

CLINICAL CASE

HERNIA HIATAL TIPO IV GIGANTE: MÁS ALLÁ DEL REFLUJO, UN DESAFÍO PARA EL CIRUJANO

GIANT TYPE IV HIATAL HERNIA: BEYOND REFLUX, A CHALLENGE FOR THE SURGEON

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RESUMEN

La hernia hiatal grado IV es una condición poco frecuente caracterizada por la migración intratorácica del estómago junto con otras vísceras abdominales, como colon, bazo o páncreas, a través del hiato esofágico. Presentamos el caso de un paciente con cuadro clínico de larga data de epigastralgia de muy alta intensidad que acudió al servicio de urgencias con exacerbación del caso clínico. Los estudios imagenológicos confirmaron la presencia de una hernia hiatal gigante con compromiso multivisceral. Se realizó una corrección quirúrgica mediante laparoscopia, con reducción del contenido herniado y cirugía antirreflujo gastroesofágico tipo Hill. La evolución postoperatoria fue favorable, con resolución de los síntomas y adecuada tolerancia oral. Este caso resalta la importancia de la sospecha clínica, diagnóstico temprano y el tratamiento quirúrgico oportuno para evitar complicaciones graves como la estrangulación o perforación de los órganos herniados, así como una mejor calidad de vida de los pacientes.

Palabras clave: Hernia hiatal, hernia paraesofágica, manejo, reparación de hernia

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ABSTRACT

Grade IV hiatal hernia is a rare condition characterized by the intrathoracic migration of the stomach along with other abdominal viscera, such as the colon, spleen, or pancreas, through the esophageal hiatus. We present the case of a patient with long-standing symptoms of very severe epigastric pain who presented to the emergency department with exacerbation of the clinical condition. Imaging studies confirmed the presence of a giant hiatal hernia with multivisceral involvement. Surgical correction was performed laparoscopically, with reduction of the herniated contents and Hill-type gastroesophageal reflux disease (GERD). The postoperative course was favorable, with resolution of symptoms and adequate oral tolerance. This case highlights the importance of clinical suspicion, early diagnosis, and timely surgical treatment to prevent serious complications such as strangulation or perforation of herniated organs, as well as improving patient quality of life.

KEYWORDS: Hiatal hernia, paraesophageal hernia, management, hernia repair

INTRODUCTION

Hiatal hernias are a common condition characterized by the protrusion of the stomach and other abdominal viscera towards the mediastinum.^{1, 2} Their classification depends on the severity and the number of organs involved; Type IV is the most complex, given its high risk of complications such as ischemia, obstruction, or volvulus.^{3, 4} Diagnosis is established through imaging studies, including barium-swallow radiography, endoscopy, and computed tomography.^{3, 4, 5}

Treatment varies depending on the type of hernia, ranging from pharmacological management in mild cases to surgical intervention in those involving multiple abdominal organs.⁴⁵ the following clinical case illustrates the surgical complexity associated with a Type IV hiatal hernia.

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CLINICAL CASE

A 52-year-old female patient with a history of pulmonary tuberculosis in 2004, for which she underwent bilateral thoracostomy due to a pneumonia-type infection. Her surgical history also includes a partial salpingectomy and umbilical herniorrhaphy.

The patient presented with a longstanding clinical history characterized by postprandial epigastric pain, rated as 10/10 on the subjective pain scale, radiating in a band-like pattern to the posterior thoracic region. She had multiple visits to the emergency department without clinical improvement or a definitive diagnosis.

In follow-up evaluations, the patient submitted a total abdominal ultrasound,



which revealed non-obstructive left renal lithiasis. An upper gastrointestinal endoscopy performed in 2023 showed mild chronic lymphocytic gastritis, while colonoscopy findings were consistent with grade I internal and external hemorrhoids. Additionally, a contrast enema colon radiograph demonstrated areas of luminal narrowing and thickening of the anal folds in the distal segments of the transverse colon.

Finally, a computed tomography (CT) scan of the abdomen and pelvis performed in November 2023 revealed a hiatal hernia with herniation and displacement of the stomach into the thoracic cavity, along with an inversion of its organ axial axis, consistent with a Type IV sliding hiatal hernia. Additionally, a left basal pulmonary cyst was identified (Figure 1 and Figure 2).

