ENTERIC DUPLICATION CYST MIMICKING A MESENTERIC CYST WITH ELEVATED CYSTIC CEA: A RARE CASE REPORT

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ABSTRACT

Enteric duplication cysts (EDCs) are rare congenital gastrointestinal anomalies; those near the pancreatic tail are exceptionally uncommon. Nonspecific clinical and radiological features lead to misdiagnosis as mesenteric cysts. We report the case of a 16-year-old female presenting with a one-year history of left hypochondriac pain, vomiting, and a palpable abdominal mass. Ultrasonography and contrast-enhanced CT demonstrated a well-defined cystic lesion in the left hypochondriac region, favouring a diagnosis of mesenteric cyst, with EDC as a differential. Cystic fluid analysis revealed markedly elevated CEA. Laparoscopic exploration revealed dense adherence of the cyst to the pancreatic tail, necessitating conversion to a laparoscopic-assisted distal pancreatectomy with cyst excision. Histopathology confirmed a double-layered smooth muscle wall lined by gastric-type epithelium, fulfilling the Ladd and Gross criteria for EDC with gastric heterotopia. This case highlights the diagnostic difficulty of distinguishing EDC from pancreatic cystic lesions, emphasizing the importance of histopathology and intraoperative flexibility.

Keywords: Enteric Duplication Cyst, Mesenteric Cyst, Elevated Cystic Cea, Case Report.

INTRODUCTION

Enteric duplication cysts (EDC) are uncommon congenital anomalies of the gastrointestinal tract, with a reported incidence of approximately 1 in 4,500 live births. They can occur anywhere along the gastrointestinal tract, from the tongue to the anus, but are most commonly found in the ileum. [1] EDCs located in the left upper quadrant and intimately related to the pancreatic tail and stomach are exceedingly rare, with fewer than 50 such cases documented in the world literature.[3]

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The clinical presentation of EDC is highly variable, ranging from an asymptomatic abdominal mass to recurrent abdominal pain, vomiting, and intestinal obstruction making preoperative diagnosis notoriously difficult.[1] Radiological investigations including ultrasound and CT often suggest alternative diagnoses such as mesenteric cyst, cystic lymphangioma, or pancreatic pseudocyst, delaying definitive management.[2]

The pathological hallmarks of EDC a wall composed of smooth muscle and alimentary tract epithelium are demonstrable only on histopathological examination.[4,5] We report a case of a 16-year-old female with an enteric duplication cyst in the left hypochondriac region that was initially diagnosed as a mesenteric cyst on imaging, with the true diagnosis established only after surgical excision and histopathological analysis.

CASE PRESENTATION

A 16-year-old female with no significant past medical or surgical history, presented to the Department of General Surgery of a tertiary health care center with a 1 year history of progressively worsening pain in the abdomen, predominantly involving the left hypochondriac. The pain was insidious in onset, progressive in nature, non-radiating, and associated with intermittent non-bilious, non-projectile vomiting and low-grade fever. There was no history of trauma, jaundice, hematemesis, malena, or altered bowel habits. Her menstrual history was regular (menarche at 12 years; LMP: 24 April 2026). Family history was non-contributory. She was admitted to the Surgery Ward and on general examination, she was afebrile (Temperature: 37.0°C), with a pulse of 88 beats/min, blood pressure 120/80 mmHg, and SpO_2 98% on room air. Systemic examination revealed a soft abdomen with bowel sounds present and mild tenderness in the left hypochondriac region. A soft-to-firm, slightly mobile swelling was palpable in the left hypochondriac region.

