


# Surgical valve replacement in a case of idiopathic dilated cardiomyopathy with massive left atrial dilatation and secondary mitral regurgitation

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A 56-year-old patient, known for having idiopathic dilated cardiomyopathy for more than 30 years with chronic atrial fibrillation under vitamin-K antagonist, was admitted for recurrent heart failure episodes despite optimal medical therapy (carvedilol 50-0-50 mg, digoxin 0.25-0-0 mg, torasemid 40-0-0 mg, dapagliflozine 10-0-0 mg, aldactone 25-0-0 mg, sacubitril/valsartan 100-0-100 mg). Cardiac resynchronization therapy was implanted 15 years ago.

Transthoracic echocardiography showed massive left atrial (LA) dilation with LA volume of 1134 mL and index LA volume > 10 times the cut-off value for severe LA dilation (493.9 mL/m<sup>2</sup>, severe > 48 mL/m<sup>2</sup>; Fig. 1A). The left ventricle (LV) was also severely dilated (end-systolic diameter: 68 mm, end-diastolic diameter: 94 mm). LV ejection fraction (LVEF) was estimated at 45–50%. Mitral regurgitation (MR) was severe (PISA radius 2.4 cm, regurgitant volume 255 mL, effective regurgitant orifice area 23 mm<sup>2</sup>; Fig. 1B). Transoesophageal echocardiography showed leakage on the whole

coaptation line, a 5 mm-coaptation gap, massive annular dilation (7 cm), posterior leaflet length of 13 mm (Fig. 1C–E, **Suppl. Video 1**). MR mechanism were (posterior > anterior) leaflet restriction (Carpentier-3b) and annular dilation (Carpentier-1), corresponding to a functional and atrial MR.  $VO_{2max}$  was 13 mL/min/kg and pulmonary pressures were normal. The heart team's decision was to perform levosimendan perfusion, pre-LV assist device assessment and surgical mitral valve replacement (SMVR). A Medtronic 33 mm Mosaic bioprosthesis implantation with LA appendage ligation (50 mm, Atriclip) were performed uneventfully. Post-operative LVEF was 30% and mean gradient 6.5 mmHg (Fig. 1F, G, **Suppl. Video 2**).

Despite the absence of robust data in favor of SMVR in functional MR (class IIb), SMVR improved patient symptoms. At 1-year follow-up, there was no readmission. Transcatheter edge-to-edge repair was not an appropriate option considering the leaflet flattening and the annular dilation.

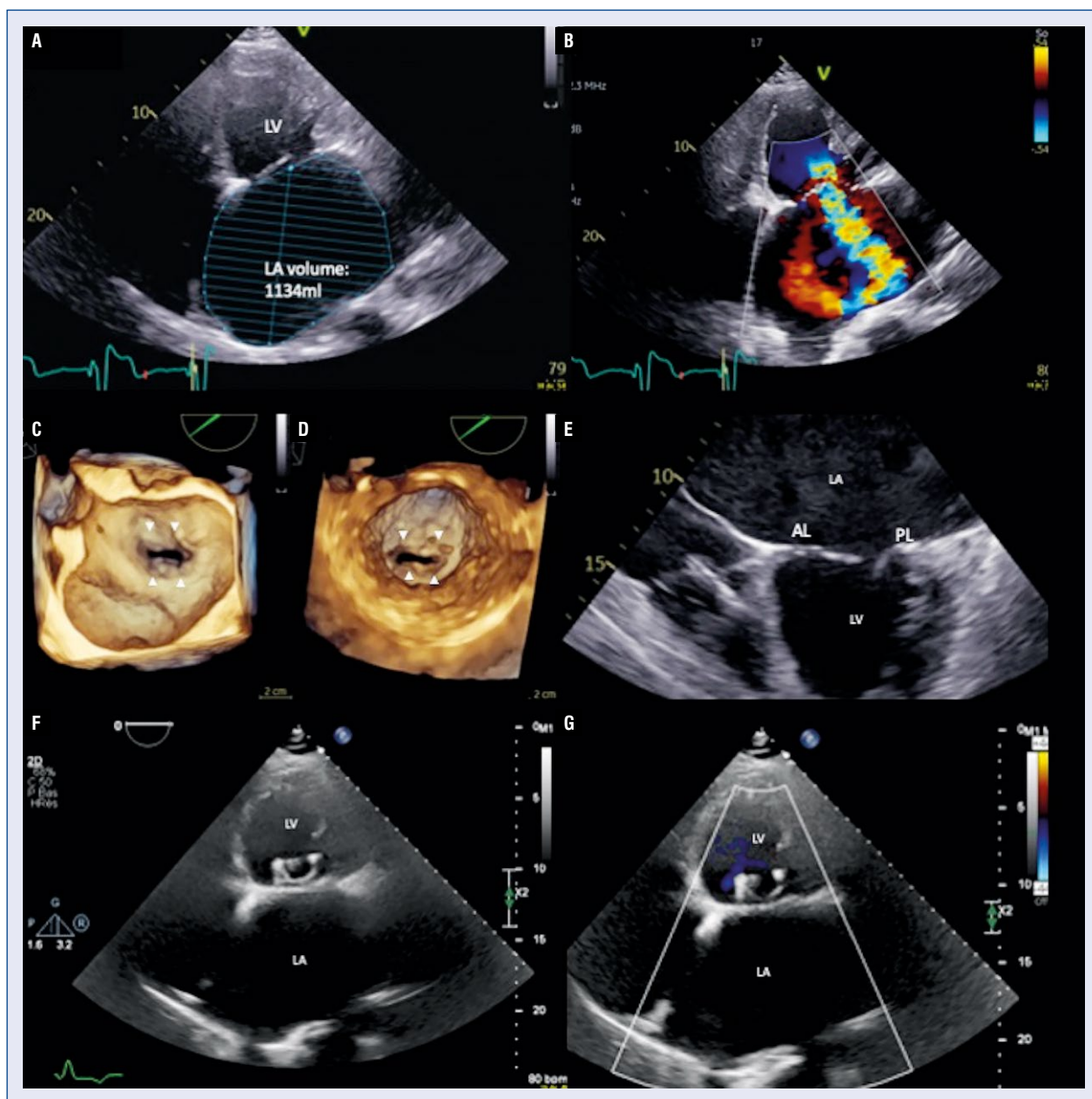
**Conflict of interest:** None declared

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**Figure 1.** A. Transthoracic apical four chamber view showing massive left atrium (LA) dilatation with LA volume of 1134 mL; B. Transthoracic apical four chamber view with color Doppler on the mitral valve and the LA showing severe mitral regurgitation; C. Transesophageal three-dimensional image of the mitral valve (atrial view) at mid-systole showing a coaptation gap between the two leaflets (arrowheads); D. Similar to panel C but ventricular view (arrowheads); E. Transesophageal four chamber view (0°), zoomed on the mitral valve, at mid-systole, showing the coaptation gap with leaflet restriction (posterior >> anterior); F, G. Transthoracic apical four chamber view showing the mitral bio-prosthesis without (F) and with color Doppler without residual mitral regurgitation (G); LV — left ventricle; LA — left atrium; AL — anterior leaflet; PL — posterior leaflet.