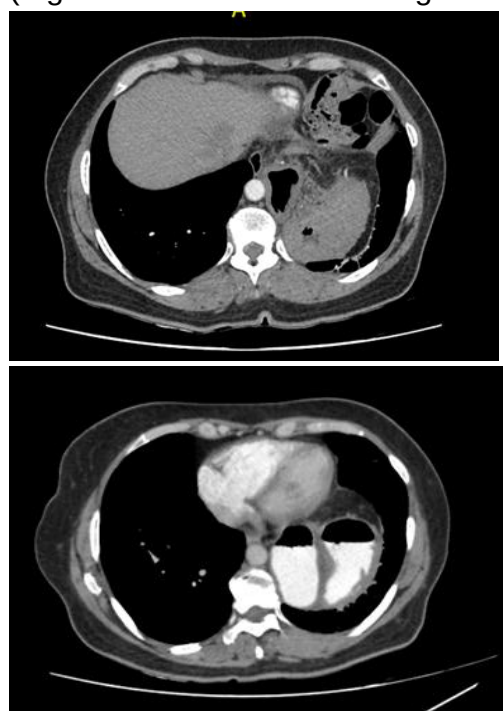


Figure No.1. Contrast-enhanced and non-contrast chest computed tomography (CT), axial view, demonstrates the presence of abdominal organs within the thoracic cavity.

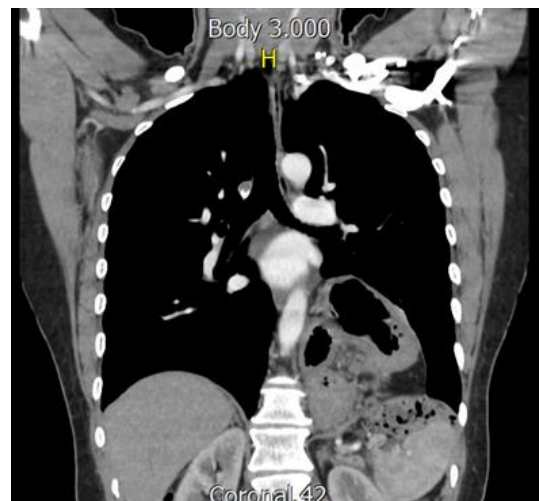


Figure No.2. Computed tomography (CT) of the chest with and without contrast, axial section, demonstrating the presence of abdominal organs within the thoracic cavity.

Based on clinical presentation and imaging findings, a diagnosis of Grade IV hiatal hernia was established, warranting surgical intervention.

Under general anesthesia, following asepsis and antisepsis, the surgical fields were prepared, and a 10 mm umbilical trocar was inserted with pneumoperitoneum insufflation maintained at 15 mmHg. Laparoscopic examination revealed an 8.5 cm left diaphragmatic hernia containing the greater omentum, transverse colon, and stomach, accompanied by left pulmonary hypoplasia. No paraesophageal hernia was observed, but multiple peritoneal adhesions were present. Additional

trocars were placed as follows: 12 mm trocars in the right and left flanks, a 19 mm trocar at the xiphoid process (due to patient obesity), and 5 mm trocars in the epigastrium and left subcostal region. The flaccid portion of the diaphragm was opened, and dissection of the hernia sac was performed, with difficulty identifying the right diaphragmatic pillar. After visualizing the left pillar, the hernia contents including the transverse colon, greater omentum, and stomach were successfully reduced into the abdominal cavity (Figure 3). Subsequently, a left thoracotomy was performed, allowing dissection to the distal thoracic esophagus with release of bilateral pleural and pericardial adhesions, as well as dissection of the left diaphragmatic pillar and liberation of the right and retro-gastric sac (Figure 4). Examination, ligation, and thrombectomy of the short gastric vessels and the accessory left gastric artery were performed utilizing ultrasonic energy, completing the retro-gastric dissection. The diaphragmatic defect was repaired with four interrupted X-shaped sutures of Ethibond 0, followed by approximation of the diaphragmatic pillars with an additional suture of the same material. Gastroesophageal sphincter reconstruction was achieved via a Hill-type antireflux procedure. Adequate hemostasis was confirmed without evidence of bleeding, the operative field was dried, gastric perfusion was satisfactory, and port sites were closed without complication. Pneumoperitoneum was carefully

released, the umbilical fascia was closed with Vicryl 0, and the flank ports and skin were sutured with Prolene 3-0, with confirmation of a complete count of gauze and instruments. Finally, Gelfoam was applied to the lower pole of the spleen to address a minor laceration.



