

## Aorto-esophageal fistula resulting from mycotic aneurysm

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**Section:** Cardiovascular

**Area of Interest:** Vascular Arteries / Aorta Lung

**Procedure:** Diagnostic procedure

**Imaging Technique:** Conventional radiography

**Imaging Technique:** CT-Angiography

**Imaging Technique:** CT

**Special Focus:** Aneurysms Case Type: Clinical Cases

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**Patient:** 65 years, male

### Clinical History:

A 65 year old man with previous coronary bypass, hypertension and diabetes, was admitted with increasing mid chest pain radiating to the back, dysphagia and dyspnea. On clinical examination there were no relevant findings. Normal blood pressure, heart rate and temperature. Normal ECG and MNMs. Laboratory findings revealed type II respiratory failure.

### Imaging Findings:

A chest radiography revealed a hazy opacity in the left lung base(Fig.1). Angio chest CT pointed out lower left lung bronchiectasis (Fig.2), no signs of pulmonary-thromboembolism, and a 3.5 cm sized saccular aneurysm resulting from penetrating atherosclerotic ulcer in the mid third of the descending aorta (Fig.3, 4).

24 hours later, while treated conservatively with large spectrum antibiotics, his condition worsened with tachycardia and hypotension.

Endoscopy mentioned no significant hemorrhagic findings.

Unenhanced CT revealed a bulge in the left antero-medial aspect of the descending thoracic aorta, effacement of the periaortic fat plane along with gas bubbles surrounding the aortic wall(Fig.5). Enhanced sequences showed these abnormalities related to an enlarged (4.2 cm sized) saccular aneurysm with hazy aortic wall, intramural air (Figs.6, 7) and revealed a small amount of contrast extravasation in the gastric fundus(Fig.8).

The patient was submitted to an emergency surgical intervention with poor outcome, confirming the presence of an aorto-esophageal fistula.

### Discussion:

The aortoenteric fistula, a rare but potentially fatal entity, is a significant challenge to radiologists when it comes to diagnosis, specially because of its subtle and nonspecific imaging findings. An early diagnosis is fundamental for patient survival.

The cardinal clinical signs include hematemesis, melena, sepsis, and abdominal pain, but the condition may also be clinically occult. [1, 2]

Considering clinical signs may not be present or may not be sufficiently specific, imaging is most often necessary to achieve an accurate diagnosis.

CT has a variable specificity (33%–100%) and sensitivity (40%–90%) for the diagnosis of aortoenteric fistulas.[3, 4]

For an effective use of this modality in the initial diagnostic examination, radiologists must be familiar with the spectrum of CT appearances.

Aortoesophageal fistulas are divided into primary and secondary forms, depending on the presence or absence of prior aortic reconstructive surgery. [5]

Primary aortoenteric fistulas occur in a native aorta without a history of prior intervention and are much more rare than secondary fistula. Causes include atherosclerotic penetrating ulcer (most common) , foreign bodies, aortitis, esophageal malignancies. [6, 7]

Secondary aortoenteric fistulas occur in the setting of prior surgery or intervention, in patients with prior aortic surgery or graft placement. [8]

Primary CT findings involves ectopic gas either within or directly adjacent to the aortic lumen. [1] Rarely, gas can be traced from the esophagus to the aorta. [3]

Direct extravasation of contrast from the aorta into the esophagus and leakage of enteric contrast directly into the periaortic space are extraordinarily rare.[2, 3]

Secondary CT findings encompasses effacement of the periaortic fat plane, focal thickening and tethering of a esophageal wall immediately adjacent to the aorta, periaortic free fluid and soft tissue thickening, penetrating ulcer or intramural hematoma immediately adjacent to a tethered, abnormal appearing esophagus.[9]

Mimics of aortoenteric fistulas are severe perigraft infection, aortitis, mycotic aneurysms, perianeurysmal fibrosis and immediate post-operative aorta [2, 3, 4]

Differentiation is aided by the observation of ectopic gas, loss of the normal fat plane, extravasation of aortic contrast material into the enteric lumen, or leakage of enteric contrast material into the paraprosthetic space; these features are highly suggestive of aortoenteric fistula in a patient with bleeding in the gastrointestinal tract [1,7,10].

