

IMAGES IN INTERVENTION

Redo BATMAN

Repeated Anterior Leaflet Modification to Enable Myval-in-Myval Implantation in Severe Mitral Annular Calcification



Marion Kibler, MD,^a Alin Ionescu, MD,^a Floriane Zeyons, MD,^a Kevin Roulot, MD,^a Elena Galli, MD, PhD,^a Olivier Morel, MD, PhD,^{a,b} Alfonso Ielasi, MD,^c Patrick Ohlmann, MD, PhD^a

Transcatheter mitral valve implantation (TMVI) in severe mitral annular calcification (MAC) is frequently limited by left ventricular outflow tract (LVOT) obstruction caused by anterior leaflet displacement. Computed tomography-derived neo-LVOT prediction is central to procedural feasibility. Leaflet modification strategies such as transseptal LAMPOON (laceration of the anterior mitral leaflet to prevent outflow obstruction)^{1,2} and BATMAN (balloon-assisted translocation of the mitral anterior leaflet)³ mitigate this risk by altering anterior leaflet geometry.

An 82-year-old woman with prior bioprosthetic aortic valve replacement presented with severe symptomatic mitral stenosis (valve area 0.9 cm², mean gradient 12 mm Hg) and circumferential MAC. Computed tomography demonstrated a large annulus (840 mm²) and critically reduced predicted neo-LVOT (52 mm²), indicating prohibitive obstruction risk (**Figure 1A**).

Index TMVI was performed using a 32-mm Myval Octapro+ valve (Meril Life Sciences) following BATMAN. Because of heavy calcification at the A2 mitral leaflet, perforation was achieved at A1 (**Figure 1B**) with sequential balloon dilation (4, 10, and 16 mm) (**Figure 1C**). The valve was implanted in a 20% atrial, 80% ventricular position with preserved LVOT patency and trivial paravalvular leak (**Figures 1D and 1E**).

Fifteen days later, the patient developed acute heart failure. Imaging demonstrated posterior tilting and atrial migration of the prosthesis (70% atrial, 30% ventricular), resulting in severe paravalvular regurgitation (**Figure 1F**). Redo TMVI simulation predicted near complete neo-LVOT obliteration. Favorable commissural alignment of the first Myval relative to the LVOT was confirmed on imaging, enabling repeat BATMAN without commissural encroachment on the LVOT (**Figure 1G**).

