HELICOBACTER PYLORI

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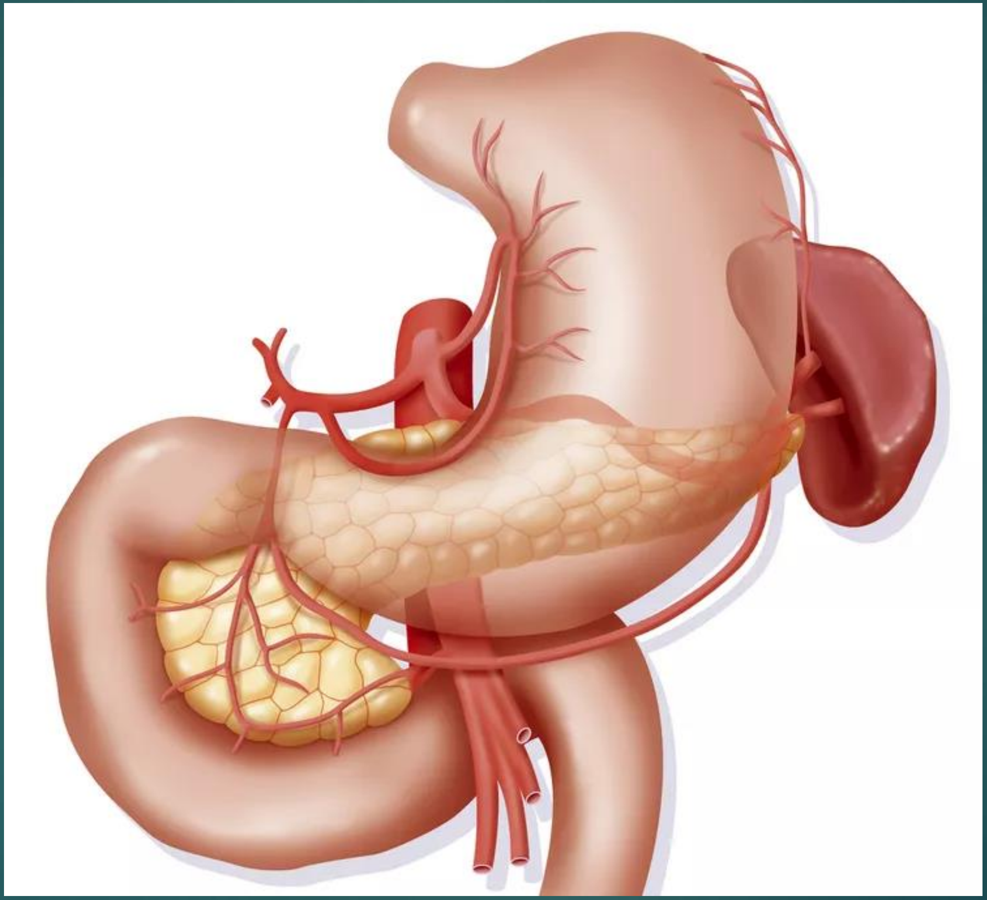
- Over the last 30 years, this organism has proved to be of importance in the aetiology of a number of common gastroduodenal diseases such as chronic gastritis, peptic ulcer disease and gastric cancer.
- Eradication therapy was then employed with mixed success, but both received the Nobel Prize for Medicine and Physiology in 2005.
- The organism is spiral shaped and is fastidious in its requirements. One of the characteristics of the organism is its ability to hydrolyze urea, resulting in the production of ammonia.
- The effect of ammonia on the antral G cells is to cause the release of gastrin.

Various tests used to detect the presence of the organism

1. **Stool antigen test** – a small stool sample is tested for the bacteria.
2. **H.pylori antibody blood test** – a sample of your blood is tested for antibodies to the H.pylori.
3. **urea breath tests.**
4. **the CLO test (a urease test),** which is performed on gastric biopsies.
5. **Histology**, using the Giemsa stains for the pre-treatment diagnosis of H. pylori infection in the community.

- Infection with H. pylori leads to the disruption of the gastric mucous barrier by the enzymes produced by the organism .
- Some strains of H. pylori produce cytotoxins, notably the Cag A and Vac A products, and the production of cytotoxins seems to be associated with the ability of the organism to cause gastritis, peptic ulceration and cancer.
- The incidence of infection within a population increases with age.
- Up to 50% of the world's population may be infected with Helicobacter .
- The means of spread has not been identified, but the organism can occur in the faeces and faecal–oral spread seems most likely .
- Commonly used eradication regimes include a proton pump inhibitor and two antibiotics, such as metronidazole and amoxycillin.
- Very high eradication rates, in the region of 90%, can be achieved with combinations that include the antibiotic clarithromycin, although it may be that in the future antibiotic resistance will become a problem.

