

# Air Under the Diaphragm After Upper Endoscopy and Laparoscopic Gastrostomy Tube Placement: Iatrogenic Chilaiditi's Syndrome

by Matthew Walvick

**Chilaiditi's syndrome is an uncommon condition that can mimic the symptoms of an acute abdomen and radiographically be mistaken for pneumoperitoneum. Awareness of this condition by the primary care physician can help discriminate a surgical emergency from an incidental finding.**

## INTRODUCTION

**C**hilaiditi's syndrome is an uncommon condition that can mimic the symptoms of an acute abdomen and radiographically be mistaken for pneumoperitoneum. Air is seen under the right hemidiaphragm due to the intestine being situated between the liver and the hemidiaphragm. When this finding is discovered in the asymptomatic patient it is termed Chilaiditi's sign. The incidence in the general population has been reported as 0.025–0.28 percent.<sup>1</sup> This is a case report of Chilaiditi's syndrome after endoscopy and laparoscopic gastrostomy tube placement.

## CASE REPORT

A 55-year-old man with a history of esophageal cancer and tongue cancer presented to the emergency department with odynophagia and a 30 pound weight loss over 4 months. Laryngoscopy was performed and multiple biopsies were taken from the right oropharynx and hypopharynx. Pathology reports of the biopsies showed squamous cell carcinoma. In anticipation of

radiation and chemotherapy as well as prevention of osteoradionecrosis exacerbating his current severe periodontitis post treatment, he underwent full teeth extraction. Endoscopic placement of a gastrostomy tube was unsuccessful due to a stricture in the upper esophagus thus, laparoscopic placement of a gastrostomy tube was required. Bronchoscopy, was performed since the patient was at high risk for bronchogenic carcinoma. Bronchoscopy was uncomplicated and revealed edema of the right posterior pharyngeal area with normal mucosa.

Chest radiograph on admission was unremarkable. (Figure 1) Repeat chest radiograph for abdominal pain post his procedures was read by the radiologist as showing free intraperitoneal air below the right hemidiaphragm. (Figure 2) The finding prompted a computed tomography scan of the abdomen. This imaging study revealed haustra of the large intestine located in-between the liver and the right hemidiaphragm. (Figure 3)

## DISCUSSION

Any disruption of the abdominal structures can cause this phenomenon. Even rapid or substantial weight loss in obese patients can cause the bowel to replace fat between the liver and diaphragm.<sup>2</sup>

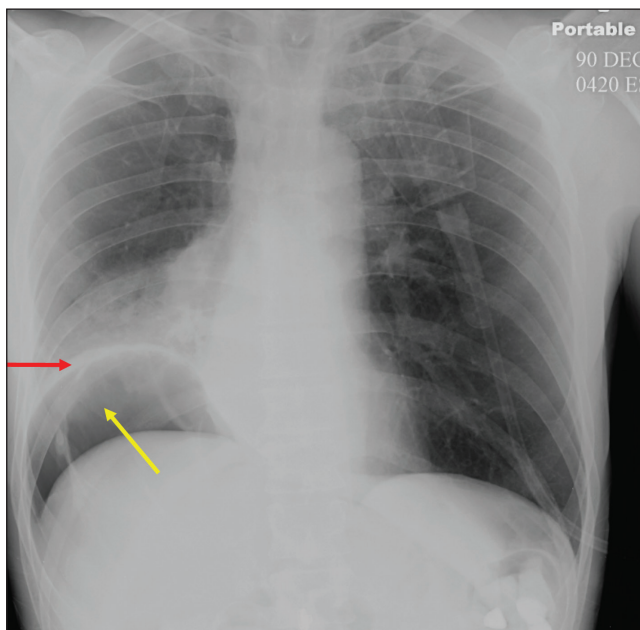
---

Matthew Walvick, D.O., Internal Medicine Resident, University of California San Francisco, Fresno, CA.



**Figure 1.** Normal chest radiograph prior to endoscopy and laparoscopy.

Imaging studies can be misleading as well as extremely useful in differentiating this condition from a surgical emergency. Radiography may show what



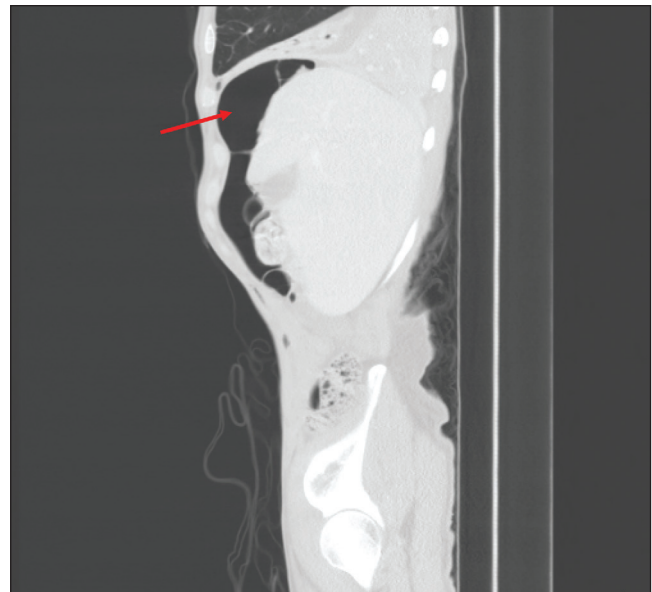
**Figure 2.** Chest radiograph post endoscopy and laparoscopy showing air (yellow arrow) under the right hemidiaphragm (red arrow).

appears to be free air under the diaphragm. However, contrary to pneumoperitoneum, intraluminal air appearing as a radiolucency will not be affected by altering the position of the patient. The left lateral position will not reveal an air fluid level as with free air. Abdominal computed tomography can delineate haustra or plicae circulares, clearly illustrating the distinction between intraluminal and free air.<sup>3</sup>

The phenomenon of Chilaiditi's sign and syndrome is well mentioned in the emergency medicine literature and surgical literature where awareness of this condition is paramount to the discrimination of a potential surgical emergency. We hope to bring awareness to this condition in the gastroenterological literature where a very common procedure such as upper endoscopy or laparoscopic gastrostomy tube placement can be a precipitating factor. ■

#### References

1. Orangio GR, Fazio VW, Winkelmann F. et al. The Chilaiditi syndrome and associated volvulus of the transverse colon: An indication for surgical therapy. *Dis Colon Rectum* 1986;29: 653-6
2. Murphy JM, Maibaum A, Alexander G et al. Chilaiditi's syndrome and obesity. *Clin Anat* 2000; 13:181-4
3. Fitzgerald JF, Tronconi R, Morris LD et al. Clinical Quiz: Chilaiditi's sign. *J Pediatr Gastroenterol Nutr* 2000;30:425-71.



**Figure 3.** Sagittal section of computed tomography of the abdomen post endoscopy and laparoscopy illustrating the presence of haustra of the large intestine (red arrow) interpositioned between the right hemidiaphragm and liver.