Classical treatment involves surgical resection of the infected graft, esophageal resection, creation of an extra-anatomic vascular bypass graft. Mortality rates are up to 90%. Modern treatment trend implies endovascular techniques, lower risk of perioperative complications, avoids most catastrophic complications after surgery [11].

**Differential Diagnosis List:** Aortoesophageal fistula, Penetrating atherosclerotic ulcer, Infectious aortitis, Mycotic aneurysm, Perigraft infection

**Final Diagnosis:** Aortoesophageal fistula

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## Figure 1

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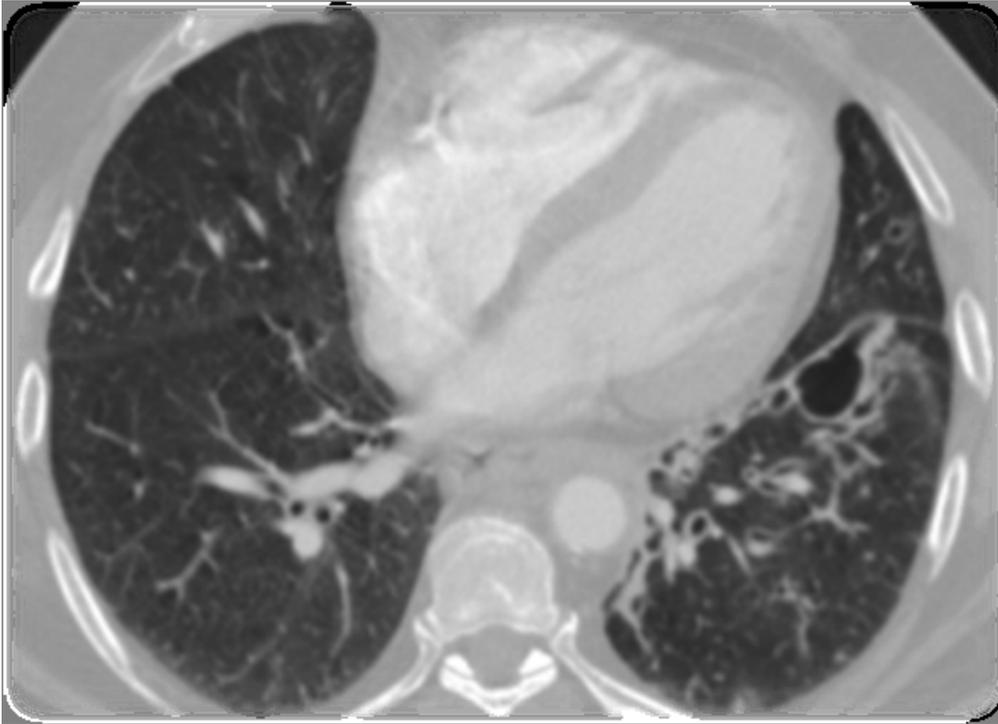


**Description:** Chest X-ray revealed a hazy opacity and slight increase in bronchovascular markings in the lower left hemithorax. No mediastinal enlargement. Also shows signs of previous sternotomy.

**Origin:** J.T.Soares, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal

**Figure 2**

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**Description:** Enhanced CT showing lower left lung bronchiectasis. **Origin:** J.T.Soares, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal.

