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Laparoscopic repair of an excessive Morgagni hernia in an adult presenting as upside-down stomach

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ABSTRACT

INTRODUCTION: Morgagni hernia is defined as the intrathoracic protrusion of abdominal viscera through a defect in the anterior diaphragm. It represents an uncommon type of diaphragmatic congenital hernia.
CASE PRESENTATION: A 68-year-old female patient was admitted in our department due to progressive epigastric discomfort for the past four months. A preoperative diagnosis of a paraesophageal hernia was set through computer tomography, with gastric portions and parts of small bowel protruding inside the thoracic cavity. Intraoperatively, an excessive diaphragmatic defect was detected in the anterior side of the diaphragm. Reduction of the hernia's contents inside the abdominal cavity was achieved through laparoscopy, with the additional fixation of an intraperitoneal non-absorbable mesh for reinforcement of the diaphragmatic wall. Patient was discharged uneventfully on the 4th postoperative day.
DISCUSSION: Morgagni hernias refer to a rare type of diaphragmatic congenital hernias, usually identified during childhood, leaving only a small number of cases observed in the adult population. Its diagnosis can pose a challenge due to the non-specific and usually asymptomatic presentation. An early surgical management is advised due to an increased number of potentially lethal complications, such as gastric incarceration and obstruction. Treatment consist of open surgical techniques through a trans-thoracic or a trans-abdominal approach, although a paradigm shift in the 21st century considers minimal invasive laparoscopic surgery the treatment of choice.
CONCLUSSION: A high index of clinical suspicion is required for diagnosis of Morgagni hernias, while prompt management is advised. Laparoscopy is considered the best approach in the hands of an experienced surgeon.

1. Introduction

Morgagni hernia (MH) is an uncommon type of congenital diaphragmatic hernia, referring to the protrusion of abdominal viscera inside the thoracic cavity, through a defect in the anterior diaphragm, known as foramina of Morgagni [1]. It is a condition diagnosed usually during childhood, with only a small number of cases being observed in the adult population. Herniated abdominal contents usually include the colon, small bowel or omentum, while the absence of symptoms or obscure abdominal presentation in adult patients, often lead to misdiagnosis [1].

In this paper, we present the very uncommon case of a patient suffering from a huge Morgagni hernia, with portions of the stomach, small bowel and omentum protruding inside the right thoracic cavity. A review of the literature is also performed regarding presentation and management of this rare medical condition. This work has been reported in line with the SCARE criteria [2].

2. Case presentation

A 68-year-old female patient was admitted to our department after progressive epigastric discomfort, along with nausea, gastric reflux and episodes of vomiting for the past four months. Her medical history included diabetes mellitus and no previous abdominal surgery. Her vital signs were normal, while physical examination was insignificant, with a mild discomfort during epigastric palpation but no abdominal pain.

Laboratory examinations where within normal limits, with a hematocrit of 39.7%, and a hemoglobin of 12.4 mg/dL. Chest radiograph uncovered the presence of a large diaphragmatic hernia, with gastric portions protruding inside the right thoracic cavity. A further CT scan initially revealed a massive paraoesophageal hiatal hernia, with part of the stomach body, antrum and duodenum along with part of the greater omentum protruding inside the right thoracic cavity (Fig. 1). After written consent, patient admitted to

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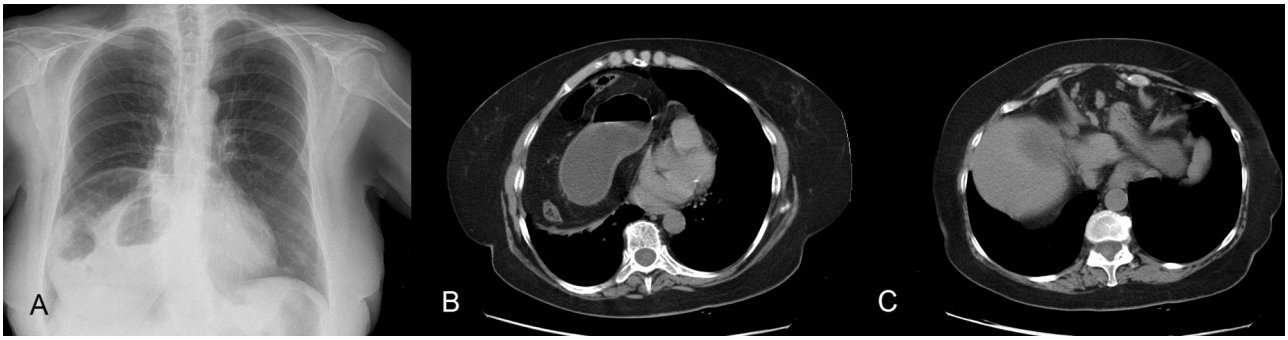

