Transcatheter Repair of Primary Tricuspid Valve Regurgitation Using the MitraClip System

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We report the case of a 71-year-old male patient with a history of heart transplantation 26 years previously. He presented with severe right-sided heart failure due primarily to high-grade tricuspid regurgitation (TR) caused by flail of the septal leaflet due to chordal rupture (Figures 1A to 1C, Online Video 1). Chordal rupture might have been due to multiple myocardial biopsies following heart transplantation for the assessment of transplant rejection.

Because of the previous cardiac surgery, immunosuppression, chronic renal insufficiency, and severe chronic pulmonary disease, the patient was deemed inoperable by the heart team.

So far there is no established interventional approach for the treatment of severe TR. A few patients have been treated successfully for secondary TR due to tricuspid annular dilation using the MitraClip system (Abbott Vascular, Santa Clara, California) (1).

Here, for the first time, we report on the use of the MitraClip system for treatment of primary TR. The MitraClip device, introduced through the right femoral vein, was used to access the tricuspid valve. Transesophageal and transthoracic imaging was used to guide the clip delivery system between the flail part of the septal and the opposing anterior tricuspid valve leaflet. After both leaflets were captured by the clip arms, the MitraClip was closed and implanted, leading to significantly reduced TR. Implantation of a second clip caudal and in immediate proximity to the first clip almost completely eliminated residual TR, with no significant inflow gradient (Figure 1C, Online Video 2).

Clip implantation subsequently facilitated cardiac recompensation of this multimorbid patient. At 30-day follow-up, the clinical benefit was mild. However, the echocardiographic result was excellent, with mild residual TR.

This report demonstrates that the MitraClip system might be a useful tool for the treatment of significant primary TR. Further studies are needed to define the role of this treatment option in this subset of patients.

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APPENDIX For supplemental videos, please see the online version of this article.