Complete blood count showed mild normocytic hypochromic anemia, with renal function and thyroid profile within normal limits. Cystic fluid analysis revealed an elevated CEA and lipase with a low CA 19-9 and normal amylase, raising suspicion of pancreatic communication intraoperatively. Cytology showed scanty mesothelial cells in a proteinaceous background, with no malignant cells.[Table 1]

USG showed a well-defined round to oval heterogeneous hypoechoic lesion measuring 5.0 × 3.0 × 4.7 cm in the left hypochondriac region with dense echogenic foci, no internal vascularity, and no internal fat strands. The impression was favored as a benign etiology likely mesenteric cyst. Contrast-enhanced CT of the abdomen and pelvis demonstrated a well-defined hypodense cystic lesion of average attenuation 15 HU, measuring approximately 4.1 × 4.1 × 4.9 cm in the left hypochondriac region, in relation to the jejunal loops with CT Impression: Most likely a mesenteric cyst; differentials included cystic lymphangioma and enteric duplication cyst. [Figure 1]

The patient was posted for Laparoscopic excision. Under General Anesthesia diagnostic laparoscopy was performed. Intraoperatively, a solid cystic tumor of approximately 6×6 cm was identified in the infracolic compartment in the mesocolon with vascularity component seen in the cyst wall. Dissection started with creating a window in Gastrocolic ligament dilineating supracolic and infracolic compartment revealed the cyst to be intimately adherent to the inferior border of distal body and tail of the pancreas, with the pancreatic tissue encased within the cyst wall and a diverting loop formed by the right gastroepiploic artery. It was seen abutting anteriorly along with the greater curvature of the stomach.

Given the intraoperative complexity and the finding of pancreatic encasement by the tumor, a decision was made to convert the laparoscopic approach to an upper midline laparotomy through a 6–7 cm incision extending from the epigastrium to the umbilicus for specimen retrieval. Inferiorly, the tumor was carefully dissected free from the distal body and tail of the pancreas near its border and was separated using a MIRUS Endoscopic Linear Cutter (60 mm, Purple) with a Trio medium-thick reload, thereby completing the distal pancreatectomy. Superiorly, the tumor was dissected free from the greater curvature of the stomach by carefully delineating the margins from the cyst wall, followed by primary closure of the serosal layer. The anterior abdominal wall was closed in layers. The procedure was completed uneventfully.

The surgical specimen was labeled as a mesenteric cyst for histopathological examination (HPE). Gross examination revealed a single circumscribed globular specimen with attached pancreas, measuring approximately 10 × 6 × 4 cm overall, with the pancreatic segment measuring 5 × 3 × 1 cm; the cyst measured 4.5 × 4.5 × 3.5 cm, had a grey-brown focally congested external surface of soft-to-firm consistency, and on cut section showed a uniloculated cyst containing about 15 mL of clear serous fluid[Figure 2]

Sections from the cyst wall showed the cyst lined by gastric epithelium mucosa. The underlying subepithelial tissue demonstrated double-layered smooth muscle and fibrocollagenous tissue, along with congested blood vessels and mild inflammatory infiltrate. Sections from the pancreatic tissue showed normal histology. Histopathological examination was consistent with an enteric duplication cyst.

DISCUSSION

Enteric duplication cysts (EDCs) are rare congenital malformations of the gastrointestinal tract arising from abnormal embryological development, most commonly due to defective vacuolation and recanalization of the primitive gut. Although several embryological theories, including the split notochord theory and persistent embryonic diverticula, have been proposed, none fully explains all variants. EDCs occur in approximately 1 in 4,000–5,000 live births and are usually diagnosed during infancy, making adolescent and adult presentations uncommon.[1,3]

The classical diagnostic criteria described by Ladd and Gross include intimate attachment to the gastrointestinal tract, a well-developed smooth muscle coat, and an alimentary epithelial lining.[4,5] Histopathological examination in our patient fulfilled all three criteria, demonstrating a double-

layered smooth muscle wall lined by gastric-type epithelium, confirming an enteric duplication cyst with gastric heterotopia.

