Free-floating occluder device in the left atrium during paravalvular leak closure in a child: Nightmare in the cath lab

Paravalvular leak (PVL) is a complication that occurs in 5%–10% of patients after surgical mitral valve replacement. Reoperation may be necessary for a rare group of patients with heart failure or progressive hemolysis. Surgical repair has been considered a standard treatment method for a long time; however, the percutaneous route may be preferred owing to lower morbidity and mortality rates in high-risk patients. There are few experiences of percutaneous PVL closure in children.

A 7-year-old-girl, who has been followed-up with dilated cardiomyopathy and left ventricle noncompaction cardiomyopathy (LVNC) diagnosis since she was 15-days old, underwent surgical mitral valve replacement due to severe mitral insufficiency. Further, 7 months after the operation, she was referred for severe mitral PVL that caused significant hemolysis requiring blood transfusion. Transesophageal echocardiography (TEE) revealed significant mitral PVL, moderate tricuspid valve insufficiency, LVNC, and reduced left ventricular contraction with a shortening fraction of 20% (Video 1). We decided to perform hybrid PVL closure because she was hemodynamically unstable and the operative risk was unacceptably high. After left anterior minithoracotomy, a 9 Fr introducer sheath was inserted into the left ventricular apex. The mean width of PVL measured by 3D-TEE was 16×6 mm (Fig. 1). A 14-mm Amplatzer Septal Occluder (ASO) device was successfully deployed across the PVL. However, the disc of the device on the ventricular side was remarkably close to the mitral valve, preventing proper valve functioning. Unfortunately, the ASO device was embolized during repositioning and started to float in the left atrium (Videos 2, 3). Subsequently, the device was captured with a snare and successfully retrieved (Video 4). Attentive device reimplantation with reassurance that it does not touch the mitral valve was performed (Video 5). We observed that the mitral valve movements were favorable by 3D-TEE, the mitral inflow was clear by 2D-TEE, and there was no residual leakage by color Doppler TEE after the procedure (Video 6).

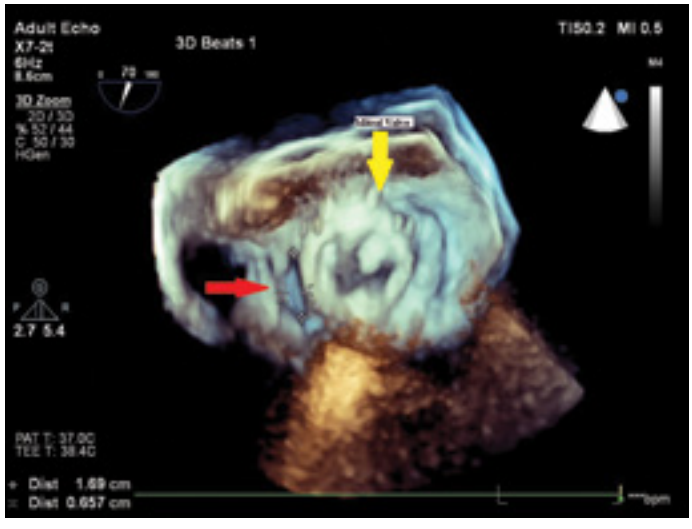

Figure 1. 3D-transesophageal echocardiography image indicating the measurement of paravalvular leak (red arrow)

Informed consent: Informed consent was obtained from the patient's parents.

Video 1. Color Doppler transesophageal echocardiographic video indicating severe mitral paravalvular leak

Video 2. Catheter angiography video indicating embolization of the Amplatzer Septal Occluder device during repositioning

Video 3. Transesophageal echocardiography and catheter angiography videos indicating floating of the Amplatzer Septal Occluder device within the left atrium

Video 4. Catheter angiography video indicating the capture of the Amplatzer Septal Occluder device in the left atrium with a snare and its successful retrieval

Video 5. Placement and deployment of the Amplatzer Septal Occluder in the appropriate position

Video 6. 2D, 3D, and color Doppler transesophageal echocardiography videos indicating the device position after the procedure

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Left ventricular outpouching - A challenging diagnosis

Under conditions of acute myocardial infarction (AMI), left ventricular outpouching (LVO) detection requires emergency differential diagnosis because the outcome of LVOs differs substan-