Circulation Reports
Circ Rep 2024; **6:** 187–188
doi:10.1253/circrep.CR-24-0018

Platypnea-Orthodeoxia Syndrome

— Sequential Comparison of the Ascending Aorta's Anteversion to the Right Atrium —

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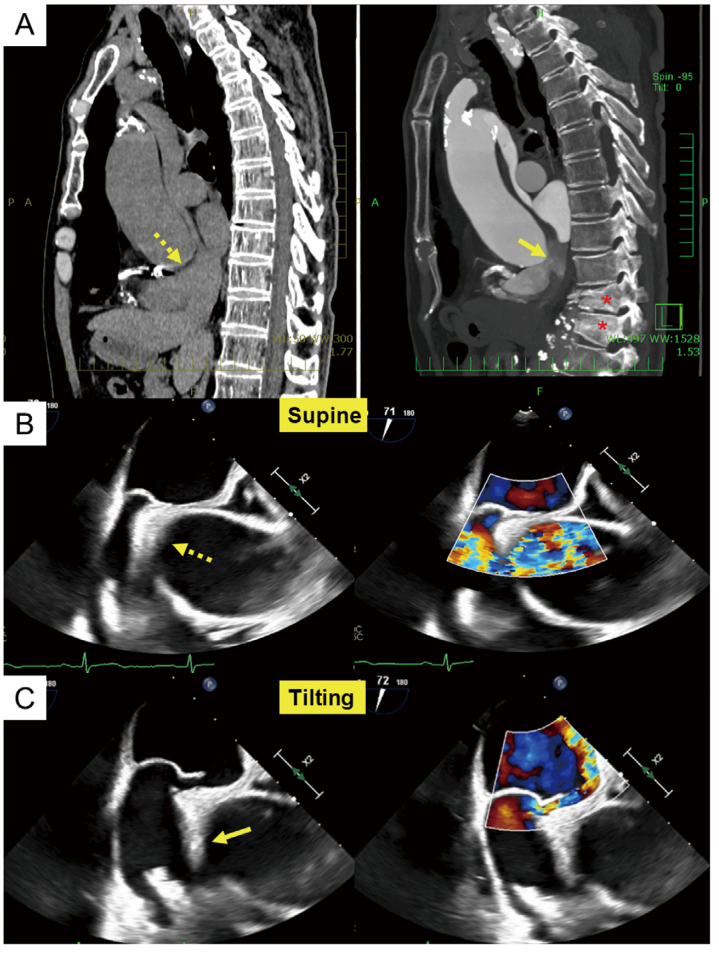

Figure. (**A**) Computed tomography images before (**Left**) and after (**Right**) the fracture (asterisks). Arrows show the right atrium, as seen from the ascending aorta. (**B**) Transesophageal echocardiography (TEE) in the supine position. Arrow shows the ascending aorta. (**C**) TEE during upward tilting. Arrow shows the ascending aorta anteverting toward the right atrium.

Received March 3, 2024; accepted March 4, 2024; J-STAGE Advance Publication released online April 11, 2024 Time for primary review: 1 day

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ISSN-2434-0790

A 79-year-old man suffered a thoracic vertebral compression fracture from a fall 15 months earlier. Following the injury, he developed hypoxia, characterized by a drop in percutaneous oxygen saturation levels below 90% in upright positions, which improved in a supine position. He was diagnosed with platypnea-orthodeoxia syndrome (POS), although the specific cause was initially unclear. He was then referred to our hospital for comprehensive evaluation and treatment. Compared with pre-injury scans, computed tomography (CT) revealed the ascending aorta had anteverted, compressing the right atrium (RA) due to kyphosis (**Figure A**). Transesophageal echocardiography (TEE) identified a patent foramen ovale (PFO) without visible shunt flow, yet it was confirmed by a positive microbubble test (**Figure B**, **Supplementary Movie 1**). On tilting during the TEE, the emergence of a notable right-to-left shunt through the PFO, which was the result of the ascending aorta's anteflexion towards the RA, was observed (**Figure C**, **Supplementary Movie 2**). After successful percutaneous PFO closure, the patient experienced a marked improvement and recovery from his symptoms after the procedure.

Compression of the ascending aorta to the RA is recognized as one of the mechanisms in the development of POS. The present study highlights the dynamic changes in the ascending aorta's position and its anteverting movement, using sequential CT and TEE, demonstrating how this movement compresses the RA.

Funding / Acknowledgments

None.

Disclosure

M.S. is a member of *Circulation Reports*' Editorial Team.

Ethics

Written informed consent was obtained from the patient.

Supplementary Files

Supplementary Movie 1. Transesophageal echocardiography in the supine position.

Supplementary Movie 2. Transesophageal echocardiography during upward tilting.

Please find supplementary file(s);
https://doi.org/10.1253/circrep.CR-24-0018