

## Caso Clínico / Radiological Case Report

**MORGAGNI HERNIA ASSOCIATED WITH HIATUS HERNIA, A RARE CASE***HERNIA DE MORGAGNI EM ASSOCIAÇÃO COM HERNIA DO HIATO, UM CASO RARO***Joana Ruivo Rodrigues, Bernardete Rodrigues, Nuno Ribeiro, Carla Filipa Ribeiro, Ângela Figueiredo, Alexandre Mota, Daniel Cardoso, Pedro Azevedo, Duarte Silva**

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**Abstract**

The simultaneous occurrence of two separate non-traumatic diaphragmatic hernias is extremely rare. We report a case of an old man with two diaphragmatic hernias (Morgagni and Hiatal hernias) and we also review the clinical and imagiologic features (Radiographic and Computed Tomography) of Morgagni and hiatal herniation.

**Key-words**

Morgagni hernia; Hiatal hernia; diaphragmatic congenital hernia; chest Radiography; Computed Tomography.

**Resumo**

A ocorrência simultânea de duas hérnias diafragmáticas não traumáticas é extremamente rara. É relatado um caso de um idoso com duas hérnias diafragmáticas (hérnia de Morgagni e do Hiato) e também revemos os aspetos clínicos e imagiológicos (Raio-X e Tomografia Computadorizada) da hérnia de Morgagni e da hérnia do hiato.

**Palavras-chave**

Hérnia de Morgagni; Hérnia do hiato; Hérnia congénita diafragmática; Radiografia torácica; Tomografia Computorizada.

**Introduction**

There are only five cases of combined Morgagni and paraesophageal hernias<sup>1-5</sup> and one case of combined Morgagni and sliding hiatal hernia<sup>6</sup>, described in the English literature. The diagnosis of those hernias is made radiographically, namely with Chest Radiography and Computed Tomography<sup>7,8</sup>.

The Morgagni Hernia is a herniation through the parasternal hiatus of the diaphragm, with subsequent herniation of abdominal contents into the thorax<sup>7</sup>. It is a rare type of congenital diaphragmatic hernia accounting for 3-5% of all diaphragmatic hernias<sup>9</sup>. The Morgagni hernia usually is small and asymptomatic until adulthood<sup>7</sup> and is diagnosed incidentally as a mass or air-fluid interface on a chest X-ray undertaken for unrelated reasons<sup>9</sup>.

The hiatus hernia is a protrusion of a portion of the stomach into the thoracic cavity through the diaphragmatic oesophageal hiatus. It is found in 50% of patients older than 50 years old. The majority of patients are asymptomatic<sup>10</sup>.

Generally, a hiatus hernia is classified into four types. The type I hiatus hernia or sliding hernia is the most common type. The types II, III and IV are all varieties of paraesophageal hernias and are the less common types of hiatus hernia<sup>11</sup>.

We report a case of a Morgagni hernia in association with a Hiatus hernia whose diagnostic was suspected in chest radiography and was confirmed by Computed Tomography.

**Case Report**

An 81-year-old man presented with progressive dyspnea over the last 6 months. The patient had a seven year history of

intermittent, postprandial and substernal pain. The pain was not related to any type of food and was partially relieved by proton pump inhibitor. On auscultation he had reduced breath sounds on inferior half of the right hemithorax. The gasometry revealed mild hypoxemia. The postero-anterior chest radiography showed increased density anteriorly, in the right lower and medial lung fields, extending laterally from the cardiophrenic angle. The presence of radiolucent areas suggested gas-containing bowel. Those findings are suggestive of a Morgagni hernia. The gastric bubble wasn't at its usual topography, suggesting the presence of a hiatal hernia (Fig. 1).

A Computed Tomography study was performed in order to clarify the diagnosis and it showed extrusion of intestinal contents into the right hemithorax through right anterior cardiophrenic angle, containing loops of the small bowel, colon and epiploic fat, in intrathoracic situation. Simultaneously, a type III hiatal hernia was present, with part of the stomach and the gastroesophageal junction in the thoracic cavity (Figs. 2-3).

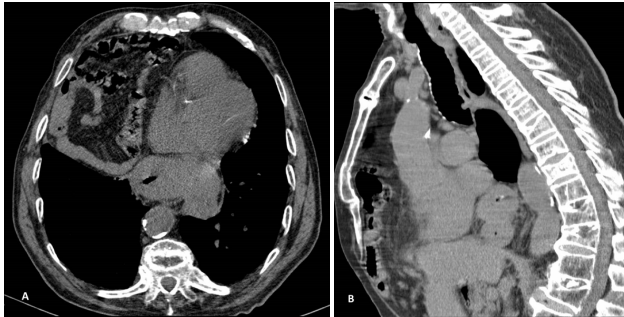
Despite the indication for laparotomy the patient refused it, continuing its medication with a proton pump inhibitor.