## Figure 3

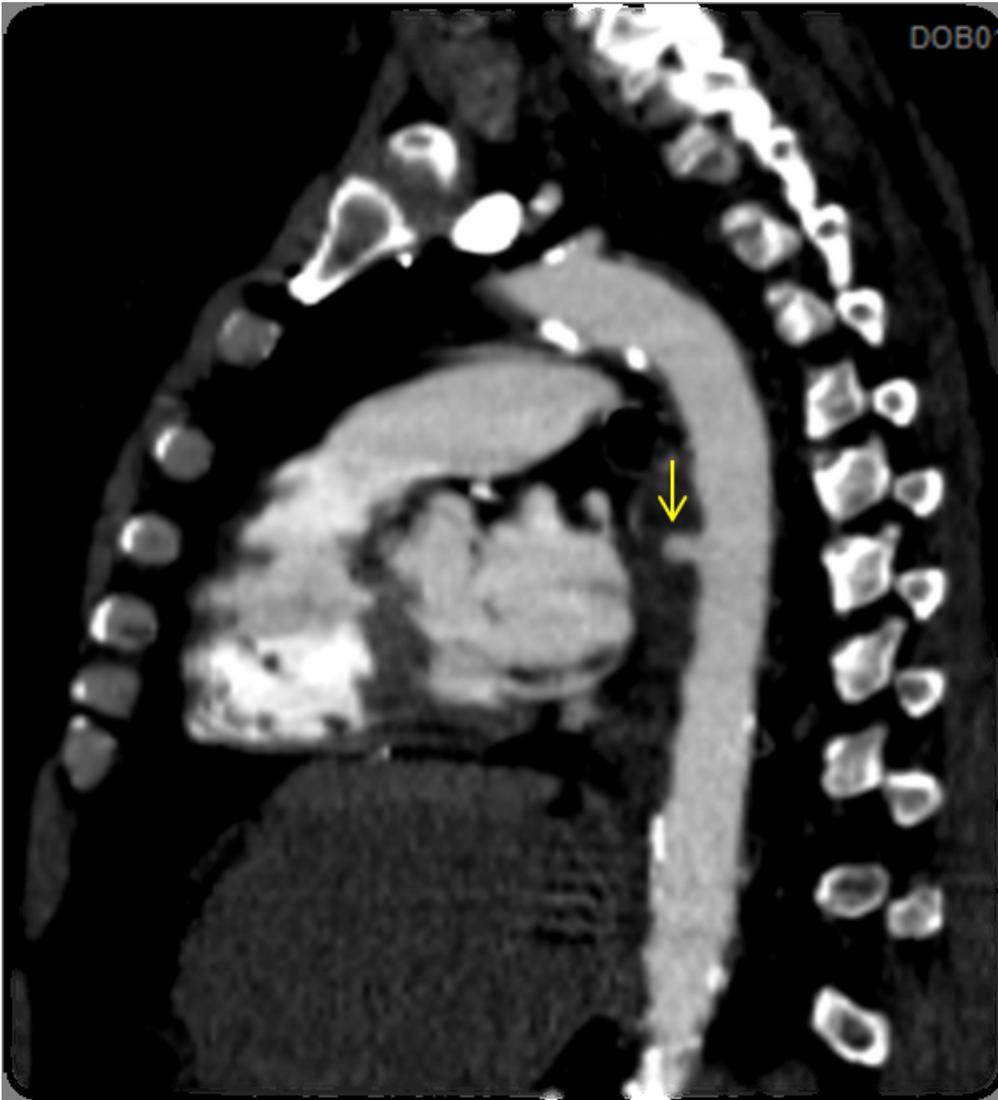
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**Description:** Saccular aneurysm (arrow) in the medial plane of the descending aorta . Densification and loss of the peri-aortic fat planes. **Origin:** J.T.Soares, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal.

