Presidential address: The next quarter

Thomas S. Riles, MD, New York, NY

I would like to take a few moments to thank a few of the individuals who have helped me at various stages of my career. The honor that you give to me today must be shared by those who have been so much a part of my surgical career and my personal life.

First, my father, Ben. I regret that he couldn’t be here today. His role modeling as a caring and dedicated surgeon was undoubtedly the reason I chose surgery as my profession.

Next, Dr Frank Spencer, one of the great surgeons and teachers of this past century. For 29 years, my surgical education and professional career has been under his leadership. To this day I call upon Dr Spencer for his wise counsel. I am truly honored to hold the Chair to which he brought such distinction for so many years.

Dr Anthony Imparato, my mentor and colleague for many years. An excellent surgeon and respected teacher, Dr Imparato incorporated the biology of vascular disease into every clinical situation. I am grateful for his many lessons and for the opportunities he has given me.

I want also to acknowledge my associates at NYU: Pat Lamparello, a partner for 20 years; Mark Adelman; Glenn Jacobowitz; Caron Rockman; Paul Gagne; Matt Nalbandian; and Neal Cayne. They have supported me in every way. Thank you all. Also I want to thank Ronnie Landis, RN, a part of our NYU vascular surgery team for more than 25 years. Her dedication and service as a research coordinator and clinical nurse has been extraordinary.

Last, I thank Adriana, a lovely lady who caught my eye about the same time I was first learning how to tie surgical knots. As have many spouses of vascular surgeons, Adriana has put up with late-night calls, early rises, and ruined social engagements. In addition to raising our two sons, Adriana has pursued her own profession as a teacher and kept it all together with grace and charm.

It seems it was only yesterday that I attended my first meeting of this organization. The year was 1976. The meeting was held in Albuquerque, New Mexico. This organization, at that time, was called the International Cardiovascular Society. Dr Frank Spencer was our president. I remember being in awe of the great surgeons at that meeting: Michael DeBakey, Ed Wylie, Jessie Thompson, Charles Rob, Robert Linton, Sterling Edwards, my mentors—Frank Spencer and Anthony Imparato—and many other great men who had already contributed so much to vascular surgery. (It was almost exclusively men in those days, as few women had had the opportunity to pursue a career in surgery in earlier years.) It was an unforgettable experience for me.

By 1976, the profession of vascular surgery as we know it had been in existence for approximately 25 years. In medicine, as in all science, it is often difficult to pinpoint exactly when an era began. Events are so closely interconnected, with one contribution leading to another, that naming any beginning or end is arbitrary. Certainly the first half of the 20th century was the time of many exciting discoveries in vascular surgery. Before 1950, however, the actual number of vascular operations that had been performed was relatively small. The successful aortic aneurysm repair by Charles Dubost in 1951, using a homograft, was a landmark event. Arguably, that was the beginning of vascular surgery as we know it today. Within months of Dubost’s report, homografts were being used elsewhere. Another important event occurred in 1951: The International Society for Angiology, the forerunner of this organization, met for the first time.

What occurred over the next quarter-century was nothing short of spectacular. In 1954, Dr Arthur Voorhees reported the first successful use of a synthetic graft for aneurysm repair. That same year, Drs Eastcott, Pickering, and Rob reported on their successful carotid endarterectomy. Year after year, new operations were described: carotid subclavian bypass in 1956, axillofemoral bypass in 1962. The Fogarty embolectomy catheter was introduced in 1963. Dr Charles Dotter did the first angioplasty for an arterial stenosis that same year. Over the next few years, a variety of extra-anatomic bypasses for arch vessel reconstruction were described. In 1973, Dr Lazar Greenfield reported his success with the new filter for the vena cava.1
Successful repair of vascular injuries, pioneered by Dr Spencer and others during the Korean conflict, became commonplace for civilian injuries in the years after the war.

Few eras in the history of surgery have been so distinguished by discovery and innovation as has the quarter-century that followed the first aortic reconstruction. Advances in cardiac surgery were even more spectacular. The introduction of the heart-lung machine, synthetic valves, coronary bypass, and heart transplantation were all introduced before 1975. The effects of these discoveries on other fields of medicine, and on health policy in general, were remarkable. The public was eager to hear about these exciting new discoveries. Newspapers and magazines regularly reported advances in treatments for cardiac and vascular diseases. Public interest undoubtedly bolstered the political effort that led to the creation of Medicare in the 1950s and the federal funding for research for cardiovascular disease in the years that followed. One might argue that the sociomedical progress of the 1960s and 1970s was as much a result of as a contributing factor to the advances that were occurring at the time.

