

# End-stage hiatal hernia with cardiac complications

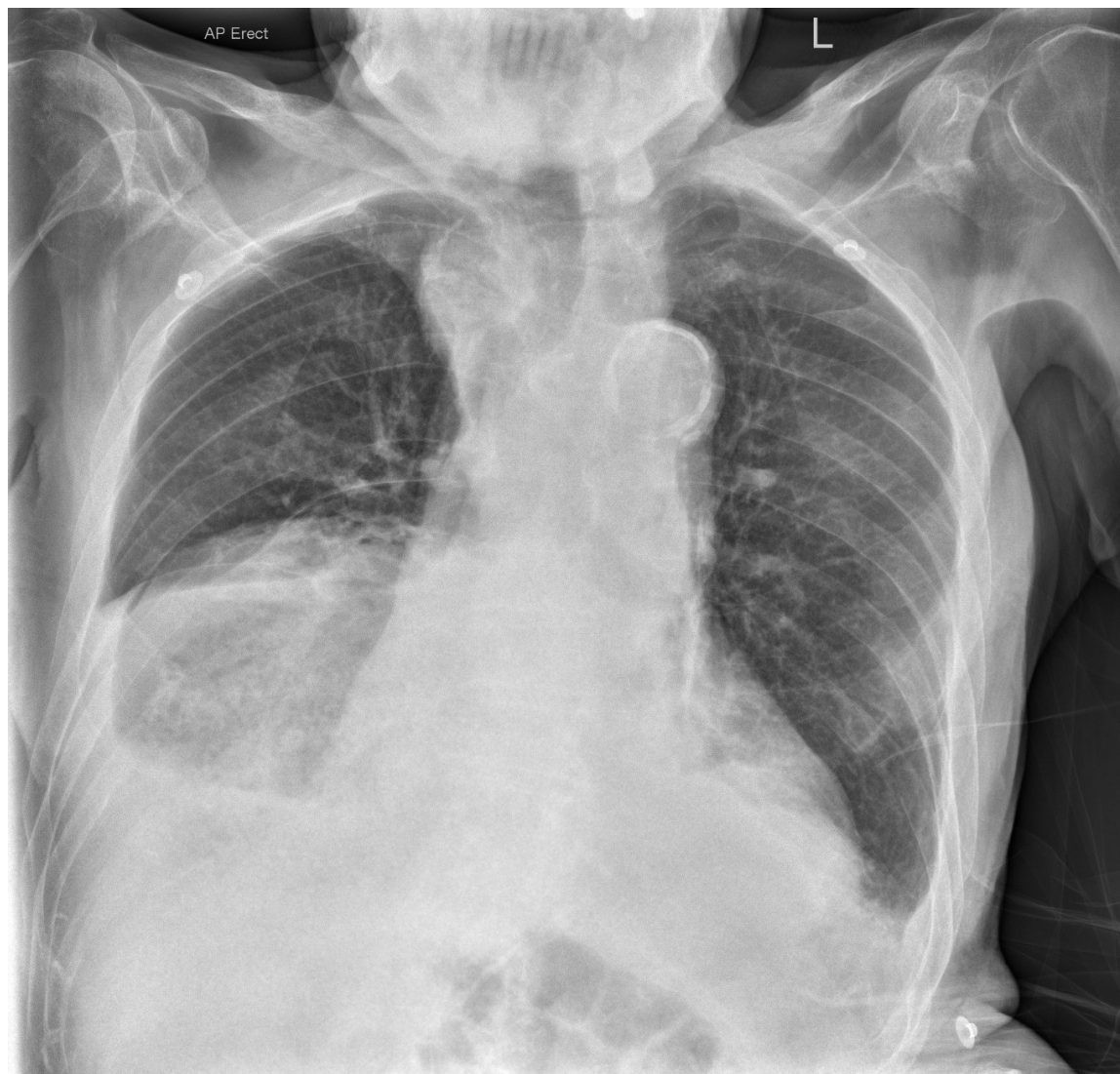
John Ahn, Gary Lau

**W**e describe a case of a fatal cardiac complication from a large hiatus hernia in a centenarian. The patient, 100 years of age, presented with a history of nausea and vomiting for many months, leading to cachexia. On admission into hospital, he was found to be in atrial fibrillation, and his chest X-ray showed bilateral pleural effusions larger on the right, masking his known hiatus hernia (Figure 1).

