

Median Diaphragmatic Cyst Radiologically Consistent with a Mesothelial Cyst in a Young Adult: A Case Report

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Received September 27, 2025; Accepted September 8, 2026.

Key words: Diaphragmatic cyst – Mesothelial cyst – CT – Diagnostic imaging – Abdominal pain – Diaphragm

Abstract: Diaphragmatic mesothelial cysts are rare, benign congenital lesions of the diaphragm, presumed to originate from coelomic remnants. Typically identified in pediatric populations, adult presentations – though uncommon – can pose diagnostic challenges due to vague or non-specific symptoms. We present the case of a 30-year-old African male with no prior imaging history, experiencing persistent epigastric pain exacerbated by deep inspiration. An inconclusive ultrasound was followed by a contrast-enhanced computed tomography scan, revealing a midline cystic lesion located adjacent to the posterior diaphragmatic pillar. This case highlights the importance of considering diaphragmatic mesothelial cysts in the differential diagnosis of chronic abdominal pain and details the characteristic imaging findings.

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<https://doi.org/10.14712/23362936.2026.28>

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Introduction

The diaphragm can rarely harbor benign cystic lesions of mesothelial origin. Diaphragmatic mesothelial cysts are uncommon and may be incidentally detected or symptomatic depending on their size and location (Esparza Estaún et al., 2003; Akinci et al., 2005).

These lesions are believed to originate from sequestered coelomic remnants during embryogenesis, and while they are most often reported in children, adult cases remain exceptionally rare. Their imaging overlap with other cystic lesions may complicate diagnosis in the absence of histological confirmation.

We present a case of a 30-year-old male with persistent epigastric pain and no prior imaging history. A contrast-enhanced computed tomography (CT) scan demonstrated a well-circumscribed, hypodense, midline cystic lesion embedded in the diaphragm.

Case report

A 30-year-old African male presented to the Emergency Department with persistent epigastric pain exacerbated by deep inspiration. He reported chronic abdominal discomfort since childhood and had never undergone radiological studies.

Physical examination was inconspicuous. An abdominal ultrasound was inconclusive due to pain and limited cooperation.

A contrast-enhanced CT of the abdomen and pelvis demonstrated a well-defined, uniformly hypodense lesion measuring approximately 10 cm in maximum diameter and showing an attenuation of approximately 30 HU, located along the left posterior diaphragmatic pillar, adjacent to the abdominal aorta and left adrenal gland. The lesion appeared embedded within the diaphragmatic fibers without displacement of adjacent organs, supporting an intra-diaphragmatic origin (Figures 1–3).

No prior imaging was available for comparison.

Given the benign appearance and absence of invasive features, biopsy or surgical exploration was not indicated. The lesion showed no solid components, wall thickening, septations, or enhancement, consistent with a mesothelial cyst.

Histopathological confirmation was not pursued because clinical and radiological criteria were sufficiently supportive of a benign diagnosis and no intervention was required.

A conservative approach was selected, with follow-up imaging planned in 6–12 months. Aspiration or sclerotherapy may be considered if symptoms persist (Yang and Han, 2022).