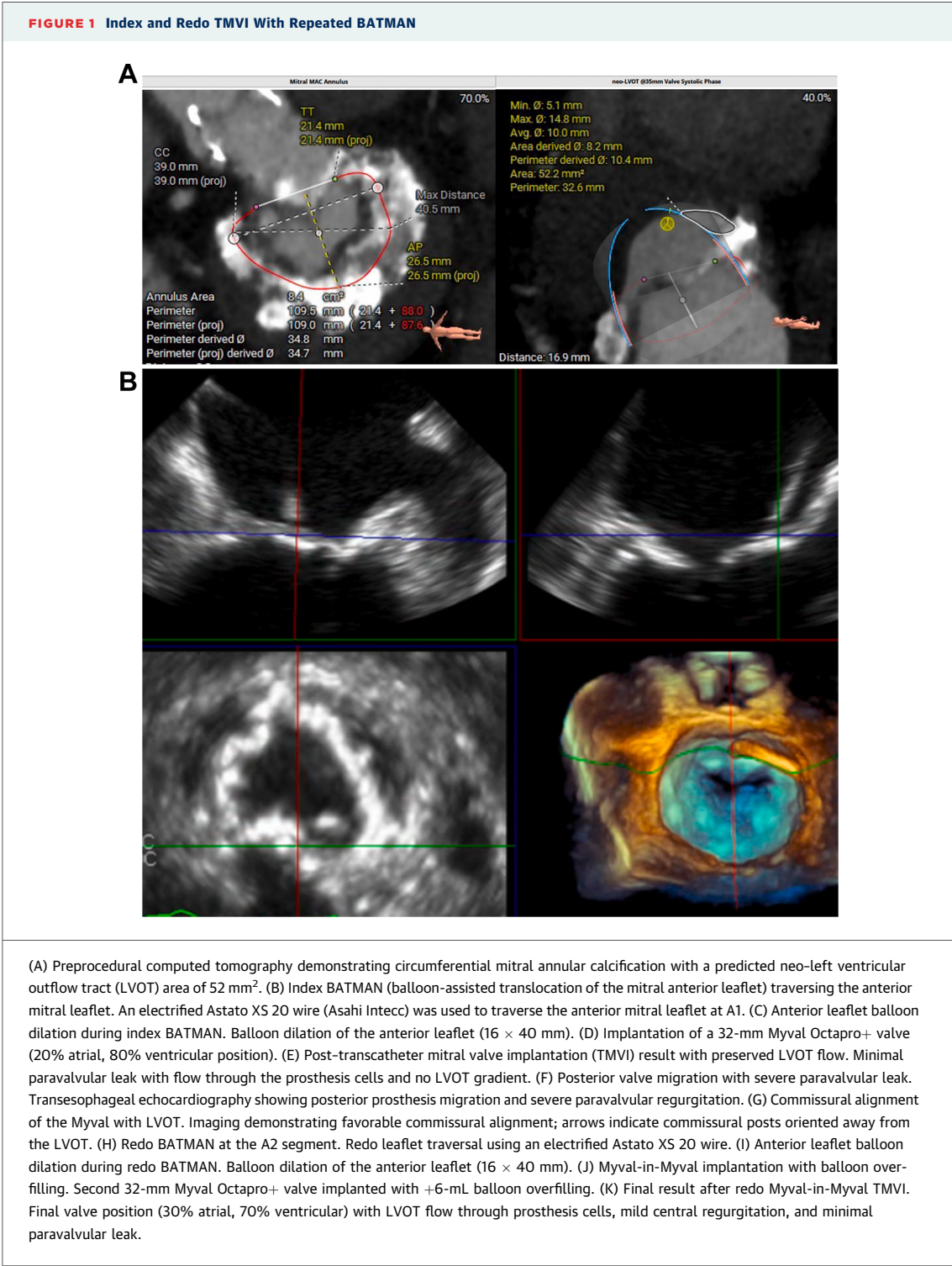
A redo Myval-in-Myval strategy was undertaken. Repeated BATMAN was performed at the A2 mitral leaflet through the implanted prosthesis using a SuperCross microcatheter (Teleflex) (angle tip 90°) and sequential balloon dilation (4 × 20, 10 × 40, and 16 × 40 mm) (**Figures 1H and 1I**). A second 32-mm Myval Octapro+ was implanted with balloon overfilling (+6 mL) under intra-aortic balloon pump support (**Figure 1J**), achieving a final 30% atrial, 70% ventricular position.

Final imaging demonstrated flow through the open cells of the Myval prosthesis without LVOT gradient, a mean transmitral gradient of 2 mm Hg, mild central intraprosthetic regurgitation, and minimal paravalvular leak (**Figure 1K**, **Video 1**).

BATMAN in the setting of valve-in-MAC carries potential risks, particularly when calcium extends into the anterior leaflet, as leaflet tearing may extend toward the aortomitral curtain or aortic annulus.

From ^aUniversité de Strasbourg, Pôle d'Activité Médico-Chirurgicale Cardio-Vasculaire, Nouvel Hôpital Civil, Centre Hospitalier Universitaire, Strasbourg, France; ^bUMR 1260 INSERM Nanomédecine Régénérative, Université de Strasbourg, Strasbourg, France; and the ^cDepartment of Interventional Cardiology, IRCCS Galeazzi Sant'Ambrogio Hospital, Milan, Italy. The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