Figure No. 3. Dissection of the hernial sac containing transverse colon, major epiploon and stomach.

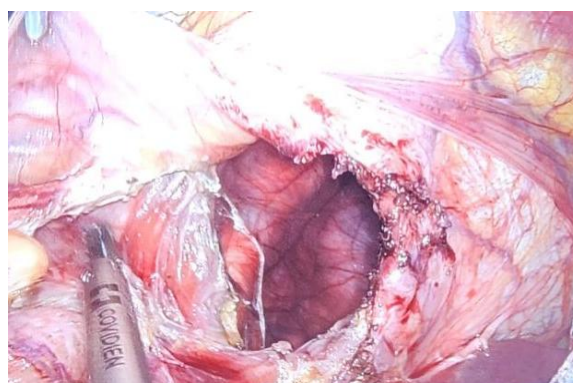


Figure No. 4. hernial orifice after reduction of its content

DISCUSSION

Hiatal hernias are a prevalent condition in the general population, characterized by the protrusion of the stomach and

other abdominal viscera into the mediastinum. They are classified into four types based on the severity and the number of herniated organs. Established risk factors include multiple pregnancies, a history of esophageal surgery or gastrectomy, and skeletal disorders associated with calcification and bone degeneration. Furthermore, a strong association exists between hiatal hernias and gastroesophageal reflux disease, Barrett's esophagus, and esophageal adenocarcinoma.^{1, 2}

Clinically, patients may present with symptoms such as gastroesophageal reflux, regurgitation, heartburn, dysphagia, epigastric or thoracic pain, and early satiety.^{1, 2} in the present case, the predominant symptoms were epigastric abdominal pain and early satiety.

In terms of classification, type I hiatal hernias, also known as sliding hernias, account for more than 90% of cases and are characterized by a symmetric upward displacement of the stomach, specifically the gastroesophageal junction, through the esophageal hiatus and above the diaphragmatic crura. Pure type II, or periesophageal hernias, occur when a portion of the gastric fundus herniates through the diaphragmatic hiatus adjacent to the esophagus, while the gastroesophageal junction remains in its normal anatomical position. Type III hernias exhibit features of both types I and II, with herniation of both the gastroesophageal junction and the

gastric fundus through the hiatus. Finally, type IV hernias involve the herniation of abdominal organs other than the stomach into the thoracic cavity, including the small intestine, colon, omentum, peritoneum, or spleen. The clinical significance of types II through IV lies in their increased risk of serious complications, such as ischemia, obstruction, or intestinal volvulus.¹ in the present case, the hiatal hernia was classified as type IV; however, precise identification of the abdominal organs displaced into the thoracic cavity was only possible during surgical intervention.

The prevalence of hiatal hernia increases with age, affecting between 55% and 60% of women over 50 years old, with approximately 9% of cases being symptomatic. This higher incidence in women is likely attributable to increased intra-abdominal pressure associated with pregnancy.³

The diagnosis of hiatal hernia can be established through various imaging modalities and functional assessments. Barium swallow radiography allows evaluation of the size of the herniated stomach and the anatomical position of the gastroesophageal junction. Additionally, it can identify alterations in esophageal motility and complications related to gastroesophageal reflux disease. However, its principal limitation is exposure to ionizing radiation.^{1, 2, 4}



Esophagogastroduodenoscopy (EGD) enables real-time visualization of the esophageal, gastric, and duodenal mucosa, facilitating the detection of lesions such as esophagitis, Cameron's ulcers, and Barrett's esophagus. However, EGD may have limitations in accurately identifying large hernias, particularly those involving organ axial rotation of the stomach.^{1, 4}

Conversely, esophageal manometry provides essential information regarding esophageal motility and facilitates the exclusion of motility disorders, such as achalasia, prior to surgical intervention.⁴ Hiatal hernia is diagnosed when the separation between the rural diaphragm and the lower esophageal sphincter exceeds 2 cm.¹

Although not essential for diagnosis, pH monitoring quantitatively assesses acid reflux exposure and its correlation with patient symptoms.¹

Computed tomography (CT) is not routinely employed in the diagnosis of hiatal hernia; however, it is valuable in cases of periesophageal hernia to exclude complications such as perforation or pneumomediastinum.¹ In this case, CT served as the definitive diagnostic modality, enabling accurate identification of the hernia.

