

# The Future of Vascular Surgery: Training Fellows for Success

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**S**urgical education has significantly evolved over the past several decades. Completing apprenticeships under Halsted's principles has long been replaced by a focus on achievement of "milestones" structured under defined core competencies. Vascular surgery (VS) is perhaps the specialty that has undergone the most change. The introduction of endovascular procedures help to distinguish vascular surgeons from general surgeons who in the past had training in open vascular techniques. The approval of a primary certificate in VS in 2005 allowed introduction of an independent ("0+5" residency) training pathway after medical school. Simulation training is also now incorporated into most training programs and also offered at many hands-on courses provided at VS society meetings. The use of simulation, especially for new procedures, is an effective learning tool that introduces new procedures and can be used to assess technical competence.

Just as there have been changes in surgical education, the practice of medicine has also significantly evolved. VS graduates have to achieve clinical competency

with adequate case experience and surgical expertise. In addition, our graduates must also learn to navigate the financial and political challenges of entering a new practice. Cost-efficient value-based care is emphasized and competing specialties are expanding their services to provide vascular care. To have successful careers, it is imperative that our trainees successfully navigate these challenges as they enter the workforce. Although several vascular surgical societies and institutions put on "fellows" programs that focus on transition to practice, there is a lack of a standardized curriculum emphasizing "the practice of medicine" in our formal training programs. With the COVID-19 pandemic affecting all aspects of our lives in 2020, our graduating trainees will perhaps face even more pronounced challenges as they integrate into the workforce.

Transcarotid artery revascularization (TCAR) is increasingly used as the preferred treatment option for patients with carotid occlusive disease. More VS trainees are being exposed to TCAR early in their training as clinicians across the country are increasingly performing TCAR at their institutions. To better prepare VS graduates to adopt TCAR into their practice, Silk Road Medical has developed a specific training program for them. There is an official TCAR certification process that begins with attendance at the "Fellows TEST DRIVE" course in July. This program begins with a series of didactic lectures from national experts. This is followed by TCAR simulation training on procedural technique. There are also educational sessions to guide graduates as they enter clinical practice. These modules include how to navigate value analysis committees, supply chain management, reimbursement, network with referring physicians, as well as developing relationship with industry partners. The graduates are also partnered with a faculty mentor to help promote continued success after the course. The attendance of the first program in 2018 was capped at 50 graduates. In 2019, 80 graduates attended the program, accounting for almost half of total VS graduates in the United States that year. Although the COVID-19 pandemic and the need for social distancing will prohibit a live course in 2020, we have converted to a virtual format for the

didactic portion of the program. For those who may not have the required prerequisite clinical experience during their training, regional courses will be offered to allow for them to complete their certification process as soon as possible. Graduates will also be provided with clinical specialists to proctor their cases if deemed necessary.

Throughout their training, VS trainees are guided to become safe physicians and future leaders who provide excellent clinical care. They will become patient advocates in our ever changing and demanding health care delivery system. Upon graduation, program directors sign a "graduation letter" that certify VS trainees as competent and ready for

independent practice. To that end, we are proud to have signed many of these letters over the past many years for our successful graduates. However, we understand that although their "training" is over, our graduates require continued guidance and mentorship from the program directors, faculty members, and their partners to ensure life-long success. We are grateful that our partners in industry, such as Silk Road Medical, have placed an emphasis on helping VS graduates become successful practicing physicians.

## My Experience As a Recent Graduate



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I graduated from Baylor College of Medicine in Houston in 2018 as a "5+2" vascular surgery fellow. At that time, because TCAR was still in the validation and implementation phase across many centers in the United States, most cases of carotid artery occlusive disease requiring intervention at my training institution were managed by carotid endarterectomy (CEA) or transfemoral carotid artery stenting (TFCAS). My vascular surgery fellowship graduating case volume certainly reflected that experience (CEA, 41; TFCAS, 26; TCAR, 4). Despite limited experience with TCAR, I was comfortable with the key procedural steps of TCAR, such as neck cutdown for direct transcervical carotid access and carotid stent placement with my overall carotid experience. I attended the Fellows TEST DRIVE Program in July 2018. It helped me to develop and practice other essential aspects of performing TCAR,

such as direct carotid access using a hands-on angioscopy model and patient selection for good outcomes through a comprehensive didactic program administered by expert faculty. In addition, tips for building a TCAR practice, coding, and documentation were also provided.

After my graduation, my transition into practice in the "real world" was facilitated by joining one of the busiest TCAR centers in the United States. At our center, three vascular surgeons (including myself) have performed > 300 TCAR over the past 2 years, with excellent clinical results and no perioperative strokes. I am grateful for the support from Silk Road Medical in my practice to not only provide excellent clinical care, but also to develop other aspects of my career. Despite not having a traditional VS training program here, my partners and I are involved in proctoring practicing physicians who wish to learn the technique to expand their stroke prevention armamentarium. Our site also provides education to clinical specialists for Silk Road Medical during their training before they go on to support TCAR procedures across the country. In July 2019, I was invited back to the Fellows TEST DRIVE program as part of the faculty. I was grateful for the opportunity to help shape the next group of graduates and look forward to contributing to the continued success of future VS graduates.