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CASE REPORTS

Successful rescue with transcatheter repair for aortic iatrogenic perforation during transseptal puncture

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A 59-year-old man presented with paroxysmal atrial fibrillation and frequent palpitations despite adequate medical treatment for 1 year. Pre-procedural transesophageal echocardiography (TEE) revealed a floppy septum. During transseptal puncture (TSP), the needle could not be advanced into the left atrium owing to the floppy septum under fluoroscopic guidance (GE; USA). When we increased the force of the puncture, the needle slid and jumped in the anterior direction and caused aortic perforation forcefully. When contrast dye was injected, left coronary flow was observed (Fig. 1a). Intra-aortic position of the needle tip also detected aortic pressure. TEE showed the transseptal needle passing from the right atrium in the aorta (Fig. 1b–d). A 0.014-in. guidewire was passed into the aorta via the puncture needle, and the Brockenbrough needle was pulled back. We antagonized the anticoagulation immediately and closely monitor the hemodynamic status. Unfortunately, pericardial effusion was observed, and pericardiocentesis was performed. Fresh-blood pericardial effusion was drained. The Brockenbrough needle and the tip of the dilator were pulled back to compress the hole. The Amplatzer duct occluder (4 × 5 mm) was used to close this iatrogenic perforation under TEE guidance (Fig. 2a–d). After implantation, neither increasing pericardial effusion nor aortic regurgitation was observed. The patient was discharged 4 days later. TSP is an important procedure for cardiologists to access the left atrium for catheter ablation. For iatrogenic aortic perforation during the TSP procedure, the important points are to keep the wire in the aorta and observe the hemodynamic status and correct the clotting time. Previous reports stated thick atrial septum may be related to complication of TSP and need TEE guidance [1–3]. In our case, floppy septum may contribute to the dangerous complication of TSP.

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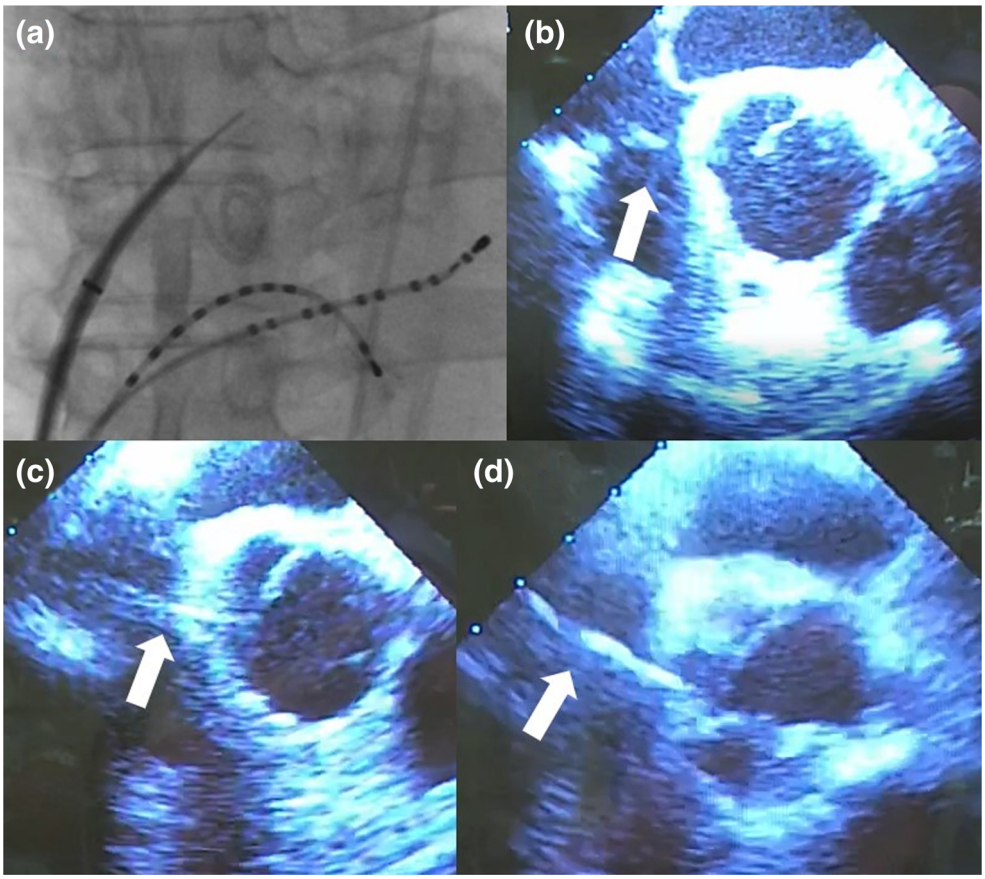

Fig. 1 **a** Anterior-posterior view: Left coronary flow was observed when contrast dye was injected. **b**–**d**. Transesophageal echocardiography: one needle (white arrow) was observed from right atrium into aorta

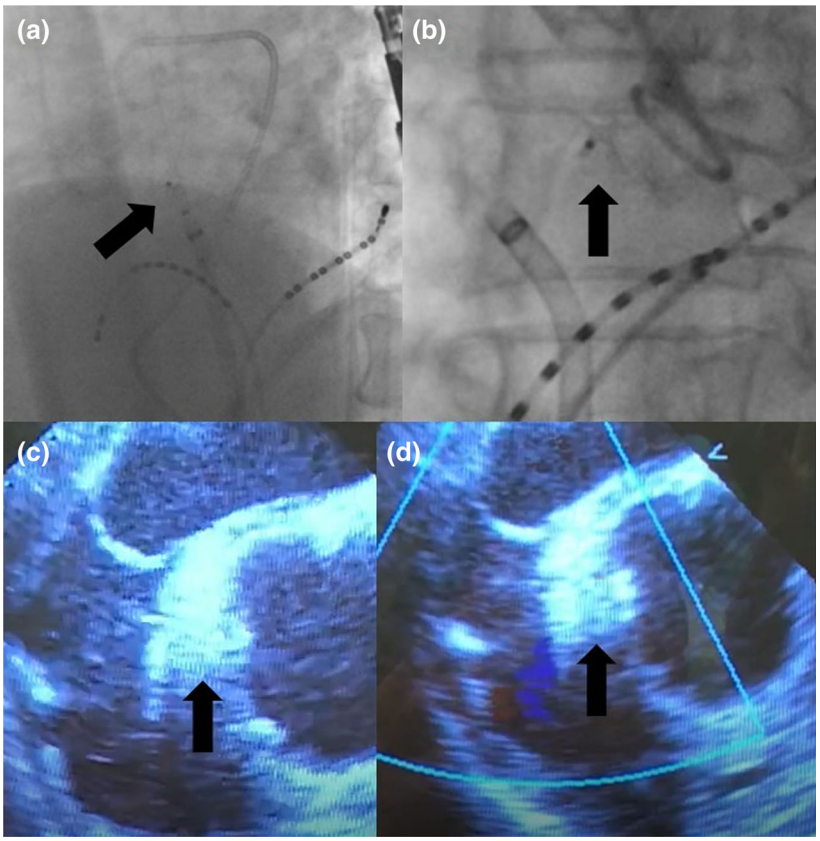

Fig. 2 **a**–**d** Left anterior oblique 60-degree view, anterior-posterior view and transesophageal echocardiography: one Amplatzer duct occluder was deployed at rupture site (black arrow)

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