Meeting an Unmet Need

Should vascular surgery be performed in Cameroon, Africa?

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CASE SCENARIO

A 53-year-old man with an abdominal aortic aneurysm (AAA) is followed annually by ultrasound. The patient is asymptomatic, but his AAA has grown from 5 to 6 cm over the last year. What is the optimal treatment for this patient? Open repair? Observation? Endovascular repair?

This is not a question that would be asked in an academic journal in the West. If the patient met criteria for endovascular aneurysm repair (EVAR), that would be the course of action. If the patient did not meet EVAR criteria, or the center did not have endovascular capabilities, then open repair would be the answer. This question becomes quite complicated, however, when considered in sub-Saharan Africa. There are several excellent vascular centers throughout Africa, but in most countries, there is a lack of fellowship-trained vascular surgeons, as well as a lack of endovascular training and supplies. The answer is yes, the AAA should be repaired, but where and by whom?

Over the last 10 years, there has been a major shift in the West in how vascular surgery has been performed and who is performing it. For example, more than 50% of AAA repairs are now performed via an endovascular approach, with a decrease in morbidity and mortality in properly selected patients.[1] As endovascular interventions have vastly improved outcomes in the West, this technology has lagged in the majority of sub-Saharan African countries due to significant financial and training constraints. In addition to new technology, there has been a shift in the West from general surgeons performing vascular surgery to fellowship-trained vascular surgeons who solely function as vascular surgeons.

SHOULD VASCULAR SURGERY BE PERFORMED IN SUB-SAHARAN AFRICA?

Vascular disease is commonly a problem of the elderly. The average life expectancy in Cameroon is 52 years. One in five children will die before they reach their fifth birthday. The cause of death for nearly all of these people is something other than a vascular source. Malnutrition is endemic. Malaria is ubiquitous and kills one in 10 children in Cameroon.[2] According to the American Red Cross, the cost of a mosquito net is $0.32 and reduces malaria by 38%.[3,4] Medication for malaria treatment costs less than $1 and saves thou-

sands more lives than even the cheapest of vascular procedures. In spite of the low cost, many people in Cameroon continue to suffer and perish from these common diseases. Most people die from easily preventable diseases long before they require intervention for vascular diseases. In a country with such limited health resources, efforts directed at common and easily treated ailments are paramount. There is, however, a sizable population in Cameroon that requires skilled vascular care. To meet the needs of these patients, a comprehensive vascular care program, complete with all medical and surgical treatment options, should be instituted. One of the first steps to creating such a program is accurately identifying the vascular surgery needs in each country. This can be quite challenging in some developing countries due to the lack of organized patient records, but the results will assist in planning where vascular centers should be established.

WHO SHOULD PERFORM VASCULAR SURGERY?

Basic vascular surgery skills, such as amputations and arteriovenous fistulae and grafts, can be performed by the majority of general surgeons. Advanced vascular surgery procedures, such as lower limb bypass, extremity revascularization after traumatic injuries, or AAA repair require advanced vascular surgery training that often is not adequately found in general surgery training. In addition, fellowship-trained vascular surgeons can assist in training general surgeons throughout the country in basic vascular surgery techniques. At the present time, considering starting vascular surgery programs in Cameroon is putting the cart before the horse. First, specialists should be trained in existing worldwide training centers. It would be far more time, and cost-effective to send a number of Cameroonian general surgeons to the US or Europe to pursue specialized training in vascular surgery, than it would be to attempt to establish vascular surgery programs de novo. These newly trained vascular surgeons could then return to Cameroon after completion of their training. Although this sounds straightforward, it is actually a difficult first step. There are many hurdles to be overcome. Who will fund these fellowships? Will Cameroonian general surgeons be willing to leave their families and country for several years of training? How can this training program be set up to ensure these surgeons will return to Cameroon, so as not to worsen the "brain drain" that is already a huge problem throughout the health care field in Africa?

WHERE SHOULD VASCULAR SURGERY BE PERFORMED?

Once the framework for training vascular surgeons is initiated, the next step is to determine where vascular surgery should be performed. The establishment of vascular surgery centers, even limited only to hospitals in the 12 provincial capitals of Cameroon, would involve capital outlays that are both impractical and foolish. According to the World Bank, the average daily salary of a Cameroonian citizen is a little over $1 per day. Surgical supplies alone for the most basic vascular case involve costs of several hundred dollars. Endovascular equipment requires substantially greater investment, both for baseline hospital equipment and for each patient. In a country with no health insurance, basic vascular surgeries would involve incurring insurmountable debt for the patient and family alike. Presently, the funding cannot come from the government. The budget for the Ministry of Heath in Cameroon is almost nonexistent. Fully equipping, staffing, and maintaining 12 US-quality vascular programs would involve a majority of this budget, leaving little for the more common and pressing health problems affecting the population.

One model that should be followed is that of the trauma system, in which a level one trauma unit can receive patients from throughout the country for specialized trauma care. Establishing similar centers for vascular surgery would allow for grouping of supplies, trainees, and vascular surgeons who can assist each other's practice. Training can then be centralized and supported both by the surgical associations of Africa and the West. If centers such as this were established, it would be the duty of the Western vascular societies to support the training of surgeons in these centers. Optimally, Western surgical societies can establish relationships with the vascular surgery center in each country. In addition, specific universities can even be encouraged to sponsor a training program and send fellowship-trained vascular surgeons abroad several times per year. There are many examples of universities forming a long-term collaboration with surgical departments in developing countries to create a consistent flow of surgeons to participate in on-site training.

SHOULD ENDOVASCULAR TRAINING AND TREATMENTS BE USED IN MOST SUB-SAHARAN AFRICAN COUNTRIES?

The problem with endovascular repair of AAA and stenting of peripheral arterial lesions is that they often require multiple interventions, the devices are expensive, complications such as endoleaks can be expensive and technically challenging to deal with, advanced training is required, and medications such as clopidogrel are often required postoperatively. Despite these problems, endovascular therapy should be encouraged. One obstacle to training surgeons in Africa is that surgeons often feel they have to leave their country to perform technologically advanced procedures. If technology is encouraged and

brought to sub-Saharan Africa, there is a greater chance surgeons will stay and advance their careers in their own countries when given the opportunity. In addition, advanced endovascular techniques used to treat patients in the private sector may create funds that can be used for more open vascular supplies and training. Although the ethics of this deserve discussion, the financial reality of developing vascular surgery treatment centers will require innovative ideas such as this. In addition, endovascular companies in the West can be lobbied, and it is good public relations for them to supply developing countries with endovascular supplies.

CONCLUSION

There is a great need for vascular surgery in sub-Saharan Africa. As vascular surgery becomes increasingly separate from general surgery, we need to think ahead to how we can assist in training specialized vascular surgeons in sub-Saharan Africa and assist their growth and development. By establishing national vascular centers that can be supported by universities and societies in the West, we can develop a training system that helps challenge and retain vascular surgeons in their native countries. ■

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