BY MALACHI SHEAHAN III, MD
DEPUTY MEDICAL EDITOR,
VASCULAR SPECIALIST

APDVS requests new ACGME Review Committee for Vascular Surgery

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DEPUTY MEDICAL EDITOR,
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On June 22, 2018, Amy Reed, MD, the president of the Association of Program Directors in Vascular Surgery, submitted a proposal for the creation of a new Residency Review Committee for Vascular Surgery.

The proposal came with the overwhelming support of vascular surgery program directors and a written endorsement from R. Clement Darling III, MD, then president of the Society for Vascular Surgery.

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Crawford Critical Issues Forum: The national shortage of vascular surgeons

BY MARK S. LESNEY
MEDGE NEWS

This year’s E. Stanley Crawford Critical Issues Forum addressed the current status of the vascular surgery workforce, its existing geographic distribution, the potential for a worsening shortage, and proposed solutions to ensure future vascular care delivery.

As is tradition, the forum was organized and moderated by the SVS president-elect, this year Michel S. Makaroun, MD, codirector of the UPMC Heart and Vascular Institute in Pittsburgh. The session began with an overview from Dr. Makaroun on the critical nature of the growing problem.

He described how the current shortage of vascular surgeons is projected to worsen for two main reasons: First, newly trained vascular surgeons are not entering the workforce in adequate numbers to meet the increased demand presented by the nation’s aging population, even with the improvements projected from the new 0-5 training program; second, there is a large...
Endofill and the “Last Editorial”

BY RUSSELL H. SAMSON, MD
MEDICAL EDITOR, VASCULAR SPECIALIST

This marks my last editorial as medical editor of Vascular Specialist. It has been more than a privilege to have been offered this position. After all, how lucky am I to be provided with an opportunity to rant about things that annoy me or laugh in print at some of the absurdities of our professional life.

Before I put down my pen, or should I more correctly say close my word processor, I would like to add an epithet that I have yet to coin publicly. I am suggesting that we lay to rest the term “Endoleak” and replace it with “Endoffill.”

At the outset, I must commend doctors White, Yu, and May for recognizing and publicizing this important potential complication of aortic endografts (White GH, Yu W, May J, J Endovasc Surg. 1996;3:124-5). However, the term “Endoleak” that they used to describe the continuation of free-flowing blood within the aneurysm sac has created confusion amongst nonvascular surgeons and the lay public. Often such misunderstanding has resulted in deleterious consequences. I’m sure many vascular surgeons have been summoned to the emergency room after an emergency physician incorrectly interpreted a radiologist’s report of an Endoleak as a life-threatening rupture. Others may have had to explain to a referring physician that an Endoleak does not imply the vascular surgeon had performed an inadequate procedure. Further, patients have absolutely no concept of the meaning of this term and are often frightened when they learn they have an Endoleak. So prior to consenting them for an endograft, I always bring out a plastic model of an aneurysm with an endograft in place and go through a time-consuming explanation. Seldom do they remember this account. When I see patients back who have an Endoleak, I once again find myself placating terrified individuals who think they are about to die.

So that is why we should replace the alarming “Endoleak” with the less disturbing and more descriptive “Endoffill.” After all, there is no “leak” but rather a “filling” of the sac with blood. Certainly, a Type I “Endoffill” is not life threatening, but I doubt the unintentional would consider it an immediate problem. “Endoffill” may still take some explaining, but it is less likely to cause patient anxiety or an overzealous panic in a referring physician.

Let’s face it. Even the term “leak” has led to many errors in the treatment of patients with an abdominal aortic aneurysm. For example, it is not unusual that an emergency room physician, hospitalist, or internist will trip a “leaking” aneurysm as nonurgent because it has not “ruptured.” I think we should ban “leaking” and “leak” from vascular surgeons and radiologists should describe exactly what is happening when a limited amount of blood escapes the wall of an aneurysm by using the term “contained rupture.” I’m sure that will get the nonvascular surgeon’s attention!

I’m hopeful that you will also remember some of my other epithets and aphorisms from columns. Such as “Vascular surgeons Operate, Medicate and Dilate,” that TLR (Target Lesion Revascularization) should really be “The Least Relevant.” That a nervous surgeon will not be proficient so “The most important heart in the Operating room is the surgeon’s.” That vascular surgeons are all “Knights of the rectangular table,” and that rapacious doctors are committing “White Coat Crime.” That atheroembolism to the buttocks should be called “Trash Can.” That we should always ask for long-term outcomes before accepting new technologies otherwise, we would be encouraging “Premature congratulation.” That Societies that refuse to rein in their members by refusing to use the word “inappropriate” are being “Anti-semantic.” Further, that shared decision making is essential but that “Insecurity is the price patients must pay for sharing in the decision-making process.” And, of course, my request that we all join the SOS, the “Save Our Saphenous” society.

I am also hopeful that, with time, my exhortations will aid Vascular Surgery in getting the recognition that it deserves. I have suggested many ways we can expedite this goal including possibly changing the name of the Society to The American College of Vascular Surgery and offering members the opportunity to refer themselves as Fellows of that College. I have encouraged all who are trying to achieve a separate Residency Review Committee, and I fully support an independent American Board of Vascular Surgery.

Editor continued on page 4
Surgeon shortage

The proposal will be reviewed by the ACGME Board of Directors at their September 2018 meeting. Dr. Reed stated, “Recognition of vascular surgery training programs through an independent Vascular RRC will improve the clinical care and safety of patients with vascular disease by holding programs to established standards of care and quality initiatives in vascular surgery. “Program directors feel strongly that vascular training programs should be rigorously reviewed by a committee of vascular surgeons rather than other surgical subspecialists as currently exists on the surgery RRC. “Only vascular surgeons have experience with all phases of vascular care – medical, percutaneous and surgical options – and are therefore in the best position to judge how the next generation of vascular surgeons should be trained.”

Review Committee

ACGME from page 1

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Rate this survey to provide feedback on the quality of the provided text. 1 to 5 stars. 5 stars = excellent, 1 star = poor. 5

Panel members discuss the challenges in the vascular surgery workforce and possible solutions during the E. Stanley Crawford Critical Issues Forum. From left: Jeremy Robinson, Mark Friedberg, MD; Anton Sidawy, MD; and Gerald Goldstein, MD.

