Manish Mehta, MD

A vascular surgeon and interventional vascular specialist describes his group's multidisciplinary approach to treating ruptured AAAs, stent graft improvements worth making, and how to build PAD awareness.

Can you tell us about your center's multidisciplinary approach for treating ruptured abdominal aortic aneurysms (AAAs)? At the Vascular Institute for Health and Disease in Albany, we have a long tradition of standardizing the approach to treating vascular patients. In 2002, as our experience of endovascular aneurysm repair (EVAR) for rupture evolved, it was all too evident that there was more to treating patients who presented emergently with ruptured AAAs than the routine preparations needed for elective procedures. We formed a multidisciplinary team that included the vascular surgeons, the emergency room (ER) physicians, the anesthesiologists, the operating room (OR) staff, and the interventional radiology technician. We standardized not only our abilities to triage from the ER to the OR, but also our endovascular procedure for treating ruptured AAAs. We acquired an inventory of stent grafts, catheters, wires, etc., that would allow us to treat most ruptured AAAs and rehearsed the procedure with all members of the multidisciplinary team.

This approach allowed us to improve our abilities to diagnose patients in the ER and reduce the time to transfer to the OR and shorten the OR preparation time for aneurysm repair. This standardized approach also allowed us to treat hemodynamically unstable patients without a preoperative CT scan by endovascular means, as needed. Today, when treating patients with ruptured AAAs, our OR is set up for endovascular and open surgical repair; our primary approach to all patients presenting emergently with aneurysm rupture is endovascular, and when endovascular repair is not possible, we are prepared for open surgical repair without delay.

Is there a need for a randomized trial on EVAR for ruptured AAAs? Should hemodynamically unstable patients with ruptured AAAs undergo EVAR? Although I am all for randomized trials, to date, there have been many nonrandomized single-center experiences, similar to ours, indicating a significant mortality rate reduction of endovascular-repaired ruptured AAAs when compared to historical controls. For an ideal randomized study, one would have to enroll patients from centers that have well-established endovascular programs for treating ruptured AAAs, and I think there would be ethical concerns about obtaining informed consent and randomizing patients when endovascular repair of ruptured AAAs has indicated a significant survival advantage.

There would also be logistical difficulties in standardizing an endovascular approach and establishing inclusion and exclusion criteria, particularly when it comes to evaluating hemodynamically unstable patients. As you might imagine, the threshold for performing endovascular repair in hemodynamically unstable patients varies among surgeons/interventionists, and standardizing an approach among various centers and physicians could be difficult, to say the least. Often, patients with ruptured AAAs who are considered hemodynamically stable become unstable, and those patients considered unstable become stable. Trying to randomize these patients to EVAR versus open surgical repair would be nearly impossible.

We have analyzed our data of close to 80 patients with ruptured AAAs who were treated by an endovascular approach, and our findings suggest that EVAR is most certainly feasible in patients considered hemodynamically unstable even, at times, without a preprocedure CT scan. Although the overall mortality rate in these patients is approximately 30%, which is higher than in patients who are hemodynamically stable, it is still acceptable under these emergent circumstances and is generally less than or comparable to what we reported with open surgical repair.

What innovation or type of technology has made the biggest impact on your practice? As a group of 16 vascular surgeons involved in treating all aspects of vascular disease by medical, endovascular, and surgical means, I think that our ability to embrace and incorporate the endovascular technology as a whole has had a signifi-

(Continued on page 112)

(Continued from page 114)
cant impact on our practice. For instance, integrating endovascular technology in treating patients presenting emergently with ruptured abdominal and thoracic aortic aneurysms has clearly had a great impact on improving patient survival, particularly when compared to the traditional open surgical repair.

What improvements would you like to see in abdominal and thoracic aortic stent grafts? Currently available abdominal aortic stent grafts can probably treat 50% of all aortic aneurysms, and there is much work to be done before we can use endovascular technology for treating the majority of abdominal and thoracic aortic aneurysms. In the near future, I would like to see abdominal and thoracic aortic stent grafts that have improved delivery systems, can accommodate at least one (if not more) visceral and/or thoracic arch vessels, can conform to significant aortic neck angulations without endoleak or migration, and can use technology that is readily available and not necessarily too customized to individual patients such that it prohibits accessibility to physicians. Finally, I would like to see stent grafts that utilize technology that is easily transferable, so surgeons/interventionists can consistently duplicate the improved outcomes.

