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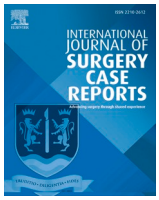

Case report

Dorsal pancreas agenesis, an incidental finding during acute appendicitis diagnosis; A case report

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ABSTRACT

Introduction and importance: Dorsal pancreas agenesis is a rare congenital anomaly characterized by the absence or severe underdevelopment of the dorsal pancreatic bud. We report a case of a man who presented with features of appendicitis only to the incidentally discovery of dorsal pancreas agenesis during the diagnosis of acute appendicitis. We describe our experience on radiological diagnostic formulation and work up.

Case presentation: We present the case of a 45-year-old male patient who presented to the emergency department with symptoms and signs suggestive of acute appendicitis. A computed tomography scan and laboratory investigations confirmed the diagnosis of appendicitis. Incidentally, the scan also revealed the absence of dorsal pancreatic tissue, leading to the incidental diagnosis of dorsal pancreas agenesis.

Clinical discussion: Dorsal pancreas agenesis is often asymptomatic and can be incidentally discovered during imaging studies or surgical interventions for unrelated conditions. In our case, the initial presentation of acute appendicitis provided an opportunity for the fortuitous diagnosis of dorsal pancreas agenesis. This emphasizes the importance of comprehensive imaging reporting in patients who undergo imaging for other conditions.

Conclusion: This case report highlights the fortuitous discovery of dorsal pancreas agenesis during the diagnostic workup for acute appendicitis. It emphasizes the need for thorough imaging evaluation and reporting along with the importance of considering anatomical variations in patients presenting with abdominal symptoms. Increased awareness among healthcare professionals about such congenital anomalies can lead to their early recognition and appropriate management.

1. Introduction and importance

Dorsal pancreas agenesis is an exceptionally rare congenital anomaly characterized by the absence or severe underdevelopment of the dorsal pancreatic bud during embryonic development accounting for less than 100 reported cases in literature [1]. It results in the complete absence of the dorsal pancreatic tissue, while the ventral pancreatic tissue remains unaffected [2]. This anomaly accounts for a small fraction of pancreatic disorders and often presents with a wide range of clinical manifestations or may remain asymptomatic. Early recognition and accurate diagnosis of dorsal pancreas agenesis are crucial for appropriate management and prevention of complications [3].

Appendicitis is a common surgical emergency presenting with right lower quadrant abdominal pain and tenderness. It is typically diagnosed based on clinical symptoms, physical examination findings, and confirmatory imaging studies, such as computed tomography (CT) scans [4]. However, in some cases, additional incidental findings are discovered during the imaging workup.

We report a case of patient who presented with features of acute abdomen suggestive of appendicitis and CT confirming the diagnosis however incidentally found to have the rare occurrence of dorsal pancreas agenesis. The aim of this report is to highlight the importance

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of thorough reporting of imaging when scanned for other conditions as incidental findings can significantly impact the patient's diagnosis, management, and long-term outcomes. By discussing the atypical coexistence of dorsal pancreas agenesis and appendicitis, we aim to increase awareness among healthcare professionals about the possibility of encountering unexpected anomalies during routine diagnostic workups. This report also emphasizes the need for careful evaluation and comprehensive imaging interpretation to avoid misdiagnosis or inadequate management.

2. Case presentation

A 35-year-old male known patient with type 2 diabetes mellitus on Glimepiride and Dapaglifozin presented to the Emergency Department with severe right lower quadrant abdominal pain. The patient described the pain as sharp and constant, more so in the right iliac fossa (RIF) and associated with nausea and vomiting. On physical examination, there was tenderness and localized guarding in the RIF, and the patient exhibited rebound tenderness. Laboratory tests revealed an elevated white blood cell count (14,000/mm^3) and an increased C-reactive protein level (30 mg/L), consistent with an inflammatory process.

Based on the clinical presentation and suspected acute appendicitis, a CT scan of the abdomen and pelvis was performed showing findings consistent with acute appendicitis with *peri* appendiceal fluid collection. An incidental finding was also noted of complete absence of dorsal pancreatic tissue without visualisation of the body and tail with only visualisation of the head, suggestive of dorsal pancreas agenesis (Figs. 1, 2).