The chest X-ray, in conjunction with an elevated serum NT-proBNP of 589pmol/L (reference <210pmol/L), were suggestive of heart failure, and a transthoracic echocardiogram was requested to further assess from a cardiac perspective.

The echocardiogram report showed there was a large extra-cardiac mass compressing the left atrium, impeding on left ventricular filling and cardiac output, despite a preserved left ventricular

**Figure 1:** Chest X-ray demonstrating moderate right and trace left pleural effusions, and an underlying hiatal hernia over the right lower lung field, with radiological appearance of food debris within.



ejection fraction. Underlying atrial fibrillation with rapid ventricular rates of above 120 beats per minute also contributed to reduced cardiac output and left ventricular failure (Figure 2). The nature of the extra-cardiac mass was not entirely clear from echocardiogram but was thought to be his hiatal hernia, given the background.

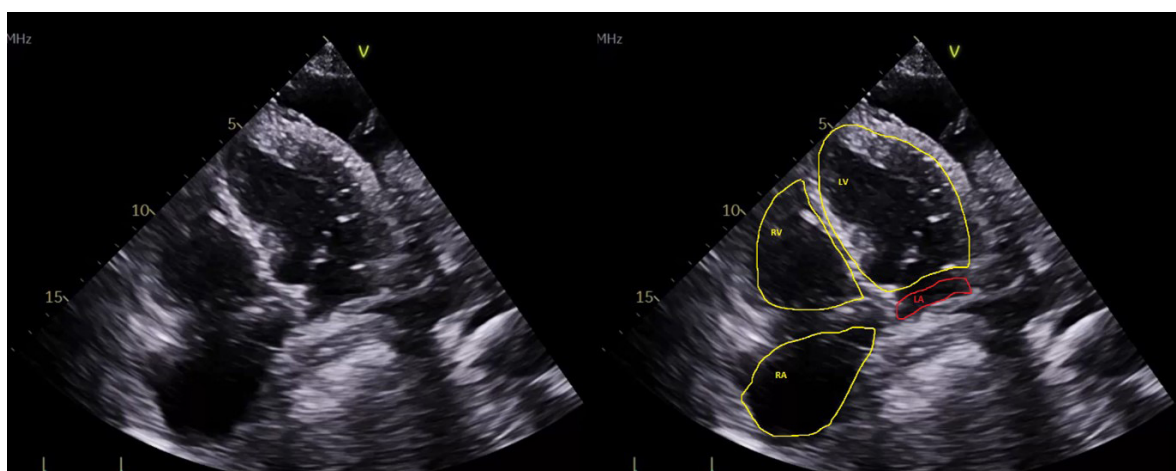
A Computed Tomography (CT) scan of the chest was performed to better assess the extra cardiac mass. This confirmed a gigantic hiatus hernia, essentially an intrathoracic stomach. There was

organo-axial volvulus with obstruction, and extensive food debris within the distended stomach (Figure 3).

