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## Case Report

# Omental herniation through the esophageal hiatus: A rare cause of gastric outlet obstruction and its CT findings

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## ABSTRACT

A man in his 60s visited the emergency department because of epigastric pain and vomiting. Noncontrast helical abdominal CT revealed a lipomatous mass on the right side of the lower esophagus. Caudal slices showed that the mass appeared to displace the gastric antrum causing gastric outlet obstruction. Further observation revealed a linear structure from the greater curvature of the stomach into the omental vessels. Based on these findings, a diagnosis of intrathoracic omental hernia through the esophageal hiatus was made. Intraoperatively, a defect in the lesser omentum was seen, and the greater omentum herniated through the defect into the esophageal hiatus. Omental herniation through the lesser omentum into the esophageal hiatus can present as gastric outlet obstruction.

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## Background

Omental herniation through the esophageal hiatus is rare. Although the majority of reported cases are asymptomatic, it may be symptomatic presenting with postprandial pain [1], dysphagia [2], and epigastralgia [3]. The symptoms are related to obstruction; however they have not been fully described in past reports. In addition, the possible routes through which the greater omentum could herniate have not been sufficiently investigated. We encountered a case of omen-

tal hernia through the lesser omentum into the esophageal the case with emphasis on its CT findings.

## Case presentation

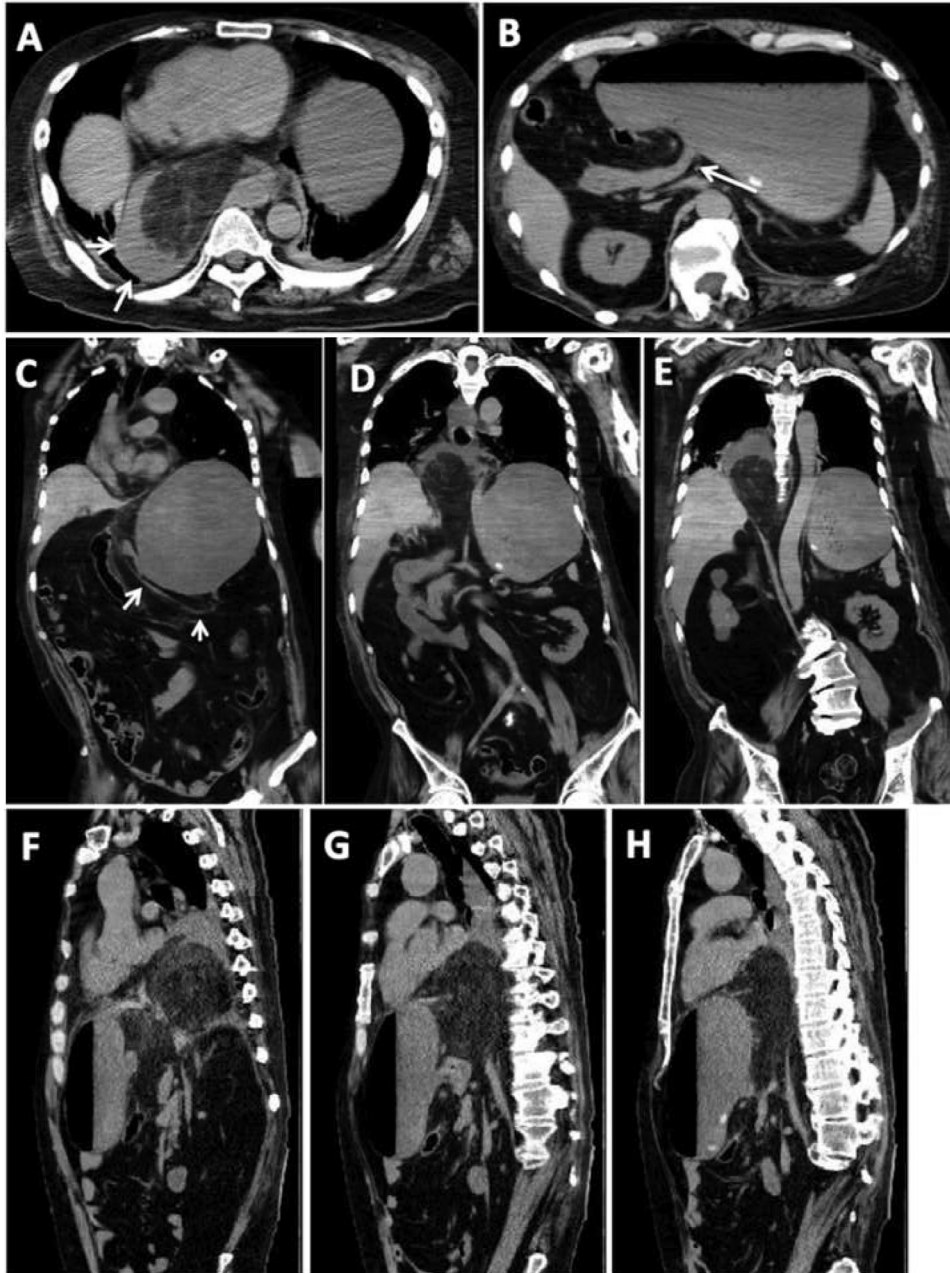
A man in his 60s visited the emergency department complaining of epigastric pain and vomiting. Initially, the cause of the symptoms was not clear and he was sent home. As the symptoms worsened after returning home, he visited the emergency department again on the fourth day. His past

