Partial detachment of tricuspid valve annuloplasty ring detected by three-dimensional transesophageal echocardiography

A 45-year-old female patient was admitted to our hospital with shortness of breath and swelling in the leg. Ten months prior to the admission she had undergone mitral valve replacement (31 St. Jude bioprosthesis) and tricuspid valve annuloplasty (33 Medtronic ring) because of carcinoid heart disease. All infective parameters were within the normal limits and no fever was detected. A two-dimensional (2-D) transthoracic echocardiography revealed severe tricuspid regurgitation (TR) and normofunctional prosthetic mitral valve. The 2-D and a three-dimensional (3-D) transesophageal echocardiography (TEE) were performed using the same machine (transducer X7-2t, Philips Electronics, Andover, MA). Live/real time 3-D, rather than off-line post-processing, and 3-D reconstructions were performed. The 2-D TEE revealed severe TR and possible partial tricuspid valve annuloplasty ring detachment. The 3-D TEE confirmed partial tricuspid valve annuloplasty ring detachment by showing the tricuspid valve from enface view, and the 3-D TEE color Doppler showed TR. The partial tricuspid ring detachment was medially located and seemed like a double-orifice tricuspid valve. The 3-D TEE provides a comprehensive anatomical overview by showing the valve from enface view (Fig. 1, Videos 1–4). After consultation with the cardiovascular surgery department, the patient was scheduled for an elective operation.

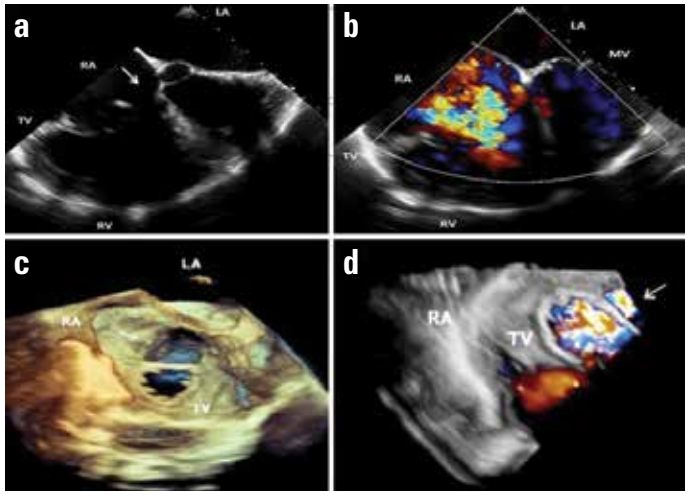

Figure 1. (a, b) Two-dimensional transesophageal echocardiography. (a) Four chamber view. Arrow points possible partial tricuspid valve ring annuloplasty detachment. LA, left atrium; RA, right atrium; RV, right ventricle; and TV, tricuspid valve. (b) Four chamber view with color Doppler showing severe tricuspid regurgitation. Mitral valve, MV. (c, d) Live/real time three-dimensional transesophageal echocardiography. (c) Arrow points partial tricuspid valve ring annuloplasty detachment from enface view. (d) Live/real time three-dimensional transesophageal echocardiography with color Doppler. Arrow points regurgitation from detached area

Video 1. Two-dimensional transesophageal echocardiography. Four chamber view showing possible partial tricuspid valve ring annuloplasty detachment.

Video 2. Two-dimensional transesophageal echocardiography. Four chamber view with color Doppler showing severe tricuspid regurgitation.

Video 3. Live/real time three-dimensional transesophageal echocardiography showing partial tricuspid valve ring annuloplasty detachment from enface view.

Video 4. Live/real time three-dimensional transesophageal echocardiography with color Doppler showing regurgitation from detached area.

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Transcatheter closure of ruptured sinus of valsalva aneurysm using symmetrical perimembraneous VSD device

A 10-year-old patient who was operated for ventricular septal defect (VSD) 3 years previously was admitted to our outpatient clinic with chest pain. Physical examination revealed a grade 3 continuous murmur. Transthoracic echocardiography revealed a 7-mm ruptured sinus of valsalva aneurysm (SOVA) with a left-to-right shunt from the aorta into the right ventricle and mild aortic regurgitation. We decided to apply transcatheter closure (TCC) to the ruptured SOVA.

The procedure was performed under transthoracic echocardiography guidance. After aortic root angiogram (Fig. 1a), which confirmed the left-to-right shunt, the 0.035-inch hydrophilic guidewire crossed to the right ventricle from the aorta. An amplatz stiff guidewire was advanced to the right ventricle through a multipurpose catheter. A 10-mm symmetric VSD occluder was advanced in a 7f sheath. After implantation of the 10-mm device, no rest shunt remained detectable and coronary flow was normal. Medication with heparin (100 U/kg bolus) was administered. After release, the ascending aortography showed complete closure of ruptured SOVA and decrease of aortic insufficiency, and there was no relationship between the device and coronary arteries (Fig. 1b). The patient remained asymptomatic at follow-up at >1 year after the procedure.