The Status of Endovascular Therapy in Australia

BY MICHAEL M. D. LAWRENCE-BROWN, MD, AND JAMES B. SEMMENS, MSC, PHD

When describing the status of endovascular repair in Australia today, the comments often include New Zealand, because vascular surgery training and practice are combined under the auspices of the Australian and New Zealand Society of Vascular Surgery. They are not limited to aneurysm disease only. This article discusses aneurysm disease and its intersection with occlusive disease. The opinions expressed are personal. The available data have been rounded to the nearest figure and extrapolated to compose some projection for future expectations.

Australia has played a significant part in the evolution of minimal image-guided therapy and technology for the management of aortic aneurysm disease.[1] Contributions from Australia include terminology, such as *endoleak*,[2] and technology, such as delivery systems,[3] force analysis,[4,5] and device design, including fenestration[6-9] and branched stent grafts. Australia has worked closely, whenever possible, with its colleagues in Europe, the Americas, and Asia.

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THE ENDOVASCULAR PATH

There has been sustained interest and support for the developments from all sectors, ranging through government regulatory bodies, hospital administration, clinicians in all related disciplines, scientific research organizations, and medical device companies. The features, materials, and delivery systems of the prototypes developed in Australia persist in the Zenith endograft (Cook Medical, Bloomington, IN), which benchmarks Australia and New Zealand's involvement.[10]

It is the foresight and structural change in training, which accompanied achievements in the endovascular field, that have secured the endovascular path. Two thousand aneurysms are now repaired annually by endovascular techniques from a combined Australia and New Zealand population of 25 million. The total number of aneurysms repaired annually approximates 3,000. This means about 65% of the total number of repair procedures are now by endovascular techniques. The ratio is perceived to vary across the region, according to local factors.

Three hundred fenestrated grafts were inserted in the last 5 years; the current rate is approximately 100 per year. A number of specially constructed (customized) grafts were also inserted for aneurysms unsuitable for standard grafts.[11]

THERAPEUTIC GOODS AUTHORITY

Within accepted parameters, fenestrated grafts have gained approval from the Therapeutic Goods Authority of Australia (TGA). Specially constructed grafts require indi-

vidual approval by the TGA. Fenestrated grafts, branch stent grafts, and specially constructed grafts have extended the patient selection for endovascular repair. A number of grafts were inserted as secondary endovascular repair for either previously open or endovascular repair. These constitute a category of "re-do" surgery/endovascular surgery. A significant number of re-dos are performed for the development of aneurysmal disease above previous infrarenal aortic open grafts. These procedures are sometimes carried out many years after the original repair and have been made possible by the use of fenestrated grafts. Many stent graft types are approved and used in Australia and New Zealand. For abdominal aortic aneurysms, the most common device has been the Zenith because of the local input to research and development and a manufacturing base in Australia.

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Twelve hundred thoracic grafts have also been inserted in the same 5-year period. The management of thoracic aneurysms has been permanently altered with a steep rate of usage.[12,13] This has been driven by the wide differential in morbidity and mortality rates between open repair and endovascular repair in this anatomical region and by changing attitudes toward treating type B dissections.

A GLOBAL MOVEMENT

The overall change in aortic aneurysm disease management is a global movement.[14,15] The pace of the cross-fertilization of ideas and procedural practice has been fuelled by enhanced communication and device technology with a continuing cycle of endovascular meetings to discuss procedural practice, imaging requirements, patient outcomes, professional education, and regulatory requirements. The challenges being met now in Australia are the provision of training in an ideal curriculum and access to optimal image-guided systems.

HEALTH PROVISION

The skills required for an endovascular therapist are based in catheter and guidewire techniques for occlusive disease. Herein lies the main challenge for many vascular units. In Australia, there are two parallel systems of health provision. The first is a government system, similar to the British National Health System in principle; the second is a private health system with government support. The effect is a competitive environment for health provision. Where access to facilities has been denied in one system, it may be provided in the other. When the outcomes are favorable in one, pressure mounts on the alternative system.

VASCULAR SURGEONS

Vascular surgeons have been able to gain access to angiosuites and catheter labs in their own right, in combination with other disciplines or individually, during this exciting time of development. With opportunity, some vascular surgeons have developed extraordinary skill coupled with disease understanding and backed with surgical ability, to the extent that their examples of skill and ingenuity have been a most important factor in the current status of endovascular therapy in Australia. Their ties with generous colleagues in interventional radiology have provided a skills base that has often showed synergistic, enhanced productivity, such as the treatment of renal artery stenosis using embolic protection for patients with borderline renal impairment. This is important because experience in renal artery catheterization and stenting is part of the skill base for inserting fenestrated grafts.[16] Shared facilities with cardiologists have similarly influenced development and, in particular, the adoption and adaptation of cardiology technology.

OCCLUSIVE DISEASE

Globally, the relationships and the sharing of information and ideas have welded the vascular community in which Australia and New Zealand share and contribute. The necessity to be proficient in the management of occlusive disease with catheter-based techniques has long been recognized and is a core factor in the curriculum and training of vascular surgeons in this region. Emerging trained vascular surgeons expect to treat occlusive disease with these techniques and decline to work in institutions that do not provide facilities. The ethic is a willingness to work with interventional colleagues without dependency.

CONCLUSION

Why have Australia and New Zealand been so much a part of the endovascular revolution? The foundations for the specialized interest lie in the separation of vascular surgery from general surgery that started in the 1950s and culminated in formal separation in the 1990s. The Australian and New Zealand Society of Vascular Surgery is now responsible for training vascular surgeons direct to examination. This allows control of curriculum, training, continuing medical education, and board certification of vascular surgery. Emerging vascular surgeons are trained in open and endovascular surgery without certification in general

surgery. The expectation and purpose is that they will be fully competent in those skills required for all forms of endovascular therapy because so much of vascular management in Australia today is image-guided–based. ■

Michael M. D. Lawrence-Brown, MD, is Emeritus Vascular Surgery Consultant to Royal Perth Hospital, and Adjunct Professor to the School of Public Health, Curtin University of Technology, in Bentley, Western Australia. He has disclosed that he is a paid consultant, receives grant/research funding, has a patent or part ownership, and has a royalty agreement with Cook Medical. Dr. Lawrence-Brown may be reached at +61 418 954 712; mlabrown@iinet.net.au.

James B. Semmens, MSC, PhD, is Professor, Curtin University of Technology, in Bentley, Western Australia. He has disclosed that he holds no financial interest in any product or manufacturer mentioned herein. Dr. Semmens may be reached at +61 8 92661856; james.semmens@curtin.edu.au.

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