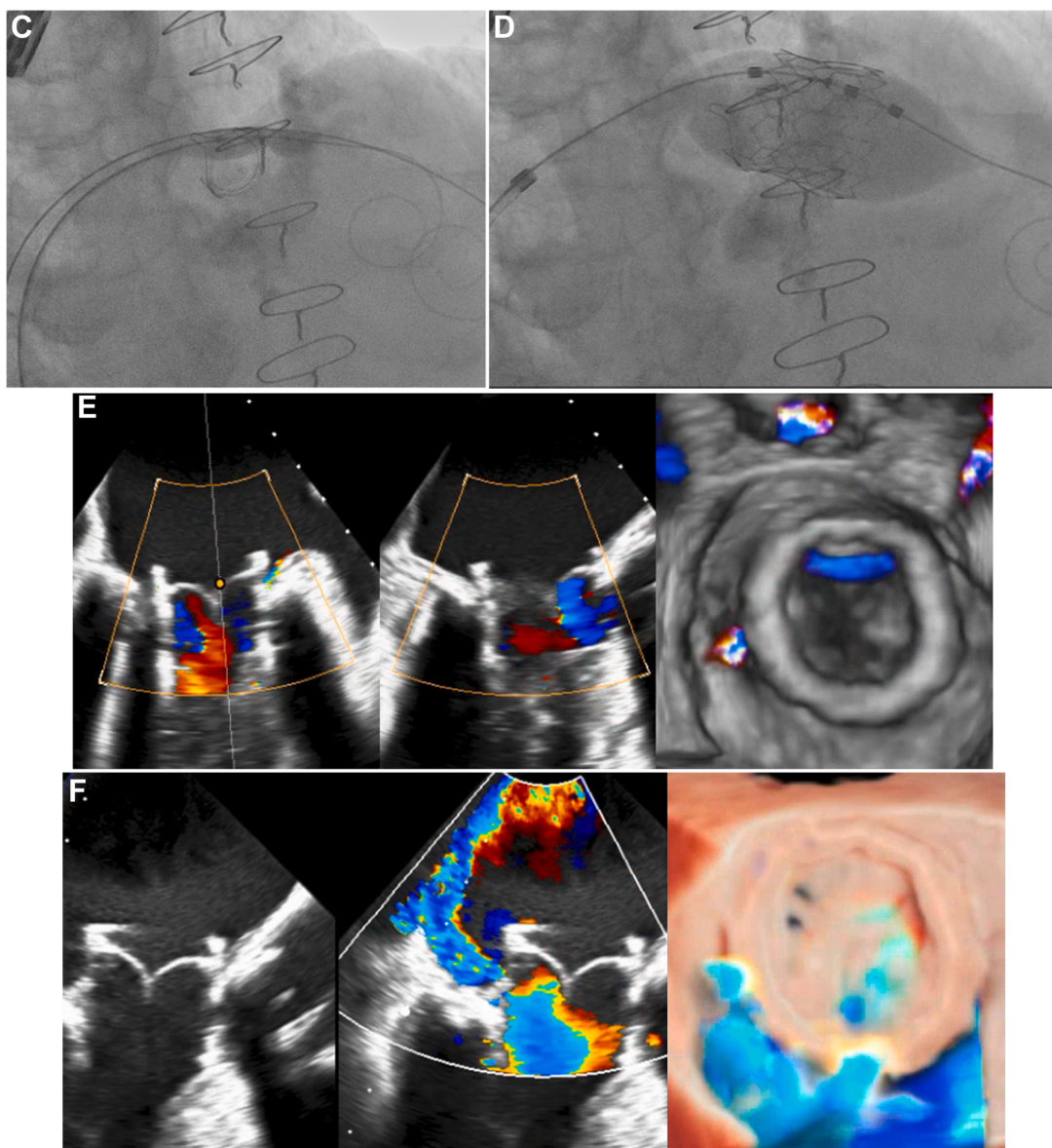
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In this case, the presence of a surgical aortic bio-prosthesis likely mitigated this risk. It also highlights the persistent challenge of anchoring transcatheter valve in severe MAC, as atrial migration occurred

