

Case report

Laparoscopic Repair of a Giant Hiatal Hernia with Nissen Fundoplication in a Patient with Dyspnea and Severe GERD: A Case Report

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Keywords:

Giant Hiatal Hernia (GHH),
Paraesophageal Hernia (Type
III/IV), Laparoscopic Repair,
Nissen Fundoplication, Dyspnea.

ABSTRACT

Giant hiatal hernias (GHHs), defined as herniation of >30% to 50 % of the stomach into the thorax, are a type of paraesophageal hernia (Type III or IV) that can cause significant extraesophageal symptoms, including progressive dyspnea and cardiac compromise, due to mechanical compression of thoracic organs. We report the case of a 60-year-old female patient (weight 57 kg, height 161, BMI 22) who presented with severe, refractory gastroesophageal reflux disease (GERD) and progressive dyspnea on exertion. Diagnostic imaging (CT scan) confirmed a large, giant Type III/IV hiatal hernia containing most of the stomach, causing compression of the left lower lobe of the lung. The patient underwent successful laparoscopic repair of the GHH, which included complete sac excision, extensive mediastinal esophageal mobilization, tension-free crural repair using absorbable barbed suture, and a standard Nissen fundoplication. The postoperative course was uneventful. The patient reported immediate and complete resolution of dyspnea and improvement in GERD symptoms. Follow-up at 6 months confirmed no recurrence on barium swallow and a significantly improved quality of life. Laparoscopic repair with Nissen fundoplication is the standard of care and an effective definitive treatment for GHHs, providing dramatic symptomatic relief, particularly for patients presenting with atypical pulmonary symptoms like dyspnea.

Introduction

Hiatus hernia is a common condition characterized by herniation of the stomach, and occasionally other abdominal organs, through the esophageal hiatus into the thoracic cavity. While most hiatus hernias are small and asymptomatic or primarily associated with gastroesophageal reflux disease (GERD), giant or paraesophageal hiatal hernias may present with atypical and extraesophageal manifestations, including cardiopulmonary symptoms such as dyspnea [1,2]. Dyspnea in patients with large hiatal hernias can result from several mechanisms, including compression of the lungs, reduction in functional lung volume, mediastinal shift, and cardiac compression, particularly of the left atrium. Additionally, microaspiration secondary to severe GERD and vagal nerve stimulation have been proposed as contributing factors to respiratory symptoms in these patients [3–5]. As a result, dyspnea may be the dominant complaint, sometimes leading to delayed diagnosis or misattribution to primary pulmonary or cardiac disease.

Giant hiatal hernias account for a small proportion of all hiatus hernias but are more commonly associated with significant morbidity. Studies have demonstrated that surgical repair of large hiatal hernias can lead to marked improvement in respiratory symptoms and pulmonary function, highlighting the clinical importance of recognizing dyspnea as a key manifestation [6,7]. Laparoscopic repair has become the preferred approach for the management of symptomatic giant hiatal hernias due to reduced postoperative pain, shorter hospital stays, and favorable long-term outcomes. The addition of an antireflux procedure, such as Nissen fundoplication, is recommended to control GERD symptoms and prevent postoperative reflux [8,9]. Herein, we report a case of a patient presenting with progressive dyspnea and severe GERD caused by a giant hiatal hernia, successfully managed with laparoscopic repair and Nissen fundoplication. This case highlights the importance of considering a giant hiatal hernia in the differential diagnosis of dyspnea and underscores the role of surgical intervention in symptom resolution.

Case Presentation

A 60-year-old female patient (weight 57 kg, height 161, BMI 22) presented with a history of progressive GERD symptoms, including severe heartburn, regurgitation, recurrent aspiration, and exertional dyspnea.

Her respiratory symptoms had gradually worsened and were refractory to medical therapy. Her medical history included well-controlled Type 2 diabetes mellitus and past lumbar disc surgery at the L4–L5 level. She had no history of chronic pulmonary disease. Clinical evaluation, routine laboratory tests, electrocardiography, and transthoracic echocardiography showed no abnormalities, effectively excluding primary cardiac or metabolic causes for her dyspnea.

Diagnostic Workup

Upper gastrointestinal endoscopy revealed a large sliding a giant paraesophageal hiatal hernia associated with severe reflux changes. A barium meal study demonstrated herniation of more than half of the stomach into the thoracic cavity, confirming the diagnosis of a huge sliding paraesophageal hiatal hernia.