**Figure 4**

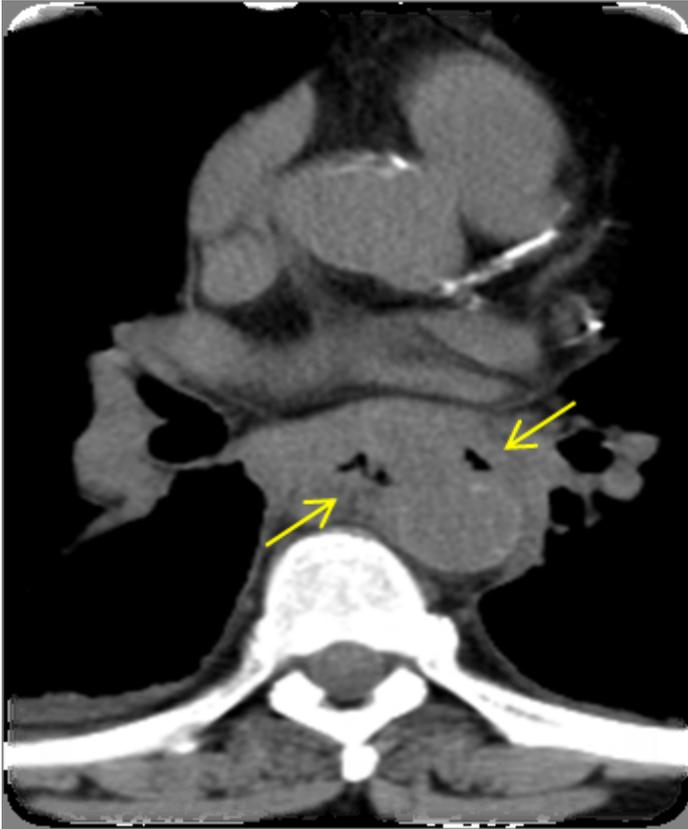
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**Description:** Saccular aneurysm (arrow) in the sagittal plane, 3.5 x 2.0 cm in size . Calcified atheromathosis. Densification of aorta's surrounding planes . **Origin:** J.T.Soares, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal.

## Figure 5

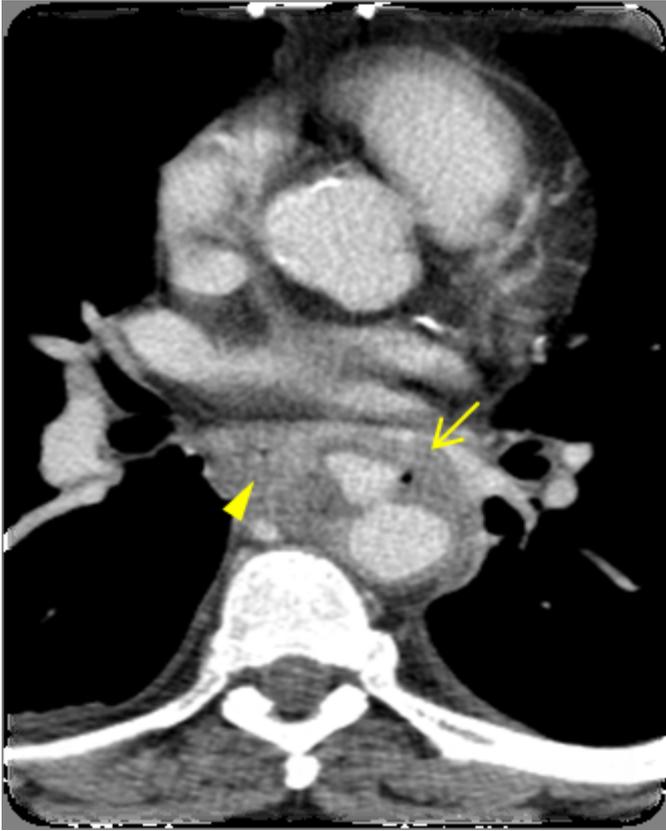
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**Description:** Non-enhanced chest CT with proclinent antero-medial aortic wall, effacement of the periaortic fat plane, high density aortic wall (intramural hematoma) and the presence of gas bubbles (arrows) surrounding the aortic wall. **Origin:** J.T.Soures, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal.