The Duodenum



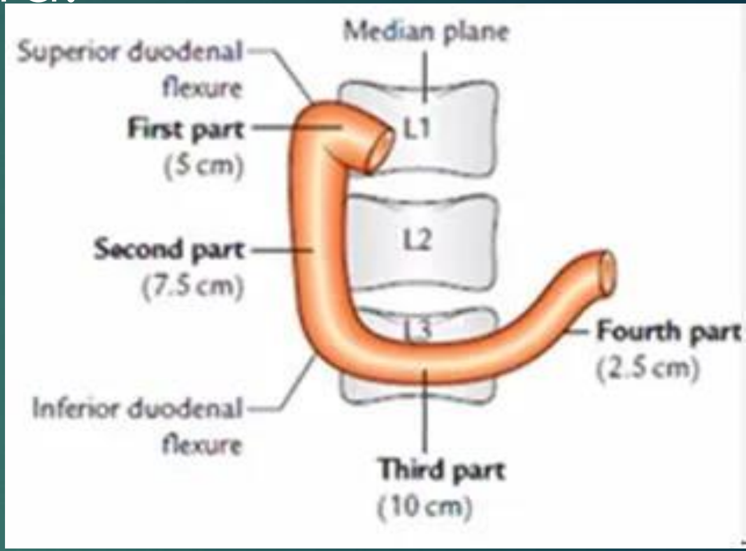
Anatomy

- The duodenum has been described as a C-shaped or horseshoe-shaped segment of the small intestine.
- It is located below the stomach.

- The duodenum can be separated into **four segments**.
- Each segment has a different anatomy (shape) and performs a different function.
- The lining of the duodenum is composed of four layers, each with its own specialized function.