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MEDICOLEGAL ISSUES

Liability with nurse practitioners and physician assistants

BY S.Y. TAN, MD, JD

Question: A nurse practitioner evaluated an elderly patient who arrived in the hospital clinic with a 3-day history of cough, tactile fever, myalgia, and malaise. Several members of the patient’s family have the “flu.” His temp was 99.8 degrees, and the chest x-ray was negative. The NP diagnosed a viral upper respiratory infection and discharged the patient without antibiotics. The supervising physician verbally agreed with the NP’s diagnosis and treatment, but did not personally examine the patient. A week later, the patient was hospitalized for pneumonia and sustained additional complications of empyema, sepsis, and respiratory failure. The NP is an employee of the hospital, whereas the physician is an independent contractor.

Which of the following is incorrect?
A. All three parties – NP, physician, and hospital – will all be named as defendants under various theories of direct and indirect liability.
B. NPs are only licensed to work under the supervision of a physician, and they do not have prescriptive authority.
C. The hospital is vicariously liable under “respondeat superior,” as the NP is an employee.
D. Under state law, the physician will likely share the NP’s liability, even if the physician had no contact with the patient.
E. Medicare services rendered by an NP cannot be billed under a physician’s National Provider Identifier (NPI) unless certain specific requirements are met.

Answer: B. Nurse practitioners and physician assistants (PAs) have historically worked under the direct supervision of a physician. NPs have graduate nursing degrees, and they are now licensed for independent practice in a number of states, including the authority to write prescriptions. Some form of physician “collaboration,” such as chart reviews, still applies, together with certain restrictions, e.g., having clearly delineated protocols and designated triggers for a referral. PAs, who have less training than NPs, do not typically have the same degree of independence. They are individually licensed to work under a specific physician, with a limited scope of practice under direct supervision.

Liability can take many forms when physicians work with NPs and PAs. Negligent supervision is a favorite plaintiff allegation, whereas the defense predictably denies physician negligence in the absence of an established physician-patient relationship. In Quiré v. Zuckerman, an NP treated a patient in the emergency department for an upper extremity complaint, which was misdiagnosed as a tennis elbow. In fact, the patient had a compartment syndrome with evident swelling and ended with an amputation. The NP testified that she had discussed the case with the attending physician, and the physician had signed the plaintiff’s medical chart as well as a prescription for a painkiller. However, he did not personally speak to or examine the patient.

The relevant New York statute governing NP practice provides that collaborative medical services be rendered in accordance with a written practice agreement and protocols. Because there was no written protocol by the hospital, the ultimate responsibility for the diagnosis and treatment was held to rest with the physician. The court opined that the practice of a registered nurse practitioner is always in collaboration with a qualified licensed physician, and thus, litigation frequently revolves around the question as to whether there exists an employer-employee relationship. The chief test is evidence of degree and extent of control over the worker in matters such as work schedule, duties, and salary. Some jurisdictions have used the principal-agent construct in the absence of an employment contract to justify a finding of vicarious liability.

Thus, litigation frequently revolves around the question as to whether there exists an employer-employee relationship. The chief test is evidence of degree and extent of control over the worker in matters such as work schedule, duties, and salary. Some jurisdictions have used the principal-agent construct in the absence of an employment contract to justify a finding of vicarious liability.

Therefore, the principles that apply here are the same principles that would be applied if the NP had been an employee of the hospital. The hospital is vicariously liable for the NP’s actions, and the NP is directly liable for his or her own actions. The supervising physician is generally not liable unless he or she had actual knowledge of the patient’s condition and failed to take corrective action.

In summary, the hospital is vicariously liable for the NP’s actions, and the NP is directly liable for his or her own actions. The supervising physician is generally not liable unless he or she had actual knowledge of the patient’s condition and failed to take corrective action.
Dealing with liability

Dr. Tan addresses several important legal concepts in his article entitled “Liability with nurse practitioners and physician assistants.” The first is that of the physician-patient relationship. If an attorney is to prevail in an action for medical malpractice, he/she must satisfy four basic requirements: The plaintiff’s attorney must establish the standard of care with which the physician defendant must comply. The attorney must then show that this standard was breached. The third requirement is that the plaintiff must show that the patient suffered damages. Finally, the plaintiff’s attorney must show that the breach of the standard of care was the proximate cause of the damages that the patient incurred. If any one of these four components is absent, as a matter of law, the suit must fail. As pointed out by Dr. Tan, direct patient contact by the physician is not required to establish a physician-patient relationship. As in this case, a phone call is sufficient. However, it should be emphasized that, as a potential consultant, simply discussing a case with a colleague does not necessarily establish a physician-patient relationship. If the potential consultant is not on call, and has no duty to see the patient, the discussion of the case is most often looked upon as a “sidewalk consult.” These types of consultations do not result in a physician-patient relationship and, therefore, do not impart liability upon the consultant.

It is important to remember that the plaintiff’s attorney will attempt to focus upon a defendant with “deep pockets.” The term “deep pockets” simply refers to a defendant with the potential to provide substantial payment to the plaintiff. Therefore, plaintiff’s attorneys will commonly attempt to include physicians and hospitals in any claim for medical malpractice filed against ancillary providers. Plaintiff’s attorneys, therefore, are particularly interested in establishing liability of nurses, physician assistants, and physicians who are employed by the hospital. As noted in Dr. Tan’s article, whereas physician assistants and nurse practitioners may not be individually at risk for liability, they are targeted as a means of establishing vicarious liability. Therefore, if a physician employs physician assistants and nurse practitioners, it is best if those employees are covered by separate malpractice insurance policies.

Another important legal concept to consider is that of apparent authority. If a physician assistant or a nurse practitioner is an employee of the hospital, but it appears to the patient that the physician extender is working directly for the patient’s physician, the patient’s physician may be deemed to have liability under the legal theory of apparent authority.

It is, therefore, prudent for physicians to clearly discuss with the patient which members of the treatment team are employed by the physician, and which are not employed by the physician.

Lastly, as Dr. Tan correctly pointed out, it is imperative that the physician avoid violating the Federal False Claims Act. To be deemed to have violated the Federal False Claims Act, the government must establish that the defendant:

1. Made or presented a false, fictitious, or fraudulent claim to a department of the United States.
2. Knew such claim was false, fictitious, or fraudulent, and
3. Did so with the specific intent to violate the law or with a consciousness that what he was doing was wrong.

While it is clear from the case law that specific intent to defraud is not required for conviction, it remains controversial as to whether willfulness is required for conviction. As in most legal controversies, it is best to avoid the issue completely and refrain from submitting any claims that could conceivably be viewed as violating the false claims act.