**Discussion**

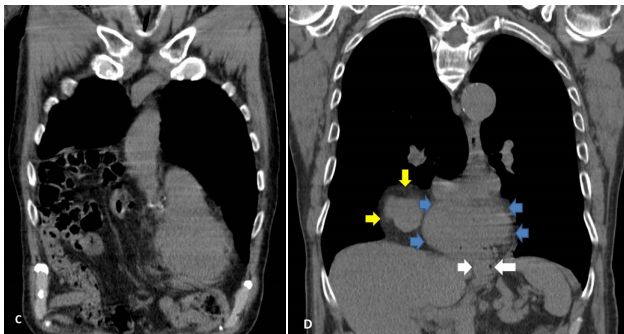
The simultaneous occurrence of two separate non-traumatic diaphragmatic hernias is extremely rare<sup>6</sup> because in regular circumstances the intra-abdominal pressure is reduced in the presence of a large diaphragmatic hernia, decreasing the likelihood of a second diaphragmatic hernia<sup>1</sup>.



**Figure 1** – Postero-anterior chest radiography showing a large inhomogeneous opacity in the right hemithorax with air-containing loops of bowel and fat, in relation with hernial contents. The gastric bubble is not in its usual topography.



**Figure 2** – Axial (A) and Sagittal (B) Computed Tomography images demonstrating a large Morgagni hernia, with herniation of part of colon, small bowel loops and omentum, in the right anterior chest hemithorax. They also show a hiatal hernia, with the gastric fundus, a part of the gastric body and gastroesophageal junction in a retrocardiac position (type III hiatal hernia).



**Figure 3** – Coronal (C) Computed Tomography image showing a large anterior diaphragmatic defect with extrusion of small bowel loops, colon and epiploic fat, in anterior intrathoracic situation, representing a Morgagni Hernia. Coronal (D) Computed Tomography image showing displaced gastroesophageal junction and hernia sac containing portions of the fundus and part of the body stomach (blue arrows) protruding through the esophageal hiatus (white arrows), as well as, part of the Morgagni Hernia (yellow arrows).

The Morgagni hernia occurs due to failure of fusion of the anterior part of the pleuroperitoneal membrane and deficiency in the process of muscularization, causing a defect in the retrosternal region of the diaphragm<sup>9</sup>. The Morgagni hernia is most frequent in women<sup>7,8</sup>, in obese people and on the right side (90%). It can also be bilateral (8%) or left-sided (2%)<sup>8</sup>. The hernia sac contains, in order of decreasing frequency, omentum, colon, stomach, liver, and small bowel<sup>12</sup>. The Morgagni hernia may have a developmental origin<sup>13</sup>, constituting fewer than 10% of congenital diaphragmatic hernias<sup>14</sup>. It may also have a post-traumatic origin<sup>13</sup>, resulting from blunt trauma (traffic accident or fall) or penetrating injuries, or have an iatrogenic origin<sup>15</sup>. Most individuals are asymptomatic<sup>7,8</sup>. In rare cases complete obstruction, incarceration, or strangulation with necrosis of a hollow

contained in a foramen of Morgagni hernia is associated with an acute or subacute presentation<sup>8</sup>.

The diagnosis of Morgagni hernia is made radiographically<sup>7,8</sup>. In postero-anterior chest radiography it usually appears as a rounded opacity at the right cardiophrenic angle and the lateral chest film localizes this density to the retrosternal space. This rounded opacity is a curvilinear accumulation of fat continuous with the properitoneal fat line of the anterior abdominal wall - “the sign of the cane”. In some cases, when the transverse colon, small bowel, or stomach herniates through the defect, air-fluid levels may be seen on chest film<sup>8</sup>. Upper gastrointestinal series or barium enema can confirm the diagnosis in patients with visceral herniation. Computed Tomography is the best diagnostic tool, particularly for symptomatic hernias with potential incarceration and strangulation<sup>7</sup>.

The hiatus hernias are much more common, representing seventy percent of the diaphragmatic hernias<sup>6</sup>. Their etiology can be explained by the repetitive stretching (e.g., vomiting, obesity or pregnancy) of the gastroesophageal junction, resulting in widening of the hiatus, rupture of the phrenoesophageal ligament, and onset of the hernia. On frontal chest radiographs they project behind the heart in the immediate supradiaphragmatic region of the posterior mediastinum. The Computed Tomography (CT) is useful because it can reveal the content of the hernia sac<sup>10</sup>.