Which thoracic dissection patients do you think will benefit most from endovascular repair? As much as most of us were hoping that the currently available thoracic aortic stent grafts that have been designed for treating aneurysmal disease would also meet our needs for treating thoracic aortic dissections, we now know that this technology is not so readily transferable, and much work is needed in our understanding of the dynamic state of the true and false lumens before we can make an ideal device. Having said that, patients who present emergently with symptomatic thoracic aortic dissections with end-organ malperfusion who fail medical treatment or patients with thoracic dissections or ruptures might be the best candidates for endovascular repair because these patients would otherwise have significant mortality from conservative continued medical management or open surgical repair. There is no clear answer, and much work needs to be done.

Currently, we have some data suggesting management strategies for thoracic dissection patients; the INSTEAD trial was a European multicenter prospective randomized trial that compared the results of best medical therapy to endovascular repair in patients with subacute (>14 days) to chronic (<52 weeks) type B dissection and supported findings that best medical therapy is a better strategy for treating uncomplicated sub-acute and chronic type B dissections. Furthermore, the ADSORB study has recently been initiated and is evaluating endovascular repair versus best medical therapy for uncomplicated acute (<14 days) type B dissections, and we should have some answers in the near future.

> "... there is much work to be done before we can use endovascular technology for treating the majority of abdominal and thoracic aortic aneurysms."

What technical tricks, if any, have you adopted from other specialties and applied in your practice? My partners and I take great pride in offering comprehensive vascular care to our patients, and in our rapidly evolving specialty, taking care of vascular patients requires that we accept change and continuously evolve to learn not just new procedures but also to refine our old techniques. This clearly requires a thought process that welcomes a multispecialty approach, and I am always learning from my friends and colleagues who are vascular surgeons, cardiologists, interventional radiologists, and neurointerventionists, etc. We have continuously incorporated these technical tricks into our daily practice to see what works well in our hands. Most importantly, my partners and I challenge ourselves continuously so we can transform these technical tricks into well-established procedures that are safe and effective for our patients.

How should an interventionist prepare to meet the various challenges presented in complicated cases? As endovascular and surgical procedures take on complexity, I think we need to have bail-out options readily available to provide comprehensive and safe vascular care for our patients. The tools that the interventionists have at their disposal should focus on the possible complications of the primary procedures. For instance, this does not necessarily mean that everyone who performs carotid stenting should have the ability to perform intracranial rescue for thromboembolic stroke, but rather if the interventionist does not have the ability to deal with acute stroke, the bail-out tool available to him should be a readily available interventionist skilled in dealing with the problem. A detailed listing of these tools is probably beyond the scope of this discussion, and I would encourage interventionists to fully under-

See advertisement on back cover.

stand the possible complications of endovascular procedures and be ready to deal with these issues.

What is your advice to the next generation of vascular surgeons who are just coming out of their fellowships? I would encourage the young vascular surgeon to: (1) focus on establishing a practice that provides comprehensive vascular care and includes vascular surgical and endovascular procedures; (2) get involved with local, regional, and national societies that focus on treating vascular patients; (3) be inclusive and share information with other specialties; (4) continuously analyze your own data and change practice patterns as needed to improve patient care; and (5) regardless of private practice or academics, take the time to understand your own needs, your partners' needs, and most importantly, your family's needs. As early as my residency and through my vascular fellowship, my mentors, Drs. Larry Scher, Frank Veith, Takao Ohki, and many others, had instilled these fundamental values in me, and I believe these are vital to a successful professional career. Of course, working in Albany with 15 of the most talented vascular surgeons that are like family is a bonus.

In what ways has your practice worked to foster public awareness regarding peripheral arterial disease (PAD) in your community? Three years ago, we established a not-for-profit organization, The Center for Vascular Awareness (www.vaware.org), whose mission is to raise vascular awareness through research and education. Our focus has been to foster public awareness regarding risk factors, diagnosis, and treatment options for PAD, aneurysms, stroke, and other arterial occlusive and venous diseases that are prevalent and often underdiagnosed. Through The Center for Vascular Awareness, we provide outreach programs that focus on educating health care providers and patients to better understand vascular disease.

Recently, our national and regional vascular societies have committed a significant effort to foster public awareness regarding vascular disease by providing comprehensive information through Web sites and mailings to physicians who treat vascular patients. In this information era, in the coming years as baby boomers retire and reach ages that are affected by vascular disease, we will have to educate them directly so they can take ownership of their vascular care, modify risk factors, and get appropriate care as needed. I think vascular disease remains poorly understood, and we are just beginning to take the initial steps that I am hoping will someday lead to a heightened awareness in our communities. ■