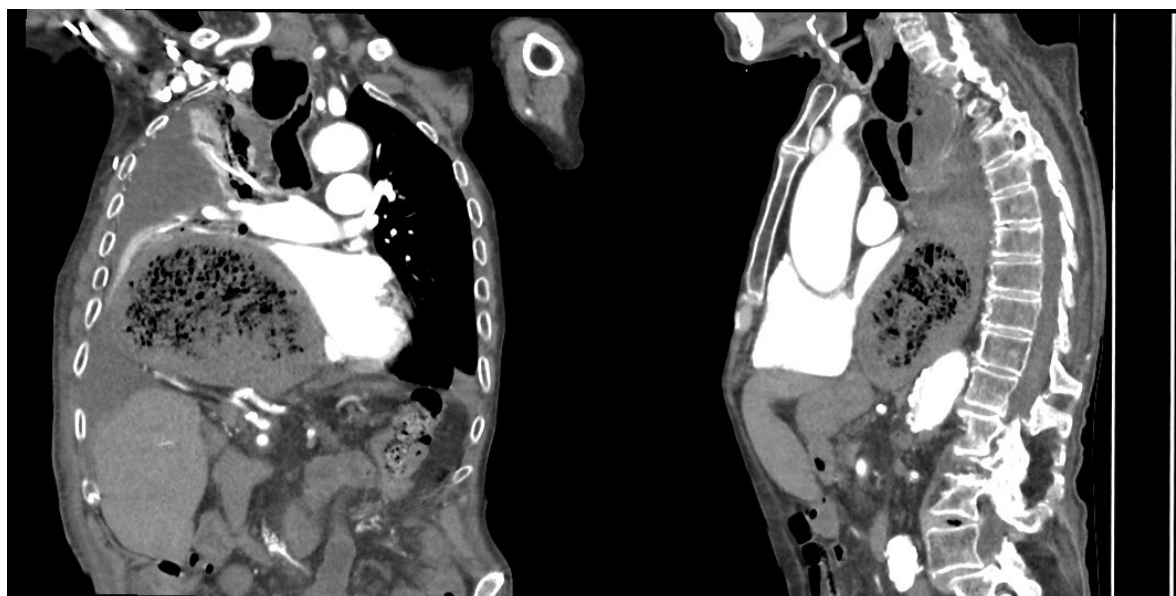
An attempt to decompress the stomach with a gastroscopy and nasogastric tube was unsuccessful.

Surgical consult was requested, but given the patient’s frailty, and the magnitude of the surgery, a palliative approach was taken. The patient died 12 days after admission and no post-mortem examination was performed.

**Figure 2:** Four-chamber view of the heart. The left atrium on bottom right view (labelled LA) is visibly compressed by an external mass, with an inverted shape and is much smaller in dimension compared to the right atrium on bottom left view (note Video 1 as supplementary material: please contact the corresponding author to view).



**Figure 3:** CT coronal and sagittal view demonstrating the large hiatal hernia with visible compression of the left atrium. There is also large pleural effusion on the right.



## Discussion

Our case illustrates a rare phenomenon of end-stage hiatal hernia. Incidence of intrathoracic stomach is extremely low, of approximately 0.3% of all hiatal hernias only.<sup>1,2</sup>

Intrathoracic hiatal hernia can be difficult to diagnose as it can present with unusual symptoms but dangerous complications, including bleeding, perforation, and obstruction. Simple chest X-ray may not show obvious changes of obstruction, as in cases of bowel obstruction on abdominal X-ray, hence the diagnosis is often made incidentally. The diagnosis can be evasive if there is not a high clinical suspicion.

As in our case, the presentation may be with symptoms of gastric outlet obstruction, but with relatively benign chest X-ray appearance. What led to the eventual diagnosis was in fact an investigation into his cardiac presentation with clinical heart failure, and atrial fibrillation.

Intrathoracic stomach is a recognised entity that can cause left atrial extrinsic compression, as can be seen on the transthoracic echocardiogram. Differential aspects for this appearance on echocardiogram can include oesophageal masses, ascending aorta aneurysm, spinal osteophytes,

pulmonary masses and mediastinal masses.<sup>3</sup> If the clinical suspicion is present, a helpful diagnostic technique includes ingestion of a carbonated beverage—with or without echogenic contrast media—at the time of echocardiography, which can show the carbonated bubbles appearing in the stomach.<sup>4</sup>

CT scan is the modality of choice to further assess for cause of left atrium compression, as was utilised in our case.

Patients with left atrial compression can develop low cardiac output state from impaired filling of the atria and the left ventricle, as well as pulmonary oedema from the increased left atrial pressure. A compensatory tachycardia can develop. Left atrial compression from hiatal hernia has also been found to cause “swallow syncope”, and reduced exercise capacity.<sup>5,6,7</sup> Clinical evidence of such cardiac compromise or cardiac failure from end-stage hiatal hernia compressing on left atrium would be an indication for acute surgical intervention.

In summary, end-stage hiatal hernia is a rare phenomenon that is difficult to diagnose without a high clinical suspicion due to its unusual presentation. Despite its rarity, it can be a fatal condition, as illustrated in our case.

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**COMPETING INTERESTS**

Nil.

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