Benjamin W. Starnes, MD

Dr. Starnes discusses his military physician training and his closure protocol for EVAR patients.

What was unique about your vascular training at Walter Reed Army Medical Center? How did this experience shape your eventual practice at the University of Washington?

I am deeply proud of my military training. I believe that any training in a military environment is rather unique. There is a belief that military hospitals are the same as VA hospitals and, although there are some similarities between the systems, they are actually quite different. There are currently only six major US Army Medical Centers in the United States. These hospitals care not only for active duty soldiers but also their dependents to include spouses and children. Also cared for is a huge population of military retirees—in essence, patients of all ages are cared for in these hospitals, which offer comprehensive medical and surgical training.

On the morning of September 11, 2001, while at Walter Reed, I was dispatched to the scene of the Pentagon to treat casualties and perform triage. Over the course of my military career, I have had a total of three combat tours, one to Kosovo and two to Iraq, where I gained a lot of experience in managing war wounds and vascular injuries. When I decided to go to the University of Washington as Chief of the Division of Vascular Surgery, I felt that Harborview, a level 1 trauma center for a vast five-state region, was a good fit for me and would allow me to transfer some of the experience I had gained on the battlefield to a civilian setting. I am extremely pleased with my choice. I couldn't work at a better institution or with more professional colleagues.

What is your most memorable experience as a military physician?

Aside from 9/11, operating on a 2-hour-old newborn girl, who was born with a tracheoesophageal fistula in a combat zone, was unforgettable. Having been deployed for a second time to Operation Iraqi Freedom with my wife 6 months pregnant with our second daughter, this newborn tugged at my heartstrings. She would have likely died because there were no surgeons who had any experience with this sort of problem at this hospital in Kirkuk. Their solution was to send her to Baghdad, which would have taken her family 4 to 5 days—not an option in my mind. All of the years of training culminated with a simple thoracotomy and extrapleural repair. I am proud of the general surgery training I received to save that girl. She is now 7 years old.

What initially prompted your decision to routinely employ rapid right ventricular (RV) pacing for thoracic endovascular aneurysm repair (TEVAR) procedures?

We had a patient who was undergoing TEVAR for a ruptured aortic dissection who unfortunately experienced a retrograde dissection (confirmed with intravascular ultrasound) and died on the table. I gained a lot of respect for those incredibly fragile aortic catastrophes and began to look at ways to deploy grafts more accurately and with less movement of the device. Based on the experience of others, we tried rapid RV pacing on our next difficult patient, and I was amazed at the simplicity and preciseness of the graft deployment. Although it is not employed for every case, we use it when we have a concern for retrograde dissection or when millimeters make a difference.

How has rapid RV pacing changed your day-to-day approach to thoracic repair, as well as your results?

We use it for cases in which we are concerned about retrograde dissection, such as penetrating ulcers with intramural hematomas that extend retrograde into the transverse arch or with dissections as I described previously. We also use it when precise deployment is critical. We have not experienced another retrograde dissection since using this approach, and I have been happy with the precision of graft deployment in the difficult cases.

What types of information do you rely on when making practice-altering decisions on how to treat patients with thoracic dissections? If published clinical data differ from your own experiences, to what degree do they influence whether to treat a particular patient with open surgery versus an endovascular approach?

At the University of Washington, we see a high volume of these cases in conjunction with our cardiothoracic surgeons. Our routine practice is to divide these patients into complicated and uncomplicated dissections. We manage virtually all uncomplicated dissections with medical therapy to include anti-impulse therapy. For the complicated dissections (those with a malperfusion syndrome), we use a combination of techniques to include stent grafting the entry tear or performing fenestration to equalize the pressures between true and false lumens. We have had excellent results using this approach and rarely perform open surgery

(Continued on page 65)

(Continued from page 66)

for these terribly sick patients. The other patients that we treat are those who have acute dissections with contained rupture and chronic dissections with aneurysmal degeneration who are not good candidates for open surgical repair. I believe that we, as academic surgeons, need to look at the current literature on balance and compare it with our own experiences—the truth lies somewhere in between.

What is the greatest area in which there is still room for improvement in currently available TEVAR devices in the aneurysm setting?

I would like to see more conformable devices that are delivered through smaller delivery systems with the ability to preserve branch vessels. There are a few companies that have developed more conformable devices, and I am excited to see how they perform over time. In the trauma setting, an absorbable device would be ideal.

In type B dissections?

Aortic dissections are highly variable and extremely complex. I don't believe that there can be a standard procedure for all of these patients because they are all so immeasurably different. Dissections require the physician to be adept at thinking outside the box and solving the problem on the fly with a combination of techniques. I do strongly believe that complicated aortic dissections should be approached first with an entirely endovascular method. Intravascular ultrasound is absolutely mandatory. An appreciation for physiology is also important in planning the method of repair/stabilization.

What is your closure protocol when treating patients using EVAR? What patient characteristics do you look for before the procedure in order to plan closure?

We now approach nearly every single patient percutaneously. This includes patients with ruptured aneurysms, and I think this has given us a time advantage in this terribly ill patient population. It takes minutes to preclose. I use a single 10-F Prostar XL device (Abbott Vascular, Santa Clara, CA) to close arteriotomies up to 24 F. I generally do not use this approach in patients who have severe occlusive disease in the common femoral artery with an intraluminal diameter of < 3.3 mm (which is the diameter of the Prostar device). These patients are typically not EVAR candidates anyway due to iliac occlusive disease. The default is a groin cutdown, and I believe that it is at least worth a try in every patient. Morbidly obese patients stand to benefit the most from this approach, which should probably be avoided early in an interventionist's experience, because these patients can be the most difficult and their anatomy hides a retroperitoneal hemorrhage better than a thin patient. ■