Fig. 1. Preoperative radiology findings. (A) Chest radiograph depicting a large diaphragmatic hernia located in the right hemithorax. (B) Views of CT scan showing contents of the hernia sac and (C) point of herniation in the anterior part of the diaphragm.

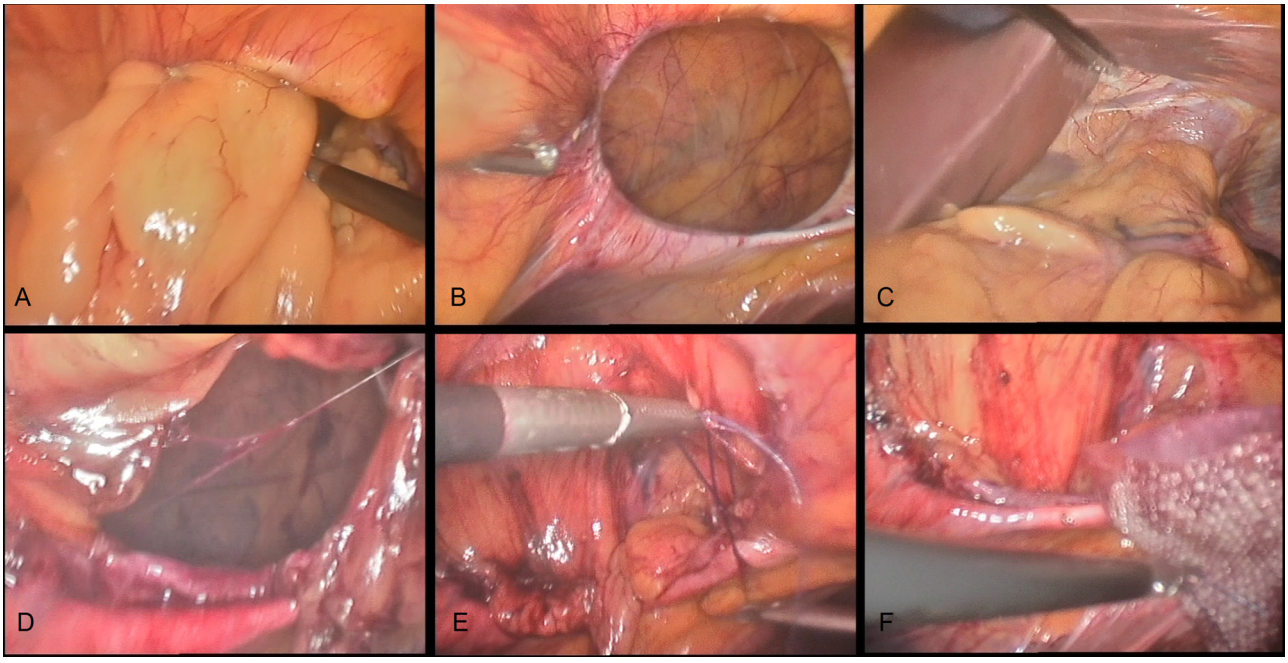

Fig. 2. Intraoperative pictures. (A) Identification of the anterior diaphragmatic defect with gastric portions, small bowel parts and omentum. (B) Reduction of the hernia's contents back in the abdominal cavity. (C) The esophagogastric junction is thoroughly investigated and identified in its normal anatomic position. (D) Excision of the diaphragmatic sac (the right lung can be seen from the defect). (E) Tension free closure of the defect with absorbable sutures. (F) Reinforcement of the diaphragmatic wall through fixation of an intraperitoneal mesh.

surgery, for laparoscopic repair of an excessive paraoesophageal hiatal hernia.

