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IMAGES IN INTERVENTION

Neo-Left Ventricular Outflow Tract Modification With Alcohol Septal Ablation Before Tendyne Transcatheter Mitral Valve Replacement

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A 69-year-old woman presented with recurrent heart failure, mild hypertrophy (13.5-mm septal thickness), and severe functional mitral regurgitation. The heart team recommended nonsurgical therapy. Leaflet calcifications precluded edge-to-edge repair; therefore, transcatheter mitral valve replacement (TMVR) with Tendyne (Abbott Vascular, Santa Clara, California) was considered.

Cardiac computed tomography showed a 162 mm^2 neo-left ventricular outflow tract (LVOT) area consistent with high LVOT obstruction (LVOTO) risk (**Figure 1**). Using standard techniques, alcohol septal ablation (ASA) was performed with 1.3 ml of dessicated alcohol injected into the first septal artery (**Figure 2**). She developed new right bundle branch block. Nine weeks later, the neo-LVOT area increased to 292 mm^2 (**Figure 3**). Four months after ASA, she underwent successful Tendyne TMVR with complete relief of mitral regurgitation, no paravalvular regurgitation, and no LVOTO (**Figure 4**).

High LVOTO risk accounts for the majority of TMVR screen failures and percutaneous procedures to reduce LVOTO have developed. LAMPOON (laceration of anterior mitral leaflet to prevent left ventricular outflow tract obstruction) was not pursued due to severe leaflet calcification and the covered nitinol stent frame of the Tendyne, which would limit the increase in neo-LVOT area with LAMPOON (1). This case demonstrates that, in selected patients even with mild hypertrophy, ASA for neo-LVOT modification can allow successful Tendyne TMVR after screen failure. This finding has implications for recent commercial availability following CE approval of Tendyne. After ASA, neo-LVOT area is influenced by myocardial thinning, altered septal motion from conduction changes, and hypokinesis. Individualization of neo-LVOT modification techniques to patient and prosthesis characteristics needs further exploration.

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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 *JACC: Cardiovascular Interventions* author instructions page.

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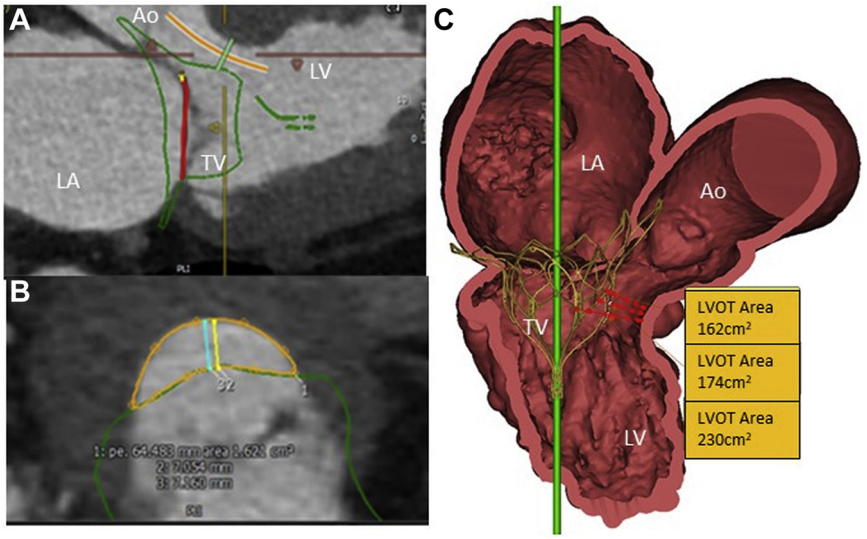
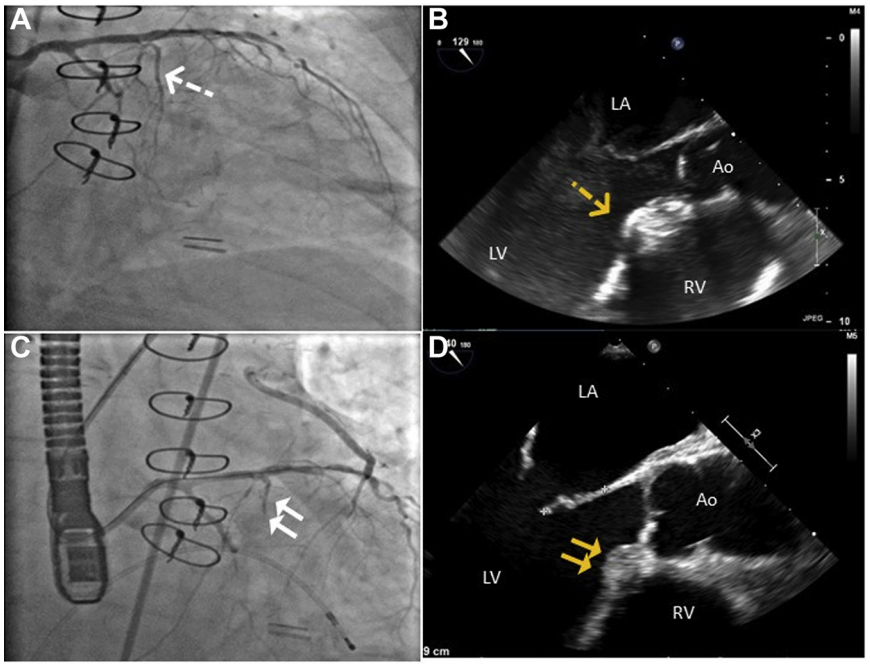
FIGURE 1 Predicted Neo-LVOT on CT



