**Conventional echocardiographic analysis**

Echocardiography measurements were performed before IABP implantation and at the time of IABP removal. Echocardiographic studies included complete 2D and Doppler examinations. Assessment of LV ejection fraction (LVEF) was performed using the Simpson biplane method. RV size was evaluated by means of RV dimension obtained at end-diastole from an RV-focused apical 4-chamber view (basal RV end-diastolic diameter - RVEDd). Doppler evaluation included the semi-quantitative assessment of mitral and tricuspid regurgitation as mild-moderate-severe according to the relevant European Society of Echocardiography guidelines. Tricuspid Annular Plane Systolic Excursion / PA Systolic pressure (TAPSE/PAsystolic) was considered as a measure of RV ventricular-arterial coupling. Tissue Doppler imaging was employed to assess tricuspid annular maximal systolic velocity S (RVS). Rotational and deformational analysis of LV and RV were performed offline with dedicated software (EchoPAC v11, GE Medical Systems), as specified below. For rotational and deformational analysis, images were acquired at 60-80 frames/sec. All measurements were performed in accordance with the current American and European Societies of Echocardiography guidelines.

**LV rotational mechanics echocardiographic analysis**

The apical (the smallest cavity achievable distally to the papillary muscles) and basal (identified by the mitral valve) short-axis images were used for velocity vector imaging (VVI) analysis. After selecting the optimal cardiac cycle, the endomyocardial border was delineated in a ‘click to point’ approach. Following this, the software automatically outlines 6 segments per short axis view. Images with poor tracking quality were excluded from further analysis. LV rotation at the basal or apical short-axis views was determined as average angular displacement of the 6 myocardial segments. The positive peak of apical LV rotation and negative peak of basal LV rotation were automatically measured. Peak LV
twist is defined as the maximal instantaneous difference between the apical and basal rotations. Peak LV torsion is defined as the peak LV twist magnitude normalized to LV length.

**Longitudinal strain echocardiographic analysis**

Gray-scale 2D apical images of the LV (4-, 2-, and 3-chamber views) were obtained and peak longitudinal strain analysis of the LV was performed offline by manual tracing of the endomyocardial contour. For each view, longitudinal strain was calculated as an average of the six automatically generated myocardial segments. Global Longitudinal Strain (GLS) was calculated as an average of all segments generated by VVI analysis of the 3 apical views. Additionally, RV free wall longitudinal strain (RV strain) and strain rate were calculated from a modified RV-centered 4-chamber view