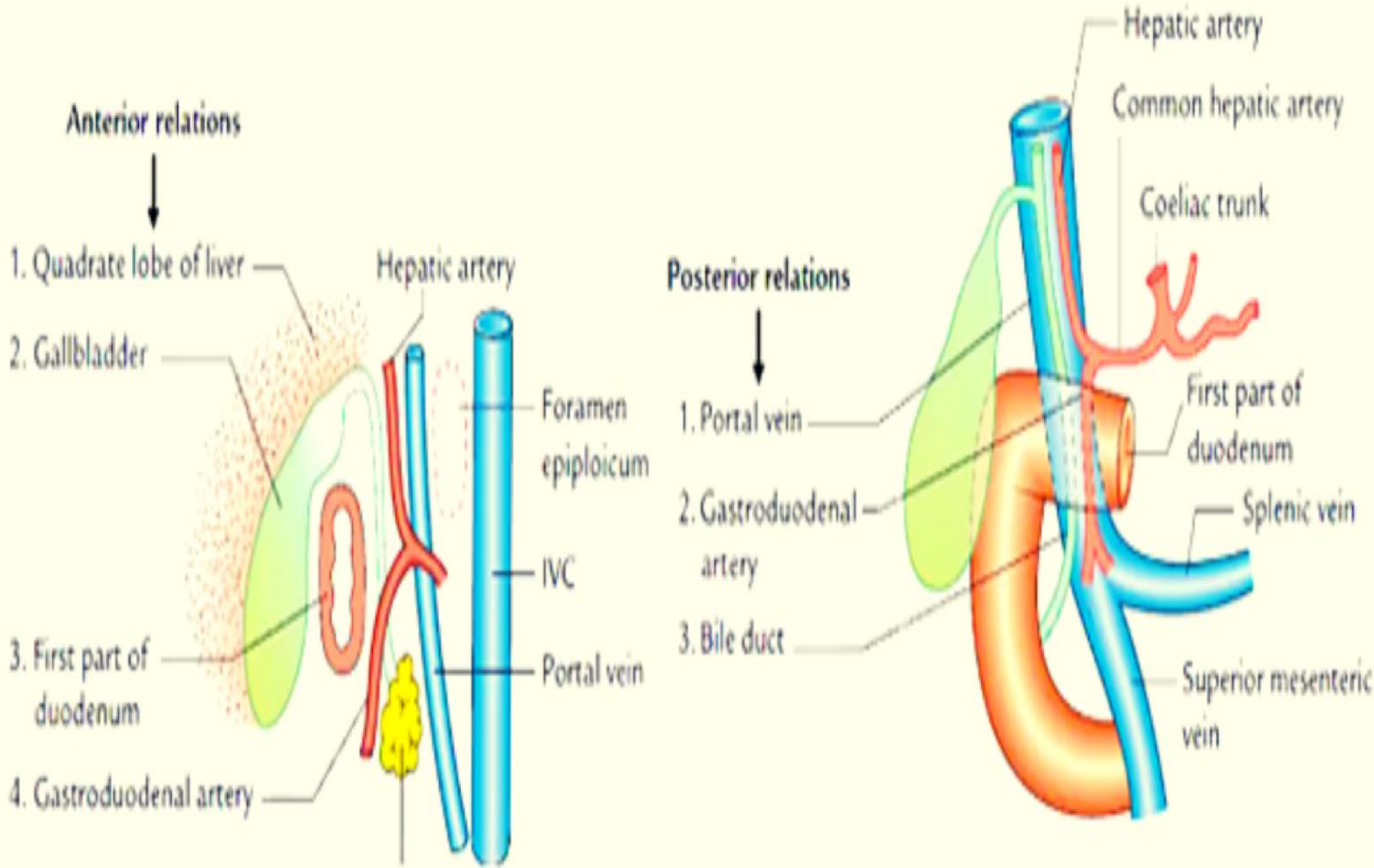
Parts of the Duodenum

First Part of the Duodenum: begins at the pylorus and runs upward and backward on the transpyloric plane at the level of the 1st lumbar vertebra.



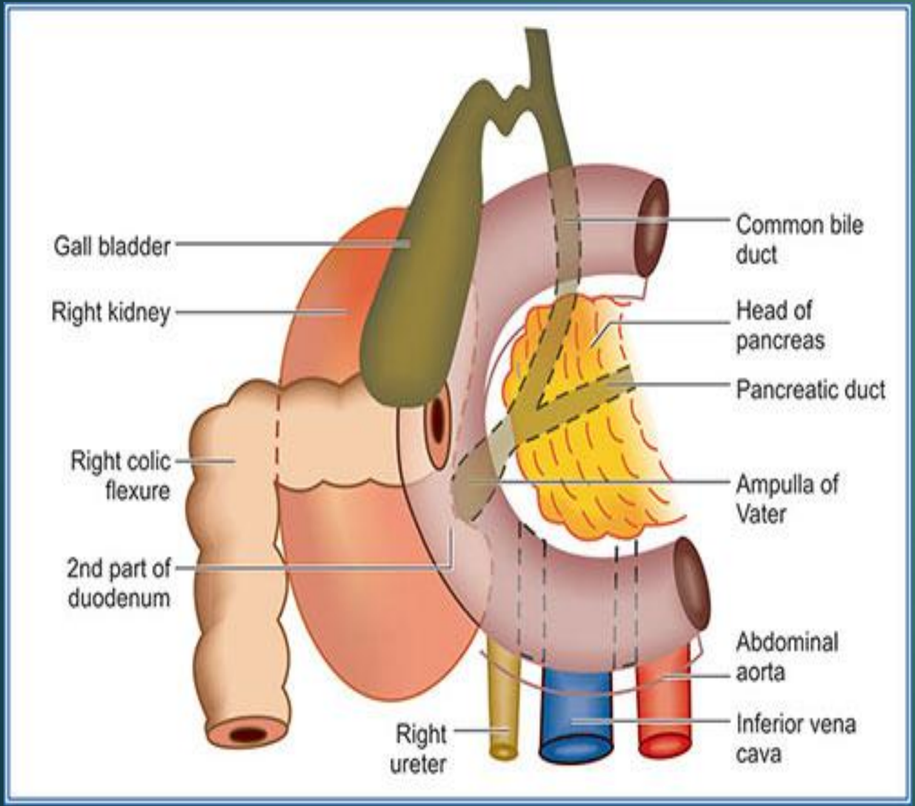
The relations of this part are as follows:

