Simultaneous release of interdigitating atrial septal defect and patent foramen ovale Amplatzer devices

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In the absence of an alternative cause of breathlessness, a 73-year-old patient with an atrial septal defect and right volume overload on echocardiography was referred for transcatheter device closure under general anesthesia.

After balloon sizing under fluoroscopy, a 22 mm Amplatzer (AGA Medical Corporation, USA) septal occluder device was partially deployed. However, transesophageal echocardiography revealed a large patent foramen ovale (PFO) (Figure 1A).

Multiple defects in the atrial septum may be occluded by one large device (1), but the 22 mm device with a 7 mm left atrial disc rim failed to close the neck of the PFO (Figure 1B). Agitated saline contrast injection via the inferior vena cava revealed dense puffs of contrast

moving across the PFO (Figure 1C). For dual ASD device closures, deployment of the smallest device followed by the larger is advocated (2). Our need for a large 34 mm Amplatzer PFO occluder posed a technical challenge, addressed in Figure 2.

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Figure 1 Transesophageal, bicaval echo view of the interatrial septum. **A** Central ostium secundum atrial septal defect (ASD) and patent foramen ovale (PFO). **B** The ASD device is deployed but not released. The rim of the larger left atrial disc fails to cover neck of PFO. **C** Agitated saline contrast injection via the in the inferior vena cava (IVC) opacifies the right atrium (RA). Dense puffs of contrast wash through the PFO (asterisks). LA Left atrium; SVC Superior vena cava

Figure 2 **A** Left atrial (LA) disc of atrial septal defect (ASD) device deployed with gentle traction into the defect within centre of fossa ovalis. The LA disc of the Amplatzer (AGA Medical Corporation, USA) patent foramen ovale (PFO) occluder overlapped the ASD device rim. The right atrial (RA) PFO disc is being deployed (arrow). The stem and RA disc of the ASD device are seen within Mullins sheath delivery system (asterisks) (William Cook Cast Products, United Kingdom). A pigtail catheter (Ao pig) is seen within the aortic root. **B** Simultaneous release of devices. The PFO device is seen unscrewed and retracted while the ASD device is at the point of release (curved arrows). The sequential deployment of the LA and RA discs left the devices in a complementary interdigitating position

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