As the Academy Annual Meeting approaches, EyeNet brings you a preview of some papers to be presented there. Each paper was chosen by its session chairperson because it either constitutes important news in the field or is illustrative of a trend. Although only five subspecialties are represented below, there also will be paper sessions for intraocular inflammation/uveitis, neuro-ophthalmology, oculoplastics and pediatric ophthalmology. Look for a complete list of papers in the Final Program or Pocket Guide or at www.aao.org/programsearch.

**Refractive Surgery Paper**

**New Combined Procedure for Keratoconus**

With the odds stacked steeply against successful refractive correction, contact lens–intolerant keratoconus was previously treatable only with invasive procedures such as corneal transplantation or intracorneal ring segments. The introduction of corneal collagen crosslinking (CXL, which is not FDA approved) has slowed or stopped progression of keratoconus by stabilizing the cornea; but many patients, particularly if they are contact lens intolerant, remain visually incapacitated, with extremely high myopia and high astigmatism, said lead author David T. C. Lin, MD, clinical associate professor of ophthalmology at the University of British Columbia and medical director at the Pacific Laser Eye Centre in Vancouver, Canada. Along with other small studies, however, a Canadian Health Protection Bureau (HPB) trial has obtained promising early results with this patient population. A case series studies, however, a Canadian Health Protection Bureau (HPB) trial has obtained promising early results with this patient population. A case series

**CASE HISTORY.** A 29-year-old patient with keratoconus. Preoperative UCVA was counting fingers and BCVA was 20/50. The iVIS treatment was optical zone, 1.67 mm; transition zone, 5.77 mm. Three months after the procedure, UCVA is 20/60, and BCVA is 20/40. Subtraction elevation maps show small optical zone treatment resulting in a large elevation change (blue).

- **Topography-Guided Photorefractive Keratectomy for Keratoconus With Simultaneous Collagen Crosslinking Using the IVIS Laser** will be presented during the Refractive Surgery paper session, which takes place Sunday, Oct. 23, from 2 to 3:30 p.m., in Room W414cd.
of 12 eyes with six months’ follow-up found that 83 percent of eyes had UCVA of 20/40 or better, and 66 percent had improved BCVA following simultaneous topography-guided photorefractive keratectomy (TG-PRK) and CXL using the iVIS laser. Mean astigmatism decreased from -3.25 D preoperatively to -0.95 D. There have been no signs of progression, said Dr. Lin, whose coauthor is Simon P. Holland, MD.

Making a case for the benefits of reducing central astigmatism and spherical aberration in keratoconus patients, Dr. Holland presented an earlier trial showing patients’ satisfaction with even a small central optical zone, said Dr. Lin.

“So we brought this concept over to the iVIS by doing a tiny central ablation—regularizing the cornea with the iVIS—and then doing CXL afterward.”

A custom-driven platform, the iVIS suite has specific benefits for keratoconus, said Dr. Lin. Using corneal topography maps for every case, the iVIS Precisio is able to take up to 50 high-resolution images a second, making it possible to image difficult corneas, even those with extreme cones or keratometry greater than 60 D. In addition to a 1,000-Hz laser that shoots about twice as fast as those 500-Hz systems on the U.S. market, said Dr. Lin, the iVIS includes active cycloversion, allowing the laser to compensate during surgery and making it much more feasible to treat patients with keratoconus.

Using an all-surface laser, this TG-PRK can bring the central optical zone treatment area down to 1.5 mm to 2 mm, reducing the amount of corneal tissue removed and achieving results with a one-step treatment following epithelial calculations, said Dr. Lin. The iVIS can also perform a concurrent larger transepithelial all-laser debridement, which increases permeability for riboflavin—the first step in the CXL stage—and speeds re-epithelialization.

Dr. Lin said that although thin corneas may limit the depth of treatment, visual improvement is still sufficient to allow reasonable functioning without correction or with a soft contact lens, if necessary.

“In the past, our contact lens–intolerant keratoconus cases all went on to have corneal transplants,” said Dr. Lin, adding that now only one in 300 has needed to go this route.

—Annie Stuart

Dr. Nagy is a consultant to Alcon and LenSx.

Comparison of Conventional and Femtosecond Laser–Assisted Phacoemulsification on Dense Nuclear Cataracts will be presented during the Femtosecond Laser paper session, which takes place Sunday, Oct. 23, from 10:15 a.m. to 12:15 p.m., in Room W414ab. The Cataract paper session takes place Tuesday, Oct. 25, from 10:15 a.m. to noon, in Room W315.