

Practicing Retina in the Developing World

The challenges are significant, and the resources are few, but the results that can be achieved for those in need make the work worth the effort.

BY PAUL S. BAKER, MD; WITH JOHN M. CROPSEY, MD; AND BEN ROBERTS, MD



As retina fellows, we are excited to enter a field that has undergone tremendous growth and advancement in recent years. With the development of new diagnostic and treatment modalities, we have been given the tools to provide the most up-to-date care for a wide range of retina disease, both in the clinic and the OR. After speaking with a close friend from residency who has chosen to practice ophthalmology in a developing country, which is something most of us will never experience, we are reminded that the treatment of retinal disease drastically differs in different parts of the world. Hearing his stories has affected our approach toward treating patients with retinal disorders. We no longer take for granted easy access to the technologies that we use on a daily basis. Below, John Cropsey, MD, and Ben Roberts, MD, both of whom are currently practicing at Tenwek Mission Hospital, Kenya, share their experiences.

—Paul S. Baker, MD; Allen Chiang, MD; and Eugene A. Milder, MD

Q: How did you decide to practice ophthalmology in the developing world?

John Cropsey, MD: I grew up in Togo, in West Africa, at a mission hospital that exposed me to the great medical needs of sub-Saharan Africa. There was such a lack of eye care in the 1980s and 1990s that my father, a general surgeon, was trained to perform cataract and glaucoma surgery. My father and two other missionary surgeons independently told me that if they were to do it over again, they would become ophthalmologists to serve in the developing world. In addition, God has shown me so much love, mercy, and grace, that I am compelled to love my neighbor as myself. My strong faith has led me to make neighbors in sub-Saharan Africa at Tenwek Mission Hospital, Kenya.

Ben Roberts, MD: I made several trips to developing countries beginning in college and saw the great need for quality care and training in other parts of the world. My first trip was with a group of ophthalmologists who went to Jamaica to work in a 2-week clinic and surgical camp. After several years of ophthalmology exposure by taking these trips, I decided to pursue ophthalmology residency training and devote a good portion of my time to medical missions.

Tenwek Mission Hospital is one of only a handful of referral centers in East Africa that have the resources to treat retinal pathology.

Q: Of the patients you see, what percentage present with retinal disease?

Dr. Cropsey: Tenwek Mission Hospital is one of only a handful of referral centers in East Africa that have the resources to treat retinal pathology. Approximately 20% of our cases are retina.

Q: What types of retinal pathology do you see most often in your clinic?

Dr. Roberts: The majority of retinal pathology that we see stems from diabetic retinopathy. Diabetes is rapidly on the rise in developing countries, particularly in East Africa where I spend most of my time. Most patients present with very advanced proliferative disease secondary to many years of poorly controlled diabetes. The second most common retinal pathology is trauma. The majority

of the population in East Africa survives by working outdoors, either farming or caring for livestock. Few, if any, wear safety protection when working in risky environments. In general, most patients have a delayed presentation compared with patients in the United States.

Q: What office-based treatment modalities are available to you?

Dr. Cropsey: We are fortunate at Tenwek to be one of only three or four centers in all of Kenya, with a population of 38 million, that have the ability to perform advanced, office-based treatment for retinal pathology. In terms of diagnostics, we have fluorescein angiography, digital fundus photography, and automated visual field testing. Unfortunately, we do not have optical coherence tomography, which would be helpful. In our hospital, we have argon laser and bevacizumab (Avastin, Genentech). There is little difference in how we treat patients compared with the United States, although we charge much less. For example, panretinal photocoagulation costs a patient the equivalent of \$6.

Q: For what retinal diseases do you intervene surgically?

Dr. Roberts: We perform surgery for proliferative diabetic retinopathy, trauma, retinal detachments, and to a lesser degree macular hole surgery.

Q: What surgical tools do you have at your disposal?

Dr. Cropsey: Very few people in sub-Saharan Africa have access to retinal treatment, particularly surgical intervention. In Kenya, there are only two centers with surgical capability for the general population. At Tenwek, we have an Accurus (Alcon Laboratories, Inc.) and a Zeiss microscope (Carl Zeiss Meditec, Dublin, CA) that allow us to perform nearly any retinal surgery that one could do in the United States. We perform all of our surgeries using a contact lens. We also have endolaser, SF₆, heavy liquid, and silicone oil at our disposal. Because we have so few retina specialists in this region, I am performing retina surgeries as a general ophthalmologist 1 year out of residency and with no formal retina fellowship training.

Q: How would you characterize the treatment of retinal detachments in the developing world?