In the type I or sliding hernia, the gastroesophageal junction migrates into the posterior mediastinum through the esophageal hiatus. The type II occurs when the fundus herniates through the hiatus alongside a normally positioned gastroesophageal junction. The type III is a combination of types I and II hernias with a displaced gastroesophageal junction as well as hernia sac containing portions of the fundus and or body of stomach protruding through the hiatus, as occurs in our case. The type IV is characterised by displacement of the stomach along with other organs (colon, spleen, pancreas and small bowel) into the thorax<sup>11</sup>.

On a frontal chest radiograph a hiatal hernia can be projected behind the heart in the immediate supradiaphragmatic region of the posterior mediastinum and may contain an air-fluid level. The upper gastrointestinal barium contrast swallow series defines the anatomic abnormality. The computed tomography is useful because it can reveal the content of the hernia sac and can show extension of a portion of the proximal stomach, or other abdominal contents, into the lower mediastinum, and a widening of the oesophageal hiatus with increased separation of the esophagus and diaphragmatic crura<sup>10</sup>.

The herniations through the esophageal hiatus and the foramen of Morgagni have several features in common, which suggest that they develop after complete closure of the diaphragm: symptoms occur usually after the age of fifty, they are more frequent in women and both have true hernia sacs<sup>6</sup>.

Nowadays there is no consensus on the best surgical approach of both hernias, partly because the condition is rare. Some authors described an upper midline laparotomy which provided good common access to bilateral hernias in preparation for possible intraoperative findings of ischemic or necrotic bowel<sup>1</sup>.

In conclusion, CT was essential for the diagnosis and characterization of this rare association between Morgagni and hiatal hernias.

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## References

1. Bettini A, Ulloa J, Harris H. Appendicitis within Morgagni Hernia and simultaneous Paraesophageal Hernia. *BMC Surg*. 2015;15(1):1-5.
2. Szentkereszty Z, Csáky G, Boland MG, Weisz R, Sasi-Szabo L, Gamal EM, et al. Laparoscopic treatment of simultaneously occurring Morgagni and paraesophageal hernias. *J Laparoendosc AdvSurg Tech A*. 2006;6:626-8.
3. Eroğlu A, Kürkcüoğlu IC, Karaoğlu N, Yılmaz O. Combination of paraesophageal hernia and Morgagni hernia in an old patient. *Dis Esophagus*. 2003;2:151-3.
4. Ngaage DL, Young RA, Cowen ME. An unusual combination of diaphragmatic hernias in a patient presenting with the clinical features of restrictive pulmonary disease: report of a case. *Surg Today*. 2001;12:1079-81.
5. Cokmez A, Durak E. Laparoscopic repair of Morgagni hernia and paraesophageal hernia on the same patient. *Surg Endosc*. 2003;4:660.
6. Lund RR, Crisler EC, Sammons BP, Gartenlaub C. Simultaneous occurrence of subcostosternal (Morgagni) hernia and hiatus hernia; report of a case. *Radiology*. 1958;70(4):561-3.
7. Huston JM, King H, Maresh A, Liska D, Port JL, Altorki NK, et al. Hernia of Morgagni: case report. *J Thorac Cardiovasc Surg*. 2008;135(1):212-3.
8. Nasr A, Fecteau A. Foramen of Morgagni hernia: presentation and treatment. *Thorac Surg Clin*. 2009;19(4):463-8.
9. Shah RS, Sharma PC, Bhandarkar DS. Laparoscopic repair of Morgagni's hernia: An innovative approach. *J Indian Assoc Pediatr Surg*. 2015;20(2):68-71.
10. Ferri FF. Hiatal Hernia. Ferri's, Clinical Advisor, Philadelphia, 2015.
11. Kahrilas PJ, Kim HC, Pandolfino JE. Approaches to the diagnosis and grading of hiatal hernia. *Best Pract Res Clin Gastroenterol*. 2008;22(4):601-16.
12. Sherigar JM, Dalal AD, Patel JR. Laparoscopic repair of a Morgagni hernia. *J Minim Access Surg*. 2005;1(2):76-8.
13. Muller NL, Silva CIS. High-Yield Imaging: Chest. Saunders, Philadelphia, 2010.
14. Nason LK, Walker CM, McNeeley MF, Burivong W, Fligner CL, Godwin JD. Imaging of the diaphragm: anatomy and function. *Radiographics*. 2012;32(2):51-70.
15. Yoo E, Kim JH, Kim MJ, Yu JS, Chung JJ, Yoo HS, et al. Greater and lesser omenta: normal anatomy and pathologic processes. *Radiographics*. 2007;27(3):707-20.