

Imaging in Cardiovascular Disease



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Conflict of Interest

The authors have no financial conflicts of interest.

Platypnea-Orthodeoxia Syndrome after Thoracic Vertebral Compression Fracture Successfully Treated by Percutaneous Patent Foramen Ovale Closure

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Platypnea-orthodeoxia syndrome (POS) is a rare clinical condition in which dyspnea and hypoxemia is made worse by sitting or standing and improves in the supine position.¹⁾ There are several causes of POS such as intracardiac right-to-left shunt flow through an atrial septal defect or patent foramen ovale (PFO).²⁾ We herein report the case of an elderly woman with POS after thoracic vertebral compression fracture (TVCF) and who was successfully treated by percutaneous PFO closure. An 83-year-old woman was referred to our hospital for a 3-month history of dyspnea after TVCF (**Figure 1A and B**). Her medical history was unremarkable. There were no specific physical examination findings except that her oxygen saturation (OS) was 84% in the sitting position and 80% when standing up or moving, even when receiving oxygen therapy. OS improved in the supine position (OS: 98%). Her chest X-ray, electrocardiogram, blood test findings including brain natriuretic peptide, and transthoracic echocardiography were normal. However, transesophageal echocardiography with bubble study showed PFO with right-to-left shunt flow without Valsalva maneuver combined with aneurysmal change of the interatrial septum (**Figure 2A, Movie 1**). We supposed that TVCF triggered intracardiac right-to-left shunting through the PFO, under the conditions of the aneurysmal change of the ascending aorta, distorted descending thoracic aorta, and kyphosis (**Figure 1**).³⁾ After the PFO device closure procedure, transthoracic echocardiography with bubble study demonstrated that right-to-left shunt flow had nearly disappeared (**Figure 2B, Movie 2**), OS was increased up to 98% while walking, and her dyspnea had improved. During 1 year of follow-up, the patient has been in a stable condition.

Author Contributions

Conceptualization: Park YH; Resources: Cho HM; Supervision: Lee SH, Lee SY, Park YH; Visualization: Cho HM, Lee SY; Writing - original draft: Jung SM; Writing - review & editing: Lee SH.

