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IMAGES IN CARDIOLOGY

Real-time three-dimensional echocardiographic diagnosis of postmyocardial infarction ventricular septal defect and guidance of transcatheter closure

A 51-year-old woman with no history of heart disease presented to the emergency room complaining of chest pain of 48 h duration and sudden onset of severe dyspnoea. The blood pressure was 92/60 mm Hg and heart rate was 105 beats per minute. Auscultation showed bilateral inspiratory rales and a grade 3/6 harsh, holosystolic murmur along the left sternal border. An ECG showed ST-segment elevation in leads V₂–V₅. Real-time three-dimensional (RT3-D) transthoracic echocardiography disclosed a 16 mm diameter through-and-through infarct ventricular septal defect (VSD; panels A, B). The patient was taken immediately to the cardiac catheterisation laboratory. Coronary angiography revealed an occluded proximal left anterior descending artery without collateral circulation. Intra-aortic balloon pump counterpulsation failed to improve the haemodynamic status. With the patient in cardiogenic shock, a decision was made for percutaneous transcatheter closure as an alternative to urgent surgical repair. A 22 mm Amplatzer occluder device (AGA Medical Corporation, Minneapolis, Minnesota, USA) was placed via the femoral vein under combined fluoroscopic and RT3-D echocardiographic guidance (panel C). Careful imaging

was needed to identify ventricular septal tissue positioned between both discs. Placement of the occluder resulted in immediate clinical improvement and a decrease in the pulmonary artery oxygen saturation from 80% to 58%. After 6 weeks, the patient underwent successful surgical repair of a persistent small residual shunt for prognostic reasons.

Our case illustrates the clinical usefulness of RT3-D echocardiography in defining the exact location of a postmyocardial infarction VSD, guiding the interventional closure, and immediately evaluating the result.

To view video footage visit the *Heart* website—<http://heart.bmj.com/supplemental>

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Real-time three-dimensional echocardiography. (A) Parasternal long-axis view locating the through-and-through defect to the mid anteroseptal segment (arrow). (B) Colour flow imaging showing a large left-to-right shunt across the defect. (C) Deployment of both discs with the device still attached to the delivery cable. (D) Appropriate device position after release.