The use of physician extenders has both helped to decrease the burden of medical care on physicians, while at the same time providing care for patients who may not have access to any type of physician care.

Unfortunately, for physicians, this assistance in the care of patients is associated with an increase in medicolegal liability. A thorough knowledge of both state and federal regulations governing the use of physician extenders, and the realization that physicians may be held liable for the actions of these extenders should hopefully decrease the risk to the supervising physician.
SVS Lifetime Achievement Award Winner:
Dr. Gregorio Sicard, a ‘Surgeon’s Surgeon’

Back at the dawn of the endovascular revolution, many other surgical specialties were vying to dominate minimally invasive endovascular procedures. Vascular surgery, the standard bearer of open vascular surgery, could have gone the way of buggy whips.

But this year’s Lifetime Achievement Awardee, Dr. Gregorio Sicard, was one of a dedicated group of vascular surgeon leaders who kept that from happening.

“I did not want to see vascular surgery be born and die within my lifetime,” said Dr. Sicard, who was honored with the 2018 Lifetime Achievement Award at the 2018 Vascular Annual Meeting.

In the early 1990s, the Food and Drug Administration and the Centers for Medicare and Medicaid Services were seeing a lot of technological advances and were being lobbied by many powerful stakeholders. Dr. Sicard, who chaired the SVS Outcomes Committee after his term as SVS president, spent many long hours in Maryland along with other members of the committee, explaining to federal agencies the importance of evidence-based, patient-centered decision-making.

“We were able to gain the trust of the FDA and CMS and to have a voice at the table,” Dr. Sicard recalled. “The committee pointed out the importance of patient safety and expected outcomes which led to these agencies trusting us. We weren’t saying this field only belongs to us. Radiology and cardiology could be a part of it, but they couldn’t take it over.”

Part of the reason their efforts were successful, he believes, is because the Society for Vascular Surgery and the American Association for Vascular Surgery had gone through a difficult but necessary merger just before his term as SVS president.

“You never know, but I doubt that this same outcome would have occurred,” he said, “if we didn’t have one voice, one society, one very coordinated effort, strategically managed by leadership. We survived an existential challenge, and since then the growth of the society has been astronomical.”

His efforts to keep vascular surgery at the political table were just one of the reasons for his award, the highest honor bestowed by the SVS each year.

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“With this award, Dr. Sicard joins the list of luminaries whom we call ‘the giants of vascular surgery,’” explained Dr. R. Clement Darling III, now past-president of the SVS. “He has achieved so much it’s hard to know where to start. As president of the SVS in 2004-2005, he was instrumental in smoothing the merger of two competing vascular societies. He has mentored 50 fellows, published hundreds of articles and book chapters, and was instrumental in ensuring that the Centers for Medicare and Medicaid Services didn’t lose sight of the important role that vascular surgeons play in endovascular procedures.”

The son of a surgeon, Dr. Sicard grew up in rural Puerto Rico, and earned his medical degree at the University of Puerto Rico. Though he now is officially retired, Dr. Sicard, 73, still reports regularly to his Washington University office to attend vascular conferences and rounds and has been passionate about training the next generation of surgeons.

“I always took that very seriously,” Dr. Sicard said. “If you live long enough, you have to train the next generation, it’s your duty.” Dr. Sicard was instrumental in forming the first fellowship program at Washington University in the 1980s.

He is particularly proud of his mentees. “A lot of them have become heads of their own programs, both in the United States and internationally, from countries like Spain, Chile and Colombia. One of my proudest achievements is that I had about 150 residents from Spanish-speaking countries who spent anywhere from a month to two years in our program.”

Vascular surgeons worldwide have traveled to Barnes-Jewish Hospital and Washington University over the decades to learn from him because of his skills in surgery and patient care. In 2011, a Distinguished Professorship was named for him at Washington University in St. Louis.

Dr. Anton Sidawy, one of the surgeons who nominated Dr. Sicard, said, “Greg is what one may call a quadruple-hitter. He excels in all areas of academic surgery; clinical care, teaching, scholarship and administration. He is a superb, innovative, and skilled surgeon. The Wash. U. Vascular Surgery group is one of the very active, most comprehensive and versatile academic groups in the country; Greg put that group together over 30 years.

“He is a surgeon’s surgeon,” Dr. Sidawy added. “I have met fellows that trained under him; every single one of them raved about his operative skills.”

Saving the Community’s Health, One Project at a Time

A handful of SVS members will soon begin implementing projects to improve community health in three areas throughout the United States.

The plans are the result of the new SVS Foundation Community Awareness and Prevention Project Grants. The first recipients were announced during the SVS Vascular Annual Meeting in June.

The grants provide up to $10,000 to three community-based vascular surgeons, each of whom proposed an innovative, community-based initiative. The awards are part of the Foundation’s expanded mission to include projects that impact vascular health, awareness and prevention.

This year’s projects aim to:

- Reduce emergency department visits and hospitalizations for diabetic foot infections, in part by providing comprehensive diabetic preventive care for those at risk for such infections. Leaders are Marcus Semel, MD, MPH; and Edward Marcaccio, MD, both of South Shore Hospital and Brigham and Women’s Hospital near Boston.
- Champion public awareness of vascular disease through empowering high school students in upstate New York to understand the impact of vascular risk factors and disease and help diagnose diseases in family members. This project also hopes to increase awareness of vascular surgeons and their expertise in treating vascular disease. SVS project leader is Manish Mehta, MD, MPH, of Queensbury, N.Y.
- Expand a long-established Wellness Check held across the Excela Health service area in Pennsylvania, adding a Vascular Health Awareness and Screening event. SVS project leader is Elizabeth L. Detschel, MD, director of vascular surgery for Excela Health, Westmoreland County and parts of Fayette and Indiana counties in Pennsylvania.

Vascular Specialist will describe the projects in greater detail next month. ■
Members Asked to Complete New Survey on Burnout

Leaders of the SVS Wellness Task Force urge all SVS members to complete a new survey on physician burnout, this one aimed at physical debility.

The burnout survey is in an email from the Mayo Clinic, which is assisting with distribution and tabulation. It is the second survey the task force has distributed, all aimed at ascertaining burnout and wellness statistics from SVS members.

“We need evidence,” said Malachi Sheahan, MD, who is vice chair of the group with Dawn Coleman, MD, as chair. “We can’t make change without evidence.”

