

An Unusual Cause of Profound Weight Loss in a Middle-aged Person

Melissa Schori, MD
 Frank Nelson, MD
 Sulaiman Azeez, MD
 Anita Soni, MD

*Division of Gastroenterology & Hepatology, Department of Medicine,
 Lincoln Medical & Mental Health Center, Bronx, New York*

First described in 1761 by Giovanni Morgagni, 1682–1771, Professor of Anatomy, Padua, Italy,¹ hernia through the foramen of Morgagni is an anteriorly manifesting hernia arising from a defect between the septum transversum and the costal attachments of the diaphragm. It is the rarest form of diaphragmatic hernia, accounting for less than 1% of surgically treated diaphragmatic hernias. Transverse colon is the most common herniating viscus, with the herniation of the stomach much less common.² The pathophysiology is dependent on the herniating viscus, and the clinical presentation is contingent on the presence or absence of viscus obstruction or ischemia.^{1,3} We describe a case of acute profound weight loss due to herniation of the stomach through the foramen of Morgagni and a review of the literature.

Case Report

A 41-year-old Hispanic man was referred for gastroenterologic evaluation after 3 weeks of postprandial epigastric pain with nonprojectile emesis. The pain occurred approximately 5 minutes after ingesting food and was dull in character, nonradiating, and relieved by vomiting. His primary care physician had treated his pain with proton pump inhibitors, with no symptom improvement. His bowel motion was unchanged at 4 times per week, and there was no progressive increase in abdominal girth or dyspnea. He had lost 34 pounds since the onset of his complaint.

Address correspondence to:
 Dr. Sulaiman Azeez, Clinical Assistant Professor of Medicine, Weill Medical College of Cornell University, Chief of Gastroenterology & Hepatology, Lincoln Medical and Mental Health Center, Room 7A-74, 234 East 149th Street, Bronx NY 10451; Tel: 718-579-5000, ext 5222; Fax: 718-579-5219;
 E-mail: sulaiman.azeez@nychhc.org

The patient had no history of coronary or peripheral atherosclerosis, connective tissue disorder, or chronic remittent epigastric pain. He had not undergone any surgical procedure, and there were no symptoms of hyperthyroidism. HIV antibody and purified protein derivative of tuberculosis examinations were negative, and computed tomography (CT) of the abdomen showed no abnormality.

Physical examination revealed a 5'6", 120-pound asthenic male in no distress. His blood pressure was 110/60 mm Hg; his pulse was 78 bpm regular, and respiratory rate was 20/min. Conjunctiva was pink, sclera was anicteric, there was no adenopathy, and oral mucosa was moist with good skin turgor. His abdomen was scaphoid with no surgical scars, no visible peristaltic wave, no succussion splash, no bruit, no palpable mass, and bowel sounds were normal. Digital examination revealed normal-colored form stool.

Esophagogastroduodenoscopy showed an hourglass distortion of the stomach due to a midgastric corpus extrinsic compression with occlusion of more than 95% of the gastric lumen and gastric folds converging to the point of constriction; no mass or mucosal ulceration was noted. Upper gastrointestinal (UGI) series for further delineation of the anatomy showed midgastric obstruction with gastroesophageal reflux (Figure 1).

The patient underwent exploratory laparotomy; a diaphragmatic hernia of Morgagni containing the stomach, which was constricted in the middle, was found, as well as a loop of the transverse colon. The hernia contents were not spontaneously reducible due to fibrosis and scarring at the base of the hernia. Adhesions were lysed and the hernia contents reduced into the abdominal cavity, with repair by suturing of the foramen of Morgagni. There was no associated paraesophageal hernia. The patient recovered with

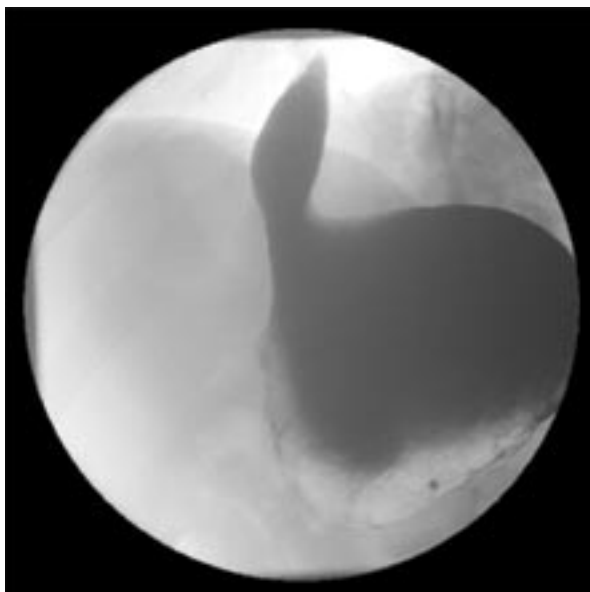


Figure 1. Upper gastrointestinal series: barium retained in proximal stomach with reflux due to midgastric obstruction.

complete resolution of his postprandial pain and emesis and has gained 6 pounds since surgery.

Discussion

This case demonstrates the clinical course of a patient with incomplete gastric obstruction due to herniation through the foramen of Morgagni. Typically, postprandial epigastric pain with significant weight loss is due to chronic mesenteric ischemia, gastric ulcer, or gastric malignancy.¹ Herniation of the stomach through the foramen of Morgagni is uncommon² and is not a well-characterized cause of this clinical presentation. There have been less than 10 cases of gastric herniation described in the literature.^{2,4,5} Herniation of the stomach presents with symptoms suggestive of gastric volvulus and gastric outlet obstruction.^{2,5} However, our review indicates that this is the first instance of acute profound weight loss in a middle-aged person as the key feature of presentation, although this may be due to lack of reporting.

