- have a predominantly **inhibitory** effect

• Parasympathetic fibers

- from the Vagus.
- **stimulate** both exocrine and endocrine secretions

CLINICAL ANATOMY

Carcinoma of the head of pancreas

- Is common.
- Compresses the bile duct leading to **persistent obstructive jaundice**.
- May press the portal vein or may involve the stomach due to close vicinity of these structures to the head of pancreas.

Acute pancreatitis

- Is the acute inflammation of the pancreas.
- Occurs due to **obstruction of pancreatic duct**, **ingestion of alcohol**, **viral infections (mumps)**, or **trauma**.
- It is serious condition because activated pancreatic enzymes leak into the substance of pancreas and initiates the autodigestion of the gland.
- Clinically, it presents as very severe pain in the epigastric region radiating to the back, fever, nausea, and vomiting.

Pancreatic pseudocyst

جامعة
الملك سعود
King Saud University



Thank you