

Percutaneous closure of left ventricular puncture after thoracentesis

Cierre percutáneo de perforación de ventrículo izquierdo tras toracocentesis

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A 73-years old carrier of aortic and mitral mechanical valves was admitted due to septic shock and a large left empyema for which she underwent thoracentesis. Whirlwind drainage of pulsatile bloody flow was immediately noticed, and the system was clamped. Both the CT scan (figure 1 A,B) and the echocardiogram (figure 1C,D) confirmed the malapposition of the 7-Fr pigtail catheter, which was puncturing the left ventricular (LV) wall.

After heart team discussion, a percutaneous alternative was considered due to unacceptable high operative risk. After the right femoral artery was cannulated with a 6-Fr introducer sheath, a 0.035 in J guidewire was advanced to the aortic root and a JR4 catheter was used to cross the aortic leaflets, blocking them when snaring the pigtail causing severe hypotension (figure 2A), which made us have to switch to the antegrade approach. We cleaned the catheter internal lumen by advancing a Gaia Second wire (Asahi Intecc, Japan), inflating a 2.5 mm x 20 mm balloon, and removing all thrombotic material (figure 2B). A 400 cm hydrophilic guidewire was, then, advanced to the

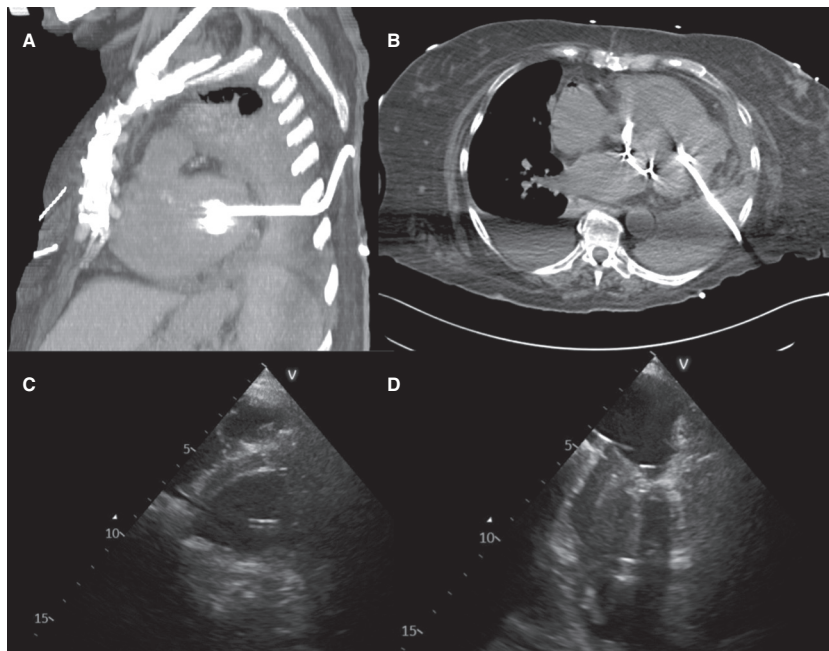


Figure 1.

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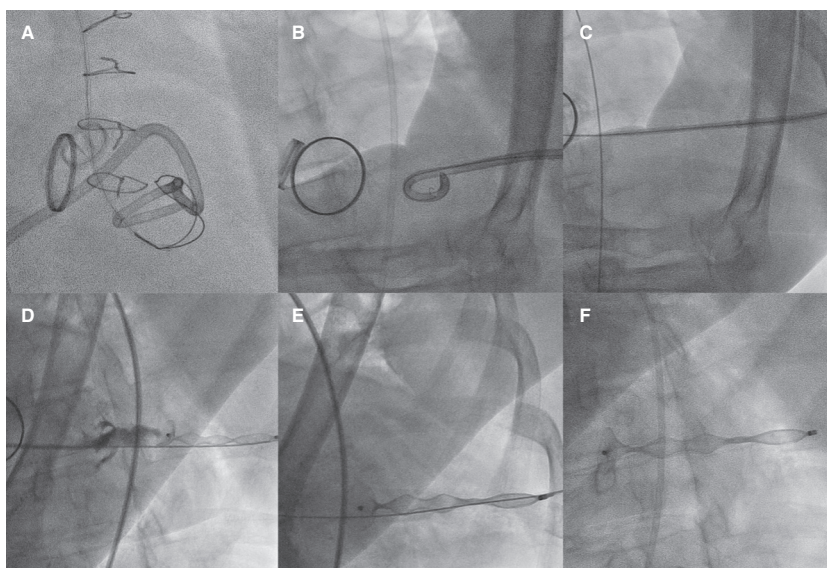