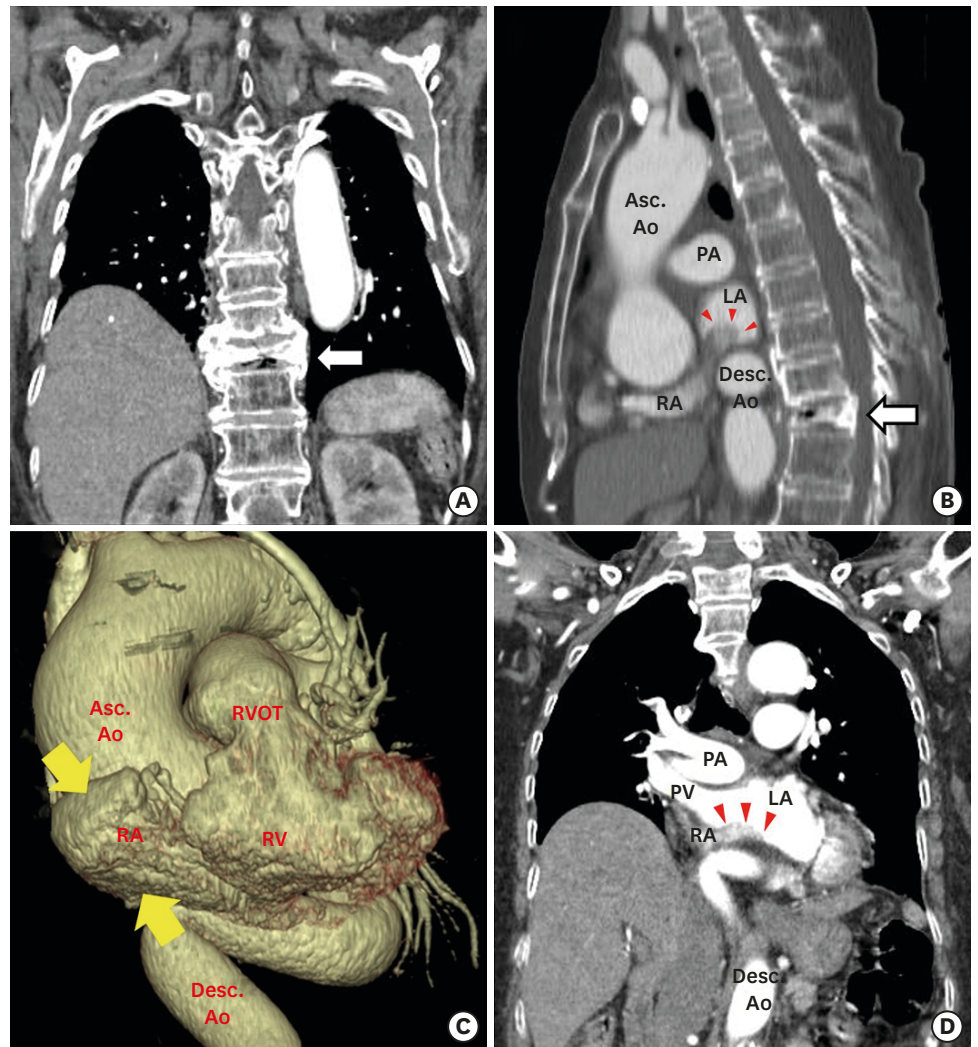


Figure 1. CT demonstrates a thoracic vertebral compression fracture (arrow) on the coronal view (A), and deformity of the right atrium and interatrial septum (arrowhead) combined with thoracic vertebral compression fracture and kyphosis on the sagittal view (B). Three-dimensional CT reconstruction imaging shows a deformity of the right atrium compressed (arrow) by an ascending aortic aneurysm and distorted descending thoracic aorta (C). Deformity of the right atrium and interatrial septum (arrowhead) on coronal view. CT: computed tomography, Asc. Ao: ascending aorta, Desc. Ao: descending aorta, LA: left atrium, PA: pulmonary artery, PV: pulmonary vein, RA: right atrium, RV: right ventricle, RVOT: right ventricular outflow tract.

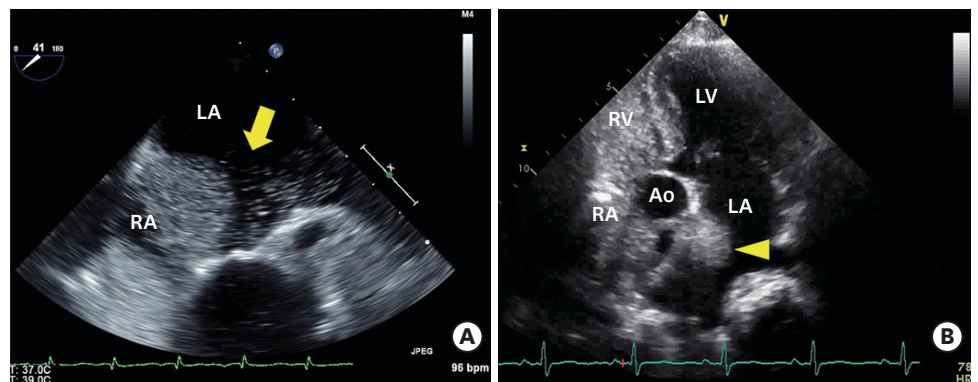


Figure 2. (A) Right-to-left shunt flow (arrow) through the PFO without Valsalva maneuver on transesophageal echocardiography with bubble study. (B) Little right-to-left shunt flow with Valsalva maneuver during transthoracic echocardiography with bubble study after PFO device closure. PFO closure device (arrowhead) is seen. PFO: patent foramen ovale, Ao: aorta, LA: left atrium, LV: left ventricle, RA: right atrium, RV: right ventricle.

SUPPLEMENTARY MATERIALS

Movie 1

Right-to-left shunt flow through a patent foramen ovale without Valsalva maneuver on transesophageal echocardiography with bubble study.

[Click here to view](#)

Movie 2

Little right-to-left shunt flow with Valsalva maneuver during transthoracic echocardiography with bubble study after patent foramen ovale device closure.

[Click here to view](#)

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