



## SPECIAL SECTION REFRACTIVE SURGERY

# Alternative Lighting Improves Patient Comfort, Surgeon View

**I**nnovative lighting techniques can reduce excessive, direct illumination of the cornea during cataract and refractive surgery, according to Alan W. Brown, MD.

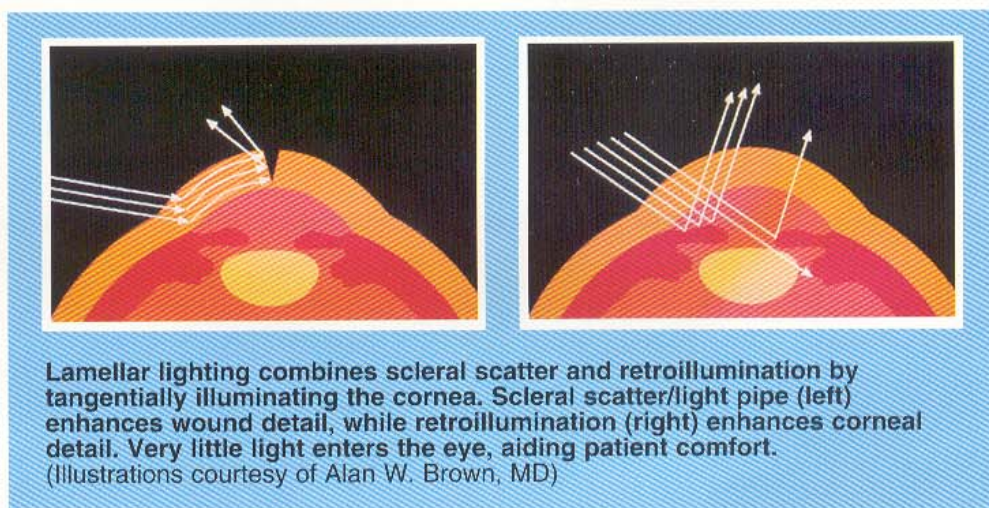


Dr. Brown

Tangential lighting, instead of a direct approach, can reduce the patient's discomfort and enhance visualization for the surgeon, he added.

"Even with major advances such as filters and ring illuminators, we still shine the light directly on the cornea during anterior segment surgery," said Dr. Brown, of Carolina Eye Associates, Wilmington, NC. "The light bounces back, and the reflection allows us to see what we're doing, but it results in excess light for the patient. It causes discomfort, corneal drying, and possibly some mild phototoxicity. The reflection also results in excess light to the surgeon, with glare and loss of contrast."

In an effort to eliminate those problems, Dr. Brown addressed the issue of the light's direction. "I always could see the eye better at the slit lamp than I could



at the microscope because the slit lamp allows certain techniques of illumination that the microscope doesn't," he said in an interview with OPTHALMOLOGY TIMES. "The method I've developed, lamellar lighting, combines scleral scatter and retroillumination by tangentially illuminating the cornea. The difference between routine microscope light and lamellar lighting is similar to the difference between holding a flashlight directly in front of your eye and holding it to the side. It means less direct light and more comfort for the patient; the patient perceives the light minimally. The cornea doesn't dry

out as fast, either.

"Lamellar lighting also reduces glare for the surgeon and intensifies corneal detail. It causes light to concentrate on the blade of the diamond knife because of an associated light pipe effect. As you make the incision, the diamond is brightly lit against a darker background, and you get a real appreciation for the depth of the incision."

### Multiple Uses

Surgeons can use this lighting technique with more than one delivery system, such as a side-light or a lid speculum illuminated with built-in fiberoptics, Dr. Brown said. "When using

lamellar lighting, I prefer to use a fixation ring/guide," he said. "The guide functions as a ruler to allow the surgeon to make straight lines on the cornea.

"I started with a fiberoptic addition to a glide (Byron Mastel glide, Mastel Precision Surgical Instruments), but recently designed an improved guide that allows better visibility and less instrument manipulation by placing two 'rulers' on the fixation ring 90° apart," Dr. Brown continued.

"More significantly, my single-step safety guide (Brown single-step safety guide, Mastel) has advantages over the two-step Russian technique for radial keratotomy. The guide has a stop that prevents the diamond from traveling beyond the

desired set point, preventing the knife from entering the patient's visual axis or going beyond the optical zone. Instead of passing back over the original incision, as in the two-step technique, the surgeon simply makes one incision with the guide in the Russian fashion with no fear of entering part of the optical zone."

Dr. Brown said he has applied for patents on several light-enhancing devices, as well as the Brown single-step safety guide.

*Editor's note: This presentation won the "best of session" award at the ASCRS Symposium on Cataract, IOL, and Refractive Surgery.*

—Paula Moyer  
Contributing Editor



The safety guide has two rules 90° apart and allows good visualization while minimizing the need to adjust the instrument for each incision. Its safety stop allows the surgeon to perform a single-step Russian technique without fear of entering the optical zone. (Photograph courtesy of Alan W. Brown, MD)

©Reprinted from OPTHALMOLOGY TIMES, May 15, 1994

AN ADVANSTAR ★ PUBLICATION Printed in U.S.A.