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## Boerhaave's syndrome secondary to an incarcerated inguinal hernia: A case report



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## ABSTRACT

**INTRODUCTION:** Boerhaave's syndrome is defined as the spontaneous perforation of the esophagus. Although it has been reported in association with different gastrointestinal pathologies, there are no previous reports in association with an incarcerated inguinal hernia containing ischemic small bowel.

**PRESENTATION OF CASE:** We present an unusual case of a gentleman who presented with severe chest pain after a 24-h period of emesis. He was found to have developed an esophageal perforation presumed secondary to an incarcerated inguinal hernia causing small bowel obstruction. The patient underwent a thoracotomy to repair the perforated esophagus followed by a groin exploration, small bowel resection and repair of the inguinal hernia.

**DISCUSSION:** Boerhaave's syndrome is well known to be a postemetic phenomenon in association with upper gastrointestinal obstruction. However, to our knowledge, this is the first reported case of esophageal perforation secondary to strangulated bowel in an inguinal hernia. In similar situations, we recommend the surgical correction of the esophageal perforation, followed by exploration and resection of any ischemic small bowel.

**CONCLUSION:** Here we present a patient who was diagnosed with a perforated esophagus after forceful emesis secondary to an incarcerated inguinal hernia containing ischemic bowel.

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### 1. Introduction

Boerhaave's syndrome, or spontaneous (post-emetic) perforation of the esophagus, was first described by Hermann Boerhaave in 1724 [1]. It is a very uncommon entity, with the estimated incidence in the literature being 1 in 6000 patients [2]. Incarcerated inguinal hernias, on the other hand, are not uncommon surgical emergency. They are the second most common cause of small intestinal obstruction [3]. However, only 10–15% of incarcerated hernias contain necrotic bowel [4]. We report a patient with a rare association of these two pathologies, where the emesis secondary to a small bowel obstruction from an incarcerated inguinal hernia resulted in esophageal perforation.

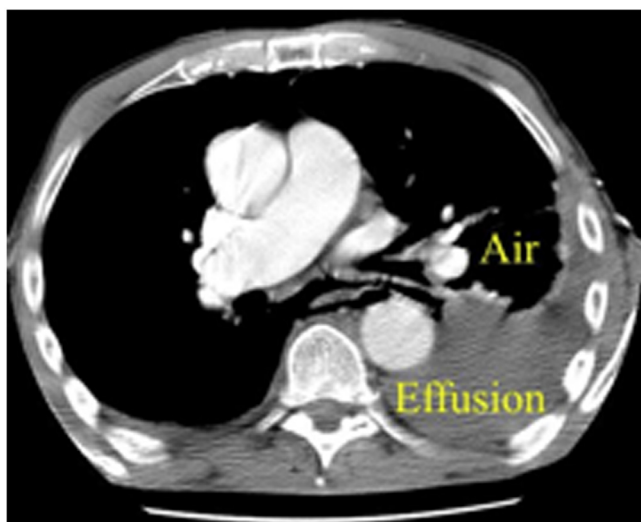
### 2. Case presentation

A 75-year-old man with a known history of Chronic Obstructive Pulmonary Disease, right inguinal hernia repair and alcohol abuse, presented to our emergency room with a one day history of vomiting followed by severe retrosternal and epigastric pain of sudden onset. He also complained of a lump in the right inguinal region that he noted on the preceding day. On initial presentation, his vital signs included a blood pressure of 128/70, a pulse of 87/min and a respiratory rate of 22/min. He was afebrile, and mildly distressed. Examination of his chest revealed decreased air entry on the left with crackles at the left lung base. His cardiovascular exam was within normal limits. He had a distended and tympanic abdomen. A very tender right inguinal mass was noted. His leucocyte count on admission was  $5.6 \times 10^9/l$ .

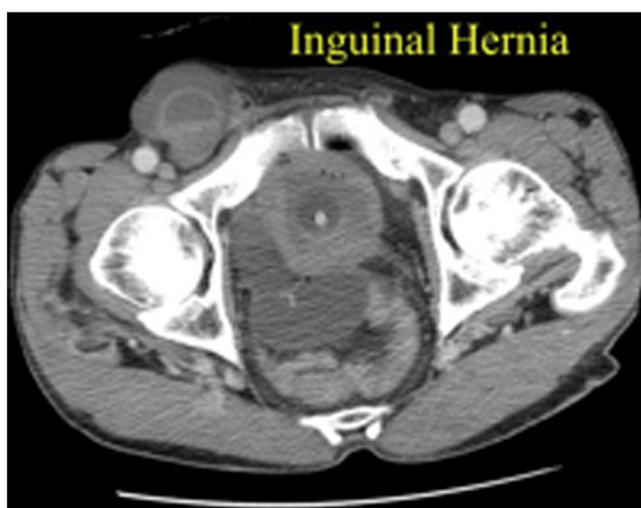
The initial chest radiograph revealed extensive atelectasis and consolidation of the left lower lobe with a small left pleural effusion. A contrast enhanced computed tomographic (CT) scan of the chest demonstrated pneumomediastinum, consolidation in the left lung and a large left pleural effusion, all of which were highly suspicious for esophageal perforation (Fig. 1). CT scan of the abdomen showed

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**Fig. 1.** CT image of the chest showing pneumomediastinum with air tracking laterally towards the left pleural space, and a large left pleural effusion.



**Fig. 2.** CT image of the abdomen showing dilated loops of bowel and an incarcerated bowel loop in the right inguinal region.

distended small bowel loops in the pelvis leading into a right groin hernia. A small segment of bowel was seen within the hernial sac. The scan was suggestive of an incarcerated hernia (Fig. 2).

A Gastrografin swallow was performed and demonstrated free extravasation of contrast from the left posterolateral aspect of the distal esophagus just above the level of the hiatus, confirming the diagnosis of a ruptured esophagus.

