The patient-centric toolbox

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*The pessimist sees difficulty in every opportunity.
The optimist sees the opportunity in every difficulty.*

The evolution of cardiothoracic surgery has resulted in the development of techniques, devices, and approaches, all which are meant to optimize the care of patients. Not every innovation is embraced, and the approaches to using these techniques will vary. In their practice, surgeons are often left to decide whether they are disease-oriented or procedure-oriented. For example, surgeons coming out of training might be asked whether they are trained in thoracic aortic endovascular repair (TEVAR), rather than asked whether they are trained in the diagnosis and treatment of aortic disease. For the procedure-oriented surgeon, devices and procedures can become part of the marquee, rather than simply items within the armamentarium and toolbox of the proficient surgeon.

In this issue of *The Journal of Thoracic and Cardiovascular Surgery*, Ward and colleagues¹ present a case report that illustrates a thoughtful and stepwise approach to dealing with a chronic aortic dissection complicated by a life-threatening aortic hemorrhage in a patient with religious beliefs that precluded the administration of blood products. The patient's condition was such that he had already been referred for hospice care at an outside hospital, presumably because it was believed that there was no surgical solution without the possibility of blood transfusion. Ward and colleagues¹ describe gaining control of the rupture with an endovascular approach after ruling out an open procedure. With the successful deployment of the endograft, this might have been the end of the story, but they appreciated that this was not a definitive fix, and after a period of stabilization a second-stage open procedure was performed.

This case report exemplifies the convergence of 2 relatively recent enhancements in cardiothoracic surgery: blood conservation programs and the endovascular treatment of aortic pathology. The benefits of blood conservation have been studied² and will not be expounded on in this commentary other than to point out 2 observations. First, although the initial impetus for blood conservation techniques may have been for the benefit of patients not able or willing to receive transfusions, these techniques have found their way into mainstream practice because of the clinical (and

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Central Message

Technology can either be the endgame or a surgical tool; the latter approach may optimize the care of the patient.

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financial) benefits for all patients. These techniques are not limited to elective “routine” procedures but can be extended to include complex aortic surgery.³ Second, the ability to perform a high-risk, bloodless aortic procedure in a Jehovah's Witness patient without the safety net of blood products is probably directly proportional to the experience of the surgeon using these blood conservation techniques to treat Jehovah's Witness and non-Witness patients alike. A complex emergency case in a Jehovah's Witness patient should not be a surgeon's first exposure to blood conservation techniques.

Cardiac procedures in the Jehovah's Witness patient have been described previously; Jassar and associates⁴ documented the University of Pennsylvania's experience, and it is notable but perhaps not surprising that of the 91 patients in their series only 2 patients had procedures involving the aorta, 1 root replacement and 1 aortic dissection repair. In a case report, Saito and colleagues⁵ describe a hybrid procedure performed in a single stage in a Jehovah's Witness patient, replacing an aortic root aneurysm open and subsequently stenting the arch for aneurysmal disease.

In this case, Ward and colleagues¹ chose to stabilize the patient with the off-label use of a covered stent graft. The key point is the decision to use the endograft not as the end solution but as a temporizing tool until the patient could be better prepared for a definitive operation. The temptation may have existed to stop after the successful endograft deployment, but do radiographic findings of a successful deployment translate into clinical success? If the patient had not been a Jehovah's Witness and the aneurysm had not been ruptured, the obvious surgical approach with the

best documented long-term outcome would have been an open procedure performed by an experienced surgeon. While labeling a patient's condition "inoperable" may be used as a rationale for TEVAR, as noted by Miller,⁶ long-term follow-up after TEVAR demonstrates that patients in "inoperable" condition do worse, skirting that thin line between frailty and futility. In a retrospective analysis of more than 10,000 Medicare patients undergoing TEVAR, Schaffer and coworkers⁷ observed that the highest rate of midterm mortality was seen in patients treated for aortic rupture (it would be difficult, if not impossible, to tease out from an administrative database how many of these were chronic dissections and how many were aneurysms).

By staging their procedures and using blood conservation techniques, Ward and colleagues¹ were able to provide their patient with something approaching the ideal scenario, and hopefully with a long-term solution. This is the optimal use of a technology.

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