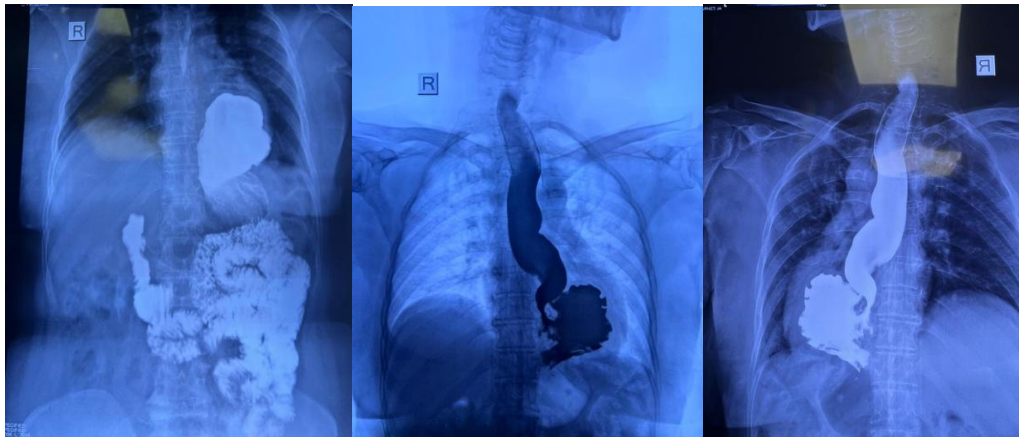


Figure 1. Preoperative barium meal demonstrating a huge hiatus hernia. More than half of the stomach is visualized herniating into the mediastinum (thoracic cavity).

Multidisciplinary Team Discussion

The patient's case was reviewed during a multidisciplinary team (MDT) meeting involving specialists from cardiology, respiratory medicine, gastroenterology, and general surgery. Given the severity of her symptoms, the large size of the hiatal hernia, and failure to respond to conservative management, the MDT unanimously recommended surgical intervention in the form of laparoscopic hiatal hernia repair with Nissen fundoplication.

Surgical Procedure

The patient underwent surgery under general anesthesia, positioned supine with the legs split (French position). The table was placed in a slight reverse Trendelenburg position. Pneumoperitoneum was established using a Veress needle, and the abdomen was insufflated with carbon dioxide. Liver retraction was achieved using a Nathanson liver retractor via a subxiphoid port.

Port Configuration and Operating Team

A standard laparoscopic port configuration was used, visualized in (Figure 2A).

Port Configuration

1 (Umbilical): Camera port. 2 & 3 (Working): Two ports are placed in the left and right upper quadrants. 4 (Assistant): One port is placed in the left anterior axillary line. 5 (Retraction): Nathanson liver retractor via a subxiphoid port.

Operating Team Positioning: Surgeon: Standing between the patient's legs. Camera Man: Positioned to the left of the surgeon. Assistant: Positioned to the right of the surgeon.

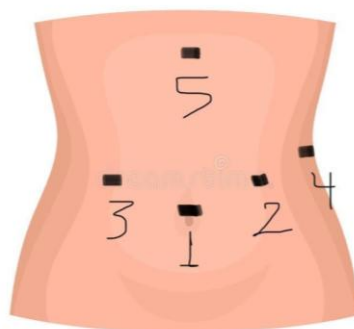


Figure 2A. Laparoscopic Port Placement Diagram (The diagram illustrates the standard five-port placement used for the laparoscopic hiatal hernia repair and Nissen fundoplication: 1-Camera, 2&3-Working, 4-Assistant, 5-Retractor)

Intraoperative Findings and Repair Details

Intraoperative findings confirmed a giant paraesophageal hiatal hernia measuring more than 10 cm, with more than half of the stomach herniated into the mediastinum.

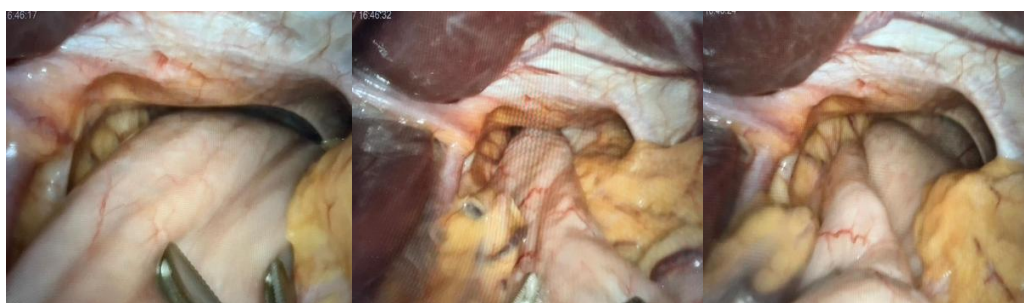


Figure 2B. Intraoperative laparoscopic view showing the huge hiatus hernia before reduction.

