

Diaphragmatic Hernia after Ivor-Lewis Esophagectomy Manifested as Lower Gastrointestinal Bleeding

CPT YONG U. CHOI, M.D., LTC JAMES H. NORTH JR., M.D., F.A.C.S.

From the Department of Surgery, Eisenhower Army Medical Center, Fort Gordon, Georgia

Diaphragmatic hernia after esophageal resection is a recognized but rare complication. Parahiatal hernias may result from manipulation and extension of the crura during surgery. This can lead to a wide array of symptoms depending on the extent and organ that is herniated. A high index of suspicion is required because there is no one symptom that is specific for herniation. This report represents the first case of a patient presenting with lower gastrointestinal bleed from a parahiatal hernia after esophageal resection.

IATROGENIC HERNIATION OF abdominal contents into the thoracic cavity is a recognized complication of esophageal surgery. Even though its occurrence is rare it does not differ substantially in presentation or complication from primary paraesophageal hernias.¹ In a series of 101 patients undergoing operative procedures for paraesophageal hiatal hernias 13 patients were identified as having iatrogenic causes for the hernias and only one of these hernias was a consequence of esophageal resection.² In fact only 18 cases of diaphragmatic hernias after esophagectomy have been reported in the English literature between 1979 and 1997.³ This report describes a diaphragmatic hernia presenting with a lower gastrointestinal bleed after Ivor-Lewis esophagectomy.

Case Report

The patient is a 69-year-old white man who underwent Ivor-Lewis esophagectomy for a T₂N₀M₀ adenocarcinoma of the lower esophagus in November 1998. His postoperative course was unremarkable. In May 1999 he presented to the emergency department with fatigue and a 4-day history of dark stools. He was hemodynamically stable. His abdominal examination revealed a well-healed midline incision. He had normal bowel sounds and no peritoneal signs. His rectal examination was remarkable for occult blood. His hematocrit in the emergency department was 27.2 per cent (a decrease from 37% one week before admission). He was admitted and resuscitated. During the hospitalization he had no signs or symptoms of continued bleeding. An esophago-

gastroduodenoscopy was performed that revealed a widely patent anastomosis and no evidence of a bleeding source. He remained stable and was discharged from the hospital. He was scheduled for outpatient colonoscopy.

Colonoscopy was performed 5 days after discharge. The colonoscope easily advanced to the transverse colon; however, there appeared to be a tight turn in the mid-transverse colon through which the scope could not be advanced. The procedure was aborted and a barium enema was performed. The barium enema revealed diverticulosis and herniation of the splenic flexure into the chest (Fig. 1). A CT scan of the chest and abdomen revealed no other abnormalities but did confirm the herniation (Fig. 2). The patient was taken to the operating room for repair of the diaphragmatic hernia. Upon entering the abdomen a large opening between the right and left crura with herniation of colon through this opening was identified. The colon was reduced and noted to be viable; however, the wall of the herniated colon was edematous and echymotic. The defect was too large for primary closure. Therefore, a Gore-Tex (W.L. Gore and Associates, Flagstaff, AZ) patch (10 × 5 cm) was used to repair the defect. The patient had an uneventful postoperative course and is currently doing well.

Discussion

Diaphragmatic herniation after esophagectomy is a rare complication. In a review of 1353 patients who underwent transhiatal esophagectomies Katariya et al.⁴ reported transhiatal hernias in only 0.4 per cent of the patients. van Sandick et al.³ reported a 4 per cent incidence of diaphragmatic herniation after esophagectomy.

The presentation of diaphragmatic hernia after esophagectomy is similar to the presentation of diaphragmatic hernia from other etiologies. Symptoms include epigastric pain, inability to pass a nasogastric

Address correspondence and reprint requests to LTC James H. North, Jr., M.D., Chief, General Surgery, Eisenhower Army Medical Center, Fort Gordon, GA 30905.

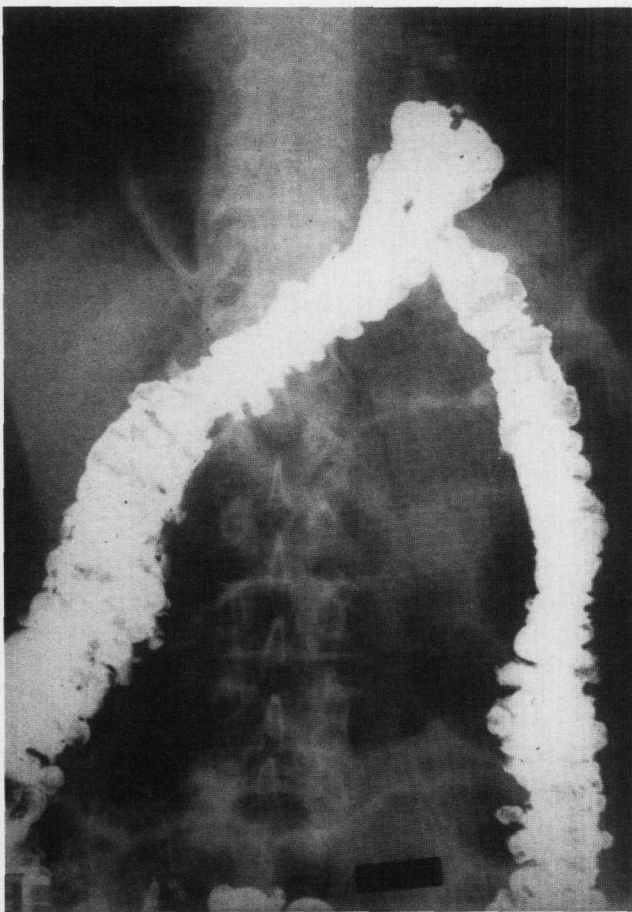


FIG. 1. Barium enema demonstrating herniation of transverse colon through esophageal hiatus.

tube, and inability to vomit when the stomach is herniated. Gastric necrosis has been reported with herniation.⁵ Other presenting symptoms include pulmonary insufficiency, dysphagia, fever, leukocytosis, abdominal pain, heartburn, and nausea/emesis. Some patients are asymptomatic.^{2, 6, 7} Although anemia has been reported with diaphragmatic hernias after esophagectomy no specific case reports could be found with the presenting symptom of a lower gastrointestinal bleed.

