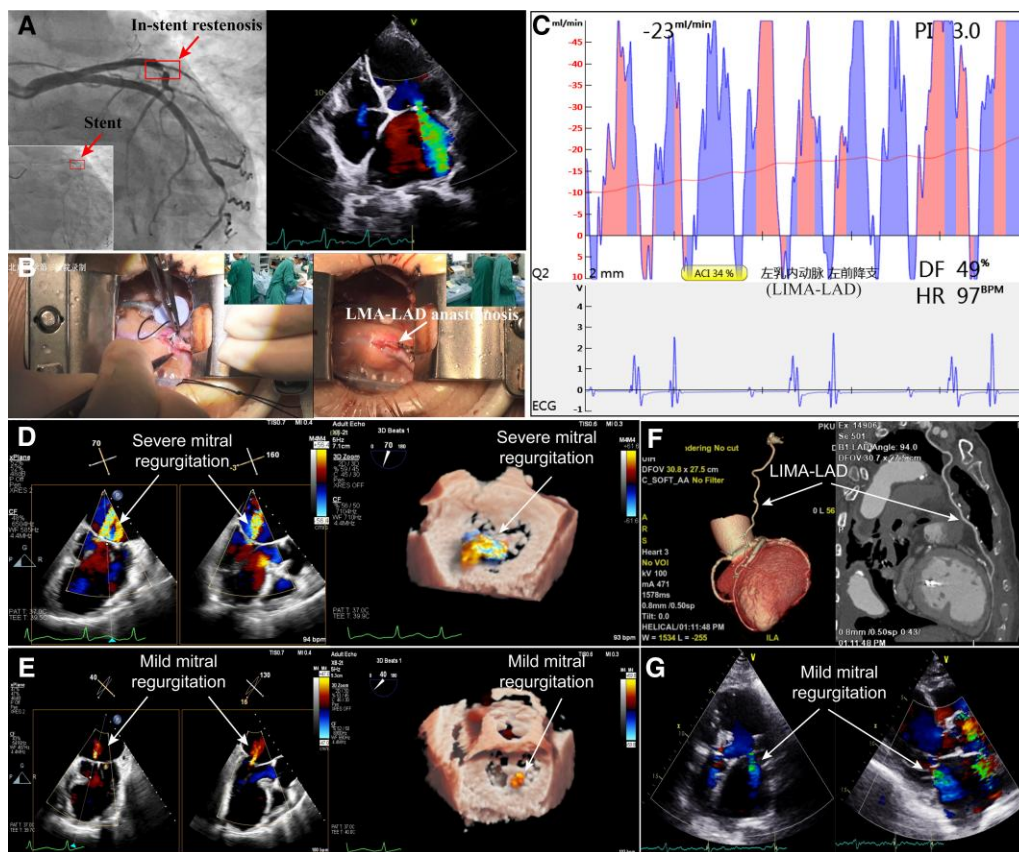


A simultaneous hybrid approach of minimally invasive direct coronary artery bypass followed by percutaneous mitral valve edge-to-edge repair

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An 81-year-old female was admitted for angina [Canadian Cardiovascular Society (CCS) Class IV] and heart failure [New York Heart Association (NYHA) class IV], with a history of three stent

implantations, myocardial infarction, and permanent atrial fibrillation. Pre-operative angiography and echocardiography confirmed left anterior descending (LAD) artery second severe in-stent restenosis (within 1

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year) unsuitable for recanalization percutaneously and severe mitral regurgitation (MR) (*Panel A*; see [Supplementary material online, Video S1](#)). European System for Cardiac Operative Risk Evaluation (EuroSCORE) II scored up to 44.36%, which prompted our heart team to plan a simultaneous hybrid strategy of minimally invasive direct coronary artery bypass (MIDCAB), followed by instant percutaneous mitral valve edge-to-edge repair using the MitraClip system (Abbott Vascular, Santa Clara, CA, USA). MIDCAB was performed through a small left anterolateral mini-thoracotomy to anastomose the left internal mammary artery (LIMA) to LAD (*Panel B*; see [Supplementary material online, Video S2](#)), and transit-time flow measurement confirmed satisfactory LIMA-LAD mean graft flow, pulsatility index, and diastolic filling (*Panel C*). After thorax closure, transoesophageal echocardiography-guided MitraClip was performed, and one XTR clip was deployed at the A2-P2 segment, which reduced MR from severe (*Panel D*; see [Supplementary material online, Video S3](#)) to mild (*Panel E*; see [Supplementary material online, Video S4](#)) with an acceptable transmitral pressure gradient. Rehabilitation was uneventful.

At 8 months follow-up, the patient's angina disappeared, and cardiac function recovered to NYHA Class II. Angiography and echocardiography confirmed LIMA-LAD 100% patency (*Panel F*) and mild MR

(*Panel G*). This successful attempt demonstrated the feasibility and efficacy of a simultaneous hybrid strategy of MIDCAB and MitraClip for use in high surgical risk patients with concomitant severe MR and coronary disease.

Supplementary material

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

Consent: The authors confirm that written consent for submission and publication of this cardiovascular flashlight including images and associated text has been obtained from the patient.

Conflicts of interest: None declared.

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Data availability

No new data were generated or analysed in support of this research.