The stomach was gently reduced into the abdominal cavity, and the hernia sac was carefully dissected and completely excised. Adequate mobilization of the distal esophagus was achieved, ensuring approximately 3 cm of esophagus remained intra-abdominal without tension.

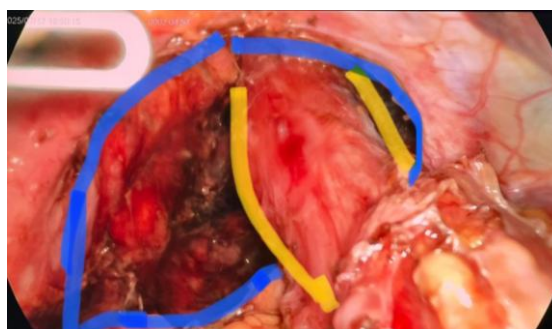


Figure 3. Reduction of the stomach and esophagus into the abdomen. The indicates the hiatus, and the yellow line indicates the intra-abdominal esophagus.

Posterior crurorraphy was performed using continuous absorbable 2/0 V-lock (barbed suture). The gastric fundus was fully mobilized by division of the short gastric vessels. A 360-degree, short, floppy Nissen fundoplication was then constructed using the shoeshine maneuver to ensure a tension-free wrap.

Postoperative Course

The postoperative course was uneventful. The patient experienced complete resolution of reflux symptoms, dyspnea, and aspiration episodes. She resumed oral intake without difficulty and was discharged in stable condition. A postoperative barium meal confirmed an intra-abdominal position of the stomach and distal esophagus, with an intact and appropriately positioned fundoplication wrap.

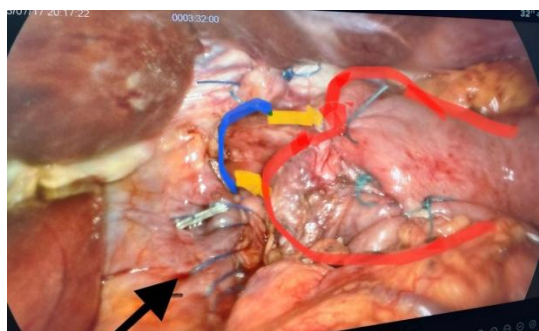


Figure 4. Result after repair. The blue half-circle indicates the repaired hiatus, the yellow line marks the esophagus, and the red line outlines the 360-degree fundoplication wrap adequately positioned around the lower esophagus.



Figure 5. Postoperative barium meal showing the lower and whole stomach positioned intra-abdominally. The fundoplication wrap is visualized adequately at the lower esophagus.

Immediate Postoperative Course

The patient was transferred to the post-anesthesia care unit in stable condition. Postoperative imaging, including chest radiography and barium swallow, confirmed complete reduction of the stomach into the abdominal cavity. Dietary advancement began on the first postoperative day with a clear liquid regimen, which was gradually progressed to a full liquid and subsequently a soft diet over the following four to six weeks. The patient was discharged on the designated postoperative day with instructions to follow a soft-diet plan and a prescription for a tapered course of proton pump inhibitors.

Long-term follow-up was conducted at one month, six months, and one year after the procedure. At the six-month evaluation, the patient reported complete resolution of preoperative dyspnea and no recurrence of heartburn or regurgitation. The severity of dyspnea improved from Grade III to Grade 0, and the gastroesophageal reflux disease health-related quality of life (GERD-HRQL) score decreased from 35 to 5, indicating marked symptomatic improvement. Objective assessment with a repeat contrast esophagram at six months demonstrated an intact fundoplication wrap, absence of obstruction, and a stable, tension-free intra-abdominal esophageal segment, confirming no recurrence of hiatal hernia. Pulmonary function testing further revealed restoration of predicted lung volumes to baseline values.