Upon entering the abdominal cavity, a huge anterior diaphragmatic defect was identified, with part of the greater omentum, small bowel loops, and gastric portions protruding through it inside the right thoracic cavity. No adhesions were encountered, so manipulation of the hernia's sac contents and their reduction back in the abdominal cavity was easily achieved through laparoscopy. Excision of the sac was next performed, with a tension-free closure of the diaphragmatic defect and reinforcement of the diaphragmatic wall with the fixation of an intraperitoneal non-absorbable mesh. The esophageal hiatus along with both right and left diaphragmatic crura and esophagogastric junction were identified in their normal anatomical position, so no further anti-reflux operation (360° or partial) was performed (Fig. 2).

Post-surgical period was uneventful for the patient. She resumed normal diet on the 2nd post-operative day and was discharged on the 4th. During 6-month follow up she reported no further symptoms related to gastroesophageal reflux, while a plain chest x-ray revealed no malposition of the abdominal viscera.

3. Discussion

Morgagni hernia is defined as the protrusion of abdominal viscera inside the thoracic cavity through an anterior defect of the diaphragm known as foramina of Morgagni. It represents an uncommon type of congenital diaphragmatic hernias (CDH), manifesting in less than 5% of such cases [1]. Formation of the defect is presumed to take place during gestation, when the diaphragm fails to normally close. Herniated abdominal contents usually include parts of omentum, stomach, colon and small bowel, while herniation takes place in the right hemithorax in up to 90% of cases [1,3]. Cardiorespiratory distress and gastrointestinal symptoms often lead to the diagnosis and treatment of MH in early childhood, leaving a notion that cases of MHs in adult population present either asymptomatic or manifesting as a mild abdominal or retrosternal discomfort [4]. In a large analysis regarding Morgagni hernias in adult population involving a total of 298 patients, Horton et al. found that 72% of adult patients presented with hernia related symptoms during time of diagnosis, with pulmonary specific symptoms being observed in 36% of these patients [1]. Other reported cases of MH in adult patients are also related with pulmonary or

gastric symptoms during initial diagnosis. A few cases of reported MH describe patients with acute abdominal symptoms due to gastric obstruction [5–7].

Paraesophageal hernias are classified into three types, according to the anatomic dislocation of the esophagogastric junction and parts of the stomach, in relation to the diaphragm [8]. Type I refers to the esophagogastric junction being above the diaphragm. In type II hernias, the esophagogastric junction is normally positioned below the diaphragm, but part of the stomach protrudes intrathoracically through the diaphragmatic crura, while in type III both the esophagogastric junction and stomach segments slide through the diaphragm inside the thoracic cavity. In rare cases of hiatal herniation, the entire stomach along with bowel loops may protrude through a diaphragmatic defect inside the posterior mediastinum, a condition known as 'upside down' stomach. Rotation of the stomach may also be observed, resulting in the reversal of greater and lesser curvatures [8].

This innocuous and vague clinical manifestation of both MH and paraesophageal hernias often leads to misdiagnosis. Arora et al. [3], reported a rare case of left sided strangulated Morgagni hernia with bowel necrosis, which was initially diagnosed as pneumonia, while in another case, Kim et al. reported the presence of a MH manifesting as chronic dyspnea in an elderly patient [5]. In addition, the controversial manifestation of MH in adult population has led to the conclusion by some authors, that MH is mostly an acquired condition rather than a true congenital hernia [5]. An increase in abdominal pressure seems to be the leading point regarding intrathoracic herniation of abdominal viscera, while it is also suggested in the medical literature that an additional hereditary predisposition in weakening of the anterior part of the diaphragm perhaps plays a role when formation of a Morgagni hernia takes place in an adult [5,9].