The present case is unusual because of its left hypochondriac location, close relation to the jejunal loops, pancreatic tail, and greater curvature of the stomach. Although the ileum is the most frequent site of gastrointestinal duplications, jejunal lesions with pancreatic involvement are exceedingly rare.[2,6] Similar atypical presentations have been reported by Gandhi et al. and Sharma et al., who highlighted the frequent preoperative misdiagnosis of these lesions as mesenteric or pancreatic cysts owing to their complex anatomical relationships.[1,7]

Radiological diagnosis remains challenging because EDCs share imaging characteristics with mesenteric cysts, cystic lymphangiomas, pancreatic pseudocysts, and mucinous cystic neoplasms. In our patient, contrast-enhanced CT favored a mesenteric cyst, with EDC considered only as a differential diagnosis. Although the presence of a layered wall ("gut signature") and close bowel attachment may suggest EDC, these findings are often subtle on CT. Ultrasonography may demonstrate the characteristic double-wall sign, but this feature is less evident in large or complicated lesions.[2,7,8]

An important diagnostic challenge in this case was the cyst fluid biochemical profile. The elevated cyst fluid CEA (35.60 ng/mL) initially suggested a pancreatic mucinous cystic neoplasm because of the lesion's proximity to the pancreatic tail. However, very low CA 19-9 levels, absence of malignant cells on cytology, and histopathological confirmation of gastric heterotopia excluded a neoplastic process. Elevated cystic CEA in EDCs has been reported only rarely and is believed to result from secretory activity of ectopic gastric mucosa rather than malignant transformation. Gastric heterotopia, reported in 20–40% of EDCs, is clinically significant because it may cause ulceration, bleeding, perforation, or chronic inflammation.[2,6]

The markedly elevated cyst fluid lipase (>600 U/L) with low amylase further complicated the diagnosis. Similar findings have been attributed to ectopic pancreatic tissue or close anatomical communication with the pancreas, mimicking pancreatic cystic lesions rather than representing a true pseudocyst.[2,7]

The differential diagnosis of a cystic left upper quadrant mass includes mesenteric cyst, cystic lymphangioma, enteric duplication cyst, pancreatic pseudocyst, mucinous cystic neoplasm, and serous cystadenoma. MRI and endoscopic ultrasound may improve characterization; however, definitive diagnosis frequently relies on surgical exploration and histopathological examination.[6,7]

Complete surgical excision remains the treatment of choice because untreated EDCs may result in infection, hemorrhage, perforation, bowel obstruction, intussusception, and rarely malignant transformation.[2,7,9] Although laparoscopic excision is preferred, extensive adhesions may necessitate conversion to an open or laparoscopic-assisted procedure. In our patient, dense adherence of the cyst to the pancreatic tail required distal pancreatectomy, emphasizing the importance of individualized intraoperative decision-making.[7,10]

This case highlights the diagnostic challenge of a left hypochondriac enteric duplication cyst with gastric heterotopia closely adherent to the pancreatic tail and associated with elevated cyst fluid CEA and lipase. Despite advances in imaging, differentiation from mesenteric and pancreatic cystic lesions remains difficult. Histopathological examination remains the gold standard for diagnosis, and complete surgical excision with appropriate intraoperative flexibility is essential for successful management.

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Table 1. Laboratory and Cystic Fluid Findings

Investigation	Result	Remarks
Hemoglobin	9.8 g/dL	Low (normocytic, hypochromic anemia)
RBC count	3.92×10^{6}/µL	—
Hematocrit (HCT)	32.0%	—
MCV	81.7 fL	—
MCH	25.0 pg	—
MCHC	30.6 g/dL	—
RDW-CV	16.5%	Raised
WBC count	7.21×10^{3}/µL	Normal
Platelet count	272×10^{3}/µL	Normal
Urea	15 mg/dL	Normal
Creatinine	0.7 mg/dL	Normal
Sodium	136 mmol/L	Normal
Potassium	3.8 mmol/L	Normal
T3	1.4 ng/mL	Normal
T4	9.0 µg/dL	Normal
TSH	1.7 µIU/mL	Normal
Cystic fluid CEA (ECLIA)	35.60 ng/mL	Elevated
Cystic fluid CA 19-9	<2.0 U/mL	Low (reference <72 U/mL)
Cystic fluid amylase	<180 U/L	—
Cystic fluid lipase	>600 U/L	Elevated
Cystic fluid cytology	Scanty mesothelial cells; proteinaceous background	No malignant cells

