Foregut Structures, Blood Supply and Innervation

The foregut is one of three embryological systems that develops into several organs and parts of the gastrointestinal tract. In the adult, it consists of the esophagus, lower respiratory tract, stomach, proximal duodenum, liver, gallbladder, and pancreas. The spleen is technically not a foregut structure; however, it derives most of its blood supply from the celiac artery, which is the main blood supply to the foregut. The vagus nerve (CN X) innervates foregut structures.



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Structures

Esophagus
Sarcophagus
The foregut gives rise to the esophagus, a tubular structure that serves as a passage for food to enter the stomach.

Lower Respiratory Tract
Lower-lungs Train-tracks
The respiratory bud forms out of the developing esophagus. It later becomes the components of the lower respiratory tract (e.g. alveoli, bronchioles, etc.)

Stomach
Stomach
The stomach is situated between the lower esophagus and proximal duodenum. It helps to break down several macromolecules in preparation for absorption.

Proximal Duodenum
P-rocks Dodo-denim
The foregut gives rise to the parts 1 and 2 of the duodenum up to the ampulla of Vater. The rest of the duodenum (parts 3 and 4) are derived from the midgut.

Liver
Liver
The liver is a foregut structure. It serves multiple important functions involved in metabolism, such as processing various metabolites and eliminating toxins, storing excess glucose as glycogen and maintaining blood glucose during fasting, and production of bile acids.

Gallbladder
Sea-gull Bladder
The gallbladder is a foregut structure. Its primary function is to store bile, a mixture of bilirubin and bile salts which aid in digestion, and release it following meals.

Pancreas
Pancreas
The pancreas develops as ventral and dorsal pancreatic buds from the duodenum. It has several important endocrine as well as exocrine functions.

Spleen
Spleen-balloon
The spleen is technically not a foregut structure since it is derived from mesoderm instead of endoderm. However, it is included here as it derives most of its blood supply from the celiac artery trunk (via the splenic artery). The spleen serves important hematological and immunological roles.

Vascular Supply

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Celiac Artery

Silly-yak Artery

Blood supply to the foregut is supplied mainly by the celiac artery, which is branches off the aorta. The other two arteries that supply the gut are the superior mesenteric artery (for the midgut) and inferior mesenteric artery (for the hindgut).

Innervation

Vagus Nerve

Vegas-sign

The vagus nerve (CN X) innervates the foregut structures. It provides parasympathetic innervation to foregut structures, as well as various other tissues and glands throughout the body.

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