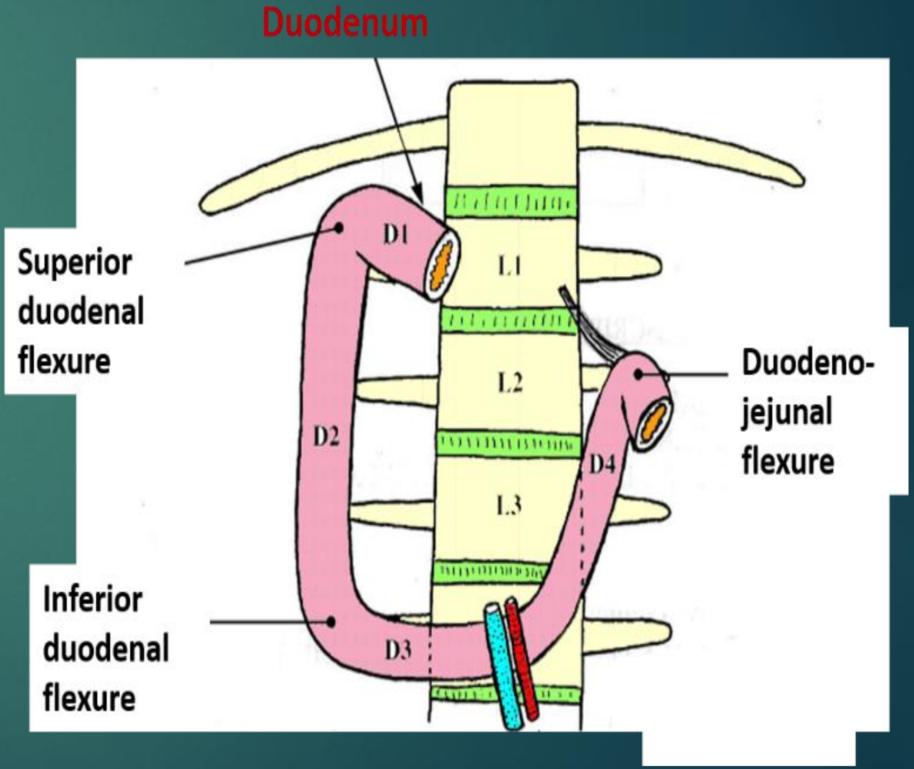
1. Anteriorly: Quadrate lobe of the liver and the gallbladder.
2. Posteriorly: the portal vein, gastroduodenal artery, the lesser sac and the inferior vena cava.
3. Superiorly: Epiploic foramen
4. Inferiorly: The head and neck of the pancreas.



Anterior relations
1. Quadrate lobe of liver
2. Gallbladder
3. First part of duodenum
4. Gastroduodenal artery
Hepatic artery
Foramen epiploicum
IVC
Portal vein
Posterior relations
1. Portal vein
2. Gastroduodenal artery
3. Bile duct
Hepatic artery
Common hepatic artery
Coeliac trunk
First part of duodenum
Splenic vein
Superior mesenteric vein

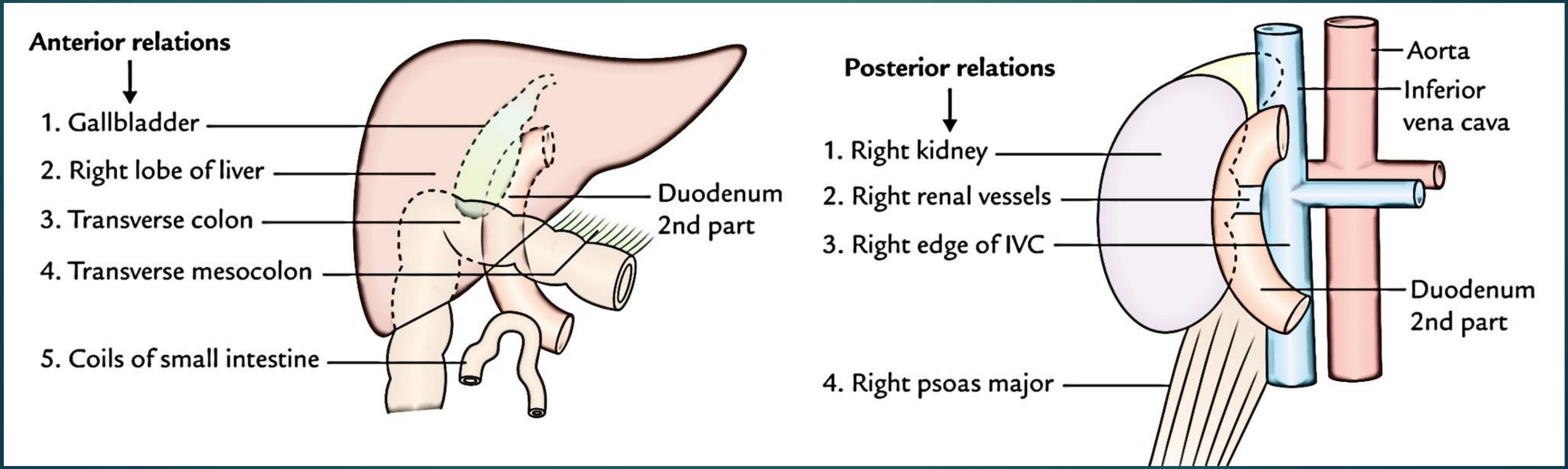
Second Part of the Duodenum: runs vertically downward in front of the hilum of the right kidney on the right side of the 2nd and 3rd lumbar vertebrae . They unite to form the ampulla of Vatar that opens on the summit of the major duodenal papilla.





