

An Incidental Case of Duplicated Inferior Vena Cava with Dorsal Pancreatic Agenesis- A Case Report

Case Report

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Abstract

Duplicated inferior vena cava (IVC) and dorsal pancreatic agenesis are rare congenital anomalies that are most often detected incidentally on cross-sectional imaging. The coexistence of these two anomalies is exceedingly uncommon and may have important diagnostic and procedural implications. We report a case of a 17-year-old female who presented with diffuse abdominal pain and was incidentally found to have a duplicated IVC and dorsal pancreatic agenesis on contrast-enhanced computed tomography (CT). Recognition of such congenital vascular and pancreatic anomalies is essential to avoid diagnostic pitfalls and to prevent potential complications during surgical or interventional procedures. This case highlights the importance of meticulous evaluation of cross-sectional imaging for identifying rare congenital variants and understanding their potential associations.

Keywords: Incidental Association; Duplicated IVC; Dorsal Pancreatic Agenesis; Computed Tomography.

Introduction

The inferior vena cava (IVC) is the major venous channel that carries deoxygenated blood from the lower limbs, pelvic region and abdomen back to the right atrium of the heart [1]. Its formation occurs between the sixth and tenth weeks of gestation through a complex process of anastomosis and regression of several embryonic veins, especially the cardinal and subcardinal veins [7]. Disruptions or variations in this developmental process may result in IVC anomalies, the most frequent being a subrenal duplicated IVC (DIVC), with a reported prevalence of approximately 0.2%–3% in the general population [5].

Subrenal DIVC arises due to the persistence of both posterior cardinal veins, which subsequently join at the lumbar or thoracic

level to form a single IVC [1]. Based on the site of this confluence, subrenal DIVC is classified into two types: type I, where the union occurs above the renal veins, and type II, where it occurs below the renal veins [7].

Duplication of the IVC is an uncommon anatomical variation that is typically asymptomatic and is often discovered incidentally on imaging studies conducted for other clinical reasons [2]. Recognition of this vascular anomaly is clinically important, particularly in patients undergoing abdominal or retroperitoneal surgery and vascular interventions, as failure to identify a duplicated IVC may result in diagnostic pitfalls or inadvertent vascular injury [2].

Dorsal pancreatic agenesis is a rare congenital condition marked by the partial or complete absence of the pancreatic body and tail,

resulting from incomplete development of the dorsal pancreatic bud [3]. Although many patients remain asymptomatic, the condition may occasionally present with abdominal pain, recurrent pancreatitis, or disturbances in glucose metabolism [4].

The coexistence of duplicated IVC and dorsal pancreatic agenesis is exceedingly rare, with only a limited number of reports describing pancreatic or systemic anomalies associated with IVC variants in the literature [6]. We report a case of incidental detection of duplicated IVC and dorsal pancreatic agenesis in a young female undergoing radiological evaluation for abdominal pain.

From a radiological perspective, this case highlights the importance of a systematic and comprehensive evaluation of abdominal anatomy. Identification of a duplicated IVC should prompt careful assessment of venous anatomy, including the level of confluence and its relationship to the renal veins, which is critical for surgical and interventional planning [2]. Similarly, recognition of dorsal pancreatic agenesis should lead to evaluation for associated complications and differentiation from mimics [3].

Case Report

A 17-year-old female presented with diffuse, intermittent, non-radiating abdominal pain of several weeks' duration. There was no history of trauma, fever, vomiting, jaundice, or urinary symptoms. Physical examination was unremarkable and laboratory investigations, including liver function tests and pancreatic enzymes, were within normal limits.

Ultrasonography of the abdomen was performed as the initial imaging modality. The pancreatic head was visualized and appeared normal; however, the body and tail of the pancreas could not be adequately assessed due to overlying bowel gas. No other significant abnormalities were detected on ultrasound examination.