He issued a “Societal Call to Action” to SVS members at the end of a session at the Vascular Annual Meeting addressing burnout issues.

Dr. Sheahan disclosed statistics from the first task force survey, completed by 860 members. Collectively, members worked an average 73.5 hours a week, with five hours completing electronic medical records and 5.5 hours of administrative/scholarly activities added to 63 hours in the office.

“Eighty-nine percent feel burned out on occasion, everyone thinks they’re working too hard and when there are conflicts between work and personal life, they’re resolved in favor of the personal side only 8 percent of the time,” he said of the recently released data.

He believes EMR will be the No. 1 conflict of vascular surgeons, with surgeons reporting they spend one hour charting for every one hour of patient time. “It’s just not working out,” he said of the records system.

Twenty percent of physician respondents said they had been sued for malpractice within the past two years, 37 percent reported being depressed within the month prior to completing the survey and the 8 percent who reported suicide ideation within the past year is double the national rate, Dr. Sheahan said.

The second survey, launched in mid-June, focuses on physical debility as a result of the stress on the body vascular surgeons face and should take fewer than 10 minutes to complete. It is expected to close in late summer.

“Look for the Mayo Clinic survey, and please take it,” he said. He added that there are initiatives going forward that aim to change the environment and change the culture. These include the SVS task force and the American Board of Surgery’s new lifelong learning initiative. “This is a call to action,” Dr. Sheahan said. “The main thing I want to say is that this is changeable. I don’t want you to think or say that we can’t do it. We can. We just need evidence.”

JVS: Statin Therapy after AAA Repair

Statin therapy can boost survival rates in patients undergoing repair of abdominal aortic aneurysms, according to an article in the August issue of Journal of Vascular Surgery. Researchers studied patients without documented statin intolerance undergoing AAA repair in the Vascular Quality Initiative between 2003 and 2017. The researchers concluded, “Preoperative statin therapy is associated with higher long-term survival but not perioperative mortality and morbidity in patients undergoing AAA repair, and initiating statin therapy in previously statin-naive patients is associated with markedly higher survival.”

AAA patients who are statin-tolerant should receive statin therapy and those patients not taking a statin at the time of surgery should be considered for such therapy before discharge. The article is open source through Sept. 30. Visit vsweb.org/JVS-Statins.

JVS Publications to Debut 4th Research Journal


The publication will focus on multi-disciplinary basic and translational vascular research studies. The two doctors’ goal “is that the publication becomes the pre-eminent research journal for our Society; and that it will complement the other three JVS journals,” said Alan Dardik, MD, PhD, who will serve as editor. Drs. Gloviczki and Lawrence will serve as editor-in-chief and senior editor, respectively, as they do for the existing three publications.

Both JVS leadership and the staff of Elsevier, which publishes the JVS periodicals, assessed the need for such a journal, Dr. Dardik said. “It will answer the need for high-quality scientific studies that address the fundamental questions of patients with vascular disease.”

“We’re very excited about it,” he said. “We anticipate that we will draw both from within our community of vascular surgeon-scientists as well as from the great community of scientists who study vascular biology. We also expect this new journal to be the premier and preferred publication conduit for the SVS Vascular Research Initiatives Conference.”

Dr. Dardik encouraged anyone, including the Society’s younger surgeon-scientists, interested in participating in the journal, to contact him.
FOCUS ON RESEARCH: VRIC a Big Success

Research focusing on potential new therapies, along with a discussion of entrepreneurship and the second annual Alexander W. Clowes Distinguished Lecture highlighted the recent SVS Vascular Research Initiatives Conference.

Presentations emphasized some of the latest research in vascular biology, offering a glimpse into the future. “We hope that the research presented at this meeting will evolve over the next 10 to 20 years into therapies for vascular disease,” said Edith Tzeng, MD, chair of the SVS Research and Education Committee, which oversees the annual conference. It was held in mid-May in San Francisco.

Of course, it’s not typically clear which peek into the future has staying power. Dr. Tzeng remembered that years ago she dismissed drug-coated balloons – now common – when the idea was presented as research. “I thought, ‘Well, that will never work!’”

The one-day conference, held the day before the American Heart Association’s Atherosclerosis, Thrombosis and Vascular Biology meeting, typically draws early- to mid-career surgeon-scientists. They presented a mix of basic and translational vascular research, generally with an emphasis on clinical applications.

Abstract sessions covered stem cells and regeneration, peripheral arterial disease, vascular endothelium and thrombosis, and vascular inflammation and injury.

VRIC also included two special presentations: the annual Alexander W. Clowes Distinguished Lecture and the Translational Panel.

This was just the second year for the Alexander W. Clowes Distinguished Lecture, named for the late Dr. Clowes, a frequent VRIC presenter, outstanding surgeon-scientist and mentor to many.

Congressional representatives and advocates of vascular disease, vascular endothelium and injury.

This year’s Translational Panel, “The Road to Entrepreneurship,” talked less about research and more about taking that research and bringing it to market. It addressed not only how to know if a researcher has something that he or she should develop and patent but also how to go about that process.

“Frequently researchers don’t think of their work as intellectual property,” she said. “But a great deal of what is not considered ‘common knowledge’ can – and should – be protected. If a scientist is working on genetics, for example, and identifies something that causes disease, that information can be used to develop treatments.

“Researchers have to think, ‘Should this information be protected?’ and then need to work on interesting a company in the research and potential therapies.’”

To view a slideshow of VRIC photos, visit vsweb.org/VRIC18Pix. To learn more about the lecture and to contribute to its funding, visit vsweb.org/ClowesLecture.
avenues have you found helpful in developing the “leading by example” behaviors (e.g. leadership courses/coaches)?
I think for me a difficult skill to acquire and practice is the “cheerleading” role of being a leader. Motivating others with an enthusiastic and positive attitude can, at times, be hard, as my overall nature is to be pretty realistic about most everything and at times pessimistic. The current reality of the exponential increase in documentation is not good in any way you look at it, but you still have to motivate people to take on tasks that may not be very pleasant or appealing. I think leading from the front as best as you can does inspire your team. I believe leadership courses are worthwhile. At the University of Michigan, the surgery department has an excellent course over a year, committing to one Friday per month, where various aspects of leadership, emotional intelligence, coaching and financial analysis are taught. This has been very helpful to consider totally different perspectives and learn additional skills.