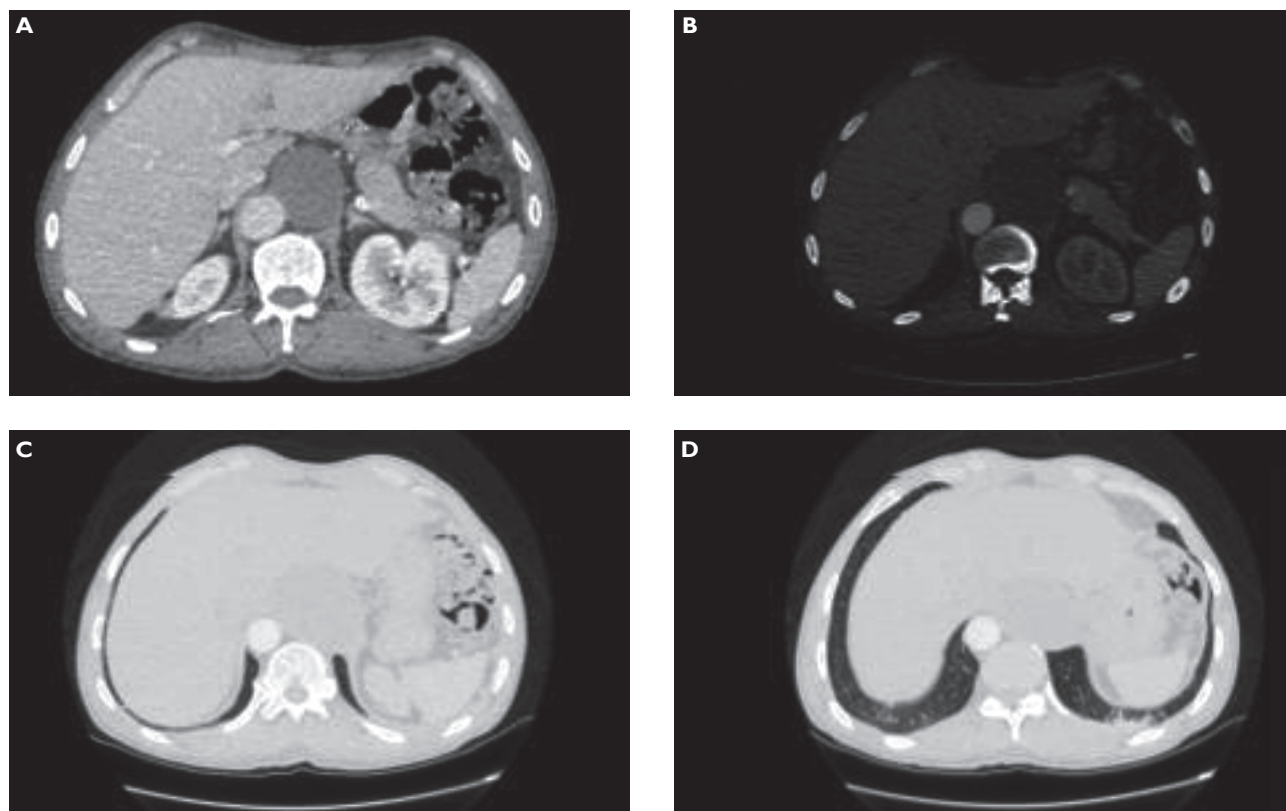


Figure 1: Axial computed tomography images without contrast: (A) abdominal window; (B) soft tissue window; (C) lung window at the superior diaphragm; (D) lung window at the inferior diaphragm. A hypodense, well-defined lesion is visible.

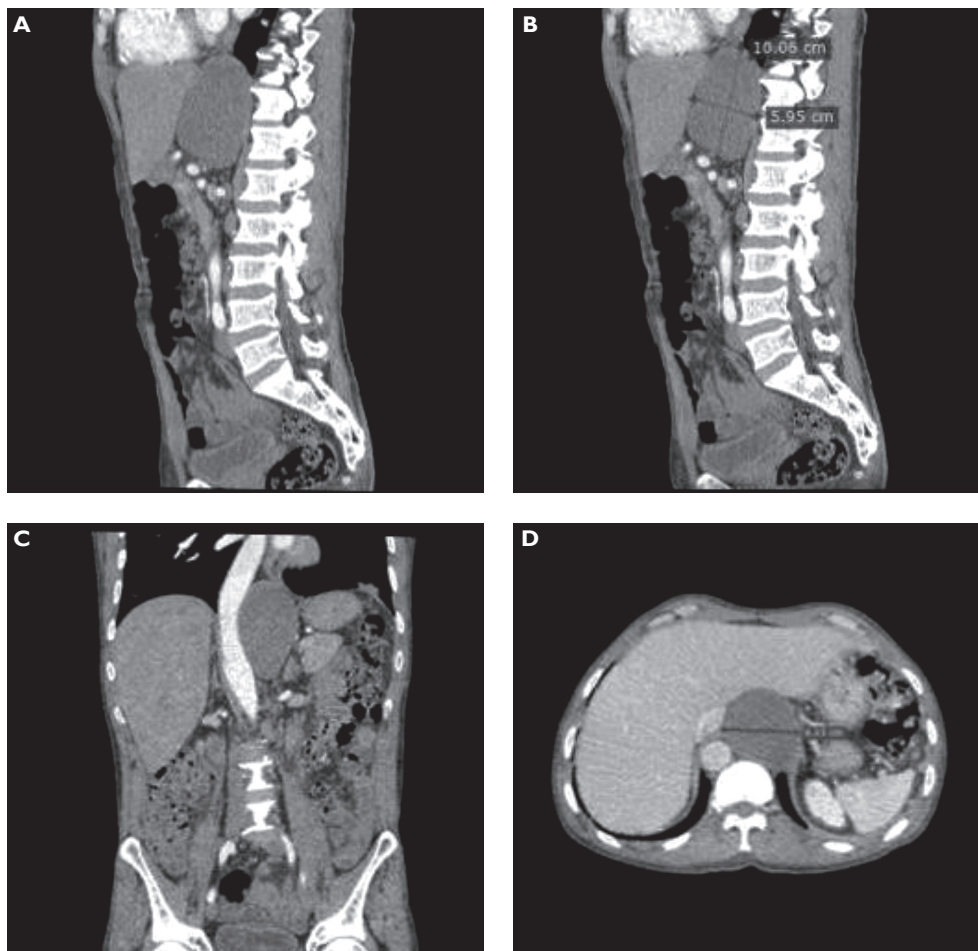


Figure 2: Contrast-enhanced computed tomography images: (A and B) sagittal plane with and without measurement; (C) coronal view; (D) axial plane with measurements. The lesion appears homogeneously hypodense.