Contrast-enhanced computed tomography (CECT) of the abdomen and pelvis was performed, demonstrating two separate infrarenal IVC segments located on either side of the abdominal aorta. The left infrarenal IVC drained the left common iliac vein and



Figure 2: Coronal contrast-enhanced computed tomography (CECT) image of the abdomen and pelvis in the venous phase demonstrating the course of the duplicated inferior vena cava (IVC), with bilateral infrarenal IVC segments running on either side of the abdominal aorta.

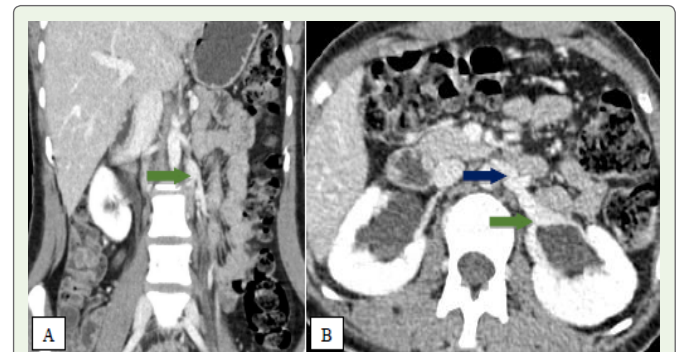


Figure 3: (A) Coronal and (B) axial contrast-enhanced computed tomography (CECT) images of the abdomen and pelvis in the venous phase demonstrating the left renal vein (orange arrow) draining into the left-sided inferior vena cava (blue arrow) as part of the duplicated IVC configuration.

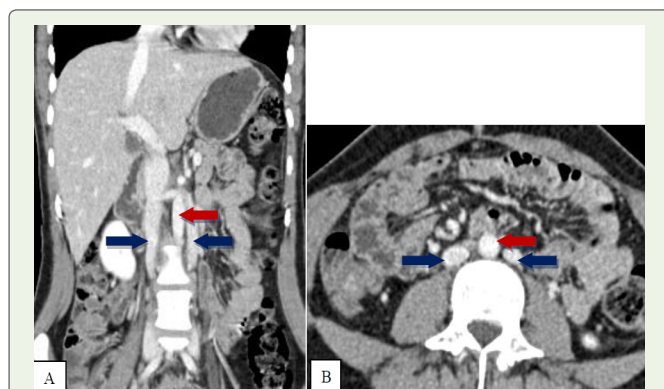


Figure 1: (A) Coronal and (B) axial contrast-enhanced computed tomography (CECT) images of the abdomen and pelvis in the venous phase demonstrating two separate infrarenal inferior vena cava (IVC) segments located on either side of the abdominal aorta, consistent with duplicated IVC. The blue arrows indicate the inferior vena cava, and the red arrow indicates the abdominal aorta.

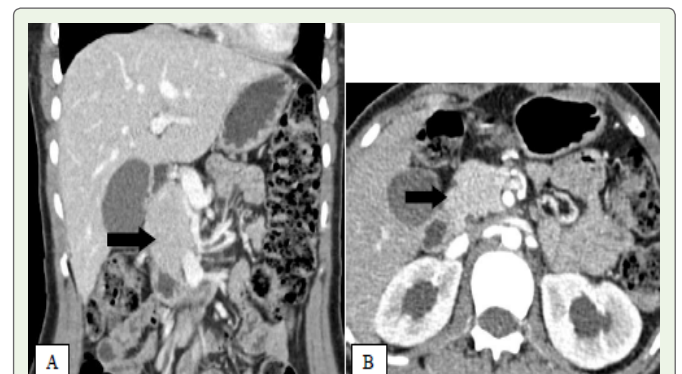


Figure 4: (A) Coronal contrast-enhanced computed tomography (CECT) image of the abdomen and pelvis in the venous phase demonstrating the pancreatic head and uncinate process with absence of the pancreatic body and tail, consistent with dorsal pancreatic agenesis. (B) Axial CECT image in the arterial phase showing the same findings.

continued superiorly to join the left renal vein, which then crossed anterior to the aorta to join the right suprarenal IVC, consistent with typical duplicated IVC anatomy.

There was no evidence of azygous continuation or interruption of the hepatic segment of the IVC. Both infrarenal IVC segments appeared symmetrical in calibre.