Q: You have held numerous leadership roles including chief of surgery at the Ann Arbor VA, co-director of the BCBSM Vascular Intervention Collaboration and the president of the American Venous Forum. These roles have been unique in their cross-disciplinary nature. What leadership advice to “model the way” would you have for vascular surgeons seeking similar leadership roles?
As one goes through their academic career, I think it is important to say “yes” more often than to say “no,” but keeping that in balance to try to prevent burnout can be a challenge. Each of the leadership roles described above are very different. Nonetheless, I would do them all again, and I am currently still involved with one of these leadership positions. The chief of surgery at the VA was an opportunity that unexpectedly arose about seven years into my career. I wanted to learn what leadership would be like in the VA system, knowing in part what it would entail. It was actually a rewarding job because the local VA team of surgeons, nurses and support staff was excellent. Dealing with central office unfunded mandates, bureaucratic rules and dealing with VISION level directives was definitely challenging but a learning experience. In terms of the Blue Cross Blue Shield Vascular Surgery QI, I am still co-directing this collaborative. This has been a great experience because we interfaced with our state vascular medical society that merged those participating in both the BMC2 and the Vascular Quality Initiative (VQI). This ultimately was a win-win, but took a lot of work from everyone to organize and focus these meetings and the data distribution and quality projects. Lastly, being president of the American Venous Forum (AVF) was also a good learning experience with society leadership particularly in terms of getting a group of very strong personalities to agree on issues and move various initiatives forward. Being the president of an academic surgical society means that you are basically responsible for most everything good and bad that happens. You again have to motivate team members to get things done and make sure all the details are paid attention to. I was lucky we had an excellent executive council and administrative staff during my time.

Q: A unique attribute for you is the path of leadership balancing a clinical role and research lab. How is leading by example different for you as a scientist running an actively funded basic and translational laboratory? What are one to two-practical pieces of advice you can provide aspiring surgeon-scientists to save them time and discomfort?
I think leading a research lab requires a different set of skills than the clinical teams. It’s a smaller group with a wider range of backgrounds of experience and certain it is not the MDs. To keep this team functioning well requires truly making quality time for the lab (during normal hours), and can be a challenge when emergencies and unexpected clinical problems arise. The leadership role here is keeping the focus of the experiments that will hopefully produce results that are valid and understandable, as well as providing troubleshooting. I think really one of the biggest challenges is to prevent the clinical enterprise from eroding into research lab time, and it’s just so important to keep those blocks of time protected. It means sometimes doing clinical cases on other days that you normally would not, including weekends. Taking time to celebrate the lab with a night out is also appreciated and fun.

Q: How can SVS best support development of surgeon-scientists?
I think the Society for Vascular Surgery (SVS) and the SVS Foundation have done a great job in engaging, promoting and funding surgeon-scientists. Certainly the SVS co-sponsored Mentored Clinical Scientist Award has really allowed vascular surgeons to compete at a very high level, as many of these K08 awardees have gone on to R funding that has continued. The Vascular Research Initiatives Conference (VRIC) meeting has really been a good addition by combining it with the Arteriosclerosis, Thrombosis and Vascular Biology meeting (now called Vascular Discovery Meeting). This collaboration has promoted networking and allows interactions with vascular biologists and other non-surgeons who are important to network with for success. I think one thing the SVS should continue to do is to profile basic and translational research at the Vascular Annual meeting (VAM) each year to prevent it from being lost from the majority of the SVS membership who are not surgeon-scientists.

Q: As you think about the future of vascular surgery and vascular disease in the population, how can vascular surgeons and surgeon-scientists best position themselves to lead effectively?
We really need to “at the table” in nonsurgical organizations. This really is important for us, because vascular surgery and general surgery are now quite separate, including different training paradigms. I think it is important to be involved with societies such as the American Heart Association, the American Venous Forum and the International Society for Thrombosis and Hemostasis, as well as other sub meetings from the AHA that might be relevant, such as epidemiologic and health services meetings. This is really where many of our grant reviewers and manuscript peer reviewers come from, as compared with surgical societies. One major area where surgeon scientists can grow and lead is in clinical trials (not just device trials), but also medical and surgical therapies. This is an important area for young people to jump into and get training and lead us forward.

DR. HENKE
DR. ARYA
NEWS FROM SVS

Views From the Vascular Annual Meeting

Here are just a sample of the photos from VAM18. See them all, and find your own photo at vsweb.org/VAM18pics.

Presidential Citation
This year’s recipients of the SVS Presidential Citation Award are, from left, top row: Drs. Larry W. Kraiss, Michael C. Dalsing, Alan Dardik, Frank B. Pomposelli and Robert M. Zwolak; bottom row: Drs. Brad L. Johnson, Amy Reed, Kellie R. Brown and Edith Tzeng.

Award Winners
Pictured at left: EJ Wylie Traveling Fellowship awardee Omid Jazaeri, MD, and Mentored Clinical Scientist Research Career Development awardee Bao-Ngoc Nguyen, MD.

Distinguished Fellows
The 2018 SVS Distinguished Fellows honored at VAM were, from left: Drs. William Patrick Robinson, Ahmed M. Abou-Zamzam, Jr., Christopher J. Abularrage, John A. Curci, Mohammad H. Eslami, Ulka Sachdev, Karen Woo and Matthew T. Menard.

Leadership Grants
2018 SVS Women’s Leadership Training Grant awardees: Dawn Coleman, MD, (left) and Bao-Ngoc Nguyen, MD.

SAVE THE DATE!

June 12–15, 2019
National Harbor, Md.
(Outside Washington, D.C.)

2019 VASCULAR ANNUAL MEETING
WASHINGTON, D.C.

Scientific Sessions: June 13–15
Exhibits: June 13–14
Diabetic foot ulcer healing is predictable by WIfI stage scores

BY TERRY L. KAMPS
MDEDGE NEWS
FROM THE JOURNAL OF VASCULAR SURGERY

Diabetic foot ulcer healing is predictable with the Wound, Ischemia, and foot Infection (WIfI) classification system when used alone or with multivariable risk-adjustment analysis, according to a study published in the Journal of Vascular Surgery.

The research was conducted by Caitlin W. Hicks, MD, of Johns Hopkins University, Baltimore, and her colleagues as a retrospective study using prospective database information from enrolled type 1 and type 2 medication-dependent diabetic patients presenting to the multidisciplinary diabetic limb preservation service at Johns Hopkins Hospital from June 2012 to July 2017. The cohort of 310 patients with diabetic foot ulcer (DFU) in the study had a median age of 59 years and was composed of 60.3% men, with 60.0% of patients being black.

