Transseptal valve-in-valve transcatheter mitral valve replacement: a case report

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Introduction: Recent advances in transcatheter technology and surgery have allowed the implantation of balloon-expandable valves in the mitral position when surgical rings and valves are available. The valves can be implanted through either a transseptal or transapical approach, with success rates ranging from 88 to 100%. Elderly patients with significant prosthetic mitral valve disease are often not ideal candidates for cardiac surgery, as advanced age, multiple comorbidities, and previous sternotomies may increase the risk of mitral valve replacement to 7.4-15.1% mortality.[1,2]

Case report: 69-year-old patient who underwent mitral valve replacement in 2009 with a biological prosthesis (Medtronic Mosaic M31) and underwent tricuspid annuloplasty for severe mitral stenosis of rheumatic origin, was admitted to our department for planned transcatheter implantation of the mitral valve. Echocardiography shows a degenerated biological prosthesis overgrown with pannus, together with an almost immobile valve causing mitral stenosis (MVA 1.4 cm^2). The ideal size of the transcatheter mitral valve for the valve-in-valve procedure was selected based on the preoperative evaluation of cardiac computed tomography angiography. A 29 mm Meril Myval (Meril Life Sciences Pvt. Ltd. Vapi, Gujarat, India) was chosen. The procedure was performed under general anesthesia and mechanical ventilation. The right femoral vein was punctured and cannulated with 8.5 SL1 transseptal sheet and 5F sheet for a temporary pacing electrode. A transseptal puncture was performed with the BRK-1 XS transseptal needle under the transesophageal echocardiography guidance and the 260 cm Lunderquist super stiff wire (Cook Medical In., Bloomington, IN, USA) was exchanged. After checking the position and direction of the Myval valve, the entire system was retracted and placed on the mitral annulus. Then the ventricular part of the Myval prosthesis was deployed under rapid ventricular pacing and released from the delivery system, anchoring it straight to the bioprosthetic mitral ring. At the end of the procedure, the puncture site was closed with a Z-suture.

Conclusion: This case demonstrated not only the feasibility of the procedure but also the importance of knowledge of the transseptal approach for nurses performing structural cardiac procedures.

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LITERATURE

1. Castillo-Sang M, Guthrie TJ, Moon MR, Lawton JS, Maniar HS, Damiano RJ Jr, Silvestry SC. Outcomes of repeat mitral valve surgery in patients with pulmonary hypertension. Innovations (Phila). 2015 Mar-Apr;10(2):120-4. https://doi.org/10.1097/imi.0000000000000139
2. Eng MH, Wang DD. Transseptal Transcatheter Mitral Valve Replacement for Post-Surgical Mitral Failures. Interv Cardiol. 2018 May;13(2):77-80. https://doi.org/10.15420/icr.2017.16:3