Education in vascular surgery: Critical issues in India

Natarajan Sekar, MD, MCh, Chennai, India

The first department of vascular surgery in India was established in 1978, and the first training course in peripheral vascular surgery was started in 1985. Despite this, vascular surgery has been slow to develop in India. The widespread misconception that vascular diseases are uncommon and that the result of vascular reconstruction is poor has resulted in vascular surgery not being popular among the medical students. Only 10 medical colleges have dedicated vascular surgical departments; hence, most students do not have enough knowledge about vascular diseases and the treatment options. This lack of awareness has resulted in a delay in diagnosis of vascular problems that results in poor outcome. At present there are only seven training centers for vascular surgery, training 12 students every year. Students receive adequate training in open surgical procedures, but endovascular training is still inadequate. Endovascular treatment has not picked up because of the expense and nonavailability of catheterization laboratories to vascular surgeons. The Vascular Society of India (VSI) has proposed to correct these problems by starting more training centers in private hospitals, starting vascular services in different parts of the country, conducting a nationwide awareness campaign, and conducting more medical education programs and workshops for the general surgical trainees. VSI has been conducting endovascular workshops for the vascular trainees and has arranged for fellowships abroad in reputed vascular units. VSI is looking forward to having active interaction with World Federation of Vascular Societies to create more training opportunities for the young vascular surgeons. (J Vasc Surg 2008;48:76S-80S.)

HISTORY OF VASCULAR SURGERY

Vascular surgery has been slow to develop in India. Very few surgeons attempted to do vascular surgery in the early 1970s. Doctors P. K. Sen and G. B. Parulker were interested in aortoarteritis and did original work and published many articles.1,2 Dr Parulker was the editor of the chapter on aortoarteritis in the second edition of Rutherford’s textbook on vascular surgery.3 Dr S. K. Khanna performed occasional vascular procedures at PGI Chandigarh, a premier postgraduate institute in North India. In South India Dr. Vira Reddy and Dr Varadarajan were the only surgeons who did vascular surgery.

Dr Reddy tried arterialization of popliteal vein by creating an arteriovenous fistula to treat patients with lower limb ischemia caused by Buerger’s disease. Proximal artery occlusion in many of these patients caused confusion regarding the diagnosis, and he called them “South Indian arteritis.”4,5 Dr Shionoya from Japan later showed similar disease pattern, and it became apparent that all of these patients had Buerger’s disease and that the diagnostic criteria for this disease needed to be redefined. All of these surgeons were either general surgeons or cardiac surgeons and did only part-time vascular surgery.

Despite all of this work, vascular surgery was never popular for the simple reason that every patient with a gangrenous toe was diagnosed with Buerger’s disease and hence considered unsuitable for vascular reconstruction. Atherosclerosis was thought of as a disease of the West and was never considered as a diagnosis. All of these patients were treated with lumbar sympathectomy or amputation.

The first Department of Vascular Surgery was started in 1978 at the Madras Medical College, which was established in 1855 and is the oldest medical school in India. A 2-year training program offering a master’s degree (MCh) in peripheral vascular surgery was started in 1985. I joined the Department of Vascular Surgery in 1986 and became the first qualified vascular surgeon in 1988.

The opposition to this new course was so great that many of my colleagues in general surgery were wondering why I would leave a lucrative general surgical practice and join a department “specializing in amputations.” It took a few years of hard work to get that stigma erased. Still, the powerful cardiothoracic lobby was vehemently against the separation of vascular surgery and almost succeeded in influencing the Medical Council of India, the controlling body for medical education in India. Another round of lobbying and case presentation was required to convince them that vascular surgery is different from cardiothoracic surgery and that vascular surgeons are not a threat to them.

PATTERN OF VASCULAR DISEASES

Buerger’s disease is the most common cause for lower limb ischemia in the government hospitals, where most of the poor patients get treatment free of cost. In private hospitals, atherosclerosis is the common cause for lower limb ischemia (Table).