CT imaging also revealed absence of the pancreatic body and tail, with preservation of the pancreatic head and uncinate process, consistent with dorsal pancreatic agenesis. No evidence of pancreatic inflammation, duct dilatation, or peripancreatic fluid collection was identified.

No other associated congenital anomalies were detected. The patient was managed conservatively and counselled regarding the incidental findings. No immediate intervention was required, and clinical follow-up was advised.

Discussion

Duplication of the IVC is an uncommon congenital vascular anomaly, with a reported prevalence ranging from 0.2% to 3% in the general population. It results from the persistence of both right and left supracardinal veins during embryogenesis, rather than the normal regression of the left-sided venous system [1]. In most cases, this anomaly is clinically silent and detected incidentally on imaging. Recognition is important in radiological and surgical practice, as failure to identify a duplicated IVC may lead to complications during retroperitoneal surgery, renal transplantation, or vascular interventions, including inadvertent vascular injury or significant bleeding [7]. Additionally, duplicated IVC can mimic para-aortic lymphadenopathy or retroperitoneal masses, potentially causing diagnostic errors if unrecognized [5].

Dorsal pancreatic agenesis results from failure of development of the dorsal pancreatic bud [3]. Cross-sectional imaging, particularly contrast-enhanced CT, is crucial for diagnosis, typically showing absence of the pancreatic body and tail while the head and uncinate process remain intact [6]. It is important to differentiate this congenital anomaly from acquired conditions such as pancreatic atrophy or fatty replacement. Some patients may present with abdominal pain, pancreatitis, or diabetes mellitus due to reduced islet cell mass [4].

The coexistence of duplicated IVC and dorsal pancreatic agenesis

is exceedingly rare, reflecting a potential shared disturbance in embryological mesodermal development [4]. Prior reports have described associations between IVC anomalies and pancreatic developmental abnormalities, including pancreatic divisum, as well as other congenital anomalies such as duplicated renal systems [2].

Our case adds to the limited literature documenting this rare association. Unlike previously reported cases with additional congenital anomalies or clinical manifestations, our patient presented with nonspecific abdominal pain, and both anomalies were incidentally detected. This supports prior observations that such congenital variants are often clinically silent and increasingly recognized due to widespread use of advanced imaging techniques.

Conclusion

This case highlights the rare incidental coexistence of a duplicated IVC and dorsal pancreatic agenesis in a young patient evaluated for abdominal pain. Recognition of such anomalies is clinically important to prevent diagnostic errors and to guide safe surgical or interventional planning. Radiologists and clinicians should maintain a high index of suspicion for additional congenital anomalies whenever a variant is identified, as comprehensive evaluation can have significant implications for patient management.

References

1. Bass JE, Redwine MD, Kramer LA, et al. (2000) Spectrum of congenital anomalies of the inferior vena cava: cross-sectional imaging findings. *Radiographics* 20: 639-652.
2. Sheyin O, Aideyan U, Eluwole A, Culpepper-Morgan J. (2014) Duplicated inferior vena cava co-existing with pancreatic divisum and duplicated right renal collecting system. *Am J Med Case Rep* 2: 155-157.
3. Shaha P, Garg A, Sahoo K, Kothari N, Garg P (2016) Duplication of inferior vena cava with associated anomalies: a rare case report. *J Clin Diagn Res* 10: TD01-TD04.
4. Lee YYN (2024) Dorsal pancreas agenesis - A case report and review of literature *Journal of Radiology Case Reports* 18.
5. Jha P, Knipe H, Ranchod A (2025) Duplication of the inferior vena cava: Reference article, *Radiopaedia.org*.
6. Elfeky M (2025) Dorsal pancreatic agenesis. *Radiopaedia Reference article, Radiopaedia.org*.
7. Hassar S, Imrani K, Billah NM, Nassar I, Rahioui Y, et al. (2025) Duplication of the inferior vena cava: Case report of an incidental radiological finding. *Radiology Case Reports* 20: 105-110.