

**Figure 1. A-D. 2D TTE short-axis view revealed a peak pressure gradient over the right ventricular outflow tract of 30 mm Hg (Fig. 1A). 2D TEE short-axis view demonstrated bicuspid pulmonary valve (Fig. 1B and Video 1A, arrow). 3D TEE full-volume acquisition also showed bicuspid pulmonary valve (Fig. 1C and Video 1B, arrow). Transverse view of colored 3D volume-rendered CT angiography also demonstrated bicuspid pulmonary valve (Fig. 1D, arrow)**

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## Multimodality imaging of isolated bicuspid pulmonary valve leading to pulmonary stenosis 🎥

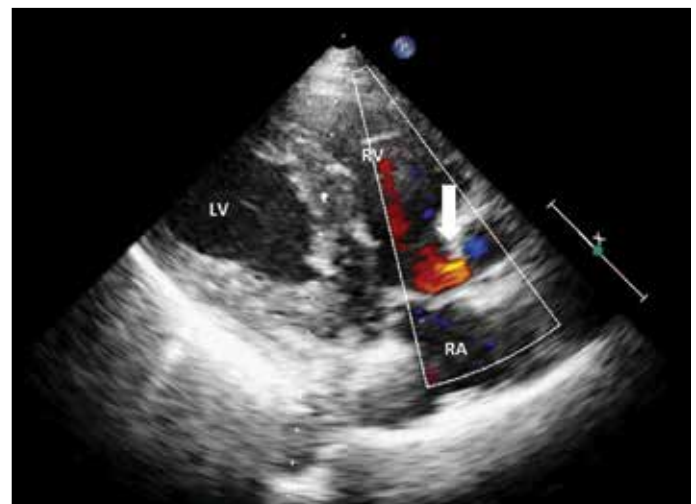
Isolated bicuspid pulmonary valve is a rare arterial valve anomaly with very few reports in the literature. It is usually in association with other congenital cardiac lesions. However, the true incidence of bicuspid pulmonary valve could be underestimated because of the difficulty in imaging pulmonary valve morphology with conventional two-dimensional transthoracic echocardiography.

A 21-year-old man was admitted to our outpatient clinic for routine evaluation. Pansystolic murmur was heard on the left second intercostal space. The electrocardiogram showed normal sinus rhythm. The two-dimensional transthoracic echocardiography short-axis view revealed a peak pressure gradient over the right ventricular outflow tract of 30 mm Hg (Fig. 1A). The two-dimensional transesophageal echocardiography short-axis view demonstrated a bicuspid pulmonary valve (Fig. 1B and Video 1A, arrow). Three-dimensional transesophageal echocardiography full-volume acquisition also showed a bicuspid pulmonary valve (Fig. 1C and Video 1B, arrow). To clarify this pathology, we performed computed tomography (CT). The transverse view of colored three-dimensional volume-rendered CT angiography images also demonstrated a bicuspid pulmonary valve (Fig. 1D, arrow). We report here a case of isolated bicuspid pulmonary valve leading to pulmonary stenosis. There is difficulty in imaging pulmonary valve morphology. For this reason, the full spectrum of non-invasive cardiac imaging modalities should be performed in the diagnosis of bicuspid pulmonary valve. Multimodality imaging can help to diagnose this condition better.

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## Coronary-cameral fistula in an asymptomatic adult patient

The average frequency of coronary-cameral communication (CCC) is 0.09% in the population who undergoes coronary angiography. In addition, coronary-cameral fistula (CCF) constitutes 10% of all CCCs. CCF is probably very rare in adult patients, because the majority of them is detected and treated during childhood. Hereby, we present an asymptomatic adult patient with CCF who was diagnosed incidentally during a pre-operative cardiovascular examination for non-cardiac surgery. A 45-year-old female patient was referred to our outpatient clinic for a cardiovascular examination before an elective abdominal surgery. In her medical history, she had no cardiovascular symptoms. Physical examination revealed 1-2/6 apical systolic murmur.



**Figure 1. Color flow Doppler jet of fistula at RV entrance**



**Figure 2. Transesophageal image of the aorta and the initial segment of the coronary-cameral fistula**



**Figure 3. Sagittal CT view of the fistula tract**



**Figure 4. Aortography demonstrating the entrance and course of the fistula**  
Transthoracic echocardiography revealed anomalous jet in the right ventricular free wall (Fig. 1). Qp/Qs was 1.1. Transesophageal echocar-

diography revealed a tunnel with a 20-mm diameter between the aorta and right ventricle (Fig. 2). CT angiography confirmed the presence of an aneurysmal RCA that opened into the right ventricle (Fig. 3). We performed aortography to show the course of the aneurysmal RCA. Aortography revealed a CCF from the right aortic sinus to the RV (Fig. 4). Because the patient was asymptomatic, no specific drug was administered at the hospital discharge.

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## Hybrid stenting of restrictive atrial septum in an infant with hypoplastic left heart syndrome after hybrid stage 1 palliation

The prognosis of children born with hypoplastic left heart syndrome (HLHS) has improved in the last decade. Survival rates are up to 70% for Fontan completion in published series. The most important problem with HLHS patients is restrictive interatrial communication, which decreases survival. In recent years, a transcatheter approach to urgent atrial septal perforation and balloon septoplasty and/or atrial septal stenting have been offered.

A 4.5-month-old boy, who underwent hybrid Norwood stage 1, bilateral pulmonary artery banding and ductal stenting with the diagnosis of HLHS when he was 10 days old, was referred to our hospital because of severe hypoxemia, dyspnea, and acidosis. Echocardiography revealed that the main problem was restrictive interatrial communication, and urgent catheterization was planned (Fig. 1A-D/please see the next page). Both femoral veins were obstructed, so a hybrid approach was chosen. The right atrium was reached through a right thoracotomy, and a 7 F sheath was placed into the atrium. Under transesophageal echocardiography and fluoroscopy guidance, a wire was positioned in the left upper pulmonary vein after looping in the left atrium, and a 9 x 18-mm cobalt iliac stent was put in the interatrial septum (IAS) (Video 1-2). The patient was extubated on the 3<sup>rd</sup> postoperative day and discharged on the 7<sup>th</sup> postoperative day.

When vascular access becomes a challenge in complex situations, stent implantation into the atrial septum can be performed by a hybrid approach through thoracotomy.

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