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**Fig. 1 – Noncontrast helical abdominal CT findings**

**A:** Lipomatous mass was seen on the right side of the esophagus. There is fluid collection around the mass (arrows).

**B:** The lower part of the stomach was displaced by the mass sinistroposteriorly and narrowed (arrow).

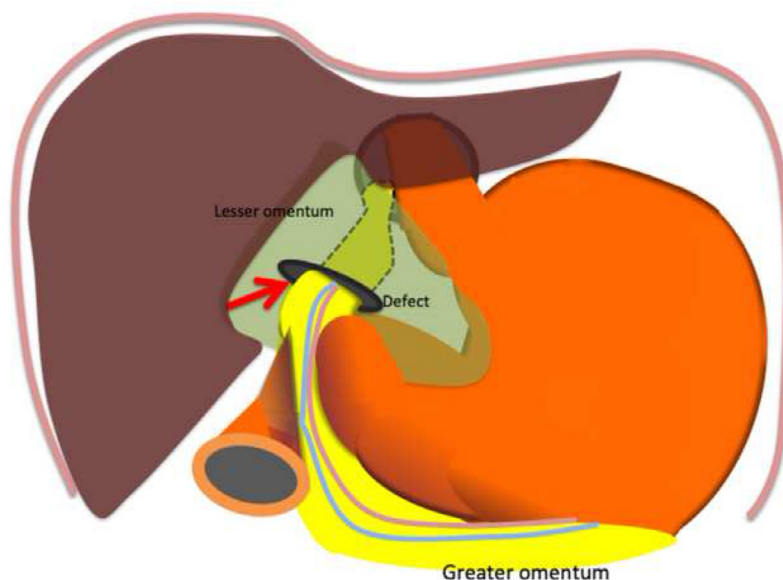
**C,D,E:** On coronal view, the omental vessels are seen (arrows). There is scoliosis in the thoracolumbar spine.

**F,G,H:** On sagittal view, the herniation is seen at the dorsal side of the diaphragm.

medical history and surgical history included right hemiparesis from intracranial bleeding sustained from a road traffic accident in his 20s and cholecystectomy for acute cholecystitis in his 50s. His vital signs were as follows: blood pressure, 124/75 mmHg; pulse, 118 beats per minute; and temperature, 36.7°C. His BMI was 15.7. On physical examination, the abdomen was distended and slight epigastric tenderness was noted on palpation. There was no guarding, rigidity, or rebound tenderness. Right thoracolumbar scoliosis was

(white blood cell count 9900/ $\mu$ L) and markedly elevated C-reactive protein (16.4 mg/dL).