All patients were assessed for baseline characteristics and DFUs at entry into their treatment program and at each follow-up visit by an integrative primary team consisting of a vascular surgeon, surgical podiatrist, endocrinologist, physician assistant, wound care nurse, and prosthetist.

Infectious disease, plastic surgery, and orthopedic foot and ankle consultations were provided as needed. Individuals with evidence of peripheral artery disease (PAD) were provided lower extremity revascularization as determined to be appropriate by the primary vascular surgeon.

The 709 presented DFUs were assessed by x-ray imaging and follow-up MRI as needed. Wounds were debrided to clean margins and antibiotic treatments were administered as appropriate. At each visit the primary team assessed and assigned each wound a WIfI classified stage of 1-4 according to the calculation based on previously accepted Society of Vascular Surgery definitions, with PAD considered separately in final multivariable model analysis.

The association between WIfI stage and wound characteristics and healing was tested by univariable analysis. Multivariable Cox proportional hazards models that included sociodemographic, comorbidity, and wound characteristics were subsequently created to test WIfI stage as an independent predictor for wound healing after adjusting for those variables. Differences between models were related to wound location.

Most of the treated wounds occurred on toes, with the least common wound location being the leg/ankle. Of the 709 treated wounds, 32.4% (n = 230) were WIfI stage 1, 19.9% (n = 141) were stage 2, 25.2% (n = 179) were stage 3, and 22.4% (n = 329) were stage 4.

Differences between the stages included larger increases in mean wound area size, wound depth, and mean time from wound onset to initial assessment as WIfI stages increased from 1 to 4.

Healed wounds were defined as “maintained complete epithelialization with the restoration of sustained functional and anatomic continuity for 6 weeks after complete healing.”

The researchers found that wound healing time significantly increased with increasing WIfI stage, with a mean wound healing time of 96.9 days for WIfI stage 1 wounds, increasing to 195.1 days for WIfI stage 4 wounds (P < .001). The authors found a likelihood of 94.1% for stage 1 wounds to be healed at 1 year, decreasing to a low of 67.4% for stage 4 wounds (P < .001).

In univariable and risk-adjusting multivariable analysis, WIfI stage had an independent negative association with wound healing. With inclusion of risk adjustment, the probability of wound healing at 1 year was significantly lowered for stage 4 wounds, compared with stage 1 wounds (hazard ratio, 0.44). The three most prominent independently associated factors associated with poorer wound healing results include concomitant PAD (HR, 0.73), increasing wound area (HR, 0.99 per 1 cm² area increase), and longer time from wound onset to initial assessment (HR, 0.97 per month). The strongest predictors for poor wound healing were increasing wound area (z score, -3.14), WIfI stage 3 (z score, -3.11), and WIfI stage 4 (z score, -5.40).

In this expanded study of previous work, the authors stated that they were the first to provide validating evidence for use of the WIfI classification system in giving “wound healing prognoses regardless of patient risk factors, comorbidities, and wound location.” Their findings also demonstrated that this classification system has broader applications than its original purpose to provide prognostic information and risk expectations for major amputation for patients presenting with foot wounds, Dr. Hicks and her colleagues concluded.

The authors reported no conflicts of interest.


Renal denervation for hypertension rebounds

BY BRUCE JANCIN
MDEDGE NEWS
REPORTING FROM EUROPCR 2018

PARIS — Endovascular device–delivered renal denervation has been dramatically resuscitated as a promisingly safe and effective nonpharmacologic treatment for hypertension on the basis of two rigorous positive, prospective, sham-controlled, randomized trials presented at the annual meeting of the European Association of Percutaneous Cardiovascular Interventions.

“These two trials are proof of concept. They were not intended to show superiority of denervation over drug therapy. They provide the proof of principle that when we interfere with the renal sympathetic nervous system we are able to lower blood pressure,” according to Felix Mahfoud, MD, an interventional cardiologist at Saarland University Hospital in Homburg, Germany, who was a coinvestigator in both trials.

As a long-time investigator in the field, he was selected by the EuroPCR 2018 organizers to present an official statement to attendees in conjunction with presentation of the two late-breaking clinical trials. The essence of the official commentary was that, despite what physicians have heard based on earlier major setbacks, renal denervation (RDN) therapy for hypertension is alive and well; it’s an active area of investigation; and it holds promise for addressing the vast unmet need for better control of hypertension.

“It’s an interesting field. EuroPCR is committed to further support of the field. Stay tuned; there’s more to come. It’s been a bumpy road up until now, but I think we’re back on track with renal denervation,” Dr. Mahfoud said.

A few years ago RDN was widely dismissed as a failed treatment strategy on the basis of the negative results of the phase 3 SYMPLICITY HTN-3 trial conducted in patients with multidrug-resistant hypertension (N Engl J Med. 2014 Apr 10;370[15]:1393-401). Since then, two European consensus conferences on device-based hypertension therapies were held in 2015 and 2017. Those meetings analyzed key mistakes in earlier research and identified three key confounders that need to be standardized in order for high-quality research to move forward: The use of antihypertensive medications, lack thereof, must be fixed and consistent; patients with severe treatment-resistant hypertension for whom basically nothing works are not the population to study initially; and key trial design and procedural details for the various endovascular therapies in development must be agreed upon.

The two sham-controlled trials presented at EuroPCR 2018 utilized different ablative energy sources: The RADIANCE-HTN SOLO study employed an ultrasound catheter, while the SPYRAL HTN-ON MED trial used a radiofrequency device. Both devices remain investigational. Each aims to ablate both the afferent and efferent renal sympathetic nerves located in the adventitia that run to and from the brain.

RADIANCE-HTN SOLO
Laura Mauri, MD, professor of medicine at Harvard Medical School, Boston, reported on 146 patients with mild to moderate hypertension at 39 U.S. and European centers, all of whom were deemed anatomically suitable.

Renal continued on page 16
A reliable predictor of response is desirable so that likely nonresponders to RDN aren’t needlessly exposed to the procedure.

The Paradise ultrasound system achieves circumferential ablation at a controllable depth of 1-6 mm in order to interrupt renal nerve traffic. Two or three ablations, each lasting 7 seconds, are delivered to each of the main renal arteries. The arterial wall is protected by water circulating through the balloon. The results were published simultaneously with Dr. Mauri’s presentation (Lancet 2018 May 23; doi: 10.1016/S0140-6736(18)31082-1).

