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DEVELOPMENT OF PANCREAS AND ITS ANOMALIES

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The pancreas is a critical organ that serves as an endocrine and exocrine gland, secreting digestive enzymes and hormones such as insulin and glucagon that regulate blood glucose levels and maintain metabolic homeostasis. The current study focuses on the intricate developmental processes of the pancreas, which develops from two endodermal buds—the dorsal and ventral pancreatic buds—early during embryogenesis at week four. The fusion of these buds, between the seventh and eighth weeks of embryonic development, results in the development of the pancreas and its ductal system

We outline a number of congenital and acquired anomalies associated with pancreatic development, including complete and partial agenesis, ectopic pancreatic tissue (heterotopic pancreas), annular pancreas, and pancreas divisum. Complete agenesis of the pancreas is characterized by an absence of the pancreatic buds, whereas partial agenesis most often involves the dorsal bud and can lead to diabetes mellitus due to large-scale loss of pancreatic tissue. Ectopic pancreatic tissue, found within the gastrointestinal tract, may be asymptomatic or symptomatic as pain and obstruction.

Furthermore, abnormal rotation during embryonic development can lead to annular pancreas, which usually occurs in conjunction with other congenital anomalies. Pancreas divisum, in which the two buds do not fuse, can lead to impaired drainage and expose the person to pancreatitis. Knowledge of the developmental processes of pancreatic development and related anomalies will guide prevention and treatment because these conditions can significantly impact the patient's health.

This study emphasizes the importance of pancreatic anatomy and development in understanding congenital defects and their clinical relevance, ultimately resulting in an improved approach of diagnosis and management in the affected individuals.