Our patient presented with lower gastrointestinal bleed. He did not have any abdominal pain or other complaints. The neck of the hernia was constricted. The hernia sac and the colonic contents were edematous and ecchymotic. We suspect the underlying mucosa had become traumatized or ischemic accounting for the colonic bleed. van Sandick et al.³ evaluated risk factors for diaphragmatic herniation. The only statistically significant factor was extended *versus* routine opening of the hiatus. Extended enlargement was defined as extended incision of the hiatal tissues. Routine opening resulted in a 2 per cent incidence of herniation *versus* 13.8 per cent for extended enlargement ($P = 0.02$).³ If the hiatus needs to be enlarged an anterior incision in the diaphragm instead of a lateral one has been shown to be beneficial.⁸ However, the distance the opening can be extended anteriorly is limited. In our patient with early-stage cancer the hiatus was minimally incised.

In conclusion paraesophageal hernia after esophagectomy is a rare occurrence. It occurs more often when the hiatus is extended. However, it can occur anytime an

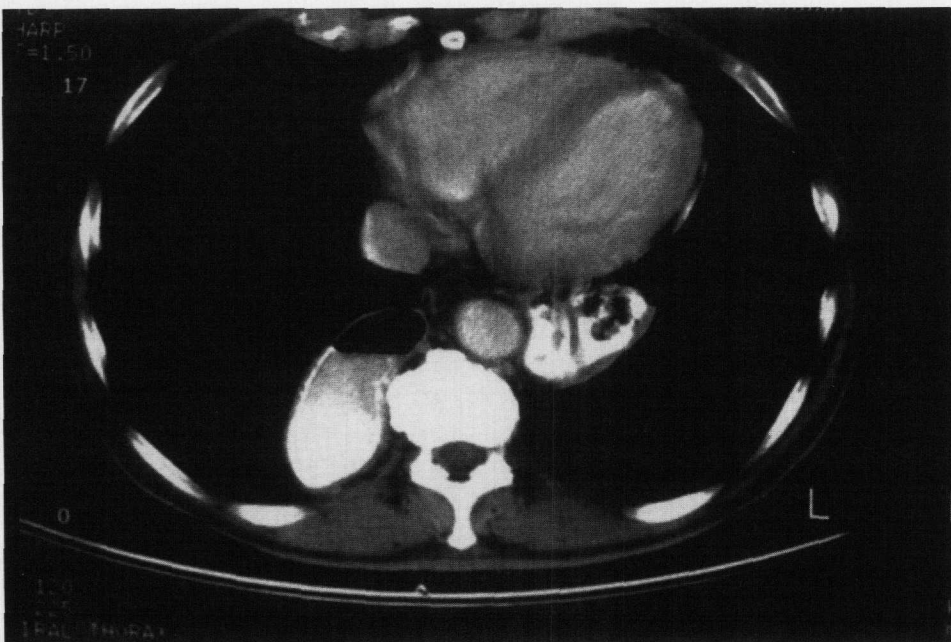


FIG. 2. CT scan of chest and abdomen confirming herniation of colon into the chest.

esophagectomy is performed as a result of manipulation of the hiatal opening. Signs and symptoms vary depending on the organ that is herniated. In this case the patient developed lower gastrointestinal bleeding due to colonic herniation. This complication must be included in the differential diagnosis of a patient with lower gastrointestinal bleeding after esophageal resection.

REFERENCES

1. Fletcher PR. Acute hiatal hernia with oesophageal perforation following Heller's operation. *Br J Surg* 1978;65:486-8.
2. Streitz JM, Ellis FH. Iatrogenic paraesophageal hiatus hernia. *Ann Thoracic Surg* 1990; 50:446-9.
3. van Sandick JW, Knegjens JL, van Lanschot JJB, Obertop H. Diaphragmatic herniation following oesophagectomy. *Br J Surg* 1999;86:109-12.
4. Katariya K, Harvey JC, Pina E, Beattie EJ. Complications of transhiatal esophagectomy. *J Surg Oncol* 1994;57:157-63.
5. Vallieres E, Waters PF. Incarcerated parahiatal hernia with gastric necrosis. *Ann Thorac Surg* 1987;44:82-3.
6. Heitmiller RF, Gillinov AM, Jones B. Transhiatal herniation of colon after esophagectomy and gastric pull-up. *Ann Thorac Surg* 1997;63:554-6.
7. Gollub MJ, Bains MS. Herniation of the transverse colon after esophagectomy: Is retrocardiac air a normal postoperative finding? *AJR* 1997;169:481-3.
8. Reich H, Lo AY, Harvey JC. Diaphragmatic hernia following transhiatal esophagectomy. *Scand J Thorac Cardiovasc Surg* 1996;30:101-3.