Hybrid treatment of a giant coronary artery fistula between the left circumflex coronary artery and the coronary sinus

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A 60-year-old woman with dyspnoea and palpitation underwent computed tomography (CT), which showed a coronary artery fistula (CAF) originating from an aneurysmal left circumflex coronary artery (LCx) (Figure 1A, arrow), draining directly into the coronary sinus (Figure 1B, arrow) and two obtuse marginal branches arising from the CAF. Transthoracic echocardiography (TTE) showed dilatation of both the right atrium and ventricle with moderate tricuspid insufficiency associated with increased systolic pulmonary artery (PA) pressure (59 mmHg). Magnetic resonance measured a 1.9 pulmonic-to-systemic flow ratio. The surgical closure of the CAF was performed with ligation of the proximal aneurysmal LCx and distal CAF. Then, the first and the second marginal branches (M1, M2) were bypassed with the left internal mammary artery (LIMA) and a saphenous vein graft (SVG), respectively. Three days later, CT showed a complete closure of the proximal CAF (Figure 1C, white arrow) and an incomplete closure of the distal CAF (Figure 1C, red arrow) with retrograde flow from the grafts anastomosed to M1 and M2, confirmed by invasive coronary angiography (Figure 1D). A percutaneous closure was performed using a 7-Fr left Amplatz 3 guiding catheter introduced from the right femoral vein into the distal part of the CAF. Complete CAF occlusion was obtained after deployment of an 8-mm Amplatz Vascular Plug 4 (AVP) (Figure 1E, circle). Postoperative TTE revealed normal systolic PA pulmonary pressure (31 mmHg) and dyspnoea disappeared.

This case illustrates that incomplete CAF occlusion may be a potential complication associated with surgical treatment. This is the first report of a hybrid surgical and percutaneous treatment of a CAF.