

## Cardiac Imaging

# Massive Hiatus Hernia Impeding Transoesophageal Echocardiography in a Patient with Swallow-Syncope Syndrome

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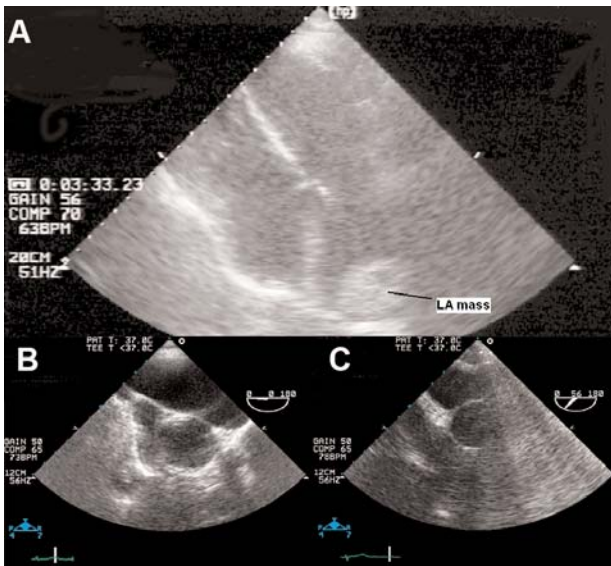
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**A**n 82-year-old lady, with a long history of syncopal spells that were occasionally associated with meals, was referred for transoesophageal echocardiography (TOE) because of a large left atrial mass identified on transthoracic echocardiography (Figure 1A). TOE was able to visualise only a part of the left atrium and the ascending aorta (Figure 1B & C), and when the probe was further advanced, it was not possible to obtain any cardiac images because of air artefact. A hiatus hernia was suspected and the TOE was abandoned. The patient was then referred for a cardiovascular magnetic resonance (CMR) scan for further investigation of the left atrial mass. This revealed a giant hiatus hernia, with most of the stomach positioned within the thoracic cavity (Figure 2A & B). The hiatus hernia extended up to the level of the great vessels, and this explained why TOE was only able to image the great vessels. There was no evidence of any other intra- or extra-cardiac masses. The presence of the hiatus hernia was not known before the TOE and CMR examinations.

A large hiatus hernia constitutes a form of posterior mediastinal mass that may encroach on the posterior aspects of the heart, particularly the left atrium, mimicking a left atrial mass on transthoracic echocardiography.<sup>1,2</sup> Hiatal hernias have been implicated

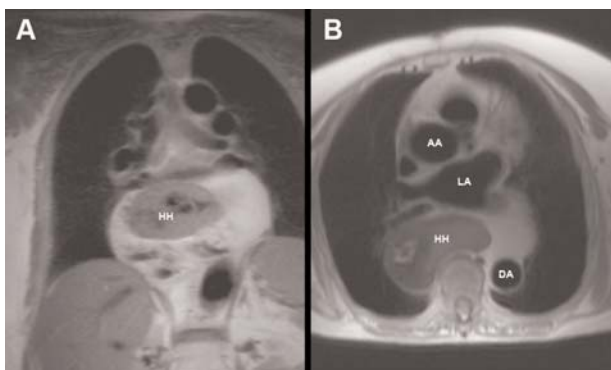
in causing dyspnoea,<sup>3</sup> postprandial syncope,<sup>4</sup> and electrocardiographic abnormalities.<sup>5</sup> Several features may help differentiate between a large hiatus hernia and a left atrial mass on transthoracic echocardiography. With angulation of the transducer, the echo density of the hiatal hernia will extend beyond the margins of the atrium.<sup>1</sup> Furthermore, the oral ingestion of a carbonated beverage may result in the appearance of swirling echo densities in the mass.<sup>6</sup> TOE has been reported to occasionally help in the diagnosis of a hiatus hernia,<sup>7,8</sup> though in the majority of cases, and particularly when the hernia is large, it fails to obtain meaningful cardiac images.<sup>9,10</sup> Frans et al have suggested that the diagnosis of hiatus hernia may be made on TOE if the mass-like lesion has a thick inner lining resembling the stomach mucosa and contains microbubbles.<sup>7</sup> This technique can make the diagnosis, but it is not always successful. Smelley and Lang have recently suggested that the use of echocardiographic contrast mixed with a carbonated beverage can further aid in clarifying the nature of a mass abutting the left atrium.<sup>8</sup> Nevertheless, if a hiatus hernia is suspected, it is probably wiser to avoid further manipulation of the probe, as the possibility of causing oesophageal or gastric damage is high. A hiatus hernia may be suspected from chest X-ray. Nevertheless, the diag-



**Figure 1.** A: Apical 4-chamber transthoracic view demonstrating a large mass that appears in the left atrium (LA). B: Transoesophageal echocardiogram showing the ascending aorta, superior vena cava and the right main pulmonary artery. C: Upon advancement of the probe, an air artefact is evident, which obscures the view.

nosis of hiatus hernia needs confirmation by means of another imaging modality, such as barium swallow, computed tomography or preferably CMR, because of the absence of radiation exposure.<sup>11-13</sup> Although TOE is not the optimal modality to assess patients with large hiatal hernias, it can sometimes help in differentiating between intracardiac and extracardiac masses.

Our patient reported that her syncopal attacks were usually associated with large meals. We believe that this is a case of “swallow syncope” syndrome. This syndrome has been recognised for over 30 years, though its aetiology remains uncertain.<sup>14</sup> One theory is



**Figure 2.** A: Coronal view of the cardiovascular magnetic resonance scan, showing the hiatus hernia (HH) positioned in the thoracic cavity. B: Transverse view showing the close proximity of the hiatus hernia to the left atrium (LA). AA – ascending aorta; DA – descending aorta.

that syncope in such cases is due to sinus or nodal bradycardia, sinus arrest, or advanced atrioventricular block.<sup>15</sup> An alternative explanation is that mechanical pressure of a large hiatus hernia on the left atrium, particularly after a heavy meal or in recumbent position, may result in decreased cardiac output and, eventually, syncope.<sup>4</sup>

In conclusion, we present a case of postprandial syncope in a patient with a large hiatus hernia, which appeared as a left atrial mass on transthoracic echocardiography and completely impeded TOE. In such cases, alternative imaging modalities should be utilised.

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