Ninety percent of hernia cases of the foramen of Morgagni occur on the right side of the diaphragm, as the left side of the diaphragm is enhanced by the heart and pericardium. In adults, the pathology is seen more in women and individuals over age 50. Transverse colon is

the most common viscus herniating through the foramen. Other intra-abdominal structures described as herniating through the foramen include the greater omentum and the liver.^{3,6-10} Abdominal symptoms predominate in obese patients and nonobese patients tend to have respiratory symptoms. The diagnosis of hernia of the foramen of Morgagni is usually suspected on thoraco-abdominal CT, which shows an intra-abdominal viscus with oral contrast in the anterior chest, usually in the right thorax.^{4,6-8} Esophagogastroduodenoscopy is usually not helpful in diagnosis.

Once diagnosis is confirmed, surgical correction is mandatory. Laparoscopic or open transabdominal or transthoracic repair have been described. Excision of the hernia sac is optional; leaving it behind is believed to reduce pleural and pericardial injury and prevent escape of carbon dioxide into the thorax.^{2,3,7,9} Direct interrupted or running suture repair can be used for small defects. Suturing with mesh prosthesis is the method of repair for large diaphragmatic defects.

Conclusion

Hernia of the foramen of Morgagni should be considered in the differential diagnosis of a middle-aged patient with no risk factor for chronic mesenteric ischemia or acid peptic disorder, who presents with profound weight loss and UGI obstructive symptoms.

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Review

Robert Kanard, MD¹

Todd A. Ponsky, MD²

¹Department of Pediatric Surgery,
The Children's National Medical Center, Washington, DC

²Division of Pediatric Surgery, Rainbow Babies
and Children's Hospital, Cleveland, Ohio

The case discussed by Dr. Schori and colleagues is interesting because of the uncommon presentation of an uncommon entity.¹ As discussed in the case study, patients who present with postprandial epigastric pain, emesis, and weight loss are usually considered to have either mesenteric ischemia, gastric ulcer, or gastric malignancy; Morgagni hernia is usually not at the top of the differential diagnosis. In the literature, Morgagni hernias are usually diagnosed incidentally during imaging for an unrelated condition or during an unrelated operation. Because of their typically asymptomatic nature, they are often not considered when patients present with pain or weight loss. When these hernias are symptomatic, they can be very frustrating to identify, especially if the history offers no guidance.

Diaphragmatic hernia (either Morgagni or the posterior-lateral hernia of Bochdalek) would enter the differential much earlier if there was a history of blunt abdominal trauma or, even obliquely, a history of a complicated neonatal medical course. As this patient presented with obscure symptoms, and not with incarcerated viscera (as adults catastrophically can do), it was educational to trace the workup the authors performed. We wonder what the preoperative diagnosis was when the endoscopic and radiographic evaluations demonstrated findings consistent with gastric obstruction. Certainly the patient needed an operation, but we wonder what considerations were given to a laparoscopic versus a laparotomic approach.

The open repair for the Morgagni hernia described in this paper is the traditionally performed repair and even recent papers continue to describe the standard open approach with a 15-cm incision. The open approach may be the preferred approach for the patient who presents critically ill with incarcerated bowel, but laparoscopy has proven equally safe and effective for the elective repair. There are now several case series published on the

laparoscopic approach.²⁻⁷ The different methods vary in the fine details of the actual closure of the defect and different authors have reported different applications of synthetic and biosynthetic patches and plugs, but most agree that primary closure is the preferred method because it avoids the insertion of a foreign material patch. Given the rarity of Morgagni hernias, it would be very difficult to conduct a prospective randomized trial of open versus laparoscopic repair.

The open repair for the Morgagni hernia that the authors performed can be utilized with or without a patch, depending on the size of the defect. There are, however, many elegant laparoscopic methods described to repair Morgagni hernias.²⁻⁷ The results from these studies show that the laparoscopic repair is as safe and effective as the open repair. At our institutions, we prefer the laparoscopic approach detailed by Dr. Ponsky and associates.⁶ We place our camera at the umbilicus and place two needle drivers through stab incisions on either side of the camera. After reducing the contents of the hernia, we use the laparoscope to assist in placing sutures percutaneously through stab incisions over the epigastrium. The sutures are tied extracorporeally, much like the stay sutures are during the laparoscopic repair of a ventral incisional hernia. At the end of the procedure, there is a 5-mm incision at the umbilicus, two 4-mm incisions lateral to the umbilicus, and usually three to four 1-mm incisions over the epigastrium. Performed this way, the procedure is relatively low-risk and simple, and patients frequently go home the same day or after a 24-hour stay. This procedure requires some basic laparoscopic skills, but it does not qualify as an advanced laparoscopic case. Alternatively, the Morgagni hernia can be closed completely intracorporeally, a method with which we have also had success.

We encourage surgeons who currently employ the open approach to try the laparoscopic approach to improve their patients' postoperative pain and cosmetic result and decrease their patients' length of stay. However, if the surgeon does not have significant experience with advanced laparoscopy, the open procedure is perfectly suitable.

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Address correspondence to:

Dr. Todd A. Ponsky, Assistant Professor of Surgery, Case Western Reserve University, Rainbow Babies and Children's Hospital, 11100 Euclid Ave, RBC 122, Cleveland, OH 44106-6015; Tel: 216-844-3015; Fax: 216-844-8687; E-mail: todd.ponsky@uhhospitals.org