Dr. Cropsey: The vast majority of patients with retinal detachments in sub-Saharan Africa will never have access to a retina specialist, and so they go untreated. For example, physicians in the two eye care centers that are responsible for the majority of retinal care in Kenya performed 800 retina surgeries last year for a population of 38 million. Kenya likely has the most advanced



Dr. Cropsey and some of his younger patients at Tenwek Mission Hospital in Kenya.

eye care in sub-Saharan Africa outside of South Africa. Most countries in this region have no retina specialists, and the patients who present to us almost always have chronic detachments with proliferative vitreoretinopathy (PVR) and a poor prognosis. In my year at Tenwek, I have had only four patients present within the first month of retinal detachment.

Dr. Roberts: Most retinal detachments present late and require combined treatment modalities such as pars plana vitrectomy, scleral buckle, and silicone oil.

Q: What are the major obstacles to treating retinal disease in the developing world?

Dr. Cropsey: The first and foremost obstacle is a lack of retina specialists. There are very few ophthalmology residency programs in sub-Saharan Africa and no retina fellowships. The second is the lack of equipment. For example, Uganda's only retina specialist does not have access to a vitrectomy machine. Third is poverty. It is very difficult for poor patients in rural areas to find a general eye care provider, and if, by some miracle, they do find a retina specialist, they often cannot afford care. I saw a man today from Nairobi who had been quoted a price of 200,000 Ks (\$2,500) for a retinal detachment repair by a retina specialist at one of the charitable eye units. When a majority of the population is living on the equivalent of \$1 a day, this amounts to almost 7 years of wages. Would you pay that amount to have surgery? What if it meant you would not be able to feed your children or send them to school? At Tenwek, we are able to provide retinal care to the poor only because

of significant subsidies from charitable organizations and churches in the United States.

Dr. Roberts: Having disposable supplies such as tubing, vitrectomy cutters, and blades presents obstacles because nothing is wasted in the developing world, and instruments and supplies are often used longer than they are designed for, purely out of necessity. We are careful, however, not to compromise sterility and patient safety.

Q: How do you best allocate limited time and resources to treat patients with retinal disease?

Dr. Cropsey: This has been one of my major issues in adjusting to life in Africa. Because of the immense need there, I have had to work long hours to take care of all the patients that come to me, and it has become physically and emotionally unsustainable. In the past few weeks, I have decided to drastically limit the number of retina cases that I am willing to take on because other pathology requires much less time to treat and I am able to achieve better outcomes.

Dr. Roberts: There is definitely a learning curve in the art of allocation. For instance, patients presenting with chronic retinal detachments are counseled extensively before proceeding with surgery. I also take into account the presence and severity of bilateral retinal disease. If a patient presents with 20/20 vision in one eye and hand motion vision in the other eye with a chronic retinal detachment, I am less likely to attempt repair, knowing that it will not offer any significant functional change for that person's vision. Alternatively, if a patient presents with bilateral advanced PVR and vitreous hemorrhage, I am likely to offer surgery because this scenario has potentially good visual outcomes.

Q: How can a retina physician who is interested in humanitarian work contribute to patient care in the developing world?

Dr. Roberts: There are several ways of helping. Physicians can help by contributing financially to organizations or individuals who are actively providing quality care in the developing world. Another way to help is to collect supplies that go unused stateside and send them to these organizations or individuals. Further, retina specialists are always welcome to serve at one of these locations for a few weeks, months, or even an indefinite period of time if such a situation is allowable. Teaching others and transferring skills to African nationals or US expatriates who are providing eye care in the developing world is another welcome way to help.

If you have equipment that is no longer needed,

To donate no-longer-needed equipment, particularly high quality lasers and vitrectomy machines, contact one of these charitable organizations:

World Medical Mission:
<http://www.samaritanspurse.org/index.php/wmm>)

Christian Blind Mission
 (<http://www.cbm.org>)

particularly lasers and vitrectomy machines that are of high quality, World Medical Mission and Christian Blind Mission (see inset above for the Web addresses for these organizations) are examples of organizations that can facilitate placing equipment where it is needed.

I encourage anyone who has an interest in volunteering to make a trip to where your skills and resources can restore vision to someone who otherwise would not receive help. The experiences and blessings that result from a service mission far outweigh any sacrifice of time or resources needed to participate. ■

Ben Roberts, MD, is a member of the Retina Consultants of Alabama in Birmingham. He has spent significant time at Tenwek Mission Hospital in Bomet, Kenya, and will be returning to Tenwek in the summer of 2011.



John Cropsey, MD, is currently in his second year of practice at Tenwek Mission Hospital. He moved to Kenya after graduating from the ophthalmology residency program at Wills Eye Institute, Thomas Jefferson University, in Philadelphia.



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