

Understanding Pancreas Anatomy: Structure and Function

Ciara Warfvinge*

Department of Digestive Diseases and Internal Medicine, Sant'Orsola-Malpighi Polyclinic, Bologna, Italy

DESCRIPTION

The pancreas is an essential organ in the human body that plays a crucial role in maintaining overall health. Situated behind the stomach and nestled within the abdomen, the pancreas is a dual-purpose organ, serving both the endocrine and exocrine systems. Its intricate anatomy is key to its multifaceted functions, which include regulating blood sugar levels and aiding in digestion. In this article, we will explore the anatomy of the pancreas, its structure, and its vital functions.

Location and general anatomy

The pancreas is a roughly six-inch long, elongated, and flattened organ that is often described as having a tadpole-like shape. It is positioned deep in the abdomen, extending horizontally across the upper abdomen, behind the stomach, and beneath the lower ribcage [1-3]. This location places the pancreas in close proximity to other vital organs such as the liver, gallbladder, and small intestine.

The pancreas is divided into three main regions: The head, the body, and the tail.

Head: The head of the pancreas is the widest part and is located on the right side of the abdomen. It is nestled within the curve of the duodenum, the first part of the small intestine.

Body: Extending to the left from the head, the body of the pancreas lies behind the stomach.

Tail: The tail is the narrowest part and extends towards the left side of the body, approaching the spleen.

Ducts and blood supply

The pancreas has an intricate network of ducts and blood vessels that facilitate its functions.

Pancreatic duct: The main pancreatic duct, also known as the Wirsung duct, runs the length of the pancreas, connecting the head, body, and tail. This duct serves as a conduit for enzymes produced by the exocrine portion of the pancreas.

Accessory duct: In some individuals, an accessory duct (Santorini duct) exists, which also participates in transporting pancreatic secretions. It usually joins the main pancreatic duct before entering the duodenum.

Blood supply: The pancreas receives a rich blood supply through the pancreatic artery, which branches from the splenic artery, and the superior mesenteric artery. Adequate blood flow is vital for the pancreas to function correctly [4].

Endocrine and exocrine functions

The pancreas is unique in that it performs both endocrine and exocrine functions.

Exocrine function: The exocrine portion of the pancreas is responsible for producing digestive enzymes and bicarbonate, which are transported through the pancreatic duct to the duodenum. These enzymes help break down fats, proteins, and carbohydrates from the food we ingest, facilitating their absorption.

Endocrine function: The endocrine portion, consisting of clusters of cells known as the Islets of Langerhans, releases hormones into the bloodstream. These hormones, primarily insulin and glucagon, play a pivotal role in regulating blood sugar levels. Insulin helps lower blood sugar levels by facilitating the uptake of glucose into cells, while glucagon raises blood sugar levels by promoting the release of stored glucose [5-7].

The role in blood sugar regulation

One of the most crucial functions of the pancreas is to maintain blood sugar (glucose) levels within a narrow range. When you eat, the pancreas releases insulin to help cells absorb glucose for energy or storage. When you're fasting or need extra energy, the pancreas releases glucagon, which prompts the liver to release stored glucose into the bloodstream. This delicate balance is essential for overall health and the prevention of conditions such as diabetes [8].

Correspondence to: Ciara Warfvinge, Department of Digestive Diseases and Internal Medicine, Sant'Orsola-Malpighi Polyclinic, Bologna, Italy
E-mail: Cjarawarv@uci.edu

Received: 14-Aug-2023, Manuscript No. PDT-23-27718; **Editor assigned:** 16-Aug-2023, Pre QC No. PDT-23-27718(PQ); **Reviewed:** 30-Aug-2023, QC No. PDT-23-27718; **Revised:** 06-Sep-2023, Manuscript No. PDT-23-27718 (R); **Published:** 14-Jul-2023, DOI: 10.35248/2165-7092.23.13.290.

Citation: Warfvinge C (2023) Understanding Pancreas Anatomy: Structure and Function. Pancreat Disorder Ther. 13:290

Copyright: © 2023 Warfvinge C. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Pancreatic disorders

Disruptions in the structure or function of the pancreas can lead to various medical conditions, including:

Pancreatitis: Inflammation of the pancreas, often due to alcohol consumption or gallstones, which can be acute or chronic.

Diabetes: A condition where the pancreas fails to produce enough insulin or the body becomes resistant to its effects, resulting in high blood sugar levels.

Pancreatic cancer: The development of malignant tumors within the pancreas is a severe condition often diagnosed at an advanced stage [9-11].

CONCLUSION

Understanding the pancreas's anatomy and its role in the body is crucial for maintaining good health and managing these disorders. Ongoing research into this essential organ continues to enhance our knowledge of its functions and ways to address its disorders. Understanding the anatomy of the pancreas is fundamental for diagnosing and managing various medical conditions, including diabetes and pancreatic cancer. This intricate organ is essential for regulating blood sugar levels, aiding in the digestion of food, and maintaining overall health.

REFERENCES

- Mei W, Cao F, Li F. Two cases of agenesis of the dorsal pancreas and a review of the literature. *BMC Gastroenterol.* 2020; 20:1-6.
- Lång K, Lasso A, Müller MF, Thorlacius H, Toth E, Olsson R. Dorsal agenesis of the pancreas—a rare cause of abdominal pain and insulin-dependent diabetes. *Acta Radiol.* 2012;53(1):2-4.
- Suh PS, Lee JH, Yu JS, Kim JH, Kim B, Kim HJ, et al. Three cases of pancreatic pseudocysts associated with dorsal pancreatic agenesis. *Radiol Case Rep.* 2019;14(1):79-82.
- Nassif S, Ponchiardi C, Sachs T. Pancreatic neuroendocrine tumor in the setting of dorsal agenesis of the pancreas. *Case Rep Gastrointest Med.* 2016.
- Erotokritou A, Gerharz CD, Sagir A. Agenesis of dorsal pancreas associated with pancreatic neuroendocrine tumor: A case report and review of the literature. *J Med Case Rep.* 2018;12(1):1-7.
- Fukuoka K, Ajiki T, Yamamoto M, Fujiwara H, Onoyama H, Fujita T, et al. Complete agenesis of the dorsal pancreas. *J Hepatobiliary Pancreat Surg.* 1999;6:94-97.
- Hebrok M, Kim SK, Melton DA. Notochord repression of endodermal Sonic hedgehog permits pancreas development. *Genes Dev.* 1998;12(11):1705-1713.
- Stanescu DE, Hughes N, Patel P, De León DD. A novel mutation in GATA6 causes pancreatic agenesis. *Pediatr Diabetes.* 2015;16(1):67-70.
- Chao CS, McKnight KD, Cox KL, Chang AL, Kim SK, Feldman BJ. Novel GATA6 mutations in patients with pancreatic agenesis and congenital heart malformations. *PLoS One.* 2015;10(2):e0118449.
- Haldorsen IS, Vesterhus M, Raeder H, Jensen DK, Søvik O, Molven A, et al. Lack of pancreatic body and tail in HNF1B mutation carriers. *Diabet Med.* 2008;25(7):782-787.
- Li H, Arber S, Jessell TM, Edlund H. Selective agenesis of the dorsal pancreas in mice lacking homeobox gene Hlxb9. *Nat Genet.* 1999;23(1):67-70.