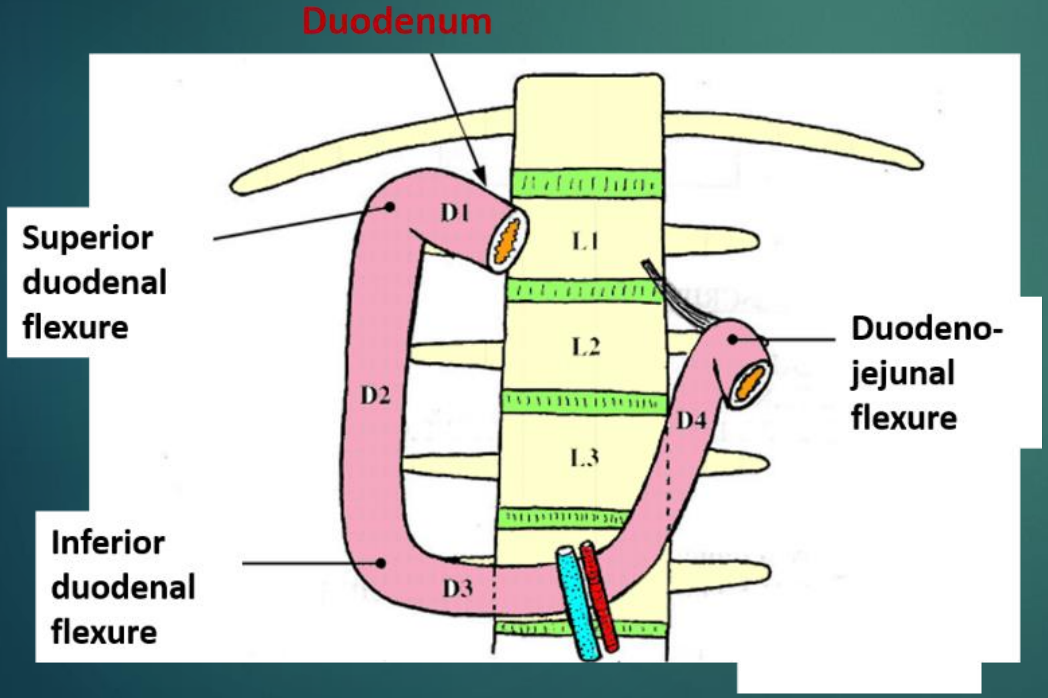
The relations of 2nd part of the duodenum

1. Anteriorly: The fundus of the gallbladder, transverse colon and the right lobe of the liver.
2. Posteriorly: The hilum of the right kidney and the right ureter.
3. Laterally: The ascending colon.
4. Medially: The head of the pancreas,



