

## Case Report

# Laparoscopic repair of type I hiatal hernia with chronic traumatic paraesophageal diaphragmatic paraesophageal hernia with mesh placement

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## ABSTRACT

Hiatal hernia is classified into four types, type I (95%) in which the gastroesophageal junction migrates into the mediastinum through the esophageal hiatus, type II gastric fundus herniates through the hiatus and the gastroesophageal junction remains in its normal position.

Type III is the combination of hernias type I and II, with displacement of the gastroesophageal junction and protrusion of the stomach through the esophageal hiatus. Type IV is characterized by displacement of the stomach together with another organ into the thorax<sup>1</sup>. Diaphragmatic hernias are defined as those that allow the passage of abdominal contents into the thoracic cavity through a defect in the diaphragm.

## INTRODUCTION

Hiatal hernia are classified as congenital (anterior or Morgagni and posterolateral or Bochdalek) and acquired (traumatic)<sup>2</sup>. Imaging studies lack high sensitivity and specificity for the diagnosis of diaphragmatic hernias<sup>1,2</sup>. Once the diagnosis or suspected diagnosis is established, the defect must be corrected by laparoscopic approach, conventional surgery or thoracotomy<sup>1,2</sup>.

To report the clinical case of a patient diagnosed with hiatal hernia type I plus diaphragmatic hernia for left hiatal, its surgical resolution by laparoscopy with Nissen type fundoplication, diaphragmatic plasty with primary closure and

reinforcement with placement of Dualmesh prosthetic material and its postoperative follow-up.

## METHODS

40-year-old female, who has no history of chronic degenerative diseases, involved in a car accident 7 years ago, starting her current condition 1 year before with gastroesophageal reflux and predominantly left precordial pain secondary to food intake, for which reason she went to the emergency department where we found the patient conscious, heme dynamically stable, chest with rhythmic heart sounds, well ventilated lung fields. Abdomen globose at the expense of adipose panniculus, pain on

superficial and deep palpation in epigastrium and mesogastrium, normal peristalsis.

Initiating study approach requesting chest tomography that reports paraesophageal hiatal hernia (Type II) with presence of supra diaphragmatic gastric fundus. Surgical protocol for laparoscopic Nissen type fundoplication was performed electively.

## RESULTS

It was decided to perform a laparoscopic Nissen fundoplication due to a pre-surgical diagnosis of hiatal hernia type II, finding during the approach a hiatal hernia type I and a diaphragmatic hernia for left hiatal hernia of 3.5 x 2.5 cm. The hernial content (stomach) is reduced, with the edges of the diaphragmatic defect free, dissection of the hernial sac is performed, as well as dissection of the esophageal hiatus (Fig. 1).

Diaphragmatic plasty is performed, identifying the edges of the defect adequately, the defect is repaired with continuous surgete with non-absorbable suture prolene vascular 1-0 (Fig. 2). Section of short vessels, release and adequate dissection of the left diaphragmatic pillar, dissection of the lesser omentum in the pars flaccida, adequate dissection of the right diaphragmatic pillar, dissection of the retroesophageal window and release of the gastric fundus ensuring adequate mobility of the same, closure of the diaphragmatic pillars with 2-0 prolene stitches, then placement of the plastic reinforcement with placement of Dualmesh prosthetic material and fixation of the same with non-absorbable suture with simple intracorporeal stitches (Fig. 3).

Once hemostasis and mesh fixation points have been verified, an anti-reflux mechanism is performed by means of a 360° Nissen Floppy type fundoplication, followed by a methylene blue test to evaluate leaks or inadvertent disruptions, which did not reveal any leakage.

(Fig. 4) Hemostasis is verified and the surgical event is terminated.

The patient had a favorable post-surgical evolution without complications, tolerating adequately the oral route, with no reflux data. The patient was discharged on the second postoperative day. With adequate outpatient follow-up.

## DISCUSSION

Hiatal hernias are acquired anatomical conditions, defined as the protrusion of the stomach or some non-esophageal structure through the esophageal hiatus, and are a frequent entity with established incidences and classification according to the type of hernia found, type I being the most frequent<sup>3</sup>.

On the other hand, diaphragmatic hernias are difficult to diagnose, requiring a high index of suspicion and complementary radiological studies for a definitive diagnosis.

Both pathologies can give completely different symptoms and depending on the clinical context of the patient can represent very different morbidity and mortality. Unlike diaphragmatic hernias, hiatal hernias can be related to gastroesophageal reflux disease such as regurgitation, heartburn, dysphagia, odynophagia, hematemesis or melena or be asymptomatic<sup>3</sup>.

However, surgery is recommended for all patients diagnosed with hiatal hernia because of the morbidity and mortality related to complications.