In our case, the presence of an upside-down stomach falsely led to the initial diagnosis of a paraoesophageal hernia, while intraoperatively it was identified that the abdominal contents were protruding inside the right thoracic cavity through an anterior-sided Morgagni hernia, making for a pretty unusual case.

Plain chest radiograph along with computed tomography play an important role in the diagnosis, identification of the hernia's contents and further management of this condition [8].

In order to avoid complications such as gastric obstruction, incarceration or gangrene, most authors agree on a prompt repair of MHs, even on asymptomatic patients [4,10]. Trans-thoracic or trans-abdominal open surgery was initially considered the best approach for surgical management of diaphragm related hernias, although a paradigm shift from open surgery to minimal invasive laparoscopic techniques has evolved in the 21st century, reducing intraoperative morbidity, postoperative complications and hospital stay [11,12].

4. Conclusion

Summarizing, diagnosis of MH requires a high degree of clinical suspicion, due to its innocuous and vague presentation. Prompt surgical repair is advised, and although only a small number of reported MH cases have been repaired through laparoscopy, this technique is considered the best approach in the hands of an experienced surgeon.

Conflict of interest

All authors declare that they have no conflict of interest.

Funding

Nothing to declare.

Ethical approval

Nothing to declare.

Consent

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 contribution

GS wrote the manuscript, acquired and analysed the data, reviewed the literature, while he supervised the manuscript preparation process. AT, CT, MK, GM, TD and GD analysed the data and reviewed the literature. GD supervised the manuscript preparation process.

Guarantor

Georgios Sahsamanis and Georgios Dimitrakopoulos.

References

[1] J.D. Horton, L.J. Hofmann, S.P. Hetz, Presentation and management of Morgagni hernias in adults: a review of 298 cases, Surg. Endosc. 22 (2008) 1413–1420.
[2] R.A. Agha, A.J. Fowler, A. Saetta, I. Barai, S. Rajmohan, D.P. Orgill, the SCARE Group, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (2016) 180–186.
[3] S. Arora, A. Haji, P. Ng, Adult Morgagni hernia: the need for clinical awareness, early diagnosis and prompt surgical intervention, Ann. R. Coll. Surg. Engl. 90 (2008) 694–695.
[4] Y. Aydin, B. Altuntas, A.B. Ulas, C. Daharli, A. Eroglu, Morgagni hernia: transabdominal or transthoracic approach? Acta Chir. Belg. 114 (2014) 131–135.
[5] D.K. Kim, H.S. Moon, H.Y. Jung, J.K. Sung, S.H. Gang, M.H. Kim, An incidental discovery of Morgagni hernia in an elderly patient presented with chronic dyspepsia, Korean J. Gastroenterol. 69 (1) (2017) 68–73.
[6] H. Tirumani, P. Saddala, N. Fasih, Incarcerated morgagni hernia: an unusual cause of large bowel obstruction, J. Emerg. Med. 47 (3) (2014) 320–322.
[7] T. Rattay, S. Ubhi, Morgagni hernia—an uncommon cause of gastric outlet obstruction, BMJ Case Rep. 2011 (2011).
[8] F. Burdan, I. Rozylo-Kalonowska, J. Szumilo, K. Zinkiewicz, W. Dworzanski, W. Krupski, et al., Anatomical classification of the shape and topography of the stomach, Surg. Radiol. Anat. 34 (March (2)) (2012) 171–178.
[9] S. Eren, F. Ciris, Diaphragmatic hernia: diagnostic approaches with review of the literature, Eur. J. Radiol. 54 (3) (2005) 448–459.
[10] D. Pironi, G. Palazzini, S. Arcieri, S. Candioli, A. Manigrasso, A. Panarese, et al., Laparoscopic diagnosis and treatment of diaphragmatic Morgagni hernia. Case report and review of the literature, Ann. Ital. Chir. 79 (1) (2008) 29–36.
[11] A. Park, C. Doyle, Laparoscopic Morgagni hernia repair: how I do it, J. Gastrointest. Surg. 18 (10) (2014) 1858–1862.
[12] D. Marinceu, M. Loubani, H. O'Grady, Late presentation of a large Morgagni hernia in an adult, BMJ Case Rep. 2014 (2014).