Non-traumatic anterior right diaphragmatic hernia, an unusual cause of acute intestinal obstruction. Case report

Joaquin Vergara Sanchez[1], Valentín Garat[2], Hoffmann Boyle[3]

Hospital Cuenca Alta, Cañuelas, Buenos Aires, Argentina

[1]Urology Resident
[2]Chief Resident in General Surgery
[3] General Surgeon

ABSTRACT

We present a rare case of a 97-year-old woman with a right anterior diaphragmatic hernia. She has no history of trauma and presented with an acute occlusive abdomen. The CT scan showed a right anterior diaphragmatic hernia involving the transverse colon. She underwent a surgical procedure to reduce the herniated contents, close the diaphragmatic defect, and create a loop colostomy. This case demonstrates the rarity of right anterior diaphragmatic hernias without an underlying cause (less than 1% of diaphragmatic hernias), the importance of suspecting them in the presence of nonspecific symptoms, the fundamental role of diagnostic imaging in their early detection, and the effectiveness of timely surgical treatment in reducing morbidity and mortality

Keywords: *Right anterior diaphragmatic hernia; Acute occlusive abdomen; Non-traumatic diaphragmatic hernia*

INTRODUCTION

Spontaneous diaphragmatic hernia (SDH) is characterized by the herniation of abdominal contents into the chest through a tear or weakness in the diaphragm. This condition can be either acquired or, more commonly, congenital. The occurrence of SDH is primarily observed in adult patients, secondary to abdominal trauma, with blunt trauma accounting for 75% of cases.[1] The prevalence of the condition is fourfold higher in males. It usually occurs on the left side, which can be partially attributed to the liver's protective role and the higher rate of embryonic fusion defects on the left side.[2]

Non-traumatic SDH is extremely rare, particularly when it occurs on the right side. We report the case of a 97-year-old female patient with an anterior right SDH, without a history of trauma or surgical procedures, who presented with an acute obstructive abdomen.

CASE

A 97-year-old female patient with a history of hypothyroidism and hypertension was admitted to the emergency department with a six-day history of generalized abdominal pain rated at 7/10, abdominal distension, and absence of bowel movements, associated with four episodes of vomiting in the last 24 hours. Upon admission, the patient exhibited a heart rate of 108 beats per minute, a respiratory rate of 18 breaths per minute, a blood pressure reading of 125/72 mmHg, an axillary temperature of 36.2°C, and an oxygen saturation level of 96%. The physical examination revealed a distended abdomen, scant bowel sounds, and guarding and rebound tenderness predominantly in the right lower quadrant. Laboratory testing revealed a leukocytosis of 16,300/mm³, creatinine levels of 2.28 mg/dL, and urea levels of 72 mg/dL. A CT scan of the abdomen and pelvis with intravenous contrast was requested, revealing a right anterior diaphragmatic hernia with a sac approximately 8 cm in diameter and a ring approximately 3 cm in diameter containing the middle third of the transverse colon, causing proximal distension of the right colon, small bowel loops, and stomach (Fig. 1).

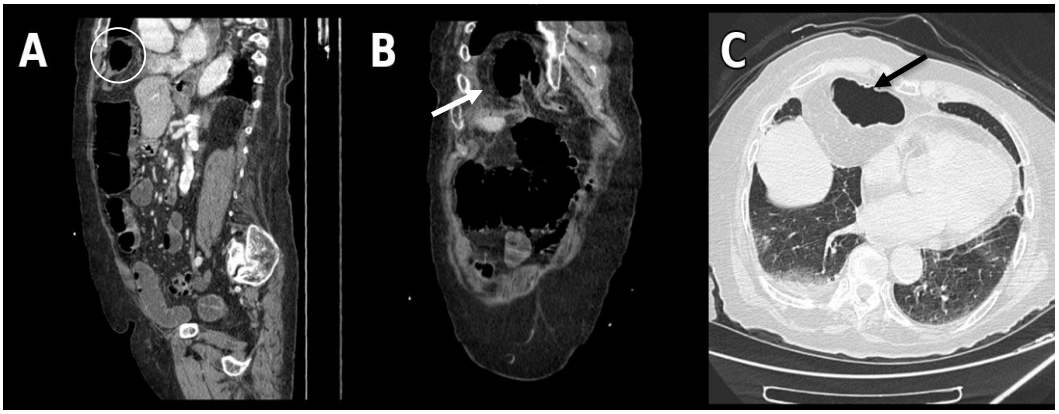

Figure 1. *Computed tomography of the chest and abdomen.* ***A.*** *Sagittal section. An ascending colonic loop is observed in the anterior mediastinum (white circle).* ***B.*** *Coronal section: The diaphragmatic defect through which the colonic loop ascends is visible (white arrow).* ***C.*** *Axial section, lung window: A colonic loop is observed at the thoracic level in the anterior mediastinum (black arrow).*

The authors declare no conflicts of interest or funding. **Joaquin Vergara: jevs826@gmail.com**
Received: July 31, 2025. Accepted: August 6, 2025

Joaquin Vergara: https://orcid.org/0000-0001-6272-5312, Boyle Hoffmann: https://orcid.org/0009-0007-2432-1457, Valentín Garat: https://orcid.org/0009-0006-5167-3944

Emergency surgery was decided. The exploratory laparotomy revealed a right anterior diaphragmatic hernia with colonic contents, which was reduced into the peritoneal cavity, exposing the diaphragmatic defect (Fig. 2). Primary closure was performed with non-absorbable sutures. In addition, due to frank cecal distension and advanced diverticular disease of the sigmoid colon, a transverse loop colostomy was performed. The patient had a satisfactory postoperative recovery and was discharged from the hospital without associated complications.

