Giant true inferoposterior left ventricular aneurysm presenting with heart failure: insights from multimodality imaging

Adam Penkalla, Natalia Solowjowa, Michael Dandel and Christoph Knosalla*

Department of Cardiothoracic and Vascular Surgery, Deutsches Herzzentrum Berlin, Berlin, Germany

* Corresponding author. Department of Cardiothoracic and Vascular Surgery, German Heart Institute Berlin, Augustenburger Platz 1, 13353 Berlin, Germany. Tel: +49-30-45932087; fax: +49-30-45932259; e-mail: knosalla@dzhb.de (C. Knosalla).

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A 58-year old male patient who had undergone post-infarction ventricular septal defect closure and venous coronary bypass grafting to the obtuse marginal artery 2 years previously, presented with congestive heart failure. Echocardiography, computed tomography and ventriculography revealed a giant inferoposterior left ventricular aneurysm (Fig. 1A–D, Supplementary Video 1).

Surgical left ventricular restoration was performed by a direct linear suture (Fig. 1E and F).

Supplementary material (Video 1) is available at EJCTS online. Video 1: Reconstructed 3D computed tomography using volume rendered technique showing the extent of the aneurysm posterobasal to the left ventricle.

Figure 1: (A) Longitudinal strain echocardiography before surgery (apical long-axis view). LV systolic peak global strain (global longitudinal myocardial shortening) only – 2% (white dotted line); extreme intraventricular asynchrony and severe relaxation disturbance. (B) Reconstructed 3D CT using the volume rendered technique (VRT) showing the extent of the aneurysm posterobasal to the left ventricle measuring 70 × 75 × 82 mm with epicardial continuity (B and C). The diameter of the neck was 67 mm, and the ratio of orifice to cavity diameter was >0.9. The aneurysm bordered medially on the patch of the basal septum and stretched along the entire posterior wall. Aneurysmal wall thickness measured 3–5 mm. CT reconstructed LV end-diastolic volume was 787 ml, with aneurysmal volume being 507 ml and LV cavity volume 280 ml. (A) Left atrium. Asterisk: CABG to obtuse marginal artery. (C) Preoperative computed tomogram showing the left ventricle with giant aneurysm. (D) Preoperative left ventriculogram in left anterior oblique view showing the tip of the pigtail catheter at the bottom of the aneurysm. Coronary angiography revealed significant coronary artery disease with 100% occlusion of the circumflex coronary artery and patent left anterior descending coronary artery, patent right coronary artery and patent CABG to the obtuse marginal coronary artery (not shown). (E) Postoperative computed tomogram after aneurysmectomy revealed LV end-diastolic volume was reduced from 787 to 247 ml as measured on CT. Asterisk: location of suture site with Teflon pledgets. (F) Longitudinal strain echocardiography after surgery (apical long-axis view). LV systolic peak global strain improvement (from 2% shortening to 6.8% shortening), less asynchrony in LV contraction and relevant improvement of myocardial relaxation. LV ejection fraction increased to 50%. A: aneurysm; CABG: coronary artery bypass graft; CT: computed tomography; LV: left ventricle.