Smoking is becoming more common, and more and more young people are becoming addicted to nicotine. Patients with Buerger’s disease are usually poor and smoke beedies, which is raw tobacco rolled in a leaf, whereas
patients with atherosclerosis are usually richer and smoke cigarettes. The role that nutritional status and infection play in this difference needs to be investigated.

A large number of our patients have Buerger’s disease with proximal major vessel involvement (Fig 1). The disease is segmental, and bypass to a patent arterial segment is possible to achieve limb salvage. Aneurysmal disease is very uncommon. We see a significant number of young patients with idiopathic type 4 thoracoabdominal aneurysm presenting with a short history, and the rest of the vascular tree is free of disease. Biopsy of the aneurysm wall has not shown atherosclerotic changes or inflammation. Rapid enlargement and rupture are common.

Diabetes mellitus is extremely common, and India is considered the diabetic capital of the world. There are about 40 million diabetic patients in India, and estimates are that by 2020, nearly 15% of the population will be diabetic. Even though coronary disease is very common, peripheral vascular disease is known to occur in only 6% to 7% of these patients. Similarly, carotid disease is also less common compared with the West. Most of the diabetic patients present late with ulceration or gangrene of the toes and critical ischemia due to tibial artery occlusion. Aortoiliac blocks are relatively rare.

**CURRENT STATUS OF VASCULAR SURGERY**

Even today, vascular surgery has developed only in major cities (Fig 2), and only about 70 full-time vascular surgeons are available for a population of 1 billion. General surgeons and cardiac surgeons who are interested also do part-time vascular surgery. Many states in India still do not have any trained vascular surgeons, and the patients in these states undergo a lot of hardship.

India does not have a national registry to document the exact number of vascular procedures; however, about 4000 to 5000 arterial reconstructions are done every year. The most commonly performed vascular reconstruction is the femoropopliteal or tibial bypass. In diabetic patients, many of the reconstructions are near the ankle. Because many of the older surgeons still believe that vascular reconstruction does not work in diabetic patients as a result of microvascular occlusion, many of these patients undergo amputation without a full vascular assessment.
In Buerger’s disease, bypass surgery is difficult because the vessels are small, only short segments are disease free, they are prone to spasm, and the vein may also be involved (Fig 3); hence, not many venture to do vascular reconstruction. Most nonvascular surgeons do only sympathectomy for these patients. Some surgeons have done omentopexy and tibial corticotomy and claimed good results. Many of these patients are poor, resume smoking after the procedure, come back with recurrence, and ultimately require an amputation. Unfortunately, much of the emphasis is on atherosclerosis and hardly any attention is paid to Buerger’s disease and its prevention even though it is the most common cause for limb ischemia.

Most patients in India are not covered by health insurance and must pay for medical care themselves. This has been the most important factor in determining the treatment option for these patients. Because a single procedure that is cheaper and will give lasting benefit is the treatment of choice, open surgery is most often chosen instead of an endovascular option. An abdominal aortic aneurysm endograft procedure is about three times costlier than an open repair in India. In my own practice, only 10% to 15% of the patients opt for endovascular procedures.

The other reason for the lack of increase in the number of endovascular interventions is that vascular surgeons often do not have access to the catheterization laboratory. In all older institutions and medical schools, the angiography laboratories are always under the control of the radiologist or cardiologist, and vascular surgeons are not allowed to use them. In private hospitals, the catheterization laboratory is available for the vascular surgeon.

CURRENT STATUS OF VASCULAR EDUCATION

India has about 264 medical colleges and schools, but only 157 offer postgraduate surgical training courses or surgical residency. The total number of surgical trainees is about 1175 every year. Only 10 medical colleges...
have a vascular surgical department, five of which are located in the state of Tamilnadu, where I come from (Fig 4). Hence, many surgical trainees complete their surgical training without being exposed to quality vascular surgery. Vascular awareness amongst these young surgeons is poor because of this. Only two centers in India presently offer the MCh in vascular surgery, which is a 3-year course. At the conclusion, the trainee has to appear for the board examination.