Following aggressive volume resuscitation, chest tube drainage, and commencement of antibiotics, the patient was taken to the operating room for definitive management. The esophageal perforation was first identified with upper endoscopy. The remaining esophagus and stomach were normal. A left thoracotomy was performed first for drainage and irrigation of the mediastinum and pleural space. The esophageal perforation site was identified at a level just above the esophageal hiatus. A two-layer repair was performed. The patient was then turned supine for exploration of the right groin. He was found to have inguinal hernia with an infarcted loop of small bowel that required resection with primary anastomosis. The hernia was then repaired primarily.

The patient was transferred to the intensive care unit and had an uneventful course, being discharged to the ward five days later.

He subsequently developed a recurrent incarceration in the right inguinal hernia, which required a formal laparotomy and another bowel resection. He was eventually discharged home twelve days later.

### 3. Discussion

The esophagus differs from the rest of the alimentary tract in that it lacks a serosal layer, which normally contains collagen and elastic fibers. This makes it more susceptible to rupture at lower pressures than the rest of the gastrointestinal tract. Spontaneous esophageal rupture is well documented as a postmetic phenomenon and early recognition with prompt treatment are important factors in minimizing the mortality. The mortality ranges from 20 to 30% [5], but if left untreated, approaches 100%. Barrett reported the first case of successful surgical repair in 1947 [6].

We reviewed the literature pertaining to the association of Boerhaave's syndrome with incarcerated inguinal hernia. A Medline search yielded no reported cases of these dual pathologies, however Boerhaave's syndrome has been reported in the context of upper gastrointestinal obstruction [7]. One case described by Bradley et al. demonstrated an associated of Boerhaave's syndrome with cholecystitis [8].

Surgical management of Boerhaave's syndrome remains the gold standard, with nonsurgical care being appropriate in selective situations [9]. An open approach continues to be employed for patients who present with unstable vital signs however, a small study by Cho et al. along with select case reports suggests that primary repair using a minimally invasive thoracoscopic approach may be safe in stable patients [10,11].

In our case, given that the presumed cause of perforation was incarcerated bowel, we continued on to a groin exploration, bowel resection and hernia repair for definitive management. To our knowledge, this is the first reported case of such dual pathology. We recommend initial repair of the esophageal perforation, followed by the resection and, if possible, primary anastomosis of the insulting obstructed ischemic small bowel.

### 4. Conclusion

Here we present a case in which the patient developed small bowel obstruction secondary to an incarcerated hernia. The resultant forceful and repeated emesis eventually lead to esophageal perforation. Our patient underwent a thoracotomy, followed by an inguinal exploration, small bowel resection and definitive hernia repair.

### Consent

Verbal informed consent was obtained from the patient for publication of this Case report and accompanying images at the time of treatment. Written consent was not attainable as the patient was lost to follow up and can no longer be reached. Thus all identifying information has been removed from the text and images provided in this manuscript.

### Competing interests

The author(s) declare that they have no competing interests.

### Conflicts of interest

None.

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N/A.

**Author contributions**

AA – Care of the patient and writing of manuscript.

MH – Writing and submission of manuscript.

WM – Care of the patient and writing of manuscript.

ST – Care of the patient and writing of manuscript.

SS – Care of the patient and writing of manuscript.

**Guarantor**

AA.

**References**

- [1] V.J. Derbes, R.E. Mitchell Jr., Herman Boerhaave Atrocis, nec descripti prius, morbi historia; the first translation of classic case report of rupture of the esophagus, with annotations, *Bull. Med. Lib. Assoc.* 43 (1955) 217–224.
- [2] G.A. Lillington, P.E. Bernatz, Spontaneous perforation of esophagus, *Dis. Chest* 39 (1961) 177–184.
- [3] M.A. Smith, N.J. Soper, Small intestine, in: G.M. Doherty, J.B. Meko, J.A. Olson (Eds.), *The Washington Manual of Surgery*, JB Lippincott, Philadelphia, 1999, pp. 216–227.
- [4] B. Kulah, I.H. Kulacoglu, M.T. Oruc, et al., Presentation and outcome of incarcerated external hernias in adults, *Am. J. Surg.* 181 (2) (2001) 101–104.
- [5] J. Jougon, T. McBride, F. Delcambre, et al., Primary esophageal repair for Boerhaave's syndrome whatever the free interval between perforation and treatment, *Eur. J. Cardiothorac. Surg.* 25 (4) (2004) 475–479.
- [6] N.R. Barrett, Report of a case of spontaneous perforation of the esophagus successfully treated by operation, *Br. J. Surg.* 35 (1947) 216.
- [7] G.G. Craven, M.G. Whittaker, Boerhaave's syndrome as a complication of pre-existent gastrointestinal disease, *Ir. J. Med. Sci.* 161 (12) (1992) 670–674.
- [8] S.L. Bradley, P.C. Pairolero, W.S. Payne, et al., Spontaneous rupture of the esophagus, *Arch. Surg.* 116 (6) (1981) 755–758.
- [9] J.L. Cameron, R.F. Kieffer, T.R. Hendrix, et al., Selective nonoperative management of contained intrathoracic esophageal disruptions, *Ann. Thorac. Surg.* 27 (1979) 404–408.
- [10] J.S. Cho, Y.D. Kim, J.W. Kim, et al., Thoracoscopic primary esophageal repair in patients with Boerhaave's syndrome, *Ann. Thorac. Surg.* 91 (5) (2011) 1552–1555.
- [11] A.S. Ashrafi, O. Awais, M. Alvelo-Rivera, Minimally invasive management of Boerhaave's Syndrome, *Ann. Thorac. Surg.* 83 (2016) 317–319.

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