

A Rare Case of Platypnea-Orthodeoxia Syndrome Caused by a Patent Foramen Ovale After Esophageal Dilatation

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Clinical Presentation:

A 79-year-old man with no prior cardiac history presented to the emergency department with a 2-day history of melena. The patient underwent esophagogastroduodenoscopy (EGD) that demonstrated an esophageal stricture, which was treated with balloon catheter esophageal dilatation. Immediately after the procedure, the patient became profoundly hypoxic while in the seated position. Computed tomography (CT) of the chest showed no pulmonary embolism, pulmonary edema, or parenchymal lung disease. His oxygen saturation improved from 84% in an upright position to 95% in a supine position.

Imaging Findings:

A transthoracic echocardiogram (TTE) with agitated saline contrast demonstrated a moderate right-to-left shunt across the interatrial septum at rest, which increased to a large shunt with Valsalva (Figure 1A-B). Transesophageal echocardiography (TEE) confirmed the presence of a patent foramen (PFO), with a tunnel width of 11mm and length of 13mm. A prominent Eustachian valve directing blood toward the atrial septum was also visualized (Figure 1C-D).

Discussion:

PFO is a congenital cardiac condition caused by incomplete fusion of the septum primum and septum secundum, resulting in an interatrial connection. Rarely, PFOs can cause POS, an uncommon syndrome characterized by dyspnea and hypoxia in the upright position. In the absence of high right atrial pressure, a PFO can cause POS through anatomic distortions that promote the flow of deoxygenated venous blood toward the interatrial septum. PFO-mediated POS has been reported after paraesophageal hernia repair, but this is the first report following esophageal dilation. The cause of this patient's new-onset severe hypoxia with platypnea-orthodeoxia syndrome (POS) was identified by repeat TTE with agitated saline contrast and the PFO was further characterized by TEE. A possible mechanism was suggested by CT chest showing close proximity of the distal esophagus relative to the right atrium (Figure 1E-F). The patient underwent percutaneous PFO closure with immediate resolution of his hypoxia. It is possible that manipulation of the esophagus resulted in a change in position of the interatrial

septum, thereby promoting inferior vena caval flow toward the interatrial septum, which varies with position.

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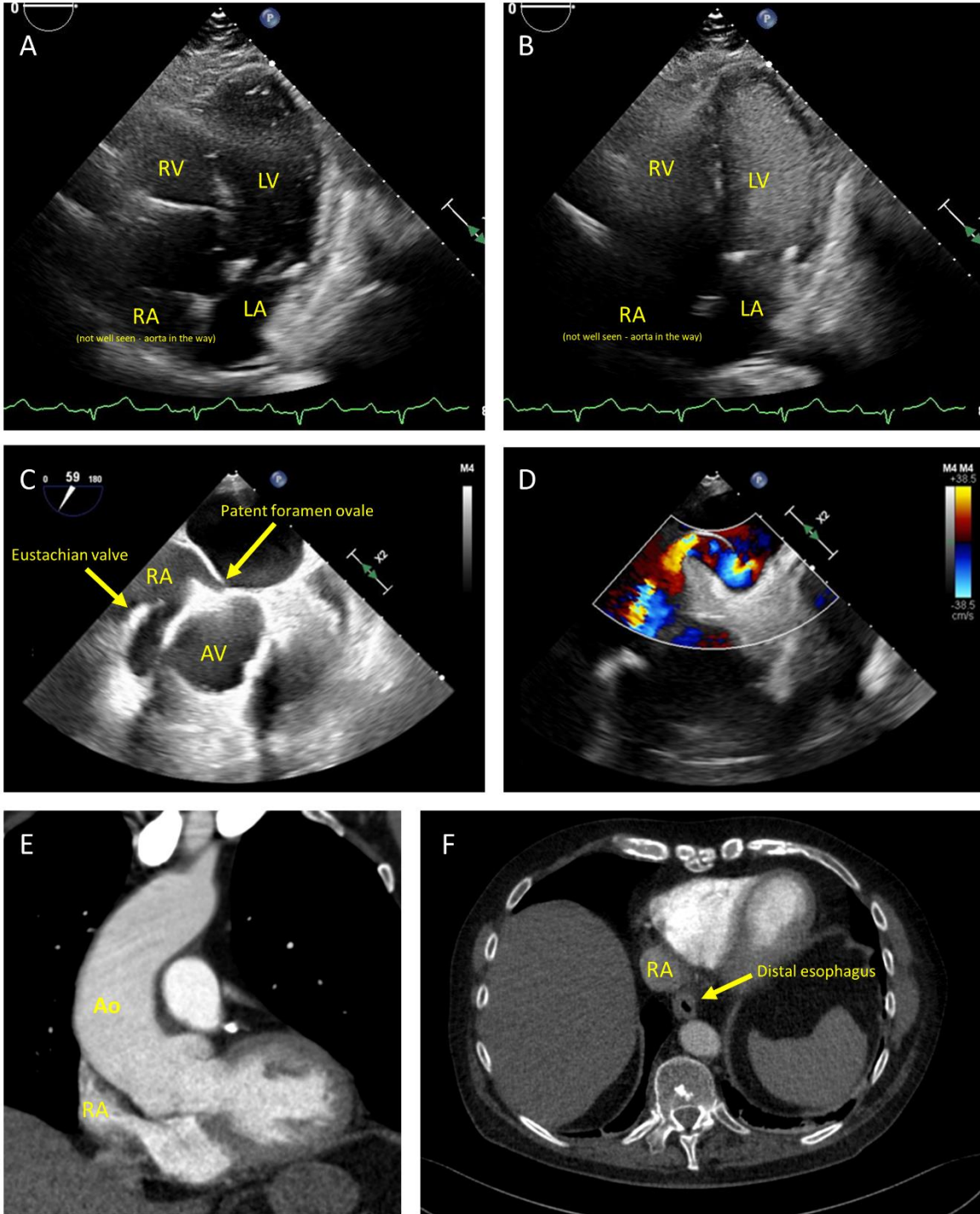


Figure 1. Transthoracic echocardiogram with agitated saline contrast (A & B) showing left-sided chamber opacification, suggesting a right-to-left intracardiac shunt. A transesophageal echocardiogram (C & D) confirming a patent foramen ovale with a prominent Eustachian valve directing the flow to the atrial septum, with a large right-to-left interatrial shunt. Computed tomography showed a dilated and tortuous aorta resulting in a distorted cardiac axis (E) with the distal esophagus in close proximity relative to a small and compressed right atrium (F).

Abbreviations: Ao – aorta; LA – left atrium; LV – left ventricle; RA – right atrium; RV – right ventricle.