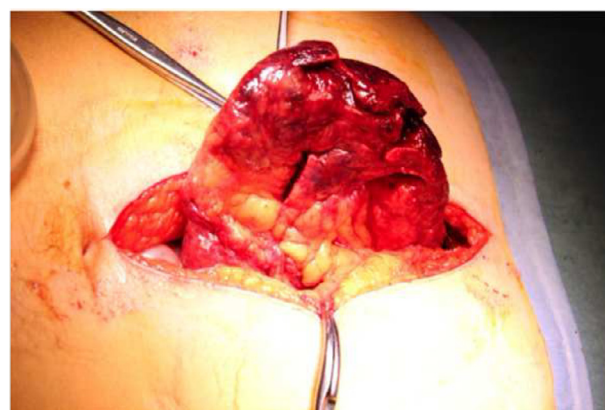
On noncontrast helical abdominal CT, the stomach was remarkably distended with food residue and gas. There was a lipomatous mass with some fluid collection on the right side of the esophagus (Fig. 1A). On the coronal view, the mass was continuous to the greater curvature of the stomach. Although a lipomatous tumor was considered for the differential diagnosis, the mass was identified as the greater omentum



**Fig. 2 – Representative illustration**

The greater omentum was herniated through a defect in the lesser omentum into the esophageal hiatus.

since there were linear structures, which were recognized as omental vessels (Fig. 1C). Based on these findings, a diagnosis of intrathoracic omental hernia through the esophageal hiatus was made. As the greater omentum was coursing on the right side of the antrum of the stomach, the antrum was displaced sinistroposteriorly and obstructed (Fig. 1B). A representative illustration is shown in Fig. 2. Fluid accumulation around the herniated omentum and elevated inflammatory markers suggested strangulation, and surgery was performed. Intraoperatively, a defect measuring approximately 5 cm in diameter in the lesser omentum was observed. The greater omentum had herniated through the defect into the lesser omentum and ultimately into the esophageal hiatus. The herniated omentum was dark red in color; thus, strangulation was suspected (Fig. 3). Consequently, the discolored part of the omentum was resected and closure of the hiatus was performed. Postoperatively, the symptoms resolved quickly and the patient was discharged on the 11th day without any complications.



**Fig. 3 – Surgical findings**

The herniated omentum was dark red in color; thus, strangulation was suspected. (Color version of figure is available online.)

## Discussion

Omental herniation through the esophageal hiatus is rare. Its risk factors include aging and obesity [4]. The esophagus is attached to the diaphragm by the phrenoesophageal membrane, which may have a role in preventing reflux and hiatal hernia [5]. This structure consists of 2 limbs. One limb passes through the esophageal hiatus and attaches to the esophagus above the diaphragm; the other limb extends caudally then attaches to the esophagus below the diaphragm. The elasticity of fibers in the membrane decreases in people over 50 years, increasing the risk of herniation [4]. In obese patients, the omentum is generally more prominent, therefore it may be more prone

to herniate. In the present case, the patient was over 50 years old, but was not obese. The patient had a history of hemiparesis and scoliosis, which may have been responsible for herniation. In addition, the defect was in the lesser omentum. The patient had a history of cholecystectomy; however, it was not clear whether the defect occurred during the procedure or was an incidental finding.

Lipomatous tumors have been misdiagnosed as omental hernias [2,6,7]. In the present case, it was clear that the mass was the greater omentum as omental vessels were seen on CT. This observation was also noted in past reports [4,8–10]. We propose 2 possible routes through which the greater omentum herniates into the esophageal hiatus. In the direct route, the omentum passes anteriorly to the stomach

into the esophageal hiatus, whereas in the indirect route as in the present case, the omentum passes through the lesser sac then into the hiatus. Sueyoshi et al reported a case where the greater omentum herniated through the lesser sac into the esophageal hiatus [3]. In other reports, the exact route of the herniation were not described. Of the reported cases, 3 cases were symptomatic and the others were asymptomatic. Although it may depend on the degree of herniation and the individual's anatomy, the route through the lesser sac may be more symptomatic as the omentum may pass over the lower part of the stomach, displacing it posteriorly toward the hiatus, which is located on the dorsal side of the diaphragm.

In symptomatic cases of omental herniation, surgery is recommended. In asymptomatic cases, conservative observation is an option [11]. On the other hand, since there is a risk of obstruction and strangulation as in the present case, elective surgery is a reasonable option in asymptomatic cases [3]. In conclusion, we encountered a case of omental herniation through the lesser omentum into the esophageal hiatus. The greater omentum displaced the antrum of the stomach sinistroposteriorly and caused gastric outlet obstruction.

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### Declaration of Competing Interest

None.

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