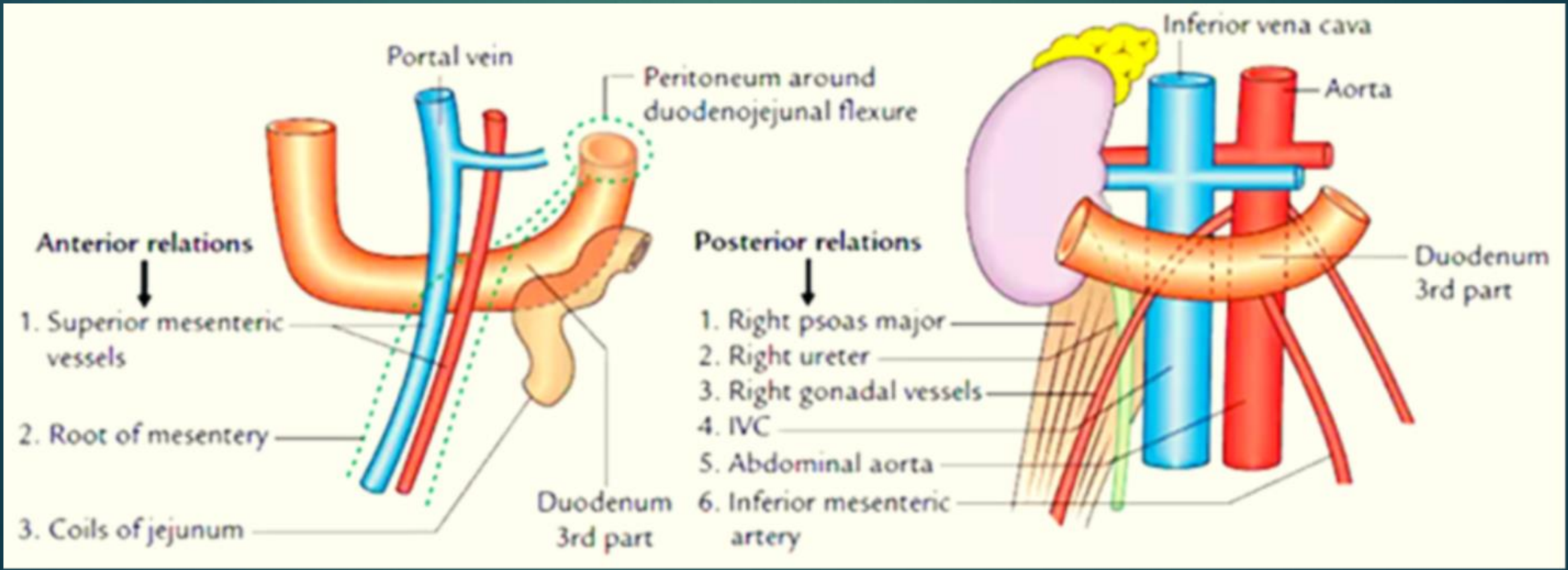
Third Part of the Duodenum

- Runs horizontally to the left on the subcostal plane, passing in front of the vertebral column and following the lower margin of the head of the pancreas.