## Figure 6

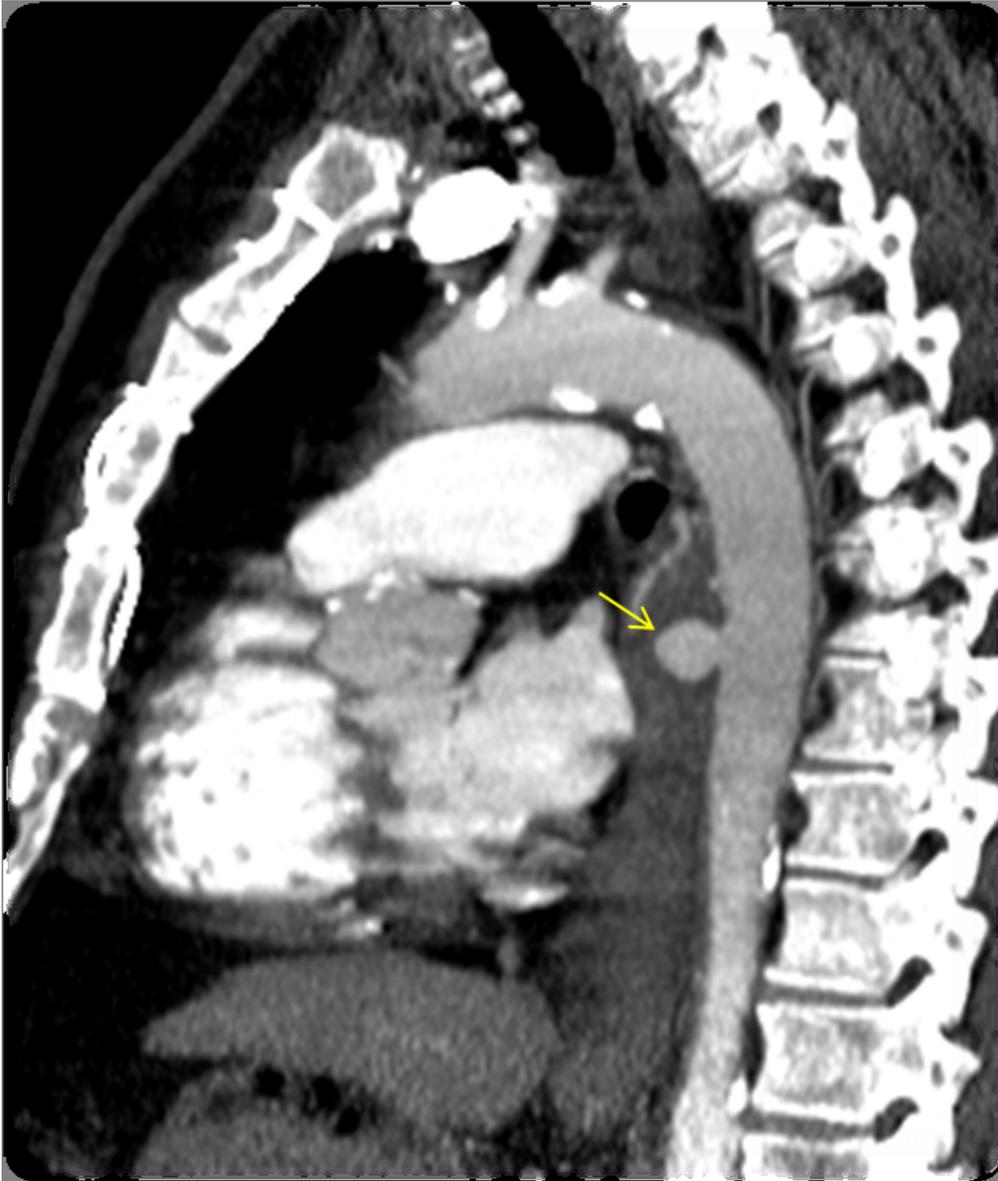
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**Description:** Contrast-enhanced CT reveals: aortic growing aneurysm insinuating to the esophageal border. Intramural gas (arrow), periaortic fat stranding, loss of the aorta's fat planes with edematous esophageal wall (arrowhead). **Origin:** J.T. Soares, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal.

## Figure 7

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**Description:** Multiplanar reconstructed image clearly demonstrates the extent of the saccular aortic pseudoaneurysm (arrow) bigger (4.5 x 2.7cm in size) than the previously shown (fig.4). Moderate density tissue along the descending aorta, indicating intramural hematoma. **Origin:** J.T.Soares, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal.

## Figure 8

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**Description:** Trans abdominal plane depicting a small amount of contrast extravasation in the esophageal lumen and gastric fundus (arrows). **Origin:** J.T.Soures, Department of Radiology, Centro Hospitalar de Vila Nova de Gaia, Portugal.