comfortably and who have a regular breathing pattern and RR intervals. However, it remains to be determined whether the visualization of the esophagus and its location with regards to the LA and the ablation set might prevent complications such as atrioesophageal fistula.

In conclusion, anatomical assessment of the entire heart and in particular of the LA for electrophysiological procedures using a contrast-free native MRI protocol is sufficient in 85% of the patients. Despite the relatively long acquisition duration, the protocol is especially useful for patients with renal insufficiency or to visualize the course of the esophagus in addition to the heart anatomy.

CONFLICTS OF INTEREST

M. Kühne is proctor for Medtronic, speakers bureau for Boston Scientific, St Jude Medical, and Biotronik. C. Sticherling is advisory board of Medtronic and Biotronik, received educational grants from Biotronik and research grant from Biosense Webster, outside the submitted work.

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Minimally invasive approach for biventricular assist device with centrifugal pump: first experience in Spain

Abordaje mínimamente invasivo para la asistencia biventricular con bombas centrífugas: primera experiencia en España

To the Editor,

In recent years, the field of cardiovascular surgery has witnessed an increasing use of minimally invasive procedures, aimed at minimizing surgical aggression and favoring patient recovery. Minimally invasive surgery has been shown to offer comparable safety and survival outcomes to conventional surgery, as well as a lower incidence of postoperative bleeding and shorter hospital stays.[1]

The increasing use of minimally invasive surgery for the implantation of long-term left ventricular assist devices (LVADs) has been favored by the smaller size of new models. Apart from improving cosmetic outcomes, minimally invasive LVAD implantation has been found to reduce postoperative bleeding rates and hospitalization time, resulting in considerable cost savings and similar short- and long-term survival outcomes to those seen in conventional surgery.[2] Minimally invasive and percutaneous approaches are also being increasingly used for the implantation of short- and intermediate-term VLADs.[3] The conventional approach for intermediate-term centrifugal biventricular assist device (BiVAD) implantation is median sternotomy. We present a case in which a Levitronix CentriMag BiVAD was implanted using minimally invasive surgery.

A 60-year-old man with a history of idiopathic dilated cardiomyopathy with severe left ventricular dysfunction was admitted for heart failure with signs of systemic congestion and decreased cardiac output. Despite treatment with vasoactive amines, diuretics, and ultrafiltration, the patient's condition deteriorated and he remained at level 3 of the INTERMACS (Interagency Registry for Mechanically Assisted Circulatory Support) scale. Clinical and echocardiographic findings also

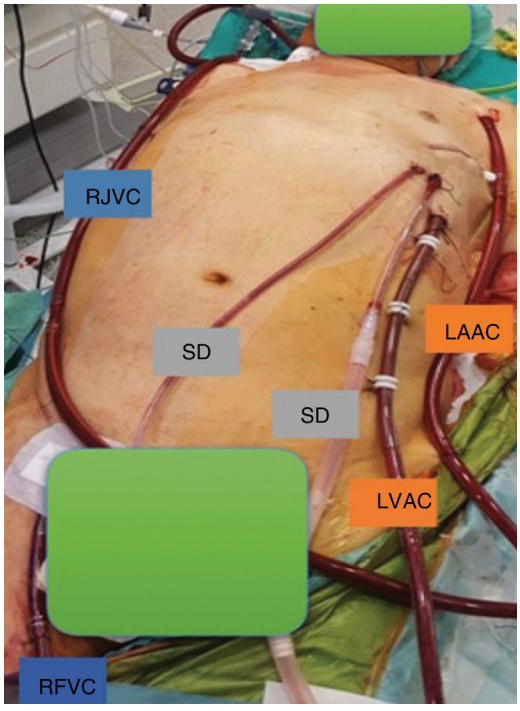

Figure 1. Cannulation and drainage setup following biventricular assist device implantation. LAAC, left axillary artery cannula (left ventricular assist device [LVAD] return cannula); RFVC, right femoral vein cannula (right ventricular assist device [RVAD] drainage cannula); LVAC, left ventricular apex cannula (LVAD drainage cannula); RJVC, right jugular vein cannula (RVAD return cannula); SD, surgical drain.

