Novel three-dimensional transesophageal echocardiography imaging of a highly mobile left atrial thrombus associated with stroke

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A 71-year-old woman initially presented with increasing dizziness and numbness, as well as a mild fever. Her medical history included atrial fibrillation and a mechanical mitral valve replacement (MVR) surgery eight years previously for severe rheumatic mitral stenosis. A transthoracic echocardiogram was unable to rule out a clinical suspicion of endocarditis on the mitral prosthesis, due to inherent shadowing artifact from the valve. Therefore, a transesophageal echocardiogram (TEE) was scheduled to obtain a better image of the valve. In the days preceding the TEE, the patient had a severe stroke with pronounced right-sided paralysis. The subsequent TEE did not show any signs of endocarditis; however, a large, highly mobile thrombus (labelled 'X') was detected in the left atrium (LA) (Figure 1 and Video 1). Spontaneous contrast was also noted in the left atrial appendage (LAA), indicating slow-moving blood. The addition of three-dimensional (3D) TEE imaging allowed for

unique views of the thrombus compared with standard two-dimensional TEE, and allowed for determining its 3D size, shape and spatial orientation within the chamber (Figure 2 and Video 2). This relatively new imaging modality also helped identify a thin strand of fibrin that loosely attached the thrombus to the LAA, which was unclear from multiple two-dimensional TEE views. The 3D images revealed that the thrombus' large size prevented it from fitting through the mitral valve prosthesis; however, it was seen repeatedly striking against the valve. The patient was aggressively managed with antithrombotic medication and closely monitored over the course of one month. Due to complaints of severe leg pain, the patient underwent computed tomographic angiography, revealing that the thrombus had embolized into the femoral artery. After the thrombus was surgically removed from the leg, a follow-up TEE showed no residual left atrial thrombus.

Figure 1

Figure 2

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