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Are surgical care practitioners adversely affecting junior surgeons' training? Matt Freudmann and Jonathan Aning slug it out in our debate on page 97.

Reduced hours in theatre as a result of the European Working Time Directive and introduction of procedure based assessments mean that simulation is here to stay. The best simulators allow surgeons to practise techniques that imitate real life. In this issue, Jorg Dabernig and Alexandra Turner describe a low tech simulation technique for basic surgical procedures (p 96).

South African surgeon George Oosthuizen was preparing for his final surgical exams when he became frustrated. Resources for exam preparation were in different places, in diverse formats. He had a wild idea: combining operative text and anatomy, with a video of each operation. Many doctors have audacious ideas. George made it happen. He's now chairman and clinical director of Go Virtual Medical, and has successfully combined gaming technology with animation, providing an exciting new multimedia platform for learning practical procedures. Educational and beautifully presented, this resource promises to be invaluable for medical students and trainee surgeons.

The Royal College of Surgeons of Edinburgh is also doing something bold. Its new non-technical skills course (p 98) exposes surgeons to the sorts of challenges fighter pilots face during flight simulation. Lessons from aviation are turning good surgeons into high flyers. Hold on to your scalpel, chaps—the sky's the limit.

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Out on a limb? The truth about a career in vascular surgery

Andrew Choong and Nick Cheshire enjoy training in a surgical specialty that is leading the endovascular revolution

There is an old joke describing vascular surgery. "Fem stop, fem pop, fem flop, fem chop." The suggestion that vascular surgeons merely delay inevitable amputations or only deal with diabetic foot ulcer debridement detracts from what an incredibly challenging and rewarding specialty vascular surgery can be.

Vascular surgery is a subspecialty with three branches of practice—arterial (not including the heart or within the skull), venous, and lymphatic surgery. The bulk of work is made up of atherosclerotic arterial disease processes—carotid procedures, aortic aneurysms, and lower limb arterial interventions. Some centres also act as an adjunct to nephrology, providing renal access services. With the exception of varicose vein surgery, venous and lymphatic surgery are limited to a few specialised centres.

Why vascular?

Vascular surgeons have a wealth of operations within their practice. They operate in the neck, chest, and abdomen as well as in the upper and lower limbs. The surgical techniques required range from delicate micro-surgical skills to extensive thoracoabdominal operations. Even laparoscopic skills have found a place in vascular surgery. What sets vascular surgery apart from other surgical specialties is the way that the specialty has embraced the endovascular revolution. The best vascular surgeons now have a skill set consisting of traditional open surgical techniques and endovascular techniques. Aortic aneurysm stent grafting and carotid stenting occur side by side with traditional fem-distal bypass grafts, endarterectomies, and open aortic surgery. There are also hybrid combinations of open and endovascular techniques being used within the context of one operative procedure. The ability to operate all over the body using any number of different surgical or endovascular

techniques is unique and makes vascular surgery very attractive to those who relish the technical challenges of surgery (box).

Multisystem disease

Vascular patients have multisystem disease. The atherosclerotic disease process means that in addition to their vascular surgical pathology, neurological, cardiac, respiratory, endocrine, and renal systems are often compromised, sometimes all at once. Vascular patients are also an elderly population often with multiple medical problems, which makes them a high risk surgical group. An understanding of these medical specialties is essential for best vascular surgical practice. Vascular surgeons employ a multidisciplinary approach to every patient, seeking expert help from any number of different specialties, particularly during the "workup" of preoperative patients. Vascular surgery is therefore one of the most "medical" surgical specialties, with a large emphasis on preoperative medical management as well as postoperative critical care. For those with a surgical mindset who enjoy being challenged by managing high dependency units and sick patients, vascular surgery is for you.

Pros and cons of a career in vascular surgery

Pros

- Operate all over the body
- Challenging, high stakes surgery
- "Medical" surgical specialty
- Large evidence base
- Particularly suited to academia
- Endoluminal intervention

Cons

- Sick patients
- Demanding job
- Long hours
- Large dual skill set to master
- Serious operative complications possible

High risk

Vascular surgery is grounded in evidence based practice, and necessarily so. The risks of vascular intervention are among the most serious in all surgical practice. Death, stroke, myocardial infarction, paraplegia, and limb loss are all known complications of vascular surgery. The benefits of intervention against the risk and complications of doing so have to be constantly weighed in the best interests of the patient. This is most apparent in aneurysmal surgery where risk of rupture is always calculated against the risk of surgery. Without an extensive evidence base, it would be impossible to furnish patients with the information required to make informed decisions about their conditions.

Heads, hearts, and limbs

The nature of vascular surgery means that the evidence base also extends to that of allied medical specialties. Neurologists and cardiologists in particular have extensive experience with the treatment as well as the primary and secondary prevention of atherosclerotic disease processes. Their respective advances are incorporated into best vascular practice. This increasing evidence base regarding medical therapy, endovascular, and open interventions means that vascular surgery easily lends itself to the practice of academic surgery. If evidence based academic surgery appeals then vascular surgery has the potential to excite and interest you throughout your career.

First exposure to vascular surgery is often as early as the house officer years. Many vascular surgical teams have house officers and these jobs are useful for juniors to learn the principles of anticoagulation, fluid balance, and preoperative workup, as well as some of the principles of postoperative critical care. Many senior house officer posts in vascular surgery are part of basic surgical training rotations. Here, the critical care of postoperative patients is honed while basic surgical skills are developed.

No national training numbers

At present, national training numbers in vascular surgery do not exist. Like upper gastrointestinal, hepatobiliary, colorectal, and breast surgery, vascular surgery is

still part of general surgical training. Most higher surgical training programmes are six years long. The first three (ideally) or four years are spent on generic general surgical training with the final years being in the vascular specialty. Many specialist registrars choose to undergo further training, often abroad, during a fellowship in vascular surgery before taking up a consultancy post.

No future in vascular surgery

Some people have argued that there is no future in vascular surgery. There is an apocalyptic view that interventional radiologists will dominate future practice, leading to the demise of vascular surgery as we know it. Current practice would suggest that this is not the case. Rather than a territorial approach to endoluminal intervention, the best centres in the United Kingdom have found a harmonious partnership of the interventional radiologist and the vascular surgeon.

In 2004, the Vascular Surgical Society of Great Britain and Ireland changed its name to the Vascular Society (www.vascularsociety.org.uk). The reason given was, "to reflect its inclusive nature in representing vascular surgeons, radiologists, angiologists, and others involved in independent vascular practice." This important change in name mirrors changes in vascular surgical practice.

Dual skill set

There have been discussions about the hybrid training of vascular surgeons and debate still rages about how best to go about assuring that the vascular surgeons of the future acquire a dual skill set necessary for the practice of vascular surgery in the 21st century. It has been suggested that vascular surgeons will break away from general surgical training and enter into a common training pathway alongside interventional radiologists. The training paths will then diverge later during the programme to allow subspecialisation. At present, however, no such scheme exists. ■

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