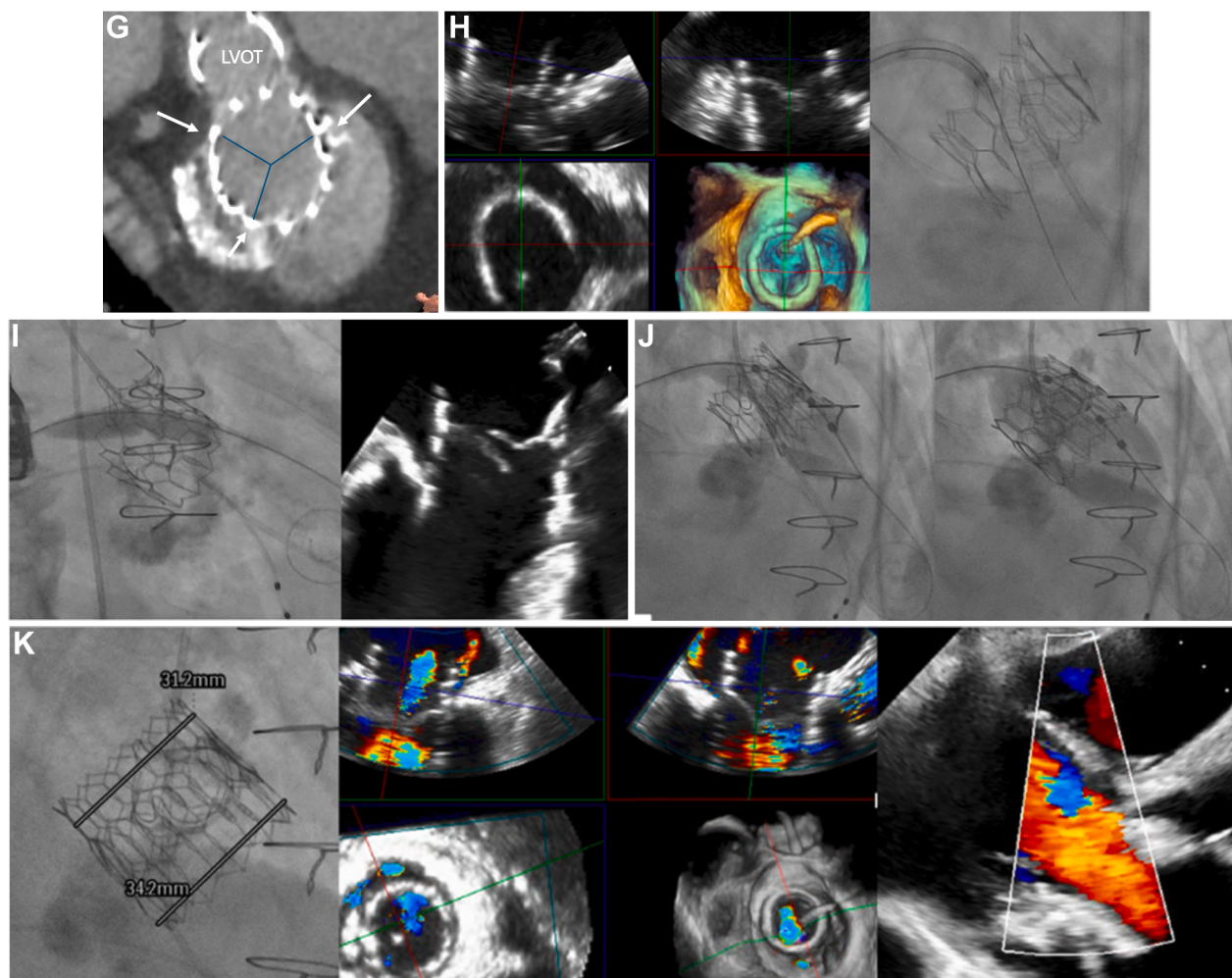
despite appropriate sizing and ventricular flaring of the first prosthesis. This case illustrates that repeated BATMAN may enable redo TMVI in selected valve-in-MAC anatomy with prohibitive neo-LVOT risk.

FIGURE 1 Continued*Continued on the next page***FUNDING SUPPORT AND AUTHOR DISCLOSURES**

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ADDRESS FOR CORRESPONDENCE: Dr Marion Kibler, Pôle d'Activité Médico-Chirurgicale Cardiovasculaire, Nouvel Hôpital Civil, BP 426, 67091 Strasbourg, France. E-mail: marion.kibler@chru-strasbourg.fr.

FIGURE 1 Continued



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calcification, Myval, transcatheter mitral valve implantation, valve-in-MAC

KEY WORDS BATMAN, left ventricular outflow tract obstruction, mitral annular

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