

CLINICAL VIGNETTE

Sinus of Valsalva rupture in a patient with a mechanical aortic prosthesis: aneurysm dissecting into the interventricular septum

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Sinus of Valsalva (SOV) aneurysm dissecting into the interventricular septum (IVS) has been rarely reported. Acquired aneurysms are caused by a deficiency of the aortic media [1]. There are several case reports of SOV dissecting into the IVS after aortic valve replacement, however surgical closure of an aneurysm that has ruptured into the left ventricular cavity has not been described yet. A 74-year-old woman was admitted to a cardiology department due to exercise-induced dyspnoea preceded by episodes of fever. Medical history included aortic valve replacement with a mechanical prosthesis (2008), pacemaker implantation due to third-degree atrioventricular block (2013), and chronic kidney disease. Laboratory tests on admission revealed elevated levels of B-type natriuretic peptide and C-reactive protein. Microbiological evaluation ruled out active infective endocarditis. Transthoracic echocardiography (TTE), transoesophageal echocardiography (TEE), and cardiac computed tomography (CT) revealed multiple dissections of IVS arising from slightly dilated right SOV. It communicated with the aortic root from the anterolateral part of the aortic annulus. Aortic prosthesis function was normal. Although echocardiography detected contractile abnormalities of the inferior wall, cardiac CT revealed Agatston score of 0 and no coronary flow obstruction. During hospitalisation, the patient developed dyspnoea. On echocardiography rupture of SOV dissecting into the IVS was observed (Fig. 1, [Suppl. Fig. 1A, B — see journal website](#)). The patient was referred for life-saving cardiac surgery. The mechanical aortic prosthesis was excised revealing the aneurysm entrance in the right SOV ([Suppl. Fig. 1C — see journal website](#)). A biological aortic prosthesis was sewn, which obliterated the aneurysm entrance from the IVS side. The TEE performed after discontinuation of extracorporeal circulation revealed no flow within the dissection. Microbiological culture of the resected tissue was negative. After three months, normal IVS and aortic prosthesis functions were confirmed on echocardiography ([Suppl. Fig. 1D–F — see journal website](#)). Causes of IVS dissection could be multifactorial; previous cardiac surgery alone could have caused postoperative shear forces between IVS and the aortic prosthesis, but it could also be caused by infective endocarditis. These conditions may lead to SOV dilatation and, subsequently, to its rupture and IVS dissection [1, 2]. There were no aortic pathologies before the primary surgery in our patient. Atrioventricular block is considered to be a complication of aneurysms, because the pressure from an expanding lesion is responsible for atrioventricular conduction disturbances [2].

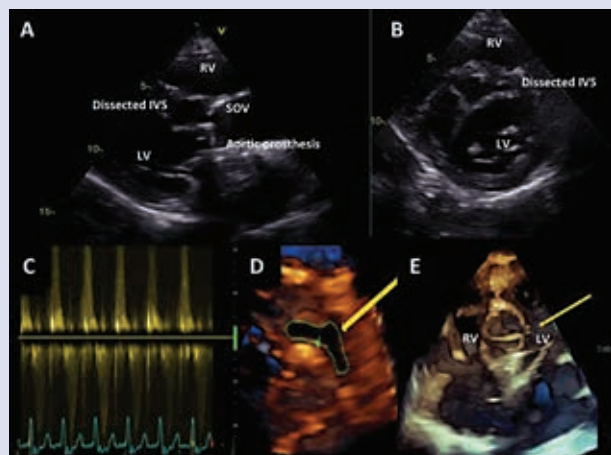


Figure 1. **A.** Two-dimensional (2D) transthoracic echocardiography (TTE), long-axis view: dilated sinus of Valsalva (SOV) above the aortic prosthesis; **B.** 2D TTE, short-axis view; **C.** Systolic-diastolic flow, Doppler spectrum through aneurysm entrance; **D.** Three-dimensional (3D) transoesophageal echocardiography, deep transgastric long-axis view: view of the right SOV aneurysm entrance (yellow arrow); **E.** 3D TTE, four-chamber view: ruptured aneurysm and its communication with left ventricle (yellow arrow); IVS — interventricular septum; LV — left ventricle, RV — right ventricle

Before and after pacemaker implantation there were no IVS abnormalities on echocardiography. Echocardiogram on admission revealed segmental contractile abnormalities; however, cardiac CT ruled out coronary artery disease. Two causes were considered: thromboembolic complications, because the aneurysmal cavity could be the site of thrombi formation, and right coronary artery compression by the aneurysm [3]. On admission, the patient was suspected of SOV aneurysm-related endocarditis that led to SOV rupture and IVS dissection. To the best of our knowledge this is the first report of aortic valve re-replacement with biological prosthesis additional to surgical correction of the ruptured and dissecting SOV. Echocardiography is a useful diagnostic tool. Early diagnosis and surgical intervention are crucial to patient survival.

References

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