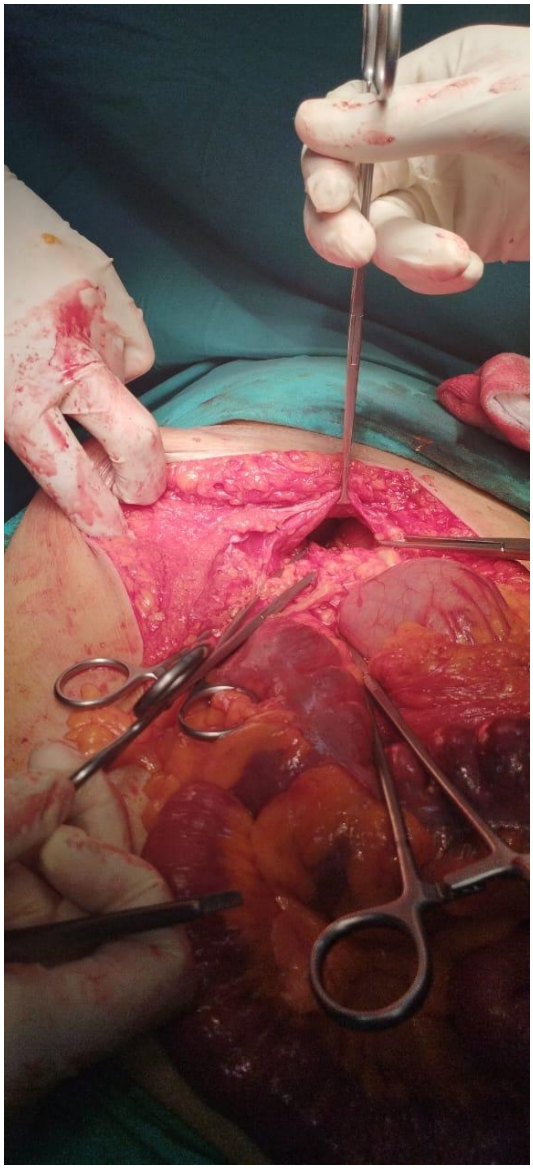

Figure 2. *Intraoperative view of the anterior diaphragmatic hernia.*

DISCUSSION

This is an uncommon case of HDE caused by a defect in the right pillar of the diaphragm, leading to protrusion of the transverse colon. There is no history of blunt trauma, penetrating injury, or surgery. HDE cases without an underlying cause are rare, with fewer than 30 documented cases published between 1956 and 2009, accounting for less than 1% of all HDE cases.[2,3]

The two main types of idiopathic SDH reported in the literature are type 1, which has an intact chest wall, and type 2, which has abdominal contents passing through the diaphragm and chest wall.[2] The main risk factors for these idiopathic hernias include persistent coughing, vomiting, or chronic and severe constipation. According to the literature, the defect occurs most frequently in the left pillar of the diaphragm (up to 65%), while the right pillar is less likely to be involved due to the mechanical support of the liver.[4]

Hernias caused by any defect on the right side of the muscle are associated with an increased risk of morbidity and mortality. Common symptoms include nausea, vomiting, shortness of breath, pain, and thoracoabdominal discomfort.[3]

The diagnosis is made using computed axial tomography, with a specificity of approximately 80% and a sensitivity of 50% for right SDE and 78% for left SDE, as demonstrated by Lodhia et al.[4]

This case is noteworthy for two reasons. First, defects on the right side are unusual. Second, the heterogeneous clinical presentation posed a diagnostic challenge. Timely diagnosis is imperative, as delays can result in elevated mortality risks due to respiratory failure caused by increased intrathoracic pressure, or to digestive ischemia/perforation resulting from diminished blood flow to the affected organs.[1]

Surgical correction of the defect is considered a permanent cure and is usually performed via an abdominal approach with primary closure of the defect. In cases of chronic illness with delayed diagnosis, a thoracic approach is employed to prevent complications, such as visceral perforation and adhesions. In this case, the defect was associated with signs of visceral obstruction. Therefore, we adopted the abdominal approach and repaired the defect with primary closure using non-absorbable sutures. Given the patient's age and the associated advanced diverticular disease, we decided to perform a colostomy proximal to the herniated site to minimize the risk of postoperative complications. Surgical correction is a highly effective treatment, with a very low recurrence rate.[5]

CONCLUSION

Spontaneous diaphragmatic hernia due to a defect affecting the right pillar of the diaphragm, in the absence of a history of trauma or surgery, is a highly unusual finding. Timely diagnosis, based on adequate clinical suspicion and the use of imaging studies, is essential. Delayed treatment or an inadequate approach are associated with higher morbidity and mortality. Early surgical intervention is both effective and safe, with a low recurrence.

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