A 69-year-old diabetic man without previous cardiac history was admitted for stabilization of glycemic control. A routine ECG showed atrial fibrillation with right bundle-branch block, and the chest radiograph revealed marked prominence of the central pulmonary arteries. Accordingly, transthoracic echocardiography was performed, which demonstrated an atrial septal defect with moderate pulmonary hypertension and substantial enlargement of the right heart.

Within the right atrium, a poorly defined mobile “mass” was identified. Transesophageal echocardiography performed to further characterize this lesion confirmed the presence of an atrial septal defect within the fossa ovalis. It demonstrated the mobile structure within the right atrium to be a large, redundant eustachian valve. Without the motion of the heart, the windsock thus formed undulated between the atrial septum and the orifice of the tricuspid valve in a serpentine fashion (Figure). There was no evidence of obstruction within the right heart due to the redundant venous valve, although sacklike extensions of such valves have been removed at surgery from patients with evidence of obstruction.1

The eustachian and thebesian valves represent the remnants of the valves of the embryonic systemic venous sinus (sinus venosus) and guard the orifices of the inferior caval vein and coronary sinus, respectively. Although not uncommonly demonstrated at transesophageal studies, the venous valves are rarely large enough in the adult to be mistaken for a mass during transthoracic studies. In the present case, the finding of a redundant eustachian valve was incidental. Obstruction of flow through the right side of the heart can occur as a result of the spinnaker-like formation of the valve impeding flow through the tricuspid valve and promoting right-to-left shunting at the atrial level. The division of the right atrium thus produced (often called “cor triatriatum dexter”) may occur in isolation but is seen more frequently in association with obstruction within the right heart: tricuspid or pulmonary atresia. Douchette and Knoblich2 have suggested that the persistent presence of a large right valve of the systemic sinus venosus may contribute significantly both to patency of the foramen ovale and hypoplasia of the right ventricle and pulmonary trunk. Others have argued that the converse is a more plausible explanation for the association between these lesions.1

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References
Serial transesophageal images (a through c) illustrating right atrium transected by persisting and prominent valve of embryonic systemic sinus venosus. Redundant and aneurysmal valve shows a serpentine motion, with excursion extending between atrial septum and orifice of tricuspid valve, where its coiled socklike structure is transected as a “smoke ring.”
Division of the Right Atrium
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