Further questioning revealed no previous history of abdominal pain or pancreatic related symptoms in the patient's medical records. Family history was unremarkable for pancreatic disorders or endocrine abnormalities. The patient denied any history of trauma or surgical interventions involving the abdominal region. These findings suggested that the dorsal pancreas agenesis was a congenital anomaly rather than an acquired condition.

The diagnosis of acute appendicitis was confirmed, and the patient underwent an appendectomy. Intraoperatively, no abnormalities or variations in the location of the appendix or adjacent structures were noted. The histopathological examination of the appendix confirmed acute appendicitis without evidence of any associated pathology. The patient's postoperative course was uneventful, and he was discharged with appropriate postoperative instructions. Subsequent follow-up visits were scheduled to monitor his recovery and address any potential long-term implications of the dorsal pancreas agenesis.

3. Discussion

The present case report describes a unique clinical scenario in which a patient initially presenting with symptoms and signs of acute appendicitis was incidentally diagnosed with dorsal pancreas agenesis. This unexpected finding highlights the importance of thorough radiological evaluations and careful interpretation of imaging findings, as it demonstrates the coexistence of two distinct conditions in a single patient.

Dorsal pancreas agenesis is an extremely rare congenital anomaly characterized by the absence or severe hypoplasia of the dorsal pancreatic bud during embryonic development [2–4]. While dorsal pancreas agenesis is typically asymptomatic, its detection in resource-limited settings, such as Tanzania, can be challenging due to limited access to advanced imaging techniques. However, the role of radiology, including the use of CT scans becomes crucial in such settings for accurate diagnosis and appropriate management [5,6].

Although the exact mechanisms underlying the association between dorsal pancreas agenesis and acute appendicitis are not well understood, there is evidence suggesting a potential link between congenital pancreatic anomalies and the development of inflammatory conditions in the abdomen [7].

In our case, the diagnosis of dorsal pancreas agenesis was made based on a CT scan, which revealed a complete absence of the dorsal pancreatic tissue. CT imaging plays a significant role in the evaluation of abdominal pathologies, including acute appendicitis, due to its wide availability and ability to provide detailed anatomical information [6,8]. In resource-limited settings, the availability of CT scans may be limited, but efforts should be made to enhance access to this imaging modality, as it can aid in the accurate diagnosis of complex conditions like dorsal pancreas agenesis.

The management of acute appendicitis in the context of dorsal pancreas agenesis poses unique challenges. Surgical intervention, such as appendectomy, remains the standard treatment for acute appendicitis [4]. In our case, the patient underwent an uneventful appendectomy without any notable complications. However, the presence of dorsal pancreas agenesis raises considerations for careful intraoperative assessment to ensure the absence of any anatomical anomalies or variations that could potentially impact the surgical procedure.

Long-term implications of dorsal pancreas agenesis in our patient are yet to be determined. While dorsal pancreas agenesis is typically asymptomatic, it is essential to monitor for potential complications or associated conditions [9]. Regular follow-up visits are essential to monitor pancreatic function in individuals with dorsal pancreas agenesis, as the absence or hypoplasia of the dorsal pancreatic bud can potentially lead to both exocrine and endocrine dysfunction [3,9].

Our patient, for instance, was diagnosed with diabetes mellitus and initiated on treatment without a known trigger. This highlights the importance of ongoing surveillance and management of associated conditions in individuals with dorsal pancreas agenesis. Understanding the potential risks and complications allows healthcare providers to implement appropriate interventions and optimize long-term patient outcomes.

The identification of dorsal pancreas agenesis in our case, facilitated by the CT scan, emphasizes the need for increased awareness of this rare congenital anomaly among healthcare professionals in resource-limited

settings. Training programs and educational initiatives can play a vital role in enhancing knowledge and improving diagnostic skills related to complex abdominal conditions. Additionally, promoting interdisciplinary collaboration between radiologists, surgeons, and other healthcare providers can help optimize patient care and outcomes in areas where resources may be limited.

4. Conclusion

The case report also underscores the importance of interdisciplinary collaboration in optimizing patient care and outcomes. In the context of dorsal pancreas agenesis and acute appendicitis, surgeons, radiologists, and other healthcare professionals should work together to ensure accurate diagnoses, appropriate management, and long-term follow-up. By strengthening the role of radiology and promoting interdisciplinary collaboration, resource-limited settings can improve patient care and contribute to the understanding of rare congenital anomalies.