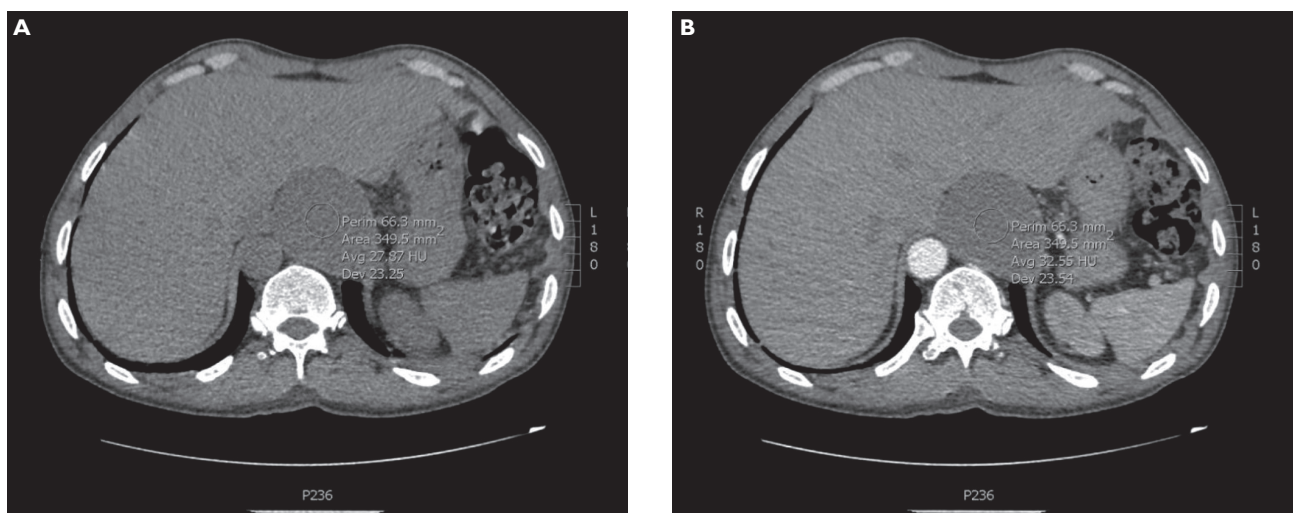


Figure 3: Computed tomography images obtained before (A) and after (B) intravenous contrast administration demonstrate stable attenuation of the lesion at approximately 30 HU, with no measurable enhancement.

Discussion

Mesothelial cysts of the diaphragm are rare congenital anomalies originating from trapped coelomic epithelium (Esparza Estaún et al., 2003; Akinci et al., 2005; Jackson and Lim, 2019).

The diaphragm develops from the septum transversum, pleuroperitoneal membranes, dorsal mesentery, and lateral body walls; failure of fusion or incomplete resorption may give rise to mesothelial-lined cysts (Mansueto et al., 2000; Martino et al., 2000; Kim and Hofstetter, 2009).

CT imaging typically reveals well-circumscribed, non-enhancing, hypodense lesions ranging 0–30 HU, whereas magnetic resonance imaging (MRI) shows T1 hypointensity and T2 hyperintensity (Mansueto et al., 2000; Jackson and Lim, 2019).

In our case, the lesion's imaging characteristics strongly favoured a mesothelial cyst.

Differential diagnosis

- Bronchogenic cysts, which may occur near the diaphragm but usually show proteinaceous or complex content.
- Hydatid cysts, especially in endemic regions, often demonstrate calcifications or daughter cysts.
- Adrenal cysts, which may simulate a diaphragmatic origin due to their posterior location.
- Duplication cysts, usually attached to the gastrointestinal tract and exhibiting a characteristic muscular rim sign (Sans et al., 1999; Weerakkody and Jones, 2024), features not observed in this case.

Management depends on symptoms, size, and radiologic features. Asymptomatic lesions may be monitored radiologically, while surgical or interventional procedures are reserved for uncertain diagnoses, complications, or persistent symptoms (Robertson et al., 2015; Kahrman et al., 2016; Yang and Han, 2022).

Large (≥ 10 cm), midline diaphragmatic mesothelial cysts in adults are exceedingly rare. A few adult cases of diaphragmatic cysts of different origins have been reported (Kandemirli et al., 2020; Welsh et al., 2024).

Our case is notable for its size (10 cm), midline location, and occurrence in an adult with no prior imaging.

Conclusion

This case highlights the need to consider diaphragmatic mesothelial cysts in the differential diagnosis of chronic epigastric pain in adults. CT provides critical diagnostic

information. In the absence of concerning features, a conservative approach with imaging follow-up is appropriate.

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