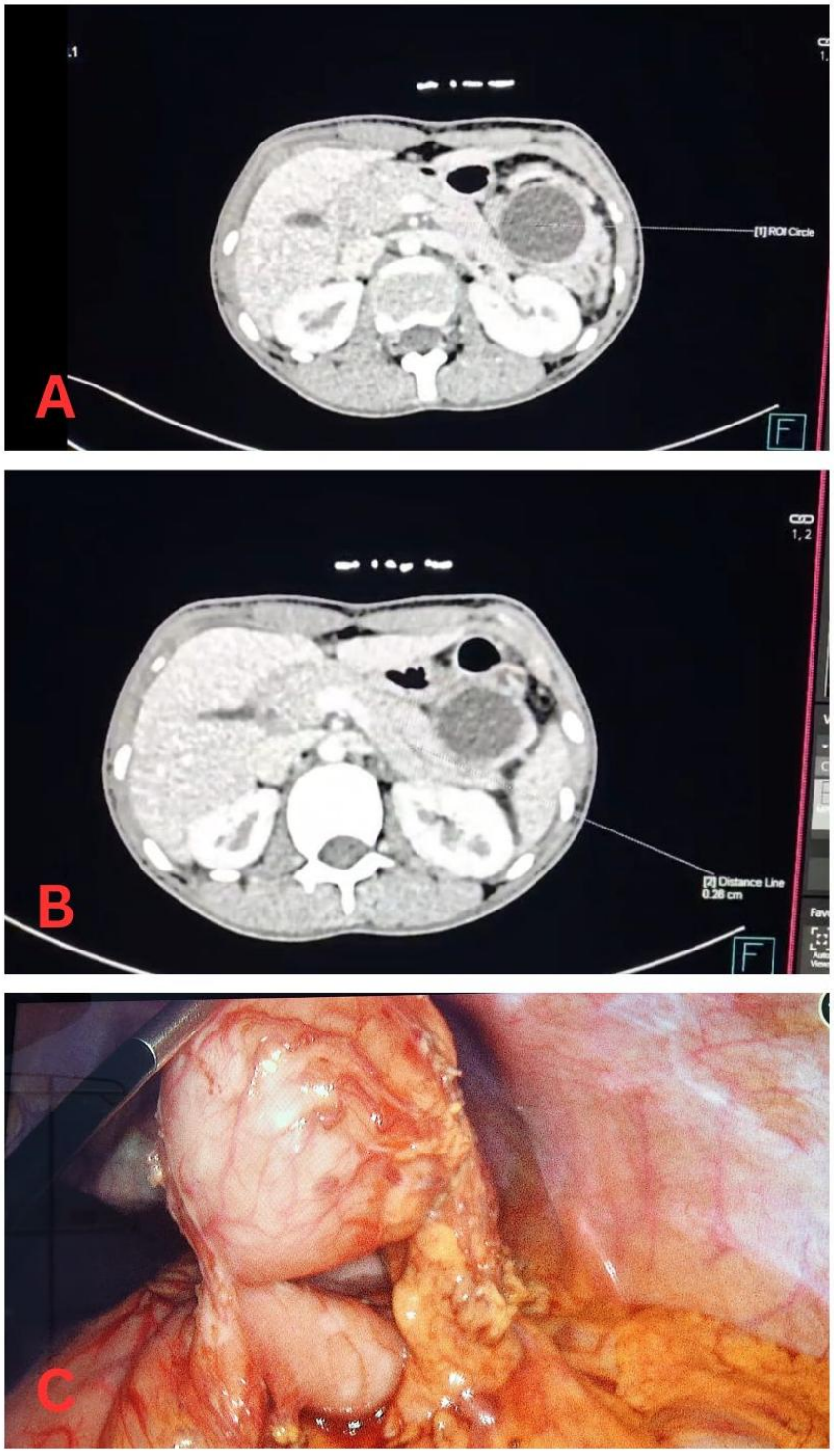

Figure 1: Pre-operative CT and laparoscopic view.

(A,B) Axial contrast-enhanced CT showing a well-defined cystic lesion in the left hypochondrium adjacent to distal pancreas. (C) Laparoscopic view demonstrating solid-cystic mass closely adherent to distal pancreatic body and tail.