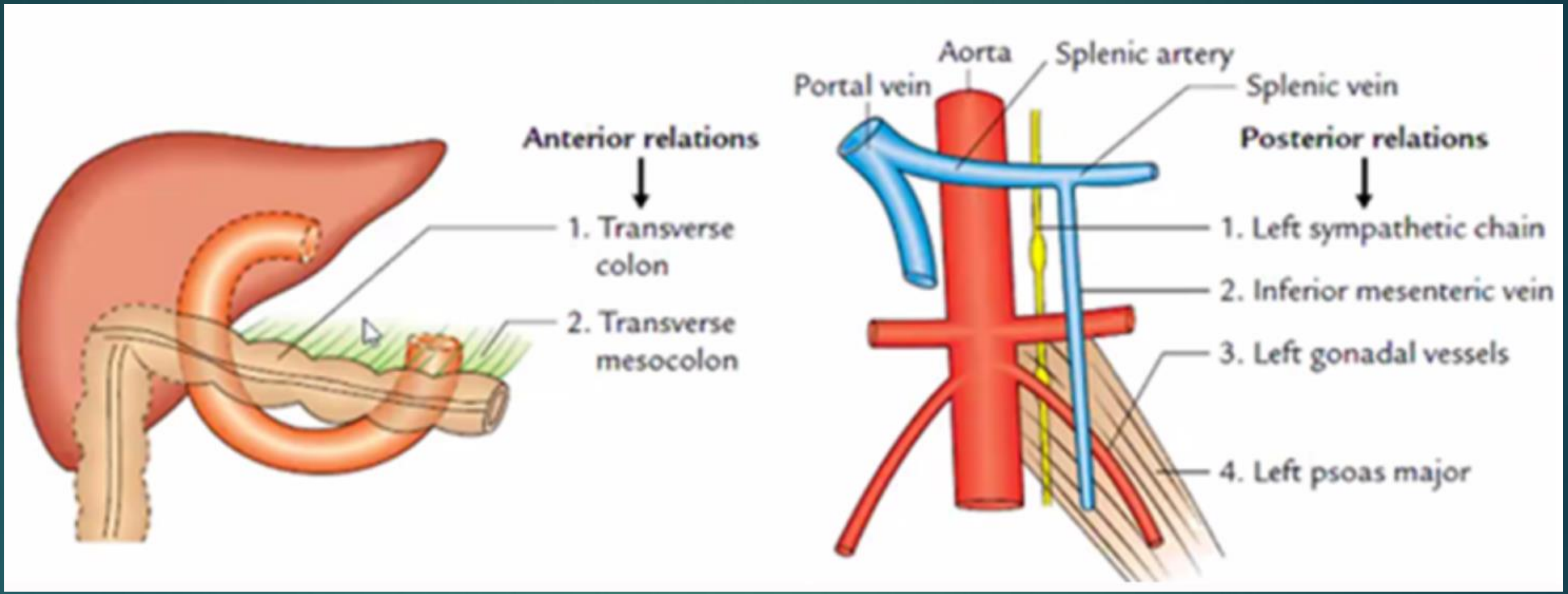
The relations of this part

1. Anteriorly: The root of the mesentery, superior mesenteric vessels, & coils of the jejunum.
2. Posteriorly: The right ureter, inferior vena cava, and the aorta and right gonadal vessels.
3. Superiorly: The uncinate process of head of the pancreas.
4. Inferiorly: Coils of the jejunum.



Fourth Part of the Duodenum

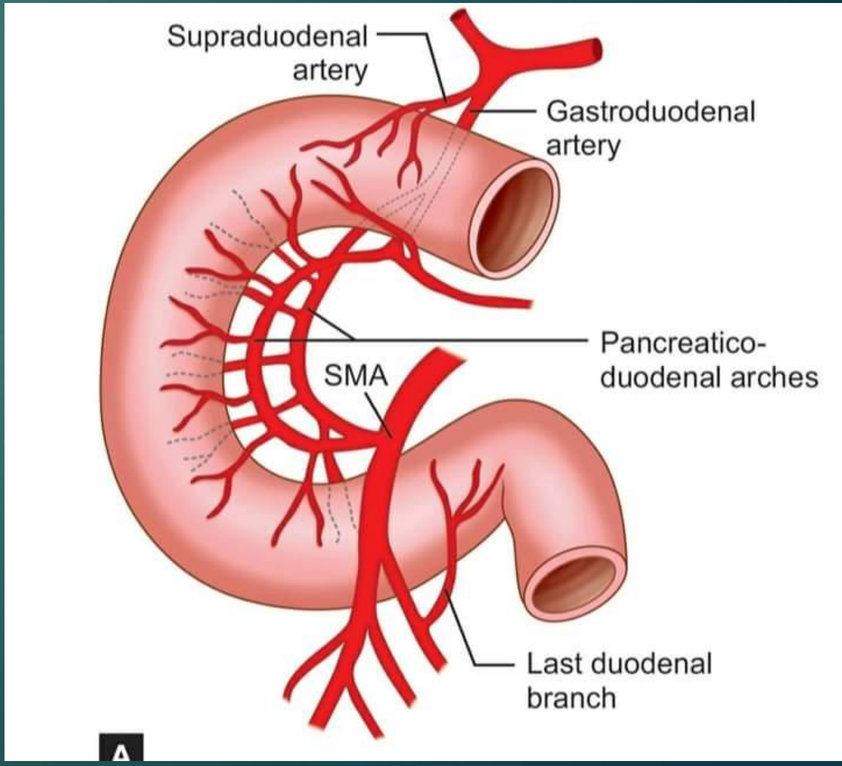
- Runs upward to the left to the duodenojejunal flexure.



- The relations of this part are as follows:
  1. Anteriorly: Transverse colon and mesocolon.
  2. Posteriorly: Left psoas major muscle, left sympathetic chain, left gonadal vessels, and inferior mesenteric vein.

Arterial supply of the duodenum

1. **Superior pancreaticoduodenal artery**: branch of the gastroduodenal artery
2. **Inferior pancreaticoduodenal artery**: branch of the superior mesenteric artery.
3. **Supraduodenal artery of "Wilkie"**.



