

IMAGES IN INTERVENTION

Successful MitraClip for Severe Mitral Regurgitation Secondary to Papillary Muscle Rupture as a Complication of Transcatheter Aortic Valve Replacement



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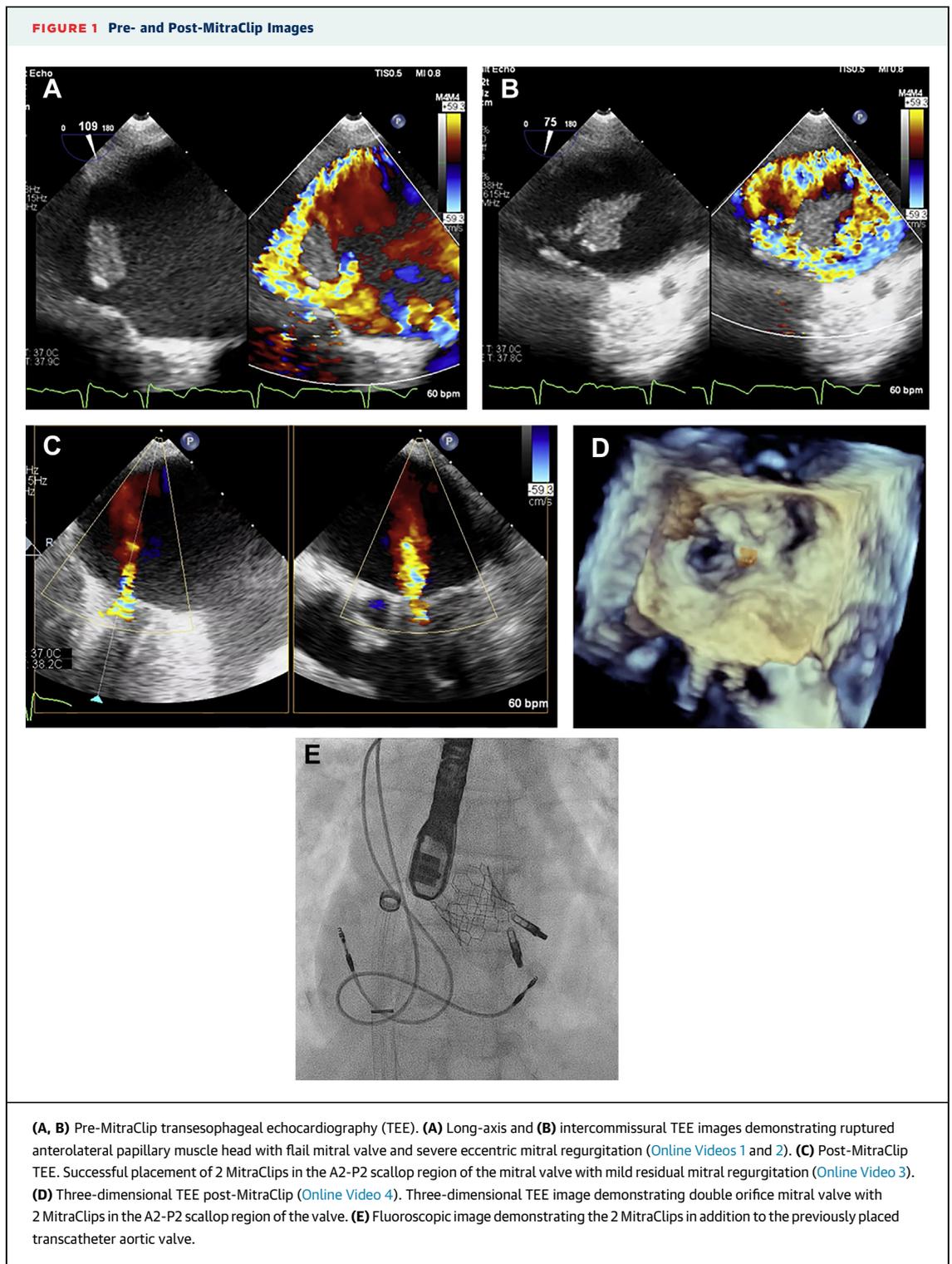
An 82-year-old woman with history of hypertension, hyperlipidemia, hypothyroidism, remote breast cancer, deafness, and severe symptomatic aortic stenosis underwent transfemoral transcatheter aortic valve replacement (TAVR) with an Edwards SAPIEN S3 valve (Edwards Lifesciences, Irvine, California), immediately following which she developed severe mitral regurgitation (MR) secondary to anterolateral papillary muscle rupture (**Figures 1A and 1B**, **Online Videos 1 and 2**). The stiff Confida wire (Medtronic, Minneapolis, Minnesota) was likely wrapped around the papillary muscle, eventually leading to traumatic avulsion of the papillary muscle head after valve deployment. She also developed complete heart block for which permanent pacemaker was required. She was hemodynamically stable and hence a conservative approach was initially sought. Over the course of the next 1.5 years, she developed progressive dyspnea on exertion and pulmonary hypertension (55 mm Hg), despite preserved left ventricular systolic function and normally functioning bioprosthetic aortic valve. She was deemed to be at prohibitive risk for surgical mitral valve replacement. Possible explanations for her stability and survival for 1.5 years with such severe MR include very severe

aortic stenosis before TAVR (peak aortic valve velocity of 6.3 m/s with peak and mean gradients of 160 and 90 mm Hg, respectively), baseline moderate MR pre-TAVR and severely increased left atrial size (volume index >50 ml/m²) with adaptation to high left-sided pressures by way of increased left atrial compliance resulting in “tolerance” to severe MR. After careful review and discussion in multidisciplinary valve meeting, we proceeded with transcatheter mitral valve repair using 2 MitraClips in the A2-P2 scallop region with successful reduction in MR grade from very severe to mild (**Figures 1C to 1E**, **Online Videos 3 and 4**) and a mean mitral valve gradient of 5 mm Hg. Upon 3-month follow-up, the patient felt significantly improved symptomatically and echocardiography revealed mild residual MR, well-affixed MitraClips, mean mitral valve gradient of 6 mm Hg, preserved left ventricular ejection fraction of 55%, and reduction in estimated pulmonary pressure to 40 mm Hg.

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From the Structural Heart Program, Prairie Heart Institute at St John’s Hospital, Springfield, Illinois. Dr. Goswami has served on the medical advisory board for Boston Scientific; and has received consultant honoraria from Medtronic. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received August 23, 2017; revised manuscript received November 24, 2017, accepted December 5, 2017.



KEY WORDS MitraClip, mitral regurgitation, papillary muscle rupture

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