Unusual complication and mechanical murmur following mitral valve clip insertion in a patient with a CRT-D

Dilip Abraham, Martin Behounek, Elved Bryn Roberts

Department of Cardiology,
Glenfield Hospital, University
Hospitals of Leicester,
Leicester, UK

Correspondence to
Dr Dilip Abraham,
dilip.abraham@nhs.net

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DESCRIPTION

A 71-year-old man underwent cardiac resynchronisation therapy defibrillators cardiac resynchronisation therapy-defibrillator (CRT-D) insertion for severe heart failure. A week after device insertion, the patient was on a cruise when he suddenly became short of breath. He was in cardiogenic shock requiring intubation and was airlifted to a Spanish hospital. Severe mitral regurgitation secondary to chordae rupture was detected on echocardiography. He was considered high risk for surgery and therefore the decision was made to insert two percutaneous mitral valve clips. He spent several days in Spain and when stabilised was transferred back to his local hospital in the UK. He remained on intravenous diuretics to manage his heart failure. His implantable cardioverter-defibrillator (ICD) lead was noted to be displaced (figure 1), therefore our unit was contacted for lead

repositioning. On admission he was fluid overloaded, and in addition to a soft murmur of mitral regurgitation, a loud diastolic mechanical murmur was heard (see online supplementary audio file and figure 2). The cause of the murmur was unclear and an urgent echocardiogram was organised. This showed the ICD lead in the right ventricular outflow tract encroaching on the pulmonary valve. The mitral valve clips were noted in the correct position (figure 3) and functioning appropriately with moderate mitral regurgitation (figure 4). Deployment involves percutaneous venous access and trans-septal puncture into the left atrium, during which it is proposed that the lead was displaced. The patient underwent lead repositioning into the right ventricular apex without complication (figure 5). The mechanical murmur persisted leading us to conclude it was secondary to turbulent flow across the mitral valve clips.

Figure 1 CXR showing malposition of ICD lead (CXR, chest X-ray; ICD, implantable cardioverter-defibrillator; RV, right ventricle; RVOT, right ventricular outflow tract).

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Figure 2 Phonogram of diastolic murmur. The first heart sound is shown clearly following the murmur; the second heart sound is drowned by the murmur and is not seen.

Figure 3 Apical three-chamber view of MV clip (LA, left atricle; LV, left ventricle; MV, mitral valve; RV, right ventricle).

Figure 4 Apical four-chamber view of moderate mitral regurgitation (LA, left atricle; LV, left ventricle; RA, right atricle; RV, right ventricle).

Competing interests None declared.

Patient consent Obtained.

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Figure 5 CXR showing ICD lead in correct position (CXR, chest X-ray; ICD, implantable cardioverter-defibrillator; LV, left ventricle; RA, right atricle; RV, right ventricle).

Learning points

- ▶ Percutaneous mitral valve clips can be a life-saving intervention in the critically unwell who are unfit for surgery by reducing the severity of mitral regurgitation.¹
- ▶ Any manipulation inside the heart cavity shortly postdevice implantation might displace device leads. Device-lead malposition can be detected on chest X-ray and sometimes by transthoracic echocardiography.
- ▶ The change in character of a heart murmur in a patient following any intracardiac procedure should prompt urgent imaging to assess its origin and rule out complications.

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