SPYRAL HTN-ON MED
David E. Kandzari, MD, reported on the first 80 patients to complete 6 months of prospective follow-up in this ongoing international, single-blind, randomized trial of more than 400 patients with inadequately controlled hypertension on one to three commonly prescribed antihypertensive medications. Participants are being randomized to RDN via circumferential radiofrequency ablation using Medtronic’s Symplicity Spyral catheter or a sham control procedure. Although in this trial patients remain on their antihypertensive medications, an earlier randomized trial established proof of principle for efficacy in the absence of antihypertensive drugs.

In the real RDN group, 24-hour ambulatory blood pressure fell from baseline to 6 months of follow-up to a statistically significant and clinically meaningful degree: by 9.0 mm Hg systolic, compared with 1.6 mm Hg in controls, and by 6.0 mm Hg diastolic versus 1.9 mm Hg with the sham procedure. Similarly, office blood pressure fell by 9.4/5.2 mm Hg with RDN, compared with 2.6/1.7 mm Hg in controls.

Notably, 24-hour ambulatory systolic blood pressure was significantly lower in the RDN group around the clock.

This may have important considerations with regard to pharmacotherapies with pharmacokinetic peaks and troughs in the early morning hours and late evening, or perhaps for groups with hypertension who are at especially high risk for cardiovascular events, such as those with nocturnal or early morning hypertension,” observed Dr. Kandzari, director of interventional cardiology and chief scientific officer at the Piedmont Heart Institute in Atlanta.

“This raises the concept of an ‘always on’ effect for renal denervation therapy that may be in distinction to pharmacotherapy and independent of adherence issues,” he added.

And speaking of adherence, a key feature of SPYRAL HTN-ON MED was that the trial incorporated periodic drug adherence monitoring using both urine and blood testing. The results, Dr. Kandzari said, were eye opening: At any given time, roughly 40% of patients in both study arms were nonadherent to their antihypertensive medications. Moreover, nonadherence was dynamic: It was not predictable for any single patient at any time point.

This 40% nonadherence rate was surprisingly high given that participants in SPYRAL HTN-ON MED were volunteers eager to participate in a non-drug treatment study and were informed up front that they would be undergoing adherence testing.

As in RADIANCE-HTN SOLO, no safety issues arose during follow-up in SPYRAL HTN-ON MED. The results were published simultaneously with Dr. Kandzari’s presentation (Lancet 2018 May 23; doi: 10.1016/S0140-6736(18)30951-6).

One difference between the two technologies is that, unlike the ReCor Paradise ultrasound catheter, which ablates in the main renal arteries, the Medtronic radiofrequency device is placed in the side branches.

 Asked whether he sees RDN, provided it is established as safe and effective, being used primarily in hypertensive patients who are on or off medication, Dr. Kandzari replied that his personal view is it will have a role in both. Some patients would prefer not to take drugs. For others with uncontrolled hypertension despite multidrug therapy, RDN could serve as adjunctive therapy that reduces their need for medication.

Unanswered questions
Additional studies of both technologies are ongoing, and pivotal large-phase 3 trials are being planned, with results expected in the next year or 2. Asked if regulatory agencies are going to require large, long-term trials with hard cardiovascular endpoints as a condition for approval, Dr. Mauri said a strong case can be made for bypassing this step.

“Blood pressure is remarkable,” she replied. “It’s one of the strongest surrogate endpoints that we have in the medical literature. It’s supported by multiple randomized trials of antihypertensive therapies, which have shown that reductions in blood pressure are associated with reductions in mortality from cardiovascular events. That’s really the gold standard for a surrogate endpoint. So I think it’s convincing. That being said, I would be very interested to also see hard endpoints in the long term, but that will take time.”

And time is a luxury in light of the escalating global hypertension pandemic. Dr. Mahfoud noted that it’s estimated that in 2015, 950 million people around the world had a systolic blood pressure in excess of 140 mm Hg. By 2025, that figure is expected to climb to 2.5 billion people. The Centers for Disease Control and Prevention estimates that more than 360,000 deaths per year in the United States have hypertension as the primary or a contributing cause. Blood pressure control rates remain unacceptably low, in the 50% range. Nonadherence is high. So there is a pressing unmet need for new forms of treatment.

Dr. Mahfoud cited three major remaining research priorities for RDN therapy. There is a need for some form of intraprocedural feedback to inform the interventionalist while still in the catheterization lab that the denervation is successfully completed. A reliable predictor of response is desirable so that likely nonresponders to RDN aren’t needlessly exposed to the procedure. And of course, the sustainability of benefit for RDN requires longer-term study.

Dr. Kandzari reported receiving institutional research support and consulting fees from Medtronic and several other medical device companies. Dr. Mauri reported receiving institutional research support from ReCor and other device companies and serving as a consultant to ReCor and Medtronic; in addition, she has accepted a position as a vice president at Medtronic to begin in September.

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JULY 2018
Screening for AAA: More harm than help?

BY MICHELE G. SULLIVAN
MDEDGE NEWS
FROM THE LANCET

Deaths from abdominal aortic aneurysm among Swedish men are going down—but not because they’re being screened for the potentially fatal condition.

Although the death rate has decreased by 70% since the early 2000s, screening only saved 2 lives per 10,000 men screened. It did, however, increase by 39% the risk of unnecessary surgery. Minna Johansson, MD, and colleagues wrote in the Lancet.

‘‘Screening had only a minor effect on AAA mortality,’’ wrote Dr. Johansson of the University of Gothenburg (Sweden). ‘‘In absolute numbers, son of the University of Gothenburg on AAA mortality,’’ wrote Dr. Johansson.

‘‘Although I agree that having a small AAA that needs long-term follow-up might be associated with negative psychological consequences, there could also be a window of opportunity [e.g., with statins, antiplatelet therapy, and blood pressure reduction], for individuals with increased burden of cardiovascular disease. Indeed, screening for AAA, peripheral artery disease, and hypertension, with the initiation of relevant pharmacotherapy, if positive, reduces all-cause mortality and some evidence suggests that this approach of multifaceted vascular screening instead of isolated AAA screening should be considered.’’

When performed according to the established criteria for elective AAA surgery, the procedure is associated with less than 1% postoperative mortality, ‘‘mainly because of wide implementation of endovascular aneurysm repair, a minimally invasive method.’’

