

## Type IV Hiatal Hernia Involving Majority of the Stomach and Part of the Transverse Colon

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### Abstract

### Case Report

Of the four types of hiatal hernias, type IV is the least common. It involves herniation of the stomach and another visceral organ past the hiatus of the diaphragm. Evaluation of the hernia can be through imaging, endoscopy, or manometry. Management of hiatal hernias can either be medical or surgical. Our case involves a 31-year-old male who presented with nausea, vomiting, and decreased oral intake for six days. He underwent robotic assisted Nissen fundoplication six months prior due to intractable gastroesophageal reflux disease and small hiatal hernia. Computed tomography imaging revealed a large hiatal hernia involving most of the stomach and part of the transverse colon. Esophagogastroduodenoscopy was limited due to rotation of the stomach as well as complex hernia. The patient ultimately underwent robotic assisted repair of the hernia with mesh placement and gastropexy.

**Keywords:** Type IV Hiatal Hernia, Hiatal Hernia, Robotic Repair.

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## INTRODUCTION

Hiatal hernias, congenital or acquired, occur when a portion of the upper aspect of the stomach or other abdominopelvic organs pass through the hiatus of the diaphragm [1]. Hiatal hernias are generally seen in adults, rather than children [1]. They can be asymptomatic or result in symptoms such as dysphagia and reflux [1]. There are four types of hiatal hernias [1]. Type I hiatal hernias, also known as a sliding hiatal hernias, account for close to 95% of hiatal hernias [1]. This type of hiatal hernia involves upward displacement of the gastric cardia [2]. Type II hiatal hernias involve herniation of the gastric fundus [2]. Type III hiatal hernias include aspects of both types I and II; in these cases, there is herniation of the gastroesophageal junction and the gastric fundus [3]. Type IV hiatal hernia is the least common presentation [4]. In these cases, there is additional organ herniation beyond the stomach [2]. Organs herniating can include the small intestine, large intestine, pancreas, and spleen [2]. Our case illustrates a Type IV hiatal hernia involving the majority of the stomach and a portion of the transverse colon.

## CASE PRESENTATION

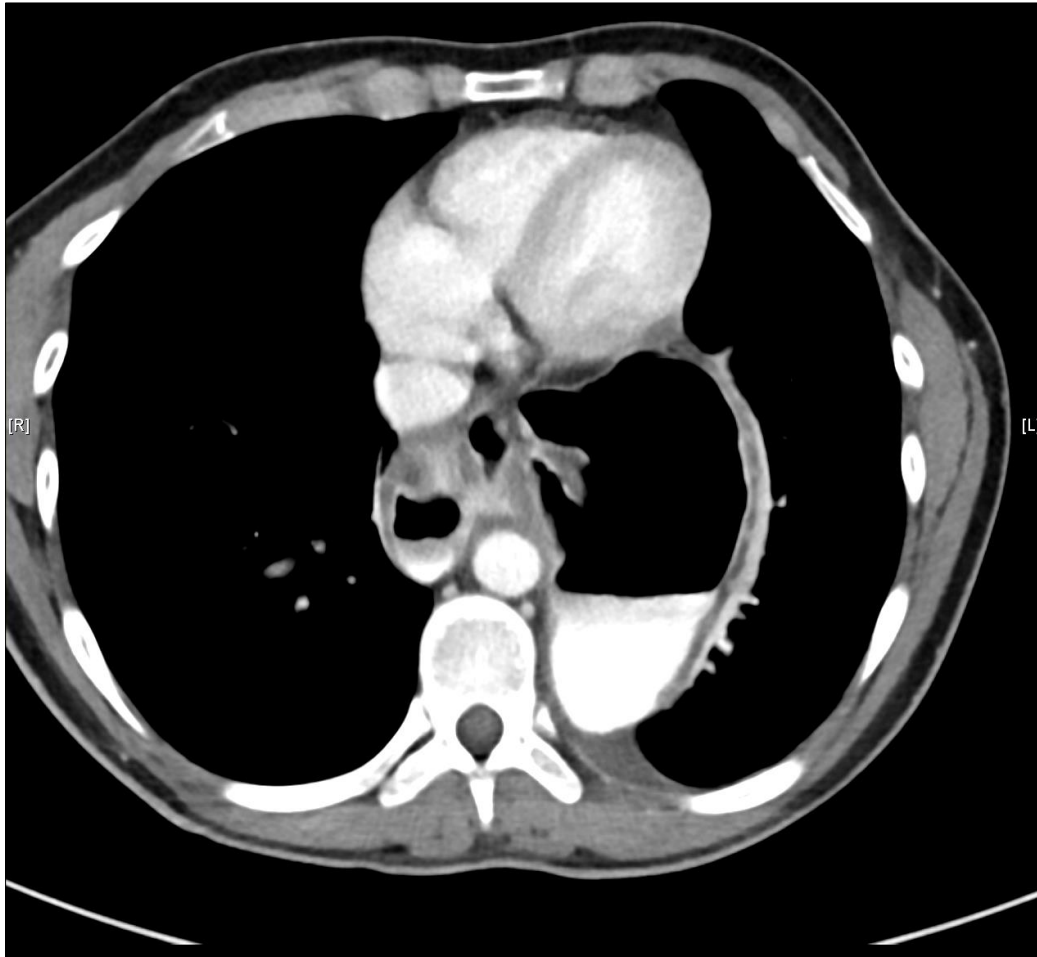
A 31-year-old male with history of gastroesophageal reflux disease (GERD), Barrett's esophagus, and constipation presented to the emergency department due to nausea, vomiting, acid reflux, and decreased oral intake which began six days prior to presentation. His surgical history was notable for robotic assisted Nissen fundoplication six months prior to presentation due to intractable GERD and small hiatal hernia. He reported recovering well from his surgical procedure.

