3-D transoesophageal echocardiography guidance in percutaneous closure of three distant atrial septal defects

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A 78-year-old woman with shortness of breath was referred for percutaneous treatment of multiple atrial septal defects (ASDs). Transthoracic echocardiography showed a moderate enlargement of the right ventricle. Transoesophageal echocardiography (TEE) identified three atrial septal ASDs separated by a long distance (Panel A). An inferior and posterior location of a 12 mm defect, an anterior and superior location of a 10 mm defect and a superior location of a 10 mm defect were noticed (Panel B, see Supplementary data online, Video S1). The first defect was divided by a multifenestrated band. The last two were sized with a stretched diameter of 15 and 12 mm, respectively. This complex anatomy did not allow a closure with a single device or possibly two. We decided to implant successively three Occlutech® devices through a 12 Fr sheath with a Flex II UNI 40 mm, a Flex II ASD 15 mm, and a Flex II ASD 12 mm, respectively (Panels C–E, see Supplementary data online, Videos S2–S4). TEE showed no residual shunt and a flat profile of the embedded devices (Panel F, see Supplementary data online, Video S5). The follow-up was uneventful at 9 months. ASDs with multiple defects are non-rare. Percutaneous closure is generally successful with a ‘Cribriform’ occluder or with a larger ASD occluder to cover a small adjacent defect. Percutaneous treatment of multiple ASDs with distant defects remains challenging. 3-D TEE represents a real contribution providing a true anatomical visualization of the defects and an accurate guidance of the interventional procedure.

Panels A and B: Cartoon and 3-D TEE right atrial view of the three distant defects. Panels C–E: 3-D TEE left atrial views of the left disc deployment of a Flex II UNI 40 mm (a), a Flex II ASD 15 mm (b), and a Flex II ASD 12 mm (c) closure devices. Panel F: 3-D TEE left atrial view of the final result.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.

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