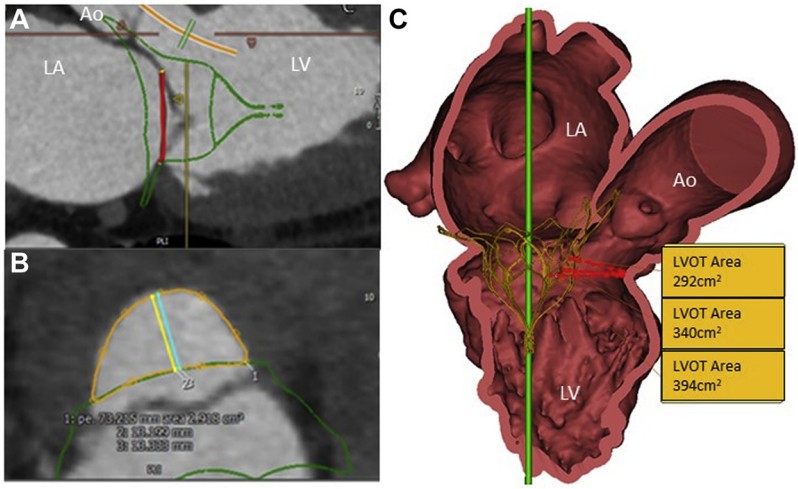
(A and B) Valve simulation **(green)**, neo-LVOT area **(orange)** at end-systole **(C)** Volume-rendered CT showing neo-LVOT measurements. Ao = aorta; CT = computed tomography; LA = left atrium; LV = left ventricular; LVOT = left ventricular outflow tract; TV = tricuspid valve.

FIGURE 2 CA and TEE Showing ASA



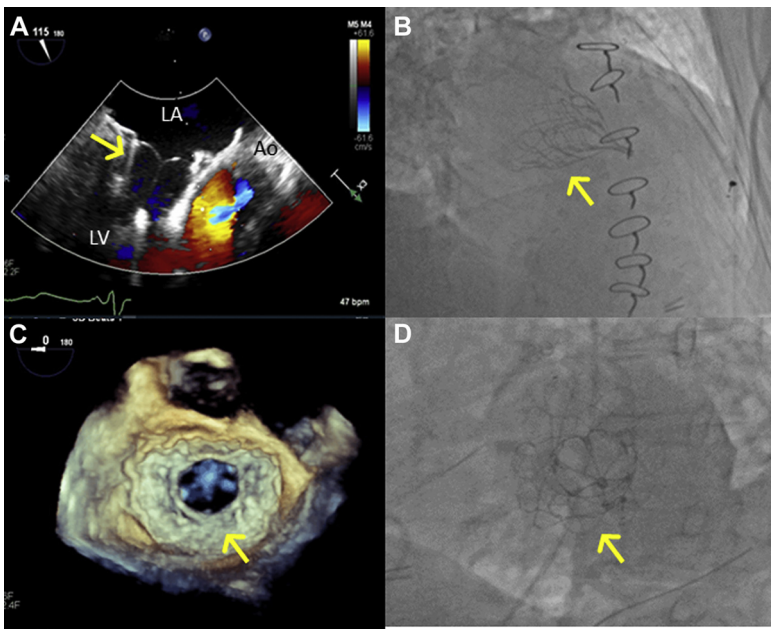
(A and B) Before ASA, first septal artery **(dashed white arrow)** supplying the septum **(dashed yellow arrows)** in **B**. **(C and D)** After ASA, absent coronary flow **(white arrows)** and thinned septum **(yellow arrows)** in **D**. ASA = alcohol septal ablation; CA = coronary angiogram; RV = right ventricle; TEE = transesophageal echocardiogram; other abbreviations as in Figure 1.

FIGURE 3 Predicted Neo-LVOT on CT After ASA



(A and B) Valve simulation **(green)**, neo-LVOT area **(orange). (B)** Tendyne valve **(arrow)** on fluoroscopy. **(C)** Volume-rendered CT of after ASA. Abbreviations as in Figures 1 and 2.

FIGURE 4 TEE and Fluoroscopy of Successful Tendyne TMVR



(A) Mitral regurgitation eliminated with Tendyne **(arrow)** on TEE. **(B)** Tendyne valve **(arrow)** on fluoroscopy. **(C)** 3D TEE of Tendyne **(arrow)**. **(D)** LVOT gradient 4 mm Hg after Tendyne **(arrow)**. 3D = 3-dimensional; TMVR = transcatheter mitral valve replacement; other abbreviations as in Figures 1 and 2.

REFERENCE

1. Khan JM, Rogers T, Babaliaros VC, et al. Predicting left ventricular outflow tract obstruction despite anterior mitral leaflet resection: the "skirt neoLVOT". J Am Coll Cardiol Intv 2018;11:1356–9.

KEY WORDS alcohol septal ablation, left ventricular outflow tract obstruction, Tendyne, transcatheter mitral valve implantation