Supracardiac partial anomalous pulmonary venous connection recognized by computed tomography in an adult patient

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Abnormal pulmonary venous connections represent rare congenital defects of the pulmonary veins, which drain into the right atrium of the heart instead of into the left atrium.[1] Supracardiac partial anomalous pulmonary venous connections (PAPVCs) are uncommon congenital cardiac malformations, detected in adulthood. In 10% of the patients, PAPVCs are located on the left side of the heart. An intact atrial septum is an even more uncommon finding.[2] An abnormally escaping left pulmonary vein most often leads to the superior vena cava. A PAPVC without atrial septal defect occurs quite rarely. The defect results in venous blood flow from the lungs into the systemic circulation with increased pulmonary flow.

Here, we describe a 68-year-old man who presented with dyspnea on moderate exertion, which had persisted for 6 months before his admission. The jugular veins were dilated and mild hepatomegaly was noted. Transthoracic echocardiography showed a dilated right ventricle, right atrial enlargement, and severe tricuspid regurgitation. No defect of the atrial septum was found. Backward flow was recorded in the hepatic veins. The left atrium (LA) was not enlarged. The pulmonary trunk was moderately dilated, and its pressure was 54/31 mm Hg. The pulmonary veins were not clearly visualized. Three-dimensional computed tomography (CT) images of the chest revealed that the left superior pulmonary vein (LSPV) was located outside the pericardium, from which the vertical vein (VV) originated to reach the brachiocephalic vein terminating into the superior vena cava (FIGURE 1A–1C). Systemic veins and the LSPV were remarkably dilated. The patient underwent elective surgery. An LSPV anastomosis to the lateral wall of the LA was created using a vascular prosthesis from the patient's own pericardium (FIGURE 1D and 1E). A tricuspid ring was implanted, and the ascending VV was ligated. The patient was discharged home after 8 days of hospitalization. Follow-up chest CT at 3 months after the operation showed a ligated VV with a large anastomosis from the LSPV to the LA (FIGURE 1F).

Echocardiography is the most frequently used modality for the diagnosis of PAPVCs.[3] Pulmonary venous confluence can sometimes be difficult to visualize. Here, the reconstructed 3-dimensional CT images demonstrated relevant findings and guided the surgical treatment in our patient. These images showed the precise size, localization, and distance between the LSPV and the left atrium.[4] Surgical repair is the only treatment for PAPVCs. Advanced age constitutes a risk factor for unfavorable surgical outcomes. In conclusion, in order to rule out anatomical and physiological factors that adversely affect treatment outcomes in this group of patients, a careful perioperative evaluation using multiple imaging modalities should be performed.

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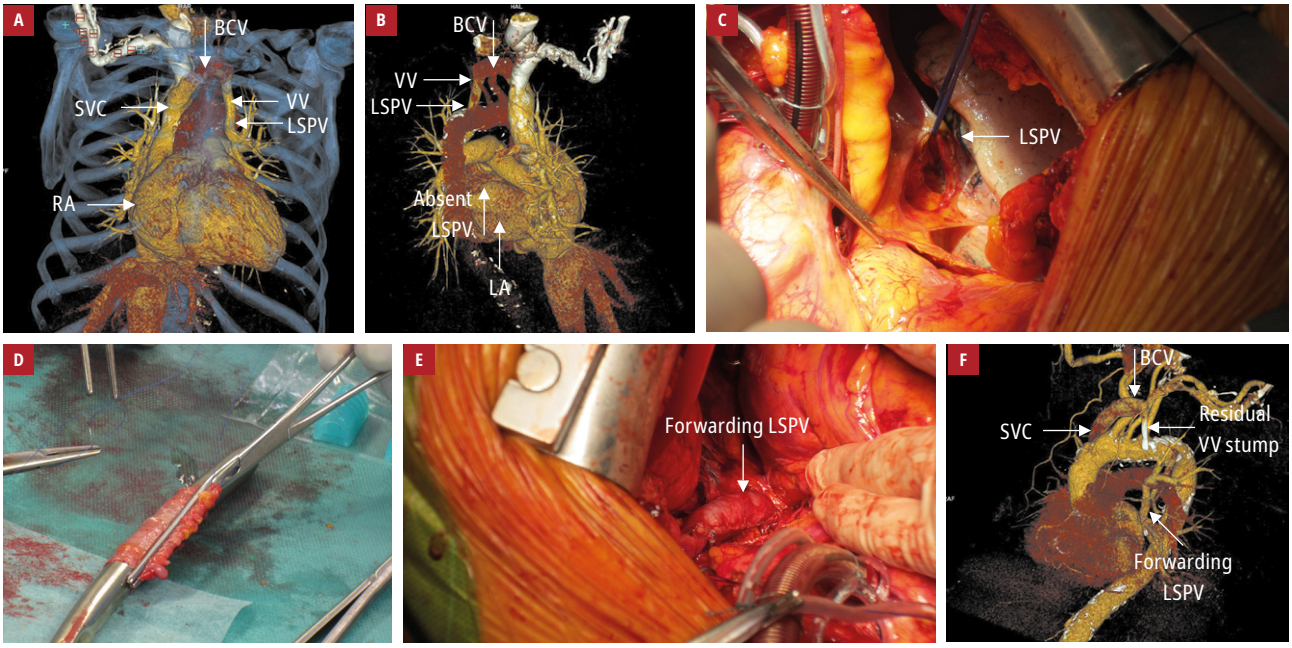

FIGURE 1 **A**, **B** – computed tomography angiography showing the abnormal left superior pulmonary vein (LSPV); **C** – the intraoperative view of the abnormal LSPV; **D** – a vascular prosthesis from the patient's own pericardium; **E** – the intraoperative view of the LSPV following surgical repair; **F** – computed tomography angiography showing the LSPV after the surgery
Abbreviations: BCV, brachiocephalic vein; RA, right atrium; SVC, superior vena cava; VV, vertical vein

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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