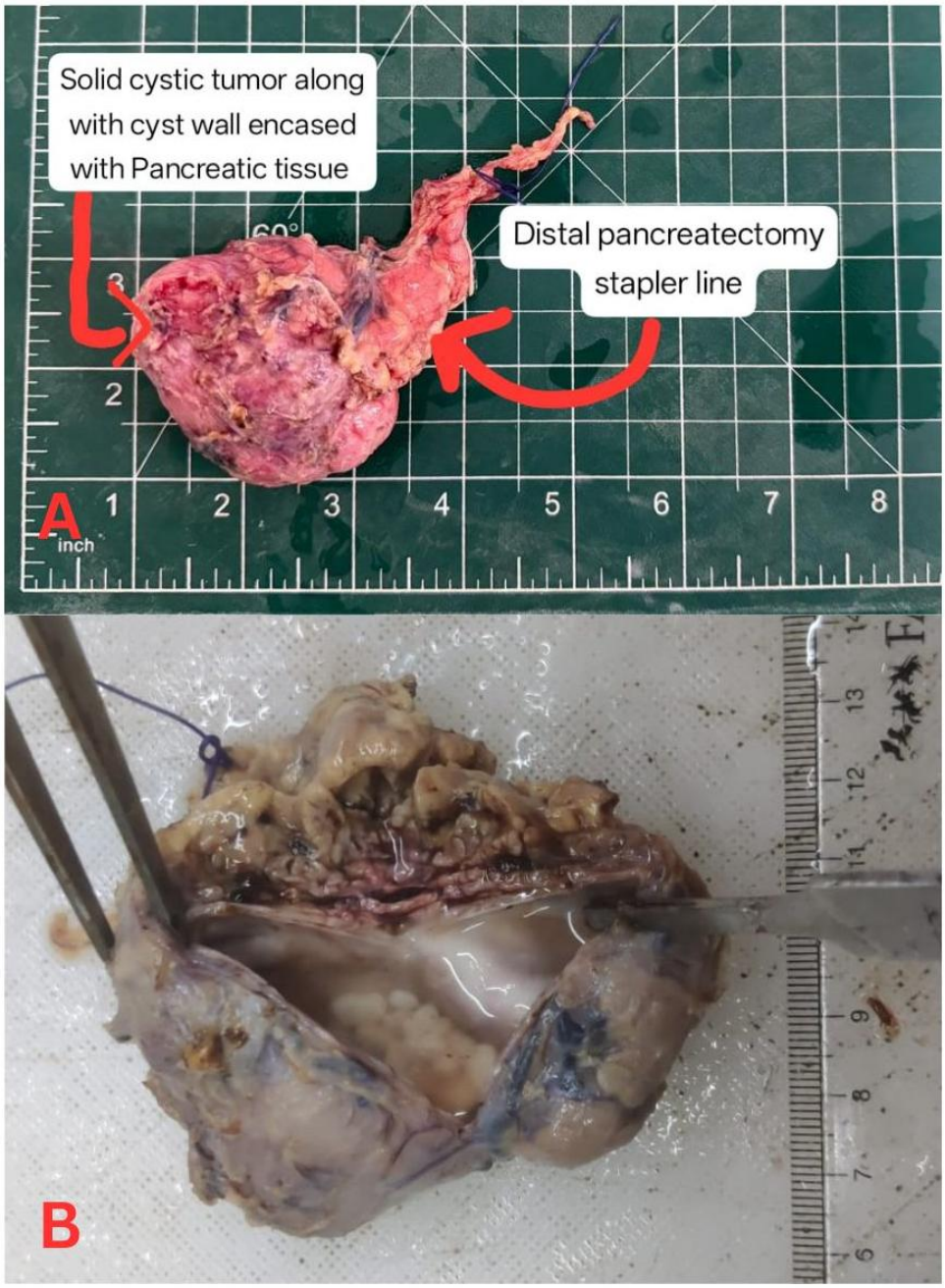

Figure 2: Gross specimen after distal pancreatectomy.

(A) Resected solid-cystic mass with distal pancreatic segment and stapler line. (B) Cut-section revealing unilocular cyst containing clear serous fluid with smooth inner lining and attached pancreatic tissue.