

Mitral Valve-in-Ring Complicated by Paravalvular Regurgitation Treated with Vascular Plugs.

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Background

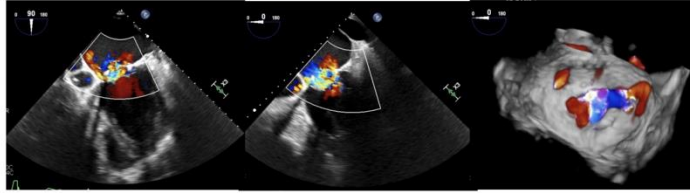
Transcatheter mitral valve replacement (TMVR) is approved in the US for use inside bioprosthetic mitral valves and rings. Mitral Valve-in-Ring (MViR) with non-circular rings is associated with a risk of paravalvular (PV) mitral regurgitation (MR). We present a case of acute PVMR treated intraprocedurally with vascular plugs.

Case

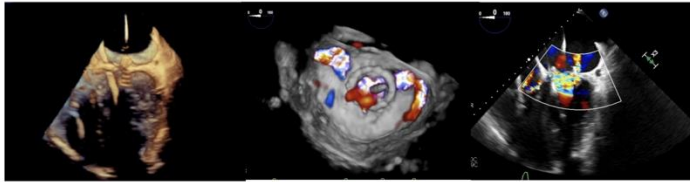
An 87-year-old male with a 32 mm Physio II mitral annuloplasty ring, prior coronary artery bypass grafting, and ischemic cardiomyopathy with EF of 20% presented with exertional dyspnea. Transesophageal echocardiogram (TEE) showed bileaflet tethering resulting in severe MR (Panel A). Using a transapical approach, a 29 mm Edwards Sapien 3 valve was deployed under rapid ventricular pacing. Inflation of valve balloon in the D-shaped ring circularized the ring, causing dehiscence at the two commissures with severe PVMR (Panel B). Through the Edwards valve sheath, the medial PVL was occluded with one Amplatzer Vascular Plug 2 (AVP2), and the lateral PVL was occluded with two AVP2s (Panel C). Fluoroscopy and TEE confirmed the position and function of the valve and plugs with only trace PVMR. At 30-day follow-up, symptoms had improved, and TTE showed only trace mitral regurgitation.

Conclusion

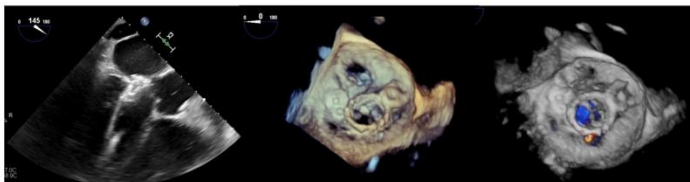
TMVR is increasing worldwide, both inside prior valves and rings as well as in native valves. However, MViR remains limited by the risk of PVMR with circularization of D-shaped rings. Immediately following MViR, AVP2 can be used “off-label” for PV leak closure through the valve delivery sheath. The ability to address PVMR concomitantly with MViR increases the safety and efficacy of the procedure. Further studies are necessary to confirm safety and efficacy, ultimately leading to approval of a dedicated PV leak closure device.



PANEL A: 2D AND 3D TEE IMAGES SHOWING BILEAFLET TETHERING LEADING TO SEVERE MITRAL REGURGITATION PRIOR TO MVIR



PANEL B: 2D AND 3D TEE IMAGES SHOWING DEPLOYMENT OF VALVE AND SEVERE PARAVALVULAR MITRAL REGURGITATION AFTER DEPLOYMENT



PANEL C: 2D AND 3D TEE IMAGES SHOWING DEPLOYMENT OF AMPLATZER VASCULAR PLUGS AND ONLY TRACE MITRAL REGURGITATION AT THE END OF THE PROCEDURE