

Chance encounter with neuro-ophthalmologist redirects would-be neurologist to an outstanding, lifelong career in ophthalmology

William W. Culbertson, M.D.

Early in his career, William W. Culbertson, M.D., professor of ophthalmology realized that private practice couldn't offer everything he wanted from the field of ophthalmology. Thus, after four years he left his Coral Gables practice to pursue a fellowship in corneal and external diseases at Bascom Palmer. It was a move that would change the course of his life.

"It was absolutely the right decision," Culbertson says, adding that he had no specific plans at the time other than to specialize in corneal diseases and surgery. Midway through his fellowship, in 1978, he was offered a position at Bascom Palmer. With the exception of a fellowship in corneal and external diseases and uveitis at the Francis I. Proctor Foundation for Research in Ophthalmology (a fellowship sponsored by Bascom Palmer) he has been at the institute ever since.

"I pinch myself every day that I chose this course," he says. In fact, Culbertson originally set out to be a neurologist. That was until a chance medical school externship in neuro-ophthalmology under Dr. J. Lawton Smith at Bascom Palmer in 1970 exposed him to the field of ophthalmology. "Lawton Smith made it fascinating and interesting," Culbertson recalls. "I knew this was for me."

Today a recognized pioneer in vision correction surgery and an expert in corneal and external disease, Culbertson participated in the first nationally organized study of refractive surgery in 1982. At the time, ophthalmologists questioned the validity of using surgery on healthy eyes simply to reduce the need for glasses. Yet the surgery, called radial keratotomy, appeared to be the only effective way to treat myopia (near-sightedness).

Radial keratotomy was the evolution of a technique first performed by Tsutomu Sato, a Japanese doctor, in the late 1930s. The technique, which involved making incisions on the back of the cornea, was improved upon in the 1960s by Russian surgeons

who found superior results when incisions were made on the front of the cornea. By the late 1970s, the procedure migrated to the United States and the need for an organized study became clear.

Bascom Palmer was one of nine U.S. centers to participate in the National Institutes of Health-sponsored "Prospective Evaluation of Radial Keratotomy," study for which Culbertson was an investigator. The study provided detailed information about how the cornea changes when incisions are made.

Since then, radial keratotomy has largely been replaced by Laser In Situ Keratomileusis (LASIK), a laser procedure which corrects near-sightedness by using an ultraviolet excimer laser to precisely shape the cornea under a superficial flap made on the surface of the cornea. The flap is then replaced, adhering itself back to the cornea without stitches.

"Laser treatment is more stable and more predictable than radial keratotomy," Culbertson says. "The laser is more accurate, but it is also more expensive." The RK knife, he explains, costs about \$2,000, compared to a laser which costs more than \$500,000. Expense may be one reason why less than seven percent of the eligible population have taken advantage of the laser procedure. Children are not candidates for the surgery because their eyes are not usually stable until their late teens or early 20s.

While Culbertson treats hundreds of refractive patients each year, they represent only half of his clinical practice. About 50 percent of his patients are cataract and cornea disease patients. Over the past few years he says cataract surgery has essentially merged with refractive surgery.



With more than 30 years of experience Dr. Culbertson is recognized as one of the world's most skilled refractive surgeons. He has been intimately involved in many major refractive clinical trials or studies. His experience and knowledge of the field is extraordinary.

"We used to wait to take out cataracts until the vision was terrible because all we could offer patients was thick cataract glasses. Their vision was magnified and distorted and they had trouble driving or even walking," Culbertson says. "Then, in the mid-70s, intraocular lenses which provided more natural vision became commonplace. These implants have evolved so that we now have a variety of options for vision including multifocal implants that allow patients to see both for distance and for reading without glasses.

In addition to his clinical practice, he is researching new techniques for corneal transplantation which involve selectively transplanting only the part of the cornea that is diseased, and is involved with FDA trials investigating new applications for the VISX STAR S4 excimer laser.

"My main areas of interest are an extension of what I've been doing almost my whole career," points out Culbertson, who earned his medical degree from Emory University School of Medicine and completed his residency in the Department of Ophthalmology at Vanderbilt University. The father of four, Culbertson lives with his wife Paula, and their two young children in Coconut Grove.

He calls this an incredible time in the history of vision correction surgery, citing the marriage of computer and laser technology in the past several years to improve surgical outcomes. Among the advances he cites are the advent of the ultraviolet excimer laser, infrared femtosecond lasers that can create precise corneal incisions and flaps, customized surgical procedures powered by computer technology and philosophical changes that now make it acceptable to operate to correct refractive errors in otherwise non-diseased eyes.

"All that is going on is incredibly exciting. In my career we've gone from vision correction surgery being completely taboo to it becoming this very advanced, acceptable technology. So much has come together in the last 15 years. I wish I was five people so that I had time to do it all."