Discussion

This case highlights the atypical, yet critical, extraesophageal presentation of giant paraesophageal hiatal hernia (GHH). The patient's primary complaint of progressive dyspnea, rather than typical obstructive symptoms like dysphagia or postprandial fullness, underscores the need for a high index of suspicion in the work-up of unexplained respiratory distress. Dyspnea in the setting of a giant paraesophageal hiatal hernia (GHH) arises primarily from mechanical compression. The herniated stomach, occupying a large volume

within the thoracic cavity, displaces the lung parenchyma and reduces overall lung capacity. In addition to restricting pulmonary expansion, the mass effect can compress the left atrium and pulmonary veins, further impairing cardiopulmonary function. Pulmonary aspiration, resulting from chronic and voluminous reflux, also contributes to respiratory symptoms, but the immediate resolution of dyspnea following surgical repair strongly indicates that mechanical compression was the dominant mechanism in this patient's presentation. The rationale for surgical intervention is grounded in the established role of laparoscopic repair as the standard of care for symptomatic GHH. In this case, the choice of a Nissen fundoplication—a complete 360° wrap—was dictated by the patient's severe, medically refractory gastroesophageal reflux disease. Although partial fundoplication may be considered in certain contexts, the Nissen is preferred when reflux is pronounced and the esophagus demonstrates healthy motility, as it provides superior long-term control and reduces the risk of recurrence. The success of the operation depends on strict adherence to fundamental surgical principles: complete excision of the hernia sac, ensuring adequate esophageal length, and achieving a tension-free closure of the hiatus. These steps collectively restore normal anatomy, alleviate mechanical compression, and provide durable relief from both pulmonary and gastrointestinal symptoms. The long-term outcomes for this patient, demonstrating complete resolution of symptoms and no recurrence, emphasize the curative potential of surgical intervention for GHH. This case serves as a crucial reminder for clinicians to consider GHH in the differential diagnosis of patients with respiratory complaints refractory to conventional pulmonary or cardiac treatments.

Conclusion

Laparoscopic repair of a huge paraesophageal hiatal hernia with Nissen fundoplication provides safe and effective management for complex GHHs. The successful resolution of both severe GERD and chronic dyspnea in this patient highlights the importance of the anatomical repair in alleviating both the gastrointestinal and severe extraesophageal (cardiopulmonary) manifestations of this disease. This approach significantly improves the patient's quality of life and prevents life-threatening complications such as volvulus or incarceration. This case illustrates that laparoscopic repair of a giant sliding paraesophageal hiatal hernia, combined with Nissen fundoplication, is a safe and effective therapeutic approach. Surgical management resulted in significant improvement of both gastrointestinal and respiratory symptoms, emphasizing the importance of recognizing large hiatal hernias as a potential cause of dyspnea and aspiration. Early diagnosis and multidisciplinary evaluation are essential to optimize patient outcomes.

Patient Consent

Written informed consent was obtained from the patient for the publication of this case report and any accompanying clinical information and images. The patient was thoroughly informed that the publication would be handled in a manner that protects their anonymity and privacy. A copy of the written consent is retained by the authors and is available for review by the Editor-in-Chief of this journal.

Conflict of interest. Nil

References

1. Kahrilas PJ, Kim HC, Pandolfino JE. Approaches to the diagnosis and grading of hiatal hernia. *Best Pract Res Clin Gastroenterol.* 2008;22(4):601-16.
2. Stylopoulos N, Rattner DW. The history of hiatal hernia surgery: from Bowditch to laparoscopic repair. *Ann Surg.* 2005;241(1):185-93.
3. Low DE, Simchuk EJ. Effect of paraesophageal hernia repair on pulmonary function. *Ann Thorac Surg.* 2002;74(2):333-7.
4. Naoum C, Falk GL, Ng AC, et al. Left atrial compression and the mechanism of dyspnea in patients with large hiatal hernias. *J Am Coll Cardiol.* 2011;58(15):1624-34.
5. Goodwin AT, George RS, Antippa P, et al. Laparoscopic repair of giant hiatal hernia: effect on dyspnea and pulmonary function. *Surg Endosc.* 2012;26(9):2390-5.
6. Carrott PW, Hong J, Kuppusamy MK, et al. Repair of giant paraesophageal hernia routinely improves respiratory function. *Surgery.* 2012;152(4):790-8.
7. Wassenaar EB, Nason KS, Luketich JD. Symptomatic and physiologic outcomes after paraesophageal hernia repair. *J Thorac Cardiovasc Surg.* 2011;142(3):585-91.
8. Dallemagne B, Kohnen L, Jehaes C, et al. Laparoscopic repair of paraesophageal hernia: long-term follow-up reveals good clinical outcome. *Surg Endosc.* 2011;25(3):731-41.
9. Kohn GP, Price RR, DeMeester SR, et al. Guidelines for the management of hiatal hernia. *Surg Endosc.* 2013;27(12):4409-28.