To exalt the glories of this early period is in no way to discredit the generation that followed. If the first vascular surgeons were the pioneers, those of the next generation were the settlers. Dr George Johnson compared the early and later periods in his presidential address titled, “The Second Generation Vascular Surgeon.”2 Speaking to this organization in 1986, Dr Johnson, after listing the achievements of the past decade, stated, “None of these has had the impact of the vascular prosthesis, the techniques, and the instrumentation [of the earlier generation].” He went on to say, however, “I see my second generation colleagues as quiet, but effective, contributors to progress in the field. All of us are proud to have implemented the advances developed by our predecessors.”2

As a part of that second generation, I too am very proud of what our profession has accomplished during this last quarter century. It has been a time of maturation of vascular surgery as a discipline. Procedures have been refined; medical devices have been perfected; operations have been made safer. In addition, our generation has developed training programs that have produced vascular surgeons of the highest quality. Members of this second generation have written textbooks, created highly respected journals, and launched a Web site. Our clinical trials and multicentered studies have resolved therapeutic dilemmas with scientific evidence. We have established practice guidelines. Our laboratories have added immense knowledge to the basic science of vascular disease. We have provided quality vascular surgery to virtually every community in this country and, indeed, to most parts of the world.

But to return to the earlier period, it is of interest to think about what led to so many discoveries and so many achievements during those first 25 years. Why then and not earlier? In his book titled The Structure of Scientific Revolutions, Thomas Kuhn discusses the fact that science does not progress in a linear fashion.3 It is the way of science and cultures in general that we oscillate between exploration and development, between periods of discovery and periods of assimilation. As new concepts emerge, they must be examined, tested, refined, and eventually incorporated into the culture. But what fuels those bursts of creative energy that characterize the periods of discovery?

Going back to our own profession, what fueled the energy of those early years? Much credit has been given, rightfully so, to the brilliant, creative individuals who were associated with our early period. Would our early history have been different without DeBakey, Bob, Sylagyi, Wylie, Crawford, Thompson, and many others who focused their energies on vascular disease? The legendary vision and work ethic of these great surgeons, mostly young men at the time, was unquestionably a major factor in the advances that occurred. But, if you think about the history of vascular surgery, there have always been individuals with great intellect and vision, such as Alexis Carrel and Rene Leriche. Carrel, however, saw little application of his discoveries of transplantation during his lifetime. Rene Leriche, who recognized the need for aortic bypass grafts, had to wait more than 20 years before actually seeing such an operation performed. Why did the work of these men not unleash a torrent of creativity?

We know that great advances generally occur not in isolation, but in conjunction with other events. What other events, then, helped to fuel the discoveries of that first quarter-century of vascular surgery? One factor was advances in other fields that were occurring simultaneously. For example, at the end of World War II, the plastic industry was emerging with new discoveries of all sorts. Vinyon-N, the material used by Voorhees for his historic aneurysm repair, was a product developed by Union Carbide, the chemical company. After creating Vinyon-N, the company failed to find a suitable use for it. It wasn’t satisfactory for sailcloth, for which it was intended. Union Carbide was pleased to donate this new material to the dog laboratory at Columbia University. From there it found its way to become the first successful synthetic vascular graft.4 The advances in synthetics made possible new sutures, flexible catheters, improved endotracheal tubes, heart valves, components for the heart-lung machine, and many other devices that were critical to the development of cardiac and vascular surgery.

Contributions came from other fields as well. The military and space industry provided new machines that were used for measuring and monitoring of patients. New surgical instruments of high quality—clamps, scissors, and needles—were developed. Antibiotics and anticoagulants were improved. New diagnostic machines for the evaluation of vascular disease were invented. The early vascular surgeons were quick to recognize the possible uses of these new technologies and apply them to their work. Industry, in response to the interests of surgeons, developed thousands of new products for their use.

In addition to the men and the technology, a third important factor was the vast number of patients with vascular disease. Up until that point in time, medical care for these patients had been limited or nonexistent. Thou-
sands upon thousands of individuals were desperate for treatment. The mere volume of procedures that needed to be performed accelerated the rate of discovery immensely. To put this into perspective, within the 4 years after the Voorhees operation, the team at Baylor Medical Center had performed more than 1000 aneurysm repairs with synthetic grafts. The treatment knowledge gained from the explosive demand spawned more new operations, new innovations, and new technology.

This confluence of bright minds, new technology, and a vast number of patients needing treatment resulted in one of the most exciting chapters in medical history of all time. Certainly all of the conditions were aligned for a major advance in medicine. But that in itself was not enough. Had not these early pioneers seized the opportunity created by the confluence of these conditions, the evolution of vascular surgery may have occurred much differently. It took great vision and courage, and it took youth—young surgeons not yet set in their ways. As Thomas Kuhn points out in his book, "Almost always the men [and women] who achieve these fundamental inventions of a new paradigm have been either very young or very new to the field whose paradigm they change." It is usually the young, he explains, who have the courage to challenge older concepts and to effect change. This axiom generally has been true in our own profession. The excellent papers at this meeting, for example, have been presented, for the most part, by men and women in their 30s and 40s.

So what will the next 25 years be like? Where will our profession go from here? Only a few years ago, some were bemoaning the fact that the great age of vascular surgery was over. The development of bypass grafts and vascular procedures had reached its peak. It seemed that interventionists with their balloons and stents were taking over.

