Clinical vignette

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Three overlapping septal occlusion devices to treat residual shunting across an atrial septal defect

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A 46-year-old woman with a history of non-ischaemic cardiomyopathy, severe biventricular failure treated with implantable cardiac defibrillator, presented with increasing dyspnoea. She also has a history of diffuse scleroderma and a prior percutaneous closure of an atrial septal defect (ASD).

Her ASD was closed in June 2004 with a 12 mm Amplatzer ASD closure device (Panel A). Two months later, recurrent right-to-left shunting was confirmed by transoesophageal echocardiogram (TEE) (Panel B) and haemodynamic evaluation. The shunt was treated with a second 15 mm Amplatzer ASD closure device (Panel C). Twenty-four hours after procedure, her SpO₂ was 96%. A follow-up TEE performed 8 months after the second device implantation again showed right-to-left shunt (Panel D). The patient was treated medically.

One year later, she presented again with worsening dyspnoea associated with decreased oxygen saturation. Because of her co-morbidities, the patient was deemed a poor candidate for surgery. The shunt was closed with a 25 mm patent foramen ovale (PFO) Amplatzer device (Panel E). Post-procedural angiography and TEE confirmed the presence of a well-seated device with no residual shunt (Panel F). Twenty-four hours later, her SpO₂ was 98%. Three months after the final procedure, a transthoracic echocardiogram showed well-seated devices and no interatrial shunting: her SpO₂ was 99%. To the best of our knowledge, this is the first published report of three sequential devices implanted to close recurrent shunting across an ASD.

Panel A. LAO 30°, cranial 30° view of the first implanted ASD closure device.

Panel B. TEE showing interatrial shunting through the first device.

Panel C. LAO 30°, cranial 30° view of the two implanted devices.

Panel D. TEE showing residual interatrial shunting after implantation of second device.

Panel E. LAO 30°, cranial 30° view of the three implanted devices.

Panel F. TEE with agitated saline showing absence of residual shunting after implantation of the third closure device.