The Continued Rise of EVAR

Zvonimir Krajcer, MD, discusses the growing popularity of this procedure and offers advice to those interested in adding it to their practice.

As an interventional cardiologist who performs endovascular aneurysm repair (EVAR), do you see more physicians from your specialty adopting this procedure in the near future?

Dr. Krajcer: I do see growing interest in EVAR among interventional cardiologists. Further adoption of this procedure requires close collaboration among interventional and surgical specialties within institutions, along with well-established training and expertise in standard percutaneous techniques and more sophisticated preclose percutaneous techniques.

What changes in technology and/or cardiology training facilitate this?

Dr. Krajcer: Technologically, reduced profile and simplified delivery in EVAR delivery systems will further facilitate a totally percutaneous approach. One marketed device (IntuiTrak, Endologix, Inc., Irvine, CA) already has a contralateral percutaneous indication with a simple deployment mechanism, so such innovations are already emerging.

Unfortunately, very few interventional cardiology training programs offer adequate exposure to advanced peripheral interventions such as abdominal and thoracic endovascular aortic repair (TEVAR). I think that those who organize interventional cardiology training programs should consider changing their curricula to add more emphasis on peripheral interventions and advanced techniques. We are unique at the Texas Heart Institute, because for over a decade, we have had an established peripheral vascular fellowship program that provides extensive exposure and training in EVAR, TEVAR, carotid artery stenting, and many other interventional procedures.

How easily adoptable is the percutaneous EVAR approach?

Dr. Krajcer: A totally percutaneous approach to EVAR requires suitable closure devices, appropriate endovascular delivery systems, careful patient selection, meticulous technique, and proper endovascular suite facilities with ready access to surgical services. After gaining more than 10 years' experience and performing more than 1,000 of these procedures, I can say with certainty that there is a learning curve. Recognizing this, the most important aspects in gaining proficiency in percutaneous EVAR are extensive knowledge of both the closure device and endovascular device mechanisms (including troubleshooting), technical expertise in identifying suitable femoral artery and patient anatomical challenges, and ample experience performing EVAR. I must also emphasize that not every closure device is suitable. Only those that have been tested specifically for this application should be considered. Additionally, it is very important to have extensive experience in bailout procedures, as well as the immediate availability of surgical services.

What are the graft and delivery system requirements? What other technologies are used?

Dr. Krajcer: Not all commercially available devices are specifically designed for or are suitable for percutaneous use. Although, as previously mentioned, there is one device that has a contralateral percutaneous indication, none of the devices in commercial use are approved for totally percutaneous use. The same is true for commercially available percutaneous closure devices in the United States. Suture-mediated closure devices that have been evaluated in numerous single-center published studies include the Prostar XL and Proglide devices (Abbott Vascular, Santa Clara, CA), which have

had excellent results in the experienced hands of both surgeons and interventionists. Note that the Prostar XL received CE Mark approval within the last year for percutaneous closure for large-bore sheaths up to 24 F based on the weight of the published information. In the United States, a controlled clinical trial is required in order to obtain such an approval. Endologix, Inc., and Abbott Vascular are initiating the first investigational device exemption, multicenter, randomized trial in the United States to specifically evaluate percutaneous EVAR among both surgeons and interventionists with appropriate institutional infrastructure and experience. As a participating site, we anticipate that the results of this trial will substantiate the single-center results. We know in our own historical experience that percutaneous EVAR with local anesthesia offers significant benefits to patients and payors when compared to surgical femoral artery access and repair with general anesthesia.

Are you concerned about any long-term durability loss in EVAR devices that can be delivered through such a low-profile system? What assurances are there that the next generation of devices will maintain or exceed the standards of the previous generations, given that they may not have the same amount of patient trial data required for approval?

Dr. Krajcer: The currently approved EVAR devices have been proven safe and effective for their labeled indications, with some implementing delivery system improvements that have shown to increase their ease of use. The devices that had suboptimal track records have been abandoned or have undergone major renovations. I agree that there is an inherent danger of compromising the durability of a device while trying to achieve too rapid of a reduction in device profile. I certainly hope that this will not happen again. Controlled clinical trial experience with lower-profile devices is necessary to determine their safety and durability in effectively repairing aneurysms.

What are some of the newer technologies you are currently using or studying in your practice?

Dr. Krajcer: One of the most challenging aspects of performing EVAR is dealing with difficult infrarenal neck anatomy. Short, angulated, or irregular infrarenal necks can compromise the seal of the device and contribute to endograft migration and type IA endoleak, which frequently has devastating consequences. We are currently working on, or testing in clinical trials, several devices that address this issue. I am very encouraged that we are striving to meet this challenge and are using endografts in many more patients who are currently not considered to be good candidates for EVAR.

How would you describe the role of live-case continuing medical education meetings in helping physicians stay current on the latest EVAR techniques and approaches?

Dr. Krajcer: I think this educational modality is very important and essential for physicians to gain adequate expertise for any kind of interventional procedure. Live-case meetings offer the benefit of real-world experience, as well as the interaction necessary to answer questions, share experiences, offer troubleshooting techniques, etc., for a more complete understanding.

In your opinion, what do these meetings provide that society-based meetings do not?

Dr. Krajcer: Didactic teaching in the form of lecture is frequently used at society-based meetings. It offers very limited knowledge on when and how to perform the procedure, what the essential steps are, and how to prevent and get out of trouble. On the other hand, live demonstration cases offer all these components of teaching, plus they add a certain aspect of suspense and uncertainty that cannot be experienced in a didactic lecture.

What advice would you offer interventional cardiologists who have no previous EVAR experience but would like to add this procedure to their practices?

Dr. Krajcer: First, these physicians must have expertise in closure device use for standard percutaneous procedures (small sheaths). They must also have an established multispecialty team (interventionists and surgeons) within the institution. They then must participate in meetings dedicated to peripheral interventions including EVAR and TEVAR, study and become well familiarized with these techniques, and participate in device-specific training courses with live demonstration cases. Initial cases should be proctored, and case selection should be monitored carefully during the learning phase until expertise is demonstrated in the preclose technique and in EVAR or TEVAR itself. ■

Zvonimir Krajcer, MD, is Program Director of Peripheral Vascular Fellowship at St. Luke's Episcopal Hospital and Texas Heart Institute in Houston, Texas. He has disclosed that he receives research funding from Endologix, Inc., W. L. Gore & Associates, and Medtronic, Inc., and is a paid consultant to Endologix, Inc., W. L. Gore & Associates, and Abbott Vascular. Dr. Krajcer may be reached at (713) 790-9401; zkrajcer@yahoo.com.