Abbreviations

CT	Computed Tomography
RIF	Right Illiac Fossa

Ethical approval

The Aga Khan University Ethics Review Committee has provided approval.

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Appendix A

Author contribution

W.K: Study conception, production of initial manuscript, collection of data, proofreading
S.P: Revision of the manuscript, proofreading
A.I: Revision of the manuscript, proofreading
N.M: Revision of the manuscript, proofreading
P.A: Production of initial manuscript, collection of data
A.D: Study conception, production of initial manuscript, collection of data

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Patient's perspective

I was shocked when I found out that I had a piece of my pancreas missing. Other than my diabetes I have had no other medical problems. However, I am pleased to have learnt of it and will continue to follow up for my disease to detect any problems in the future early.

Informed consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

Declaration of competing interest

None.

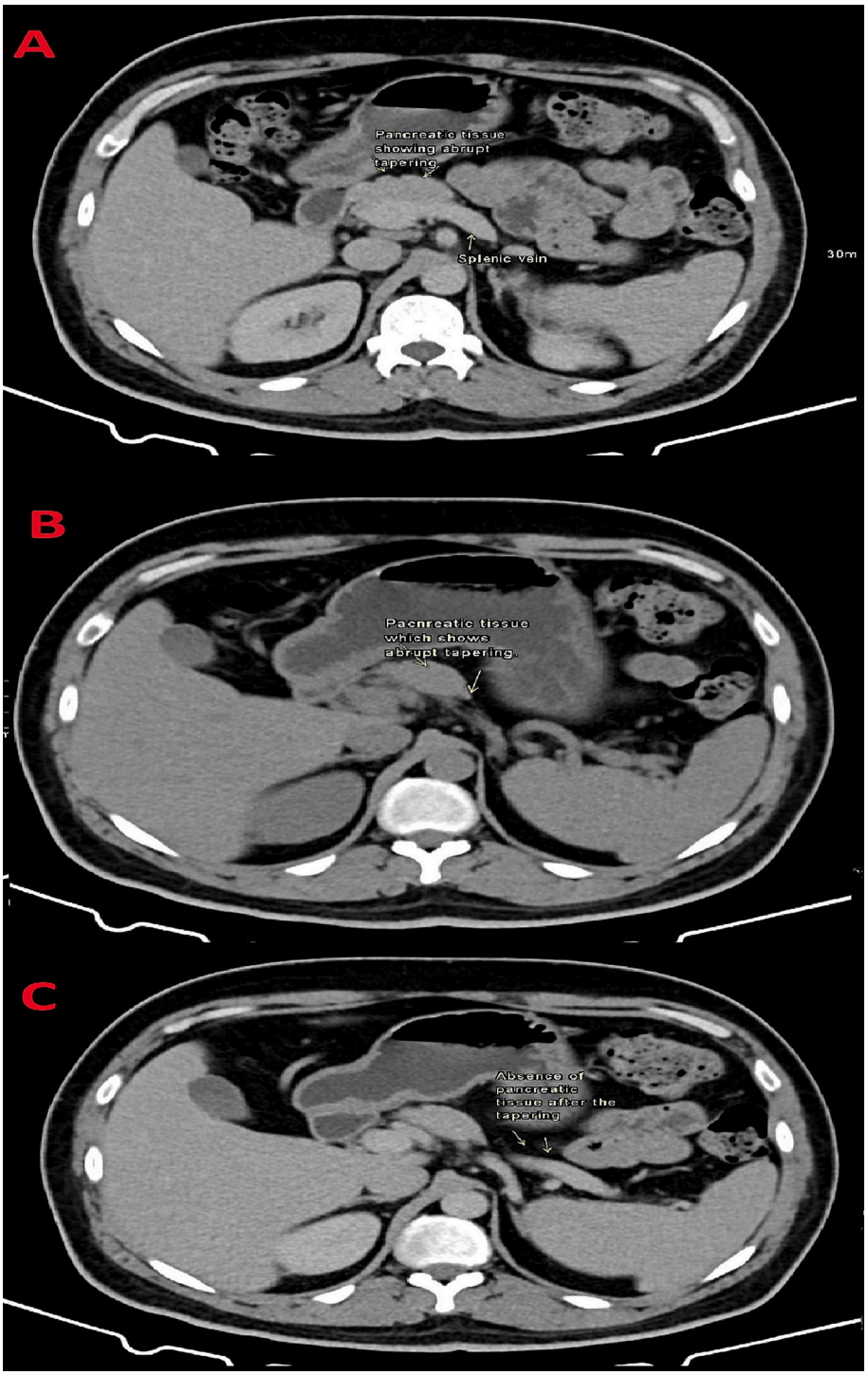

Fig. 1. CT scan of abdomen axial view. A – Showing head and uncinate process of the pancreas and splenic vein. B – Abrupt tapering of pancreatic tissue. C – Absence of pancreatic tissue after the tapering.

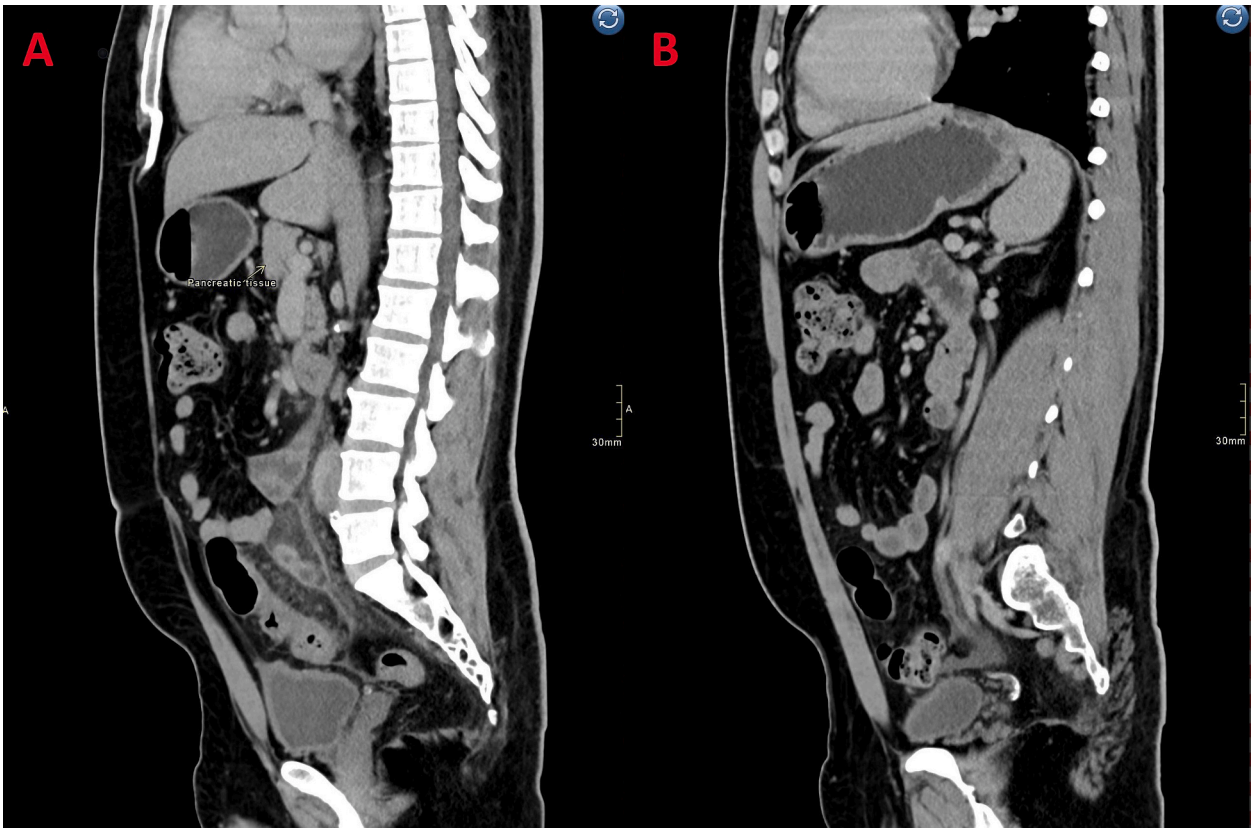

Fig. 2. CT scan of abdomen sagittal view. A – Showing pancreatic tissue with abrupt ending. B – No pancreatic tissue seen.

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