

## Image in cardiology

## Valve-in-valve-in-ring for severe mitral regurgitation

## Valve-in-valve-in-ring en insuficiencia mitral grave

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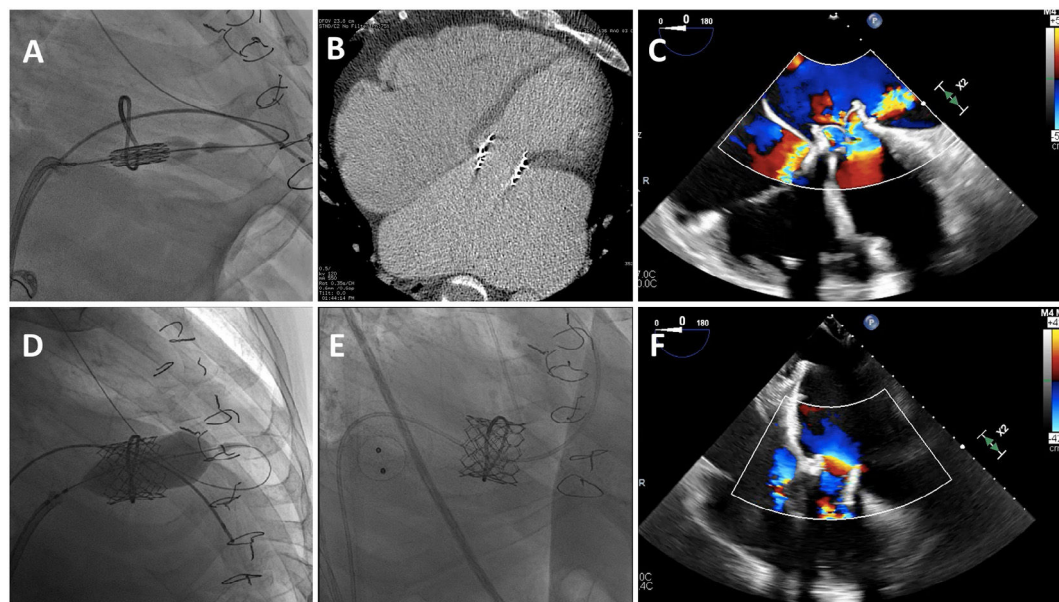


Figure 1.

A transcatheter valve-in-ring procedure was performed to treat a failing mitral valve repair (video 1 of the supplementary data). Through a transvenous-transseptal approach, a 29 mm-Edwards-Sapiens-3-Ultra-valve (Edwards Lifesciences, United States) was delivered into the ring (figure 1A) and deployed with rapid pacing (video 2 of the supplementary data). We were unable to find a good perpendicular x-ray view due to an “8-shape-configuration” of this 3-dimensional ring (figure 1A). A noncoaxial/asymmetric implantation was evidenced in the postprocedure computed tomography scan (figure 1B) and transesophageal echocardiogram (TEE) (figure 1C). Thus, the lateral part of the valve remained too deep in the left atrium (figure 1B,C). This unfavorable position was associated with residual severe mitral regurgitation (MR) through the uncovered part of the valve stent frame between the ring and the insertion of the valve leaflets (figure 1C; videos 3 and 4 of the supplementary data), despite full apposition to the ring.

Additionally, an atrial septal defect remained after the transseptal approach. Due to this suboptimal result, the patient developed heart failure 1 month later. We decided to implant another transcatheter valve aiming to seal the uncovered segment of the previous valve. This time, the 29 mm-Edwards-Sapiens-3-Ultra-valve was delivered deeper into the left ventricle (figure 1D,E, and video 5 of the supplementary data). The atrial septal defect was closed with a 36 mm-Amplatzer-device.

The MR disappeared (figure 1F, and video 6 of the supplementary data), without significant gradient across the valves or left ventricular outflow tract obstruction. The patient currently remains asymptomatic.

Mitral valve-in-ring is a feasible approach in selected patients, but may be associated with MR due to the above-mentioned mechanism. A second valve implantation may be required in up to 50% of patients with 3-dimensional rings. New designs of Edwards-Sapiens-valve including a full coverage of the stent frame may solve this problem.

## APPENDIX. SUPPLEMENTARY DATA

Supplementary data associated with this article can be found in the online version available at <https://doi.org/10.1016/j.rec.2020.11.005>

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Available online 31 December 2020