Interestingly, only 4 years after Dr. Johnson brought attention to the fact that vascular surgeons of the second generation had not produced discoveries as significant as the synthetic graft, Dr. Juan Parodi announced his successful repair of an aneurysm with an endograft. The excitement of this event rippled through our profession. Surgeons around the globe began to experiment with graft designs and delivery devices. New industries developed to produce grafts. By the late 1990s, surgeons across the country were being trained in the new technology, and patients were benefiting from the new method of treating abdominal aortic aneurysms. Last year, more than 19,000 endografts were used in the United States alone.

The skills necessary for inserting endografts prompted our vascular surgeons to learn catheter techniques. In a few short years, our residency programs incorporated endovascular training as part of the curriculum. Vascular surgeons coming out of these programs today are as skilled with catheters and stents as they are with sutures and needle holders.

Many other procedures and scores of devices have stemmed from the work on aortic endografts. Endografts of all shapes and sizes and purposes have been developed. Cerebral protection devices for safer carotid stent placement are being designed and built. New catheters, guidewires, and balloons have been produced. A walk through the exhibits of this meeting will give you a glimpse of the products that have been developed in the past few years as a result of our interest in endovascular surgery. In addition, we are seeing new medications for thrombolysis and anticoagulation. Drug-eluding stents will soon be available. Gene therapy is being investigated. We have new machines for diagnosing vascular disease. We are in the midst of a technology surge that is equal to, if not greater than, that at the time of the birth of our profession.

As this new technology becomes available, we are fortunate to have bright young surgeons who are able to make effective use of it. The young surgeons presenting at this meeting are only a reflection of the hundreds of talented young surgeons in our ranks. At a recent Fellows Night in New York, the level of basic science and clinical research presented by vascular surgery residents was astounding. Vascular surgery is blessed with some of the best minds in medicine today.

All of this new technology and surgeons skilled at using it come none too soon. We are already seeing an increase in the number of patients who need treatment for vascular disease. As the members of the Baby Boom age, the number of elderly will continue to expand disproportionately to the rest of the population. At the beginning of this century, there were approximately 35 million Americans aged over 65 years. By 2015, that number will be 50 million, and by 2030 that will expand to 70 million. The demand for early diagnosis and treatment will further magnify the need for more vascular professionals in the future.

If you look closely at what is happening around us, you will appreciate the fact that the circumstances of today are not unlike those that existed 50 years ago—bright young surgeons, new technology, and a growing population in need of vascular care. It is my view that we are at the beginning of another dynamic era of innovation and discovery. A new period of scientific advance is already well underway. The opportunity for making significant contributions in the years to come is extraordinary—not only contributions to the treatment of vascular diseases, but also major advances in prevention of vascular disease. One can hope that the energy that will drive this next period of discovery will also bring solutions to many of the medical-social problems of today—the rising costs of medical care and our inability to provide quality care to all members of our society.

Is it possible that among us today are vascular surgeons who will harness angiogenesis so that we will be able to grow new blood vessels for ischemic limbs? Is it possible that surgeons of the future will be busy applying catheter-directed medicines to the lining of arteries to reverse plaque formation? Will physicians someday be able to predict in advance which individuals will develop aneurysms and then be able to prevent those aneurysms before they occur? Will we have an effective vascular screening program for our society? All of these are not only possible, but very likely. I expect that individuals in this room will be leading these
efforts. There is one thing I can say about the future with certainty—that is that by year 2025 there will be new devices, new medicines, new treatments, and new machines for diagnosis that are beyond the imagination of anyone in this room.

But remember that bright minds, new technology, and need are not the only ingredients for a major scientific advance. It also takes courage and hard work on the part of those who can effect the change. Those who will lead the way must seize the opportunities and make the most of each and every one. I know there are young surgeons in this room today who will do exactly that. There will be many challenges along the way. The competition from cardiology will be severe. But I do believe that vascular surgery as a profession will prevail. We have been studying and treating vascular diseases for 50 years, and we do it best.

The coming years will be an extraordinary period for vascular surgery and for all of the young surgeons who will be a part of it. The contributions that you will make to our profession and to our society will likely be greater than all those that have proceeded. I will look forward to being with you at these meetings in the years to come, to marvel at what your generation will create. I believe that young surgeons of today will make this next quarter-century our very best.

In closing, I want to thank all of you who have given me the extraordinary privilege to serve as an officer of this society for the past 6 years. Being your president has been the high point of my surgical career. The transitions that have taken place during these few years have been phenomenal. We will be soon voting on yet another change in our organization. I am convinced that the convergence of the Society for Vascular Surgery and the American Association for Vascular Surgery is an important next step to building the strong organization that we need for the future that I have envisioned today.

REFERENCES


Submitted June 17, 2003; accepted July 1, 2003.
The 2020 presidential race results have yet to be officially certified amid legal challenges over the supposed election irregularities. Patrick Borchers, Lillis Family professor of law at Creighton University in Nebraska, has looked into the fraud allegations and explained how Team Trump's legal cases could affect the outcome of the US election. Location of Repository. Presidential address: the next quarter. By Thomas S. Riles. Get PDF (49 KB). Publisher: The Society for Vascular Surgery and The American Association for Vascular Surgery. Published by Mosby, Inc. Year: 2004.