Venous supply of the duodenum

1. The **superior pancreaticoduodenal** vein drains into the portal vein.
2. **The inferior pancreaticoduodenal** vein joins the superior mesenteric vein

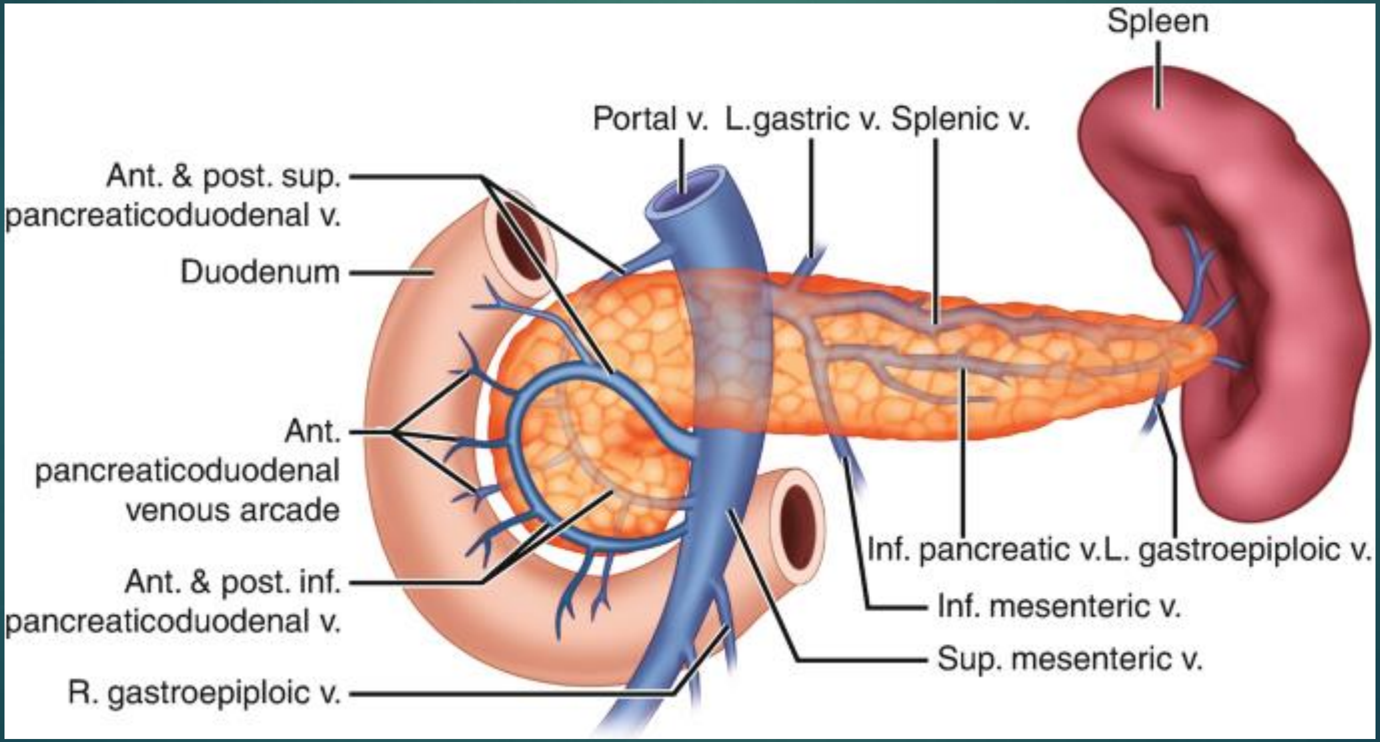


Table 2: Anatomic Relationships and Blood Supply of the Four Segments of the Duodenum

Duodenal Segment	Anterior Anatomy	Posterior Anatomy	Blood Supply
First	Quadrate lobe of the liver	Common bile duct, portal vein, head and neck of the pancreas, gastroduodenal artery	Superior pancreaticoduodenal artery, retroduodenal artery
Second	Gallbladder, right lobe of the liver	Right renal hilum, right renal vessels, IVC, right psoas muscle	Superior pancreaticoduodenal artery, inferior pancreaticoduodenal artery
Third	Superior mesenteric vessels, root of the mesentery, transverse mesocolon	Aorta, right ureter, right psoas muscle, right gonadal vessels, IVC	Inferior pancreaticoduodenal artery
Fourth	Transverse colon, transverse mesocolon, root of the mesentery	Aorta, left psoas muscle, left kidney, left ureter, left renal and gonadal vessels	Jejunal branches of the SMA