



Letters to the Editor

Left Thoracotomy and Descending Aortic Anastomosis for HeartWare Implantation After Previous Coronary Artery Bypass Graft and Left Ventriculotomy

To the Editor,

Successful implantation of left ventricular assist devices (LVADs) in patients with previous median sternotomy remains challenging (1,2), and hostile cardiac apexes, as in the case of former ventricular

reconstruction, are often considered a contraindication. We present our technique of LVAD implantation after previous ventricular surgery.

A 52-year-old patient was admitted at our hospital for an acute worsening of an end-stage heart failure. In 2006, he underwent a triple coronary artery bypass graft and left ventricular reconstruction for apical dyskinesia with thrombosis. From 2011, the patient was on the waiting list for heart transplantation. Due to progressive deterioration and a dismal quality of life, we decided to implant an LVAD as bridge to transplant. Left ventricle end-diastolic diameter was



FIG. 1. (a) The preoperative CT scan showed patency of the grafts, a scar at the site of previous apical ventriculotomy, and strong adhesion of the right ventricle to the posterior surface of the sternum. (b) The apical sewing ring was secured in place with single-pledgeted U-stitches. (c) The outflow graft was measured before starting the anastomosis on the descending aorta to avoid length mismatch. (d,e) Previously applied Teflon felt strips and sutures on the left apex were first removed with a knife (d) and subsequently with the HVAD coring system (e). (f) The HeartWare HVAD in its final position.

68 mm; diastolic and systolic volumes were 218 and 155 mL, respectively; and ejection fraction was 29%. The INTERMACS class was 3. The preoperative CT scan is shown in Fig. 1a. The patient was positioned in the semi-right-lateral position. A left anterolateral thoracotomy was performed, and the chest was entered through the fifth intercostal space. Intrapericardial dissection of adhesions was kept to a minimum and done only to expose the apex, with consideration of the Teflon felt strips previously used for ventricular reconstruction. Femoral vessels were cannulated for cardiopulmonary bypass (CPB). The operative field was flooded with carbon dioxide to reduce the risk of air embolization and facilitate de-airing maneuvers. The apical sewing ring was secured in place with single-pledgeted U-stitches (Fig. 1b). The descending aorta was isolated close to the isthmus. The outflow graft was measured (Fig. 1c). An end-to-side anastomosis was performed on the descending aorta using a partial cross-clamp, and the graft was de-aired. The driveline was tunneled through the subcutaneous tissue. Under rapid pacing (temporary epicardial electrodes) and with the patient in the Trendelenburg position, the left apex was incised with a knife (Fig. 1d) and subsequently with the HVAD coring system (Fig. 1e) to remove some of the Teflon felt strips. After accurate inspection of the LV chamber, the LVAD (HeartWare HVAD, HeartWare, Framingham, MA, USA) was implanted (Fig. 1f). The patient was successfully weaned off CPB. The patient was extubated after 7 days and was discharged after 50 days. Only two units of blood were transfused postoperatively. All postoperative echocardiograms showed a regular opening of the aortic valve. The patient is currently on ongoing support without any thromboembolic event for 1 year of follow-up.

Alternative strategies for device implantation are essential to manage the increasing complexity of cases of end-stage heart failure (3,4). Recently, Umakanthan et al. (4) published their successful experience with the HeartWare device implanted via left anterior thoracotomy to the descending aorta in four patients with histories of multiple previous sternotomies without previous left ventriculotomy. These patients are denied LVAD implantation, as previous surgery on the left ventricular apex is usually considered a contraindication. To our knowledge, the patient herein presented is the first to receive a LVAD after a ventriculotomy. With a left thoracotomy, the apex is easily exposed, and digital pressure on the ventricular wall under transesophageal echocardiographic control allows a precise identification of the optimal implant site. Intrapericardial dis-

section of adhesions was kept to a minimum, and the presence of previous sutures and Teflon felt strips required accurate management but did not significantly interfere with the LVAD placement.

In very select patients, a previous left ventriculotomy should not be considered an absolute contraindication to the use of a LVAD.

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