Three years ago the National Board of Education, another independent body that administers medical education in India, agreed to start a separate Fellowship in Vascular Surgery, which is a 2-year training program. This was started in three centers: One is a medical college and the other two are private hospitals. This fellowship has now been upgraded to a Diploma in National Board (DNB) course, which is a 3-year course. Two more centers have been approved to start this course. In all, only 12 candidates are trained every year in vascular surgery. During this training, the trainees get enough hands-on training in operative vascular surgery but limited endovascular training. Most often the trainees must travel overseas to get training in endovascular procedures.

ROLE OF THE VASCULAR SOCIETY OF INDIA

The Vascular Society of India (VSI) was formed in 1994 with 34 members. The membership has now grown to about 300, but only 70 are full-time vascular surgeons. The rest are cardiac surgeons, general surgeons, radiologists and cardiologists. VSI was formed with the objective of creating greater awareness about vascular diseases amongst both the general public and the medical fraternity. Non-surgeons, such as radiologists and cardiologists, were allowed to join as associate members with no voting rights to create a common forum for everyone treating vascular diseases.

A mindset exists amongst the medical personnel that atherosclerosis and vascular diseases are uncommon in India and that they are diseases of the Western countries. To remove this misconception, VSI has been conducting annual conferences in different cities in India and continuing medical education (CME) programs for the medical students in various medical colleges.

VSI has been conducting hands-on vascular suturing workshops with animal models for the surgical residents. Endovascular workshops for the vascular trainees, which have been held in collaboration with Cordis, consist of module one, where the trainees do the procedures on Mentis simulator (Mentis Inc, Winnetka, Ill) and module two, when they are allowed to do procedures on animal models.

VSI has also arranged for a number of fellowships in various parts of the world for the young vascular surgeons to undergo training in open surgery as well as endovascular procedures. Still, we do not have enough trained vascular surgeons available across the country. With the change in lifestyle and improved life expectancy, the disease spectrum is also changing. The number of vascular patients is likely to increase owing to the increase in the incidence of smoking and an epidemic-like increase in diabetes mellitus; but right now, we are under-prepared to handle that situation.

FUTURE GOALS

To create awareness amongst public. Public awareness about vascular diseases is extremely poor. A media-conducted survey found only 20% had heard of vascular surgery and none had heard of bypass surgery in the leg. The Vascular Society of India (VSI) has successfully conducted an all India awareness campaign in which the media, Health Minister, and health officials participated. The VSI plans to declare the first week of August as the vascular awareness week and conduct similar programs every year.

To create awareness amongst the medical students. Undergraduate medical students and postgraduate surgical trainees do not have sufficient exposure to vascular surgery because this specialized service is not available in many of the medical schools. VSI has submitted a proposal with the health ministry to start vascular departments in all of the medical colleges. VSI has proposed to increase the number of CME lectures and workshops for all the surgical postgraduates in all the states that do not have vascular services.

To start more training courses in vascular surgery. A number of private hospitals have well-developed vascular services. The VSI has been helping these hospitals to start training programs (DNB courses). VSI has formed a commit-
tee to interact with the National Board to decide on the curriculum and training for the students. VSI proposes to conduct endovascular training courses for more number of trainees every year.

**Collaboration with World Federation of Vascular Societies.** This will give a great opportunity for the trainees and young vascular surgeons to get international exposure.

**Promote research.** Buerger’s disease and aortoarteritis are more common in Asian countries. Work has to be done on the epidemiology and causative factors. Nothing much has been done because of lack of funds. This is another area where the World Federation of Vascular Societies can help.

**Create a national registry for all the common vascular problems.** Nonavailability of national data has been one of the main reasons for administrative indifference. This will also help to convince our medical colleagues that vascular diseases are common in India.

**REFERENCES**


Submitted May 27, 2008; accepted Aug 29, 2008.