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## Type IV paraesophageal hernia as a cause of ileus: Report of a case

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## ABSTRACT

**INTRODUCTION:** Type IV paraesophageal hernias (PEHs) have been rarely reported in the literature. Transverse colon is the most common viscus to herniate in this category.**PRESENTATION OF CASE:** Herein we present a case with an emergent admission of a 66 year old man with type IV PEH with small intestine into the hernia sac.**DISCUSSION:** The diagnosis of PEHs can be challenging due to their extremely low incidence and the non-specific symptoms and can be easily missed from the initial differential diagnosis.**CONCLUSION:** In this case, the hernia was diagnosed early and managed successfully with an immediate laparotomy.© 2014 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

## 1. Introduction

Type IV paraesophageal hernias (PEHs) consist the smallest sub-category of PEHs. Viscera other than the stomach are protruding through the hiatus into the thoracic cavity giving birth to symptoms from the respiratory tract due to lung compression, as well as from the gastrointestinal tract depending on the herniated viscus. The first report of these cases was in 1979 with transverse colon herniating through the hiatus.<sup>1</sup>

The most commonly involved viscus in PEHs type IV is transverse colon.<sup>2–4</sup> Herein we present a rare case of herniated small intestine; approximately 50 cm of ileum was identified within the hernia sac in the thoracic cavity.

## 2. Presentation of case

The patient, a 66-year old gentleman, with past medical history of ulcerative colitis and rheumatoid arthritis was admitted at the emergency department complaining of symptoms of dyspnea, acute epigastric pain and nausea. The patient was tachypneic, and tachycardic, with respiratory rate of 25 breaths/min and heart rate of 90 pulses/min. After the conventional radiographies a chest X-ray (CXR) showed bowel loops in the posterior mediastinum (Fig. 1).

A computed tomography (CT) of the chest and the abdomen confirmed the radiological findings (Fig. 2).

The patient was taken to the operating room for an emergent laparotomy. A large type IV PEH was recognized with 50 cm of ileum within the hernia sac. Although the small bowel was slightly injured, with purple discoloration, it was judged to be viable. There were no signs of necrotic ishaemia and the herniated viscera were pulled back in the abdominal cavity. The crura of the diaphragm were approximated and sutured with nylon No. 1 sutures. Afterwards a Nissen fundoplication was performed.

The procedure was tolerated well, and the respiratory function of the patient improved remarkably shortly after the operation. The hospital course was uneventful and the patient was discharged on the 7th postoperative day. The patient 1 year after the operation enjoys normal oral intake.

## 3. Discussion

The awareness for these rare entities needs to be high especially in cases with recent operation at the diaphragmatic region. The past medical history of recent laparoscopic Nissen fundoplication or trans-hiatal esophagectomy has been rarely discussed as potential risk factor for type IV PEHs. In the case of Herman et al., a 32 year old man was reoperated 5 days after his laparoscopic Nissen fundoplication, due to type IV PEHs with transverse colon bulging up into the chest.<sup>5</sup>

In cases of free past surgical history, the diagnosis of these hernias is challenging and can be easily missed or delayed in the emergency setting due to the non-specific symptoms and their low

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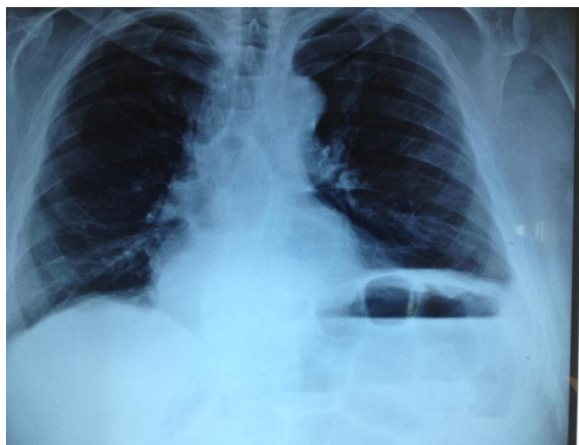


Fig. 1. Plain chest X-ray indicating the loop gas into the thorax.



Fig. 2. CT scan confirmed the presence of small intestine in the thoracic cavity.

incidence. Symptoms can range from diffuse abdominal pain, chest pressure, discomfort to dyspnea, vomiting and severe epigastric pain.<sup>6,7</sup>

The surgical management for these hernias should be always suggested to the patients; depending on the severity of the symptoms, an emergent laparotomy may need to be performed in order to manage the severe lung compression or the ischemia of the herniated viscus and alleviate the symptoms. In the latter scenario a resection of the strangulated viscus can be necessary.

In our case report, 50 cm of ileum had protruded into the thoracic cavity. The non-specific symptoms at presentation could have

easily delay the diagnosis and probably lead to deterioration of his respiratory status and irreversible damage of his bowel. The patient following the conventional X-rays and the CT scan of the chest and the abdomen which established the diagnosis of type IV PEH was immediately operated. The laparotomy was successful with no need for resection, and the herniated intestine was pushed back into the abdominal cavity.

Radiological findings of plain X-rays like bowel loops or air fluid levels in the mediastinum in patients are the most common and indicative signs that should alert the surgeon or the internist.<sup>6,7</sup> Even in asymptomatic cases, patients with incidental findings, like the above mentioned, in routine imagine procedures, should be informed about the potential risks of these modalities, and regarding the benefit of the surgical management.

#### 4. Conclusion

Our case increases the accumulating evidence of these rare hernias. This is the first case reporting the presence of small intestine only, within the hernia sac of the type IV PEH. The early diagnosis and the immediate laparotomy mediated the successful management and an uneventful post-operative course for the patient. The management of these entities can be challenging depending on the herniated viscus and the ischemic time. Patients with radiological signs of these entities in the routine imaging investigations should be offered the solution of surgery in order to avoid the potential complications following the strangulation of the herniated viscera.

#### Conflict of interest

All the authors declare that there is no conflict of interest.

#### Funding

None declared.

#### Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request

#### Author contributions

Marinos Makris, Evripides Yettimis and Nikolaos Varsamidakis have performed the study design, the editing and supervision of the paper, Marinos Makris and Demetrios Moris performed the writing, Marinos Makris, Demetrios Moris and Nikolaos Varsamidakis performed the literature search and the data extraction.

#### Key learning points

- Small intestine loops along with transverse colon are the most commonly involved viscera in type IV paraesophageal hernias (PEHs).
- Due to the extremely low incidence of type IV PEHs and the non-specific symptoms they cause, the diagnosis can be performed by X-rays or chest CT, or by laparotomy in the emergency setting.
- Type IV PEHs can be easily missed from the initial differential diagnosis, if we count only on the clinical examination.

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