Shamrock aorta: unruptured sinus of Valsalva aneurysms in a patient with a prosthetic heart valve

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Sinus of Valsalva aneurysms (SVAs) are rare cardiac anomalies which may be acquired or congenital, most commonly involving the right or non-coronary sinuses. Sinus of Valsalva aneurysms are usually asymptomatic until rupture. Acquired SVAs are caused by conditions affecting the aortic wall, such as trauma, infections, or connective tissue disorders. Rarely, iatrogenic causes, such as surgical trauma to aortic wall during aortic valve replacement (AVR), might be the aetiology of SVAs.

A 62-year-old female admitted to our emergency department with complaints of palpitation and exertional chest pain. A past medical history was unremarkable except AVR 20 years ago. On admission, her physical examination revealed normal systolic and diastolic blood pressures, and tachyarrhythmic pulses. Electrocardiogram revealed atrial fibrillation with rapid ventricular response. Serum biochemistry and cardiac biomarkers were in normal limits. Her heart rate was around 150 b.p.m. which was unresponsive to intravenous β-blocker, calcium channel blocker, and digoxin. Echocardiographic study (Panels A and B) and multidetector computed tomography (Panel C) demonstrated enlarged shamrock-shaped aorta with large SVAs measuring 7.4 × 6.7 cm in diameter. After aortography (Panel D), the patient was referred for surgical patch repair of the lesion with aortotomy and cardiotomy.

Panel A. Transthoracic echocardiography demonstrating sinus of Valsalva aneurysms (SVAs).
Panel B. Transoesophageal echocardiography demonstrating the shamrock-shaped aorta (Ao) and involvement of left and non-coronary sinuses.
Panel C. Corresponding multidetector computed tomography, notice the extension to right ventricular outflow tract (RVOT). A 40 mmHg gradient between the right ventricle and pulmonary artery was found on right heart catheterization.
Panel D. Aortography, dashed lines delineate the extension of SVAs. LA, left atrium; LV, left ventricle; PV, pulmonary valve; RA, right atrium; RV, right ventricle.