failure³ and aiding in surgical planning. Further, this case illustrates that the spatial and temporal resolution of CT imaging has improved such that the diagnosis of coronary artery disease as well as of complex intracardiac pathology is now possible, even in the presence of severe tachyarrhythmia. In select cases, real-time dynamic CT imaging may eventually replace echocardiography and angiography and allow evaluation with a single test.

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False aneurysm after transapical aortic valve implantation

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Video clip is available online.

CLINICAL SUMMARY

An 81-year-old man with severe aortic valve stenosis had repeated bouts of acute pulmonary edema (New York Heart Association class III). He had known triple-vessel coronary artery disease, chronic bronchitis, peripheral artery disease, and chronic atrial fibrillation. Echocardiography showed a mean gradient across a tricuspid aortic valve of 45 mm Hg with a calculated surface area of 0.38 cm². It also showed functional mitral regurgitation (grade 2/4) with heavy calcifications of the mitral annulus and severe pulmonary hypertension (80 mm Hg). The left ventricular ejection fraction (LVEF) was calculated to be 15%. Dobutamine stress echocardiography demonstrated a mild improvement of the LVEF and some contractile reserve. The EuroSCORE and Society of Thoracic Surgeons (STS) preoperative scores were 31% and 20%, respectively. Conventional surgery was considered too risky and the patient was referred for

transcatheter aortic valve implantation (TAVI). During his workup, he had low cardiac output and acute renal failure necessitating emergency aortic balloon valvuloplasty as a bail-out procedure. After diminution of the gradient to 27 mm Hg and improvement of renal function, TAVI was successfully performed through a left anterolateral thoracotomy via the transapical route with a balloon-expandable transcatheter xenograft (Edwards SAPIEN THV, Edwards Lifesciences, Irvine, Calif) 26 mm in diameter. An intra-aortic balloon pump was inserted after the procedure. Excess of anticoagulation contributed to a pericardial effusion of 600 mL that was drained 2 weeks after the operation. Echocardiography at 1 month demonstrated a functional prosthesis, negligible posterior leak (<1/4), a mean gradient of 9 mm Hg, LVEF of 25%, and pulmonary artery pressure of 35 mm Hg.

Three months after the procedure, the patient returned with a sudden-onset pulsating mass of 4 cm in diameter on the lateral aspect of the thoracotomy scar but was otherwise completely free of symptoms. Computed tomographic scan of the thorax showed a false aneurysm of the left ventricle of 50 × 22 mm dimension communicating with a pouch in the thoracic wall of 28 × 27 mm diameter with enhancement at injection of contrast material (Figure 1). Echocardiography confirmed the presence of a left ventricular apical aneurysm with an LVEF of 34%, good left ventricular kinetics, and a functional bioprosthesis; Doppler study confirmed flow within the aneurysmal sac (Figure 2 and Video E1). Surgical closure of the fistula was performed through sternotomy and cardiopulmonary bypass (CPB) accompanied by bypass grafting of the left anterior descending artery by the left internal thoracic artery. The patient made an uneventful recovery.

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Received for publication June 18, 2008; accepted for publication July 6, 2008.

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J Thorac Cardiovasc Surg 2009;137:e21-2

0022-5223/\$36.00

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doi:10.1016/j.jtcvs.2008.07.018

FIGURE 1. Computed tomographic scan (coronal and transverse sections).

FIGURE 2. Echocardiography with Doppler study showing flow within the aneurysmal sac.

DISCUSSION

TAVI offers a novel therapeutic approach in high-risk patients with severe symptomatic aortic stenosis.¹ Despite a successful procedural outcome and discharge from hospital, a false aneurysm developed at the site of apical puncture. The localization to the apex is unusual, and

this is the first time it has been described after TAVI. Ventricular pseudoaneurysms have been reported after transmural myocardial infarction, chest trauma, infective endocarditis, tumors, and cardiac surgery.² Surgical management is indicated to prevent rupture and can be achieved by direct suture closure with CPB.³ The improvement of the patient's clinical status after TAVI allowed subsequent CPB for the repair of the aneurysm and bypass grafting of the left anterior descending artery. Even though further surgery was not planned for this patient, TAVI acted as a bridge procedure.

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