Down to the wire: Acquiring endovascular skills in cardiac surgery

Maral Ouzounian, MD, PhD,^a and Christine Herman, MD, MSc^b

See related article on pages 675-7.

Less-invasive and endovascular approaches to cardiovascular disease are burgeoning, and the lesson from coronary interventions is clear: patients are willing to accept higher reintervention rates for less-invasive initial procedures. In this issue of the *Journal*, Nguyen and George argue that training in our field must be revised to accommodate the explosion of percutaneous technology.¹ We concur and further suggest that until training programs catch up to the changing demands of the profession, surgeons in training must commit dedicated time to acquiring these skills.

Similar to the expanding scope of the contemporary valve surgeon, today's aortic surgeon will offer both minimally and maximally invasive surgeries. For many patients, open surgical aortic repair remains the gold standard and provides excellent, durable results. The role for thoracic endovascular aortic repair, however, is expanding: thoracic endovascular aortic repair is first-line therapy in many descending aortic pathologies; thoracoabdominal aneurysms can be managed with fenestrated or branched grafts; stenting may be offered to patients with high-risk arch and ascending pathology; and the endoscopic Bentall procedure will undoubtedly make its appearance. It is our position that a surgeon who is able to offer the full spectrum of therapeutic options for complex aortic pathologies is optimally positioned to consider and deliver what is in the best interest of each patient. Incorporating the evolving endovascular skill set into the cardiac trainees' repertoire, however, poses a unique challenge for residency programs.

For nearly 2 decades, Canadian cardiac surgical training programs have consisted of direct-entry 6-year residencies, similar to the current American I-6 programs. Advantages of the Canadian system include the following: (1) early and intensive exposure to cardiology with the majority of a junior year spent in the coronary care unit, echocardiography laboratory, angiography suite, and electrophysiology laboratory, a formative time that has become an important part of the development of a cardiac surgeon; (2) an enrichment year, designed to cultivate a resident's academic or clinical

interests; and, most importantly (3) built-in flexibility, allowing programs to adapt and stay relevant to the contemporary cardiac surgical environment. It is feasible, for example, for programs to dedicate as much as 6 months of senior training to endovascular surgery or transcatheter aortic valve replacement (TAVR) rotations, something that would not be possible with the time constraints of a 2- or 3-year training program after general surgery. Another adaptation has been the transition in the last decade toward training *cardiovascular* rather than *cardiothoracic* specialists. As the requirement for oncologic expertise and thoracoscopic and laparoscopic skills expands, cardiac surgeons bear increasing similarity to their vascular rather than thoracic surgical colleagues with regard to disease pathology and surgical techniques.

The inherent delay between the development of a novel technique or device and its widespread adoption creates inevitable challenges for training. Emerging technologies are often first implemented in major centers or in the context of clinical trials before gaining momentum and becoming widely disseminated. Training paradigms reflect this process, and the opportunities initially available for trainees may be limited. The acquisition of new skill sets is difficult and often occurs in descending order of priority: an attending in practice, an advanced fellow spending dedicated time learning a procedure, and finally, often low on the totem pole, a junior resident spending a few months on the service. It will, for example, undoubtedly take further dissemination and standardization of techniques before junior residents are given the opportunity to be primary operators during TAVR deployments. Similarly, dedicated fellows will likely be given priority over residents during low-volume, high-stakes cases such as complex total arch or thoracoabdominal repairs.

There are some similarities between the areas of expertise required to offer TAVR and thoracic endovascular aortic repair: wire skills, fluoroscopic visualization, access considerations, and, most importantly, judgment regarding anatomic and clinical suitability for a particular therapy. Even with a comprehensive 6-year program tailored to the individual, true expertise in a niche area often mandates advanced training in a specialized high-volume center. Almost all Canadian graduates pursue such training in areas such as valve repair, heart failure surgery, TAVR, aortic surgery, or newly identified therapies. Rather than expecting residency programs to offer high-level exposure to emerging technologies immediately or waiting for them to catch up, surgeons in training should follow the lead of Nguyen and George and go out and get the training they need.

Reference

1. Nguyen TC, George I. Beyond the hammer: the future of cardiothoracic surgery. *J Thorac Cardiovasc Surg.* 2015;149:675-7.

From the Division of Cardiac Surgery,^a Department of Surgery, Peter Munk Cardiac Centre, University of Toronto, Toronto, Canada; and the Division of Vascular Surgery,^b Department of Surgery, McGill University, Montreal, Canada.

Disclosures: Authors have nothing to disclose with regard to commercial support.

Received for publication Jan 15, 2015; accepted for publication Jan 16, 2015; available ahead of print Feb 19, 2015.

Address for reprints: Maral Ouzounian, MD, PhD, Peter Munk Cardiac Centre, 200 Elizabeth St, 4N-464, Toronto, ON M5G 2C4, Canada (E-mail: Maral.ouzounian@uhn.ca).

J Thorac Cardiovasc Surg 2015;149:678

0022-5223/\$36.00

Copyright © 2015 by The American Association for Thoracic Surgery

<http://dx.doi.org/10.1016/j.jtcvs.2015.01.028>