MECHANICAL CIRCULATORY SUPPORT IN A PATIENT WITH CONGENITALLY CORRECTED TRANSPOSITION OF THE GREAT ARTERIES

To the Editor:

We read with interest the case report by Huang and Slaughter,[1] recently published in *The Journal of Thoracic and Cardiovascular Surgery.* The article summarizes surgical experience with left ventricular assist device (LVAD) therapy implementation in a patient with congenitally corrected transposition of the great arteries (ccTGA) who experienced end-stage heart failure due to failure of the systemic ventricle.

We agree with Huang and Slaughter[1] that patients with ccTGA present unique challenges for VAD implantation and management because of their individual anatomical features and sequelae of previous palliations (adhesions, prosthetic valves in situ, and residual intracardiac shunts).

Based on our experience with such patients, VAD insertion into the systemic, but anatomically and morphologically right, ventricle has been feasible using different cannulation sites: the free wall or diaphragmal surface.[2] Because of the thickness of the wall of the failing ventricle, with its enlarged cavity, we did not place silicon rings as ''spacers'' for reduction of the intracavital part of the inflow cannula.

Individuals with a significantly increased risk for intraoperative bleeding and firm intrathoracic adhesions after palliations may benefit from the off-pump insertion technique described by Huebler et al[2] from our working group, which eliminates the bleeding risk related to the cardiopulmonary bypass. However, appropriate determination of the optimal insertion point for the inflow cannula and the detection of thrombi and additional chordae or other inflow obstacles using preoperative computed tomographic scan imaging and intraoperative transesophageal echocardiography guidance are crucial.

Our patient, a 59-year-old man with ccTGA, dextrocardia, pulmonary artery stenosis, a ventricular septal defect, and a secundum-type atrial septal defect, had undergone 2 complex palliation procedures in the past. He is still receiving ongoing support over 24 months after HeartWare HVAD (Framingham, Mass) insertion was performed using the off-pump approach and placement of the inflow cannula via the diaphragmal surface of the systemic ventricle.[2]

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Reply to the Editor:

We want to thank Stepanenko et al for their interest in our report[1] on placement of a HeartWare ventricular assist device (HVAD) in a patient with congenitally corrected transposition of great arteries (ccTGA). The Berlin group has reported and described the concerns that need to be addressed when considering a VAD for patients with ccTGA.[2,3]

We agree with Stepanenko et al[2] that careful consideration needs to be given to inflow cannula/pump placement. We chose to use a needle with injection of agitated saline to verify the best possible orientation. As noted by Stepanenko et al, it is possible to implant VADs ''off pump.'' However, this limits the surgeon's ability to inspect the ventricle for thrombus, crossing fibers, or other anatomical variations that might cause inflow obstruction. Thus, it was our opinion that it is best to have a short run on cardiopulmonary bypass to closely inspect the ventricular cavity because it is morphologically a right ventricle with many more trabeculations and possible sites for thrombus formation.

Patients with congenital heart disease present with unique challenges for mechanical assist device placement. A variety of surgical techniques should be available to the surgeons because the anatomical and pathological features of the defective heart might be different for each patient. VAD cannulation site selection and position must be determined with accuracy and verified by echocardiography and pump performance before leaving the operating room.

Long-term HVAD support, as described in our report and in the patients of Stepanenko et al,[2] demonstrates the possibility of using VAD support as an alternative treatment option for ccTGA patients with end-stage heart failure either as a bridge to transplant or destination therapy.

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2. Stepanenko A, Potapov EV, Hetzer R. Mechanical circulatory support in a patient with congenitally corrected transposition of the great arteries. *J Thorac Cardiovasc Surg*. 2013;146:243.
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MANAGEMENT OF DISTAL AORTIC COMPLICATIONS AFTER REPAIR OF ACUTE TYPE A AORTIC DISSECTION

To the Editor:

Masseli et al[1] report the use of antegrade stent grafting to treat acute complications early after surgery for acute type A aortic dissection. The previously surgically sewn ascending or arch Dacron graft was used as the entry point to antegrade deploy a stent graft in 5 patients with contained rupture or malperfusion. In 1 patient, the stent graft was inserted to treat exsanguination at the distal total arch suture line at the end of the primary operation. In the remaining 4 patients, the treatment occurred a few days after the primary procedure.

More important, in their article, reopening of a fresh sternotomy to access the aorta in an unstable patient may be more expeditious than struggling through femoral access and wires manipulations in a dissected and malperfused descending and abdominal aorta. We congratulate the authors for getting out of trouble by thinking outside the usual ''stent-graft box.''

The availability of stent grafts gives all of us additional tools to deal with difficult problems that traditional methods may have been unable to control as well. More important, all cardiovascular surgeons should become sufficiently familiar with all potential options at their disposal.

However, we find it often difficult to justify the reluctance to perform some form of frozen elephant trunk (FET) to prevent most of the complications successfully treated herein. Growing experience with FET techniques has shown benefits in simplifying complex 2-stage aortic operations, stabilizing distal aortic lesions, avoiding reliance on a fragile aortic anastomosis, and potentially correcting distal malperfusion.[2] Exclusion of the descending thoracic aorta with appropriate length stent grafting can decrease long-term aortic dilatation and rupture risk.[3] In addition, the FET, when combined with a total arch replacement, can make the possibility of type I proximal endoleak and proximal migration nonexistent.

We would encourage a more elective use of antegrade stent grafting to avoid having to resort to the emergent bailouts described herein or, worse yet, risk losing patients from rupture or malperfusion after discharge from our units.

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Reply to the Editor:

In our original article, we described antegrade stent placement as a useful bailout strategy for complications arising after surgical treatment of acute type A dissections.[1] In their letter to the editor, Quintana et al propose the frozen elephant trunk technique (FET) as the initial procedure to avoid complications and the need for bailout strategies, such as the one we presented, and argue that the benefits of the FET have been shown. The cited reference reports about a product-associated registry and the analysis of a subset of 68 procedures that have been performed in patients with acute type A aortic dissections.[2] A newer publication concerning this registry, the International E-vita open Registry,[3] is reporting about 274 treated patients, containing 88 patients with acute type A aortic dissection. The mortality in this group was 18%, and the overall rate of spinal cord injuries was 8%. In our opinion, these reports with relatively small numbers give no evidence for benefits of the FET in relation to conventional techniques that we extended with the method we presented.

Nevertheless, in total arch replacement, the FET gives some theoretical advantages that could outweigh its possible disadvantages, such as longer circulatory arrest times, higher incidences of spinal cord ischemia, or device-related problems. The FET has to be further evaluated to answer these questions. Additional products and ongoing growing experience will help to find the right position for the FET, which was, until now, mainly bound to a single product.

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