On presentation, his blood pressure was 120/67 mmHg, heart rate was 89 beats per minute, and his oxygen saturation was 97% on room air. On physical examination, there was mild epigastric tenderness to deep palpation. Computed tomography (CT) of the abdomen and pelvis revealed a large hiatal hernia containing majority of the stomach and a portion of the transverse colon (Figure 1). The surgical team evaluated the patient and initially did not recommend any intervention. The following day, he underwent upper gastrointestinal tract fluoroscopy, which demonstrated near complete herniation of stomach above the hemidiaphragm, with a meso-axial rotation. The small

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bowel follow-through was terminated, as the patient regurgitated the majority of the contrast. The surgical team then recommended endoscopic placement of a Dobhoff tube. The following day, he underwent esophagogastroduodenoscopy (EGD). The EGD indicated that the gastroesophageal junction was 26 cm from the incisors. It also showed salmon colored esophageal mucosa consistent with Barrett's metaplasia; biopsies obtained during the procedure confirmed

Barrett's esophagus. The pylorus was unable to be identified due to distorted anatomy and complex hernia. As a result, a Dobhoff tube could not be placed. Two days later, a peripherally inserted central catheter was placed for total parenteral nutrition (TPN). Three days later, he underwent robotic paraesophageal hernia repair with mesh placement, robotic lysis of adhesions, and gastropexy. Five days later, he was completely weaned off TPN and discharged home in a stable condition.



**Figure 1: Computed Tomography of the Abdomen and Pelvis**

## DISCUSSION

Hiatal hernias can be evaluated using imaging, endoscopy or manometry [5]. Radiography using oral barium contrast can help determine the size of the herniation involving the stomach as well as the location of the gastroesophageal junction [3]. Additionally, it can help identify esophageal strictures, stenosis, or abnormal motility [3]. Computed tomography can help identify the type and position of the hiatal hernia as well as potential adverse associations such as organ perforation or pneumoperitoneum [3]. Performing an EGD can help analyze mucosal structures and identify lesions, but endoscopic evaluation can be difficult based on gastric rotation [3]. Additionally, the introduction of air during the procedure can alter the perceived size of a hernia [3]. Esophageal manometry can help with determining the

status of esophageal motility [3]. This may be beneficial prior to pursuing fundoplication surgery [3].

There are both medical and surgical methods for addressing hiatal hernias [3]. Hiatal hernias are commonly associated with GERD, and noninvasive measures are often initially pursued [3]. Some noninvasive measures include reduction of weight, not consuming food in the two-to-three hours prior to sleeping, raising the head end of the bed by two-thirds of a foot while sleeping, and removing foods which exacerbate GERD symptoms from the diet [3]. Regarding GERD, an eight week trial of a proton pump inhibitor (PPI) can also be pursued [6]. Initially, the PPI should be taken once daily prior to consuming the initial meal of the day [6]. If the eight week trial completely

alleviates the symptoms of GERD, the PPI can be discontinued [6]. If there is not complete alleviation of symptoms, the affected individual may require an EGD after cessation of the PPI for two-to-four weeks [6].

Surgical intervention can be considered in cases of concomitant sliding hernia and GERD, especially if PPI did not completely alleviate the symptoms [3]. Surgical intervention is warranted in individuals with signs of obstruction or volvulus of the stomach [3]. It is also reasonable to consider surgical intervention in asymptomatic individuals who are less than 50 years of age [7]. Robotic hernia repair is considered to be a viable alternative to a laparoscopic approach [8].

## CONCLUSION

There are four types of hiatal hernia, of which type IV is the least common. These hernias can be either congenital or acquired. Treatment options include medical management or surgical intervention. In the case of surgical intervention, a robotic approach is a valid alternative to a laparoscopic intervention.

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