

IMAGING VIGNETTE

CLINICAL VIGNETTE

Simplified ELASTA-CLIP Before Transapical Mitral Valve Replacement



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ABSTRACT

Residual and recurrent mitral regurgitation after transcatheter edge-to-edge repair are therapeutically challenging. In the present case report, we describe a simplified, transapical electro-surgical laceration and stabilization of clip procedure that represents an alternative and direct approach for electro-surgical laceration of mitral valve leaflets enabling transcatheter mitral valve replacement for recurrent mitral regurgitation after mitral valve transcatheter edge-to-edge repair. (J Am Coll Cardiol Case Rep 2023;28:102086) © 2023 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Interventional treatment options for patients with residual or recurrent mitral regurgitation (MR) after mitral valve transcatheter edge-to-edge repair (M-TEER) are limited. A possible option is the electro-surgical laceration and stabilization of clip (ELASTA-Clip) procedure, which includes transfemoral, transseptal electro-surgical laceration of the mitral valve (MV) “tissue bridge” followed by transcatheter MV replacement using a Tendyne valve system (Abbott).¹ Here, we describe a new, alternative approach for the ELASTA-Clip procedure using an exclusively transapical approach.

In 2021, an 86-year-old woman was treated for severe secondary MR using M-TEER (1 NTW-MitraClip, Abbott) resulting in a residual MR 1+. Two years later, echocardiographic evaluation showed recurrence of severe symptomatic MR due to chordal rupture lateral to the correctly aligned and attached clip device (**Figure 1A**, **Video 1**). Repeat M-TEER was prohibitive due to an elevated MV inflow gradient and small remaining MV orifices with severe mitral annular calcification. The heart team opted for an ELASTA-Clip plus Tendyne implantation as therapeutic approach of choice.

Standard anterolateral mini-thoracotomy was performed for gaining access to the left ventricular apex. After apical puncture and wire placement through the lateral MV orifice in the left atrium (LA), a shortened 22-F sheath (DrySeal, W.L. Gore) was inserted in the left ventricle. A second wire was introduced into the LA through the medial MV orifice (**Figure 1B**). Two 6-F guiding catheters (JR4; Cordis) were inserted over the wires and used for snaring an ASATO wire (0.014-inch, Asahi Intecc) in the LA, which was externalized afterward. A “flying V” was created, and the V-shaped wire loop was placed on the atrial side of the anterior MV leaflet (**Figures 1B and 1C**), which was successfully cut by electro-surgical laceration during glucose 5% infusion over the guiding catheters (**Figure 1D**, **Video 2**). We did not observe hemodynamic instability after leaflet laceration. Next, the Tendyne device was implanted as previously described (**Figures 1E and 1F**).² At the end of the

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**ABBREVIATIONS
AND ACRONYMS****ELASTA-Clip** = electrosurgical laceration and stabilization of clip**LA** = left atrium**M-TEER** = mitral valve transcatheter edge-to-edge repair**MR** = mitral regurgitation**MV** = mitral valve

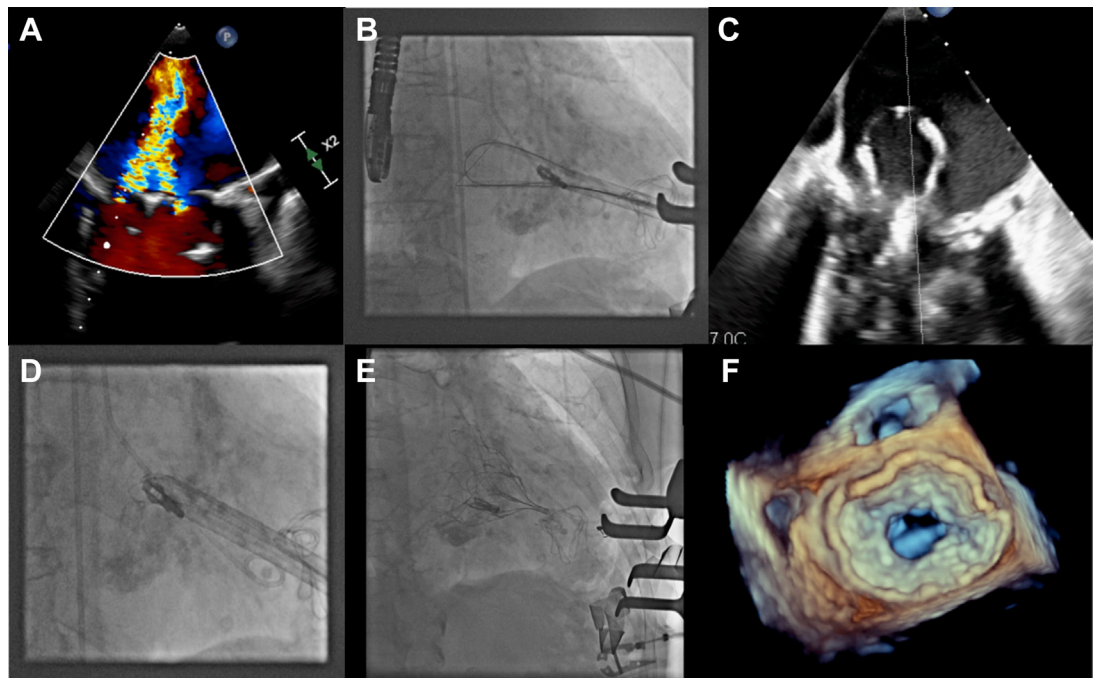
procedure, echocardiographic evaluation proved good positioning and function of the Tendyne device without evidence of left ventricular outflow tract obstruction, without evidence of paravalvular or valvular MR, and with evidence of a stable MitraClip attached to the posterior MV leaflet. The simplified transfemoral ELASTA-Clip procedure offers the possibility of less invasive TMVR compared to a transapical approach and might also reduce the risk of LVOT obstruction.

In conclusion, the simplified, transapical ELASTA-Clip procedure represents an alternative and direct approach for electrosurgical laceration of MV leaflets enabling transcatheter mitral valve replacement for recurrent MR after M-TEER.

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FIGURE 1 Illustration of the Transapical Electrosurgical Laceration and Stabilization of Clip Procedure


(A) Severe recurrent mitral regurgitation after previous mitral valve transcatheter edge-to-edge repair due to rupture of a chord. (B) After transapical advancement of guiding catheters into the left atrium, (C, D) a V-shaped electrosurgical wire loop was prepared and (E) the edge-to-edge device cut free from the anterior mitral leaflet. (F) Subsequently, the Tendyne valve was implanted.

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KEY WORDS apical access, ELASTA, M-TEER, transcatheter electro-surgery, Tendyne

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