## CONCLUSION

Diaphragmatic hernias are a surgical indication and can be performed by different types of surgical approach depending on the clinical context of the patient, emergency, elective or incidental surgery at the time of another

surgical procedure, always assessing the possible associated complications that may arise, adhesions in the mediastinum, strangulation of herniated contents, respiratory compromise, the need to perform thoracotomy, among others <sup>4</sup>.

The type of closure of the defect reduces the risk of recurrence, there is no consensus on how diaphragmatic plasty should be performed, however, the use of continuous non-absorbable suture surgete is preferred <sup>4,5</sup> Primary closure is the main technique performed, the use of prosthetic material is limited to its availability<sup>4,5</sup> Prosthetic material should be colored when feasible, it is considered that the mesh should exceed 1.5-2.5 cm of the hernial annulus. In diaphragmatic defects larger than 8 cm or area larger than 20 cm<sup>2</sup> primary closures are difficult. <sup>4,5,6</sup> For this type of defect, the ideal is reinforcement or placement of mesh, which can be fixed by glue, suture or tackers, avoiding their placement in the vicinity of the pericardium due to the risk of cardiac complications. <sup>4,5</sup> In relation to hiatal hernia, antireflux surgical procedures, fundoplication by laparoscopy continues to be the most effective <sup>8</sup>.

In the case of the patient we found two different defects in which surgical treatment was performed for each one of them, as well as the reinforcement of the surgery with prosthetic material of the Dualmesh type, with a favorable post-surgical evolution.

## CONFLICTS OF INTERESTS

The authors have no conflict of interest.

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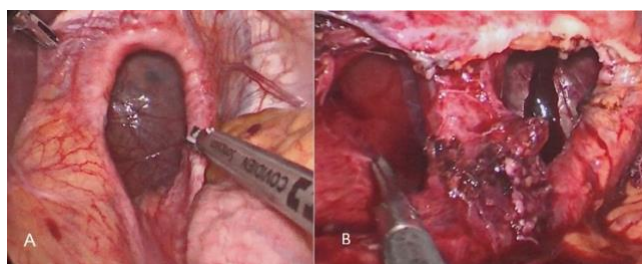
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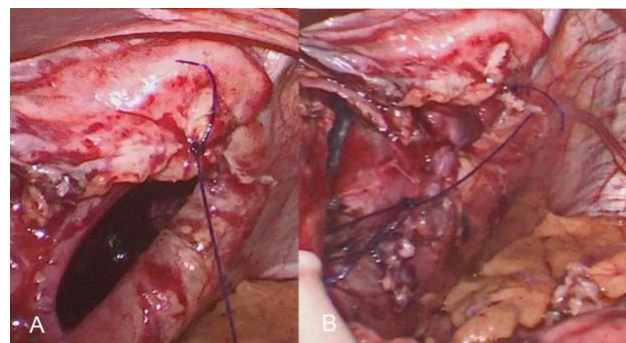
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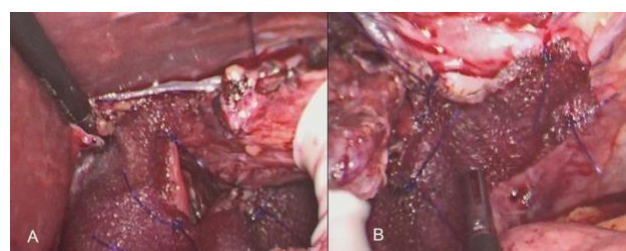
## FIGURES



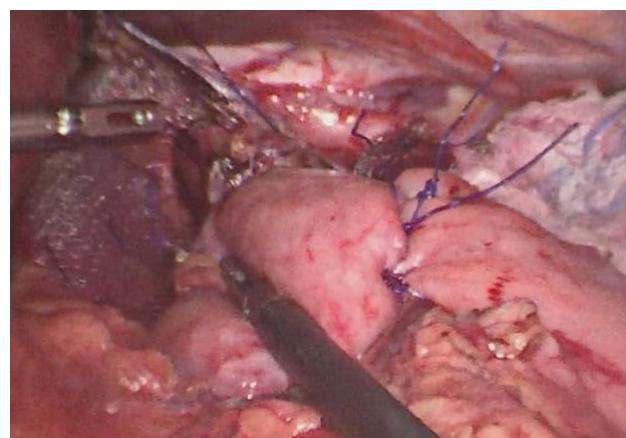
**FIG. 1.** A) Left hiatal diaphragmatic hernia, B) Type 1 hiatal hernia.



**FIG. 2.** Diaphragmatic plasty A) Start of continuous surging with vascular prolene 1-0, B) End of diaphragmatic plasty.



**FIG 3.** Placement of Dualmesh prosthetic material A) Right diaphragmatic abutment B) Left diaphragmatic abutment and diaphragmatic plasty.



**FIG. 4.** Nissen Floppy fundoplication, mesh placement on the right diaphragmatic pillar is visualized.