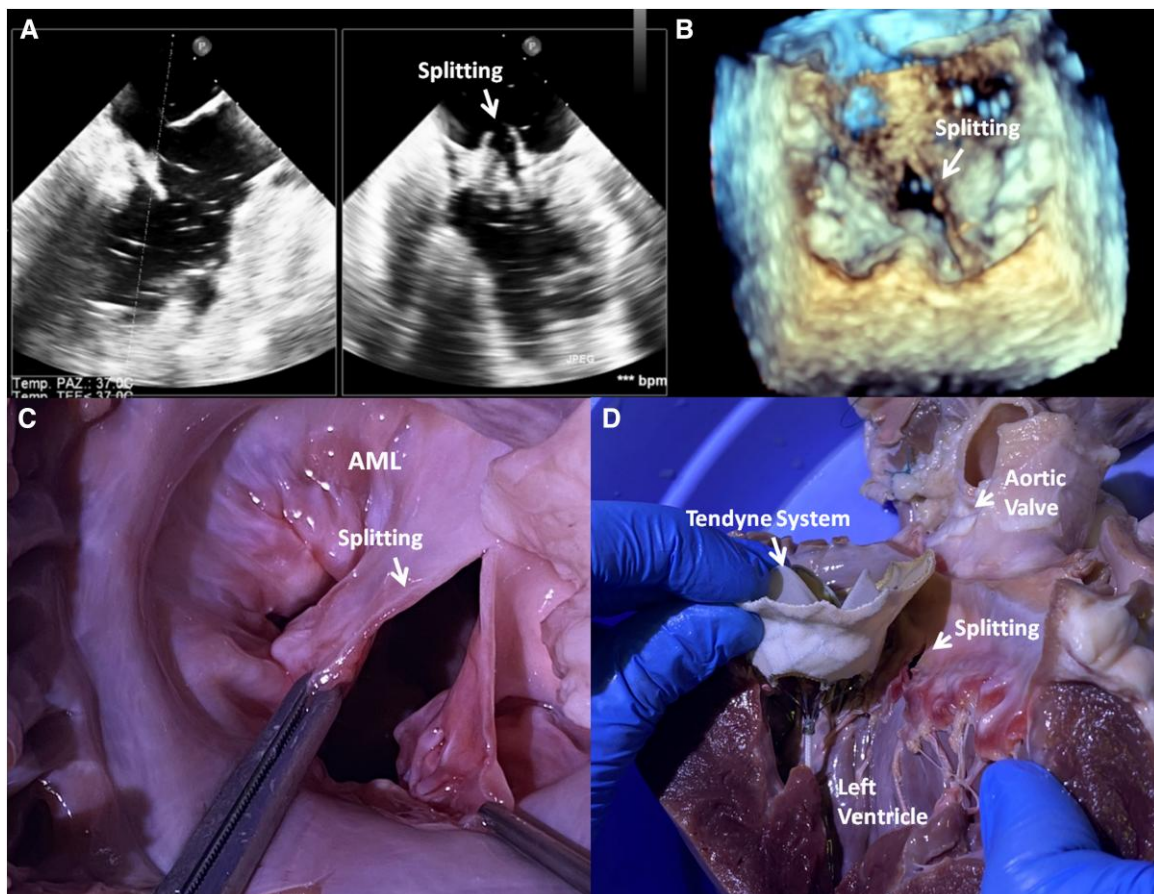


# Transapical beating heart anterior mitral leaflet endosplitting: on-the-bench testing

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**Figure 1** Confirmation of the anterior mitral leaflet splitting. (A) 2D bi-plane view, (B) 3D transesophageal echocardiography en-face view, (C) on specimen, and (D) on specimen with implanted Tendyne system. AML, anterior mitral leaflet

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Transcatheter mitral valve replacement (TMVR) is frequently denied because of the risk of left ventricle outflow tract (LVOT) obstruction determined by the anterior mitral leaflet (AML) displacement. Transcatheter, wire-mediated laceration of the AML [laceration of the anterior mitral leaflet to prevent outflow obstruction (LAMPOON)] has been proposed to solve this issue but is time-consuming, complex, and poorly reproducible.<sup>1</sup> We developed and tested a transapical, beating heart, direct splitting of the AML. The procedure was performed in an *ex vivo* beating heart pig model (4Cardio.Lab, Milano, Italy) under real-time transesophageal echocardiographic guidance (iE33, Philips, Eindhoven, the Netherlands) while direct visualization of the valves was enabled by fiberscope imaging (ENF-GP, Olympus Corp., Tokyo, Japan). A 22F Gore DrySeal Sheath was inserted in the left ventricle through the heart apex. Under echo guidance a standard endoscopic scissor (Metzenbaum, Aesculap, Germany) was inserted in the left atrium through the DrySeal allowing precise visualization and alignment with the A2 segment of AML that was cut (*Figure 1A* and *B*; see [Supplementary material online, Video S1](#)). Transapical beating heart AML endosplitting is a simple alternative to a complex procedure as LAMPOON with no need of an additional access. Moreover, on the basis of the present testing, we believe the endosplitting might be more reproducible to other techniques in terms of length and location of the splitting as confirmed by the specimen findings (*Figure 1C* and *D*). Comparative studies will be necessary to confirm this theory. The length of the splitting allows for optimal fitting and sealing of the TMVR in the native MV orifice without LVOT obstruction as we recently demonstrated in human.<sup>2</sup>

## Supplementary material

[Supplementary material](#) is available at *European Heart Journal—Case Reports*.

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**Consent:** No patients were involved in the present case report; all experiments were performed on *ex vivo* pig hearts. No consents were therefore obtained.

**Conflict of interest:** L.B. and A.F. have nothing to disclose. A.C. unpaid consultant for Abbott, Valcare Medical, Neochord, Biocompatibility Innovation, Eucardia, CoreMedic.

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## Data availability

Data are available upon request.

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