For preoperative evaluation, a combination of barium swallow radiography, endoscopy, and esophageal manometry is

recommended, as it offers a comprehensive assessment of the disease and facilitates more precise surgical planning.¹

Treatment of hiatal hernia depends on factors such as hernia size, type, and symptom severity. Symptomatic hiatal hernias are generally managed by controlling gastroesophageal reflux through proton pump inhibitors, as well as lifestyle and dietary modifications.^{2, 4} However, in cases of periesophageal hernias that are refractory to medical management and present a risk of obstruction or gastric volvulus, surgical intervention is considered the definitive treatment.^{1, 2, 4}

Both abdominal and thoracic approaches have been described for the repair of hiatal hernias. The thoracic approach is considered advantageous for facilitating dissection of the hernia sac and its contents, as well as for complete mobilization of the esophagus.⁴ However, in the present case, the abdominal approach was preferred.

The management of giant type IV hiatal hernias poses a significant surgical challenge. In this case, it necessitated a meticulous laparoscopic technique to reduce the herniated contents, excise the hernia sac, repair the hiatal defect, and perform an adjunctive antireflux procedure.

The most recent guideline on the surgical management of hiatal hernia, published



in 2024 by the American Society of Gastrointestinal and Endoscopic Surgeons (SAGES), outlines treatment options including hiatal hernia repair with or without mesh reinforcement and fundoplication. However, the evidence regarding the routine use of mesh in hiatal hernia repair remains inconclusive. While some studies suggest that mesh placement reduces postoperative hernia recurrence, others report no significant difference in recurrence rates or symptom resolution, but note an increased risk of complications and greater complexity in revision surgeries. Although data are still limited, mesh reinforcement during primary hiatal hernia repair may reduce early recurrence without significantly impacting late recurrence, complication rates, or postoperative symptoms. Conversely, fundoplication performed during hiatal hernia repair has been shown to increase early postoperative dysphagia but effectively decreases gastroesophageal reflux without altering the risk of symptomatic hernia recurrence.^{1, 2, 4, 5}

Regarding the surgical approach, hiatal hernia repair may be performed via transabdominal or transthoracic routes, with laparoscopic fundoplication considered the standard of care for both sliding and paraesophageal hernias. Nissen fundoplication (360°) is the preferred technique; however, in cases of esophageal motility disorders, a partial (Toupet) fundoplication (270°) is

recommended.^{1, 2, 4, 5} Laparoscopic surgery offers several advantages, including reduced hospital stay, accelerated recovery, and decreased incidence of pulmonary complications, although it is associated with technical limitations such as two-dimensional visualization and reduced instrument maneuverability.

The use of mesh in the repair of paraesophageal hernias remains a subject of ongoing debate. Although several studies have demonstrated a reduction in hernia recurrence with both synthetic and biological mesh reinforcement, the American Society of Gastrointestinal and Endoscopic Surgeons (SAGES) has yet to issue definitive recommendations due to insufficient long-term evidence. Synthetic meshes have been associated with complications such as esophageal erosion and stenosis, whereas the benefits of biological mesh appear to diminish over time. Further research is warranted to clarify the role of mesh reinforcement in paraesophageal hernia repair.^{1, 2, 4, 5}

The success of surgical repair is measured by the relief of symptoms in patients, especially the improvement of gastroesophageal reflux and heartburn. Also, very low complications are reported in less than 0.19% of cases, from which pneumothorax, gastroesophageal lesions, splenic hepatoma and dysphagia may result.^{4,5,6,7}



CONCLUSIONS

The patient exhibited a prolonged clinical course with multiple healthcare visits without a definitive diagnosis, underscoring the importance of comprehensive evaluation through appropriate imaging modalities. Computed tomography proved pivotal in confirming the diagnosis of a type IV hiatal hernia with herniation of the stomach and other abdominal organs, demonstrating the utility of this imaging technique in complex cases.

Consistent with the literature, meticulous identification and reduction of hernia contents, reconstruction of the gastroesophageal sphincter, and repair of the diaphragmatic defect were fundamental to the success of the procedure and the prevention of postoperative complications.

While conservative management may be appropriate for mild hiatal hernias, surgical intervention is imperative in cases of large hernias or when there is a risk of severe complications such as volvulus, ischemia, or obstruction. In the present case, surgical repair successfully restored normal anatomical relationships and alleviated the patient's symptoms, underscoring that early intervention in advanced cases can optimize clinical outcomes and reduce the risk of recurrence.

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