Figure 2.

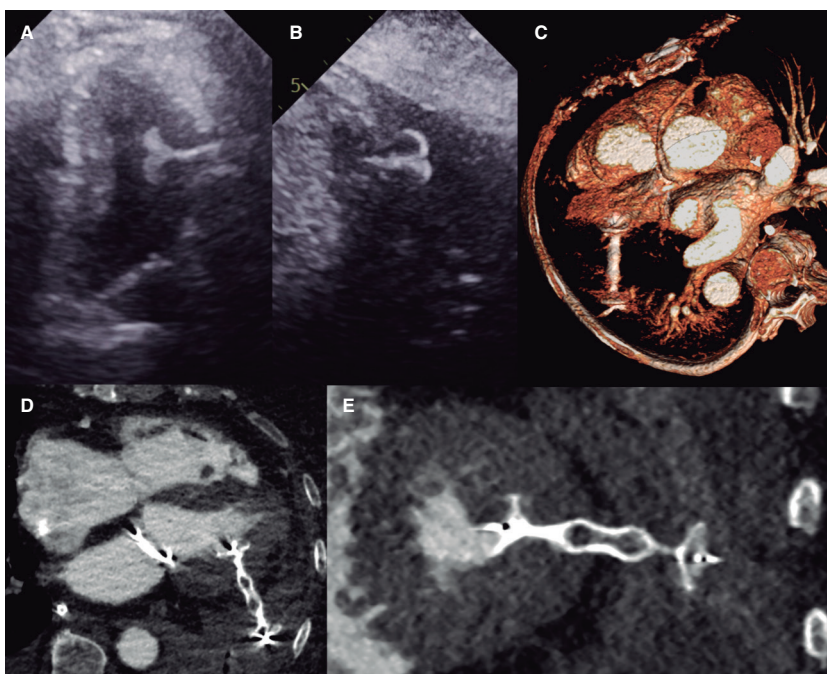


Figure 3.

ascending aorta and snared out creating a LV-right femoral arterial loop. Afterwards, the pigtail catheter was exchanged for a 7-Fr Destination introducer sheath (Terumo, Japan) (figure 2C). Although a 12 mm x 9 mm Amplatzer Vascular Plug II (AVPII) (AGA Medical Corporation, United States) device was implanted it could not seal the puncture completely (figure 2D). We exchanged it for a 10-Fr Destination introducer sheath followed by a 20 mm x 16 mm AVPII, which was successfully implanted leaving no residual leak (figure 2E,F). The echocardiogram confirmed the preserved LV ejection fraction, and absence of pericardial effusion (figure 3A,B). A new CT scan confirmed the proper seal of the puncture by the device (figure 3C-E).

FUNDING

None declared.

ETHICAL CONSIDERATIONS

Since this is an isolated case report, most SAGER guidelines do not apply. The patient's gender (woman) has been specified. However, since this is a case report and not a research study, additional considerations were not deemed necessary.

STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE

Artificial intelligence was not used.

AUTHORS' CONTRIBUTIONS

M. García-Gómez and H. Gutiérrez-García drafted the initial version of the manuscript and selected and edited the images that would later be used. A. Campo-Prieto., M. Plaza-Martín., R. Ramos-Martínez, and A. Revilla-Orodea collaborated in the manuscript critical review and approved its final version.

CONFLICTS OF INTEREST

None declared.