The 6-year follow-up time, as the authors noted, is relatively short. A 2016 review of the Swedish Nationwide Abdominal Aortic Aneurysm Screening Program determined that significant mortality benefit could take 10 years to materialize (Circ 2016;134:1141-8).

The full impact of Sweden’s remarkable decrease in smoking is almost certainly making itself known in these outcomes—smoking is implicated in 75% of AAA cases.

‘‘The decreased prevalence of smoking in Sweden, from 44% of the population in 1970 to 15% in 2010, should be viewed as the main cause of the decreasing incidence and mortality of AAA.’’
Ruptured abdominal aortic aneurysm repair: Preop measures that predict death

BY TERRY L. KAMPS
MDEDGE NEWS
FROM THE JOURNAL OF VASCULAR SURGERY

Four preoperative variables – age over 76 years, creatinine concentration greater than 2.0 mg/dL, pH less than 7.2, and lowest ever systolic blood pressure less than 70 mm Hg – predicted 30-day mortality following repair of ruptured abdominal aortic aneurysms (rAAAs), in a retrospective study of 303 patients treated at Harborview Medical Center at the University of Washington, Seattle.

Brandon T. Garland, MD, and his colleagues at Harborview, reviewed the data set of patients, noting 50% were aged older than 76 years and 80% were male. Many patients had typical vascular risk factors: 65% had hypertension, 39% had coronary artery disease, and 22% had chronic obstructive vascular disease. Patients who were treated for rAAA after 2007 and had preoperative computed tomography scans were assessed for endovascular

Risk scores for rAAA mortality outcomes provide helpful guides for patient care.

In absolute numbers, only 7% of the benefit estimated in the largest trial of AAA screening was observed.

AAA continued from page 17 reductions in AAA mortality were present in both the screened and nonscreened cohorts and were thus mainly caused by other factors – probably reduced smoking. … Our results call the continued justification of AAA screening into question.”

In Sweden, all men aged 65 years are invited to a one-time ultrasound abdominal aorta screening. Most participate. Anyone with an aneurysm is followed up at a vascular surgery clinic, with surgery considered if the aortic diameter is 55 mm or larger.

Dr. Johansson and her colleagues plumbed national health records to estimate the risks and benefits of this routine screening. The study comprised 25,265 men invited to join the AAA screening program in Sweden from 2006 to 2009. Mortality data were compared with those from a contemporaneous cohort of 106,087 men of similar age who were not invited to screen. Finally, the mortality data were compared with national trends in AAA mortality in all Swedish men aged 40-99 years from 1987 to 2015.

A multivariate analysis adjusted for cohort year, marital status, educational level, income, and whether the patient already had an AAA diagnosis at baseline.

From the early 2000s to 2015, AAA mortality among men aged 65-74 years declined from 36 to 10 deaths per 100,000. This 70% reduction was similar in both screened and unscreened populations; in fact, the decline began about a decade before population-based screening was introduced and continued to decrease at a steady rate afterward.

After 6 years of screening, there was a 30% reduction of AAA mortality in the screened population, compared with the unscreened, translating to an absolute mortality reduction of two deaths per 10,000 men offered screening.

Screening increased by 52% the number of AAAs detected. The absolute difference in incidence after 6 years of screening translated to an additional 49 overdiagnoses per 10,000 screened men.

Looking back into the mid-1990s, the investigators saw the numbers of elective AAA surgeries rise steadily. In the adjusted model, screened men were 59% more likely to have this procedure than unscreened. The increased risk didn’t come with an equally increased benefit, though. There was a 10% decrease in AAA ruptures, “rendering a risk of overtreatment of 19%, or 19 potentially avoidable elective surgeries per 10,000 men,” the team noted.

“Sixty-three percent of all additional elective surgeries for AAA might therefore have constituted overtreat.”

The findings are at odds with large published studies that found a consistent benefit to screening.

“Compared with results at 7-year follow-up of the largest trial of screening for abdominal aortic aneurysm [Multicentre Aneurysm Screening Study (MASS)], we found about half of the benefit in terms of a relative effect and 7% of the estimated benefit in terms of absolute numbers [2 vs. 27 avoided deaths from AAA per 10,000 invited men]. Compared with previous estimates of overdiagnosis and overtreatment, we found a lower absolute number of overdiagnosed cases [49 vs. 176 per 10,000 invited men] and fewer overtreated cases [19 vs. 37 per 10,000 invited men]. However, since the harms of screening decreased less than the benefit, the balance between benefits and harms seems much less appealing in today’s setting.”

None of the authors had any financial disclosures. *msullivan@mdedge.com*

Predict continued from page 18

aneurysm repair (rEVAR) based on infrarenal neck length and diameter and access vessel size. Noneligible patients and all patients treated prior to 2007 had open repair (rOR) surgery.

A primary screen of selected preoperative variables included age, hematocrit, systolic blood pressure values, use of cardiopulmonary resuscitation, pH, international normalized ratio, creatinine concentration, temperature, partial thromboplastin time, weight, history of coronary artery disease, and loss of consciousness at any time.

The four statistically significant associations were age over 76 years (odds ratio, 2.11; P less than 0.11), creatinine concentration over 2.0 mg/dL (OR, 3.66; P less than .001), pH less than 7.2 (OR 2.58; P less than .009) and lowest ever systolic blood pressure less than 70 mm Hg (OR, 2.70; P less than .002). Each of the four predictive preoperative rAAA variables was assigned a value of 1 point. Individualized scores are simply calculated by totaling the number of preoperative risk predictors.

Of the original 303 patients, 154 were alive at 30 days following rAAA repair, and there was a significant benefit from using rEVAR. Overall, patients with 1-, 2-, 3-, and 4-point mortality scores had 30-day mortality risks of 22%, 69%, 80%, and 100%, respectively. rEVAR mortalities dropped to 7% for a 1-point score and to 70% for a 3-point score.

There were no 30-day survivors with 4-point risk scores regardless of whether they had rEVAR or rOR procedures.

The predictive risk scores for rAAA mortality outcomes provide helpful guides for patient care recommendations, and can be used to supplement the rOR-validated Glasgow Aneurysm Score, Hardman index, and Vascular Study Group of New England risk-predicting algorithms to “aid in clinical decision-making in the endovascular era,” the researchers wrote. “The scores also add “prognostic information to the decision to transfer patients to tertiary care centers and aid in preoperative discussions with patients and their families.”

Dr. Garland and his colleagues reported that they had no financial conflicts of interest.

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