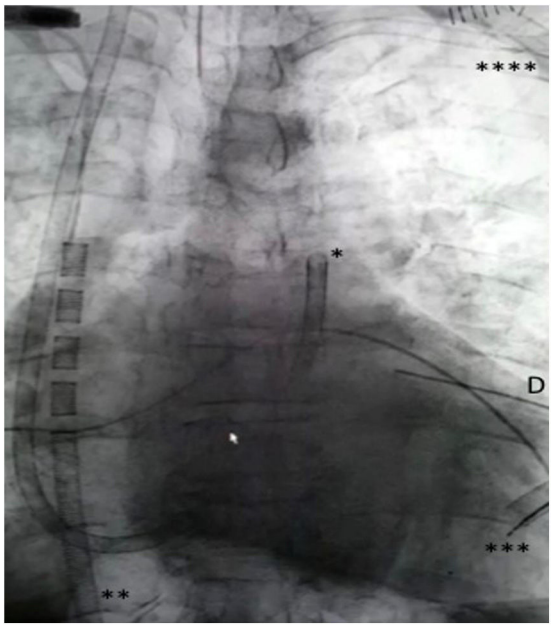

Figure 2. Chest radiograph following biventricular assist device implantation. Right ventricular assist device return (*) and drainage (**) cannulas. Left ventricular assist device drainage (***) and return (****) cannulas.

showed right ventricular systolic dysfunction. In view of this situation, it was decided to implant a BiVAD.

Left axillary artery cannulation was performed via end-to-side anastomosis of a 10-mm Dacron graft into which a Medtronic EOPA arterial cannula (18-Fr) was inserted. A 34-Fr Levitronix CentriMag LVAD return cannula (Abbott) was implanted via left anterior minithoracotomy. This was followed by percutaneous placement of a right ventricular assist device (RVAD) in the pulmonary vein and insertion of a drainage cannula in the right femoral vein; a 17-Fr return cannula (Bio-Medicus, Medtronic) was directed through the right jugular vein to the main pulmonary artery, before the bifurcation, following the procedure recently described by Uribarri et al.[4] This approach, consisting of percutaneous placement of the RVAD and minimally invasive implantation of the LVAD, reduced the degree of surgical aggression required to achieve circulatory support (figure 1 and figure 2). Amines were withdrawn after 24 hours of BiVAD support and the patient was extubated at 96 hours and placed on a waiting list for an urgent heart transplant. The heart transplant was performed 7 days later, and in the absence of significant postsurgical complications, the patient was discharged home at 21 days.

BiVAD implantation by minimally invasive surgery offers an alternative to conventional median sternotomy. It is associated with a lower incidence of bleeding and infectious complications, and in the case of heart transplant patients, reduces the risk of perioperative complications, largely by eliminating the need for 2 median sternotomies.

Percutaneous RVAD placement allows for the addition of an oxygenator to the VAD circuit to provide circulatory and respiratory support to patients who experience respiratory deterioration. In such cases, anticoagulation is necessary. In addition, if the patient shows good respiratory and right ventricular recovery, the RVAD can be removed at the bedside, eliminating the need for surgical decannulation.

In conclusion, minimally invasive surgery for BiVAD implantation carries a lower risk of complications than median sternotomy and could provide an alternative for critically ill patients who are potential candidates for heart transplant.

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First national registry of evolocumab in clinical practice in cardiology units in Spain. The RETOSS-CARDIO study

Primer registro nacional de evolocumab en la práctica clínica en unidades de cardiología en España. Estudio RETOSS-CARDIO

To the Editor,

Reducing low-density lipoprotein cholesterol (LDLc) with lipid-lowering therapy decreases cardiovascular events in both primary and secondary prevention; hence, the sharper the decrease, the lower the cardiovascular risk and the earlier the decrease occurs.[1]

Despite receiving statin therapy alone or in combination with ezetimibe, only 25% to 30% of patients in Spain with ischemic heart disease achieve the recommended LDLc targets.[2]

Proprotein convertase subtilisin/kexin type 9 inhibitors are highly effective in lowering LDLc levels and the risk of cardiovascular complications. In the FOURIER[3] study, patients with established atherosclerotic cardiovascular disease showed significant reductions in cardiovascular events when evolocumab was added to the standard lipid-lowering therapy. However, as there may be substantial differences between clinical trials and "real life", it is essential to know how these drugs perform in clinical