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Image of the Issue

LVAD decommissioning: A percutaneous cardiac catheterization lab approach

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A 34-year-old female with viral cardiomyopathy was referred for left ventricular assist device (LVAD, HeartWare) explantation due to myocardial recovery after 20 months on support.

After a multidisciplinary discussion, our group decided to proceed with a percutaneous approach under conscious sedation. This approach was chosen to avoid the deleterious risks of cardiopulmonary bypass on cardiac function.

The outflow graft was cannulated and a 12 mm Amplatzer Vascular Plug (VP) II (Abbott Vascular, Santa Clara CA) was deployed.

The size of the plug was determined by the known diameter of the outflow cannula. If the diameter is unknown a sizing balloon could be used. An angiogram was taken about 10 min post-initial deployment and demonstrated no significant antegrade or retrograde flow through the outflow graft, it is however possible that a small non-visualized residual flow persisted (Figs. 1–3).

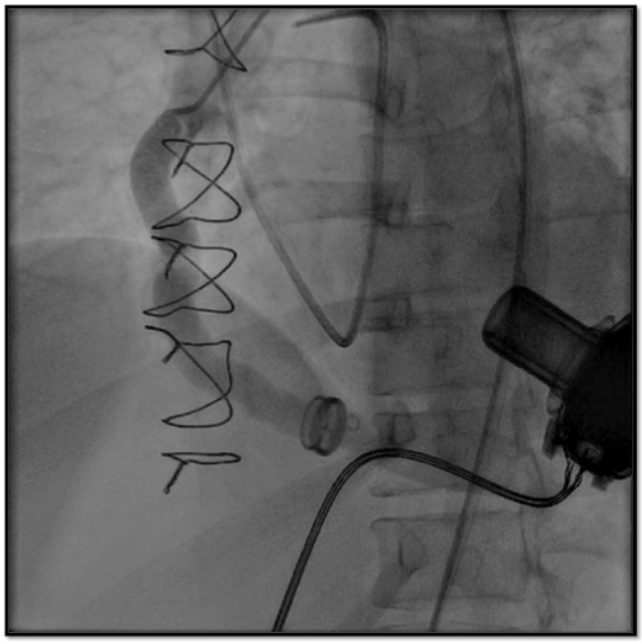

Fig. 1. 6 French JR4 catheter engaged into the outflow cannula.

Biventricular filling pressures and cardiac output remained stable. Two days later a portion of the driveline was resected and removed and the residual driveline was capped and buried. The postoperative course was uneventful. The patient received six months of dual antiplatelet therapy with aspirin and clopidogrel consistent with current guidelines for cardiac occluders and since then has been continued on aspirin 81 mg daily as well as coumadin.

The current standard of care for LVAD decommissioning is surgical decannulation requiring cardio-pulmonary-bypass with limited data on percutaneous decommissioning. In patients who recover myocardial function after LVAD implantation, there is need for decommissioning since retrograde flow can cause significant volume overload in a

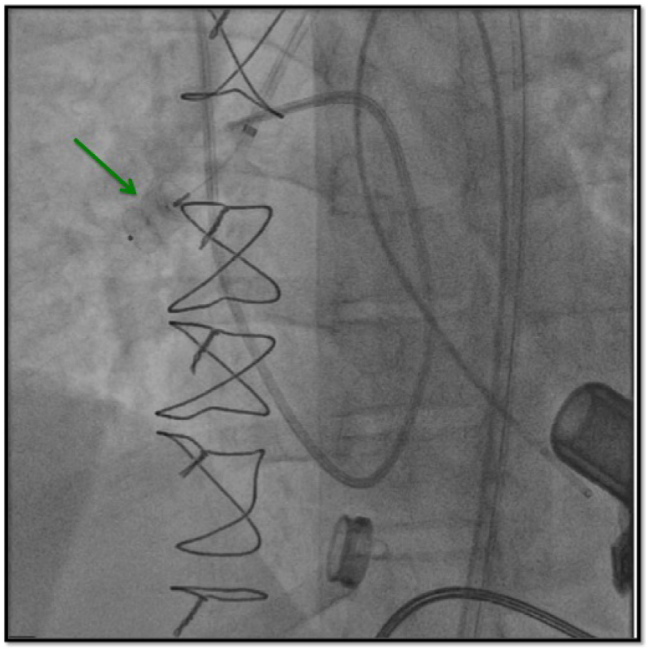

Fig. 2. Placement of the 12 mm VP2 into the outflow cannula.

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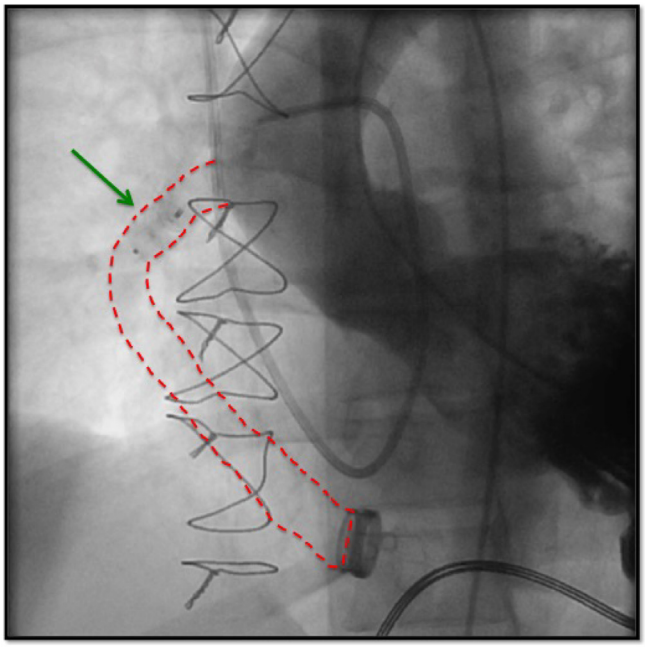

Fig. 3. Final aortogram and LV gram demonstrating no antegrade or retrograde flow in the outflow cannula.

recovering LV. Retention of the apical cannula creates a risk of thromboembolic events.

Zeigler et al. first described LVAD decannulation in a palliative setting using a 22-mm Amplatzer VP II in the outflow graft [1]. Our institution previously performed emergent percutaneous LVAD decommissioning using a 14-mm Amplatzer Septal Occluder in the outflow graft in a case of LVAD thrombosis and complete pump stoppage [2]. Two additional reports describe elective percutaneous decannulation under general anesthesia in adult patients with myocardial recovery. In one case this approach was chosen after the outflow cannula could not be reached through the thoracotomy incision [3]. The second case describes the scheduled use of Amplatzer VP II placed in the outflow graft [4].

We report the use of percutaneous closure of the LVAD outflow graft in a patient with myocardial recovery and that this procedure can be safely performed in the cardiac catheterization laboratory under conscious sedation. There is need for further development of hybrid-techniques for LVAD decannulation.

Declaration of interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.carrev.2018.09.003.

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