Left ventricular thrombus formation after successful percutaneous edge-to-edge mitral valve repair

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Percutaneous edge-to-edge mitral valve repair is a non-surgical treatment option for high-risk patients with symptomatic mitral regurgitation (MR) and severely depressed left ventricular function who are not eligible for conventional surgery.

A 55-year-old female patient with dilative cardiomyopathy, severely depressed left ventricular ejection fraction of 15%, and a severe functional MR was treated with percutaneous edge-to-edge mitral valve repair by MitraClip® system (Abbott Vascular). The procedure was successful, reducing the MR from Grade 4+ to Grade 2+. (Panel A pre-procedurally and Panel C post-procedurally). The residual MR was left intentionally avoiding acute left ventricular failure due to an intolerable increase in resistance. Routine echocardiography performed 4 days after the procedure demonstrated new formation of a large left ventricular thrombus adherent to the inferior wall (Panel D), despite anticoagulation with intravenous heparin. Thrombus was clearly absent before the procedure (Panel B). Unfortunately, the patient developed a thrombembolic stroke and died 1 week later due to pneumonia.

The review of the percutaneous procedure did not reveal any abnormal device manoeuvres or potential injuries of the left ventricle.

Successful percutaneous edge-to-edge mitral valve repair may lead to substantial reduction in intraventricular flow especially in patients with severely depressed left ventricular function, which may cause thrombus formation. Since an increasing number of patients with severely depressed left ventricular function and severe MR are treated with this percutaneous approach, this phenomenon might be under-recognized. Consequently, special care should be taken to identify ventricular thrombus formation in follow-up echocardiography after successful percutaneous edge-to-edge mitral valve repair.

Panels A–D. Intraventricular thrombus formation after successful percutaneous edge-to-edge mitral valve repair. Panel A shows the three-dimensional colour flow transoesophageal echocardiography of the mitral regurgitation (60°, grade 4+) pre-procedurally. Left ventricular thrombus was absent before the percutaneous edge-to-edge mitral valve repair in Panel B and Supplementary material online, Movie S1 (transstoracic echocardiography, apical two-chamber view). Panel C shows a successful reduction in the mitral regurgitation to Grade 2+. Panel D and Supplementary material online, Movie S2 show left ventricular thrombus adherent to the inferior wall (arrowheads).

Supplementary material is available at European Heart Journal online.

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