

INSIDE THIS ISSUE

2 **Anti-VEGF Therapy for Age-Related Macular Degeneration Yields Improved Acuity for Eyes With VMID**

3 **Blepharoptosis Repair Improves Patients' Quality of Life**

4 **New Faculty**

Patients With Fuchs Endothelial Dystrophy Experience Residual Corneal Haze After DSEK

Research conducted in the Department of Ophthalmology at Mayo Clinic in Rochester, Minnesota, has determined the changes in anterior corneal cells in Fuchs endothelial dystrophy before and after Descemet stripping with endothelial keratoplasty (DSEK). The study also quantified corneal light scatter (ie, haze) and its relation to vision after DSEK.

"This study indicates that visual function after DSEK is affected by residual haze in the anterior host cornea more so than in the surgical interface," says Sanjay V. Patel, MD. "Haze, which contributes to glare disability, partially improves after surgical intervention and does not affect visual acuity. Haze improves more in younger patients, an outcome that is associated with improvement in forward light scatter."



Sanjay V. Patel, MD

The research abstract, "Cellular Changes in the Anterior Cornea Before and After Descemet Stripping Endothelial Keratoplasty for Fuchs Endothelial Dystrophy," was presented at The Association for Research in Vision and Ophthalmology annual meeting in May 2012. Related papers were published in *Archives of Ophthalmology* and *Cornea* (see below).

In the study, 49 eyes of 42 patients with Fuchs dystrophy (mean age, 67 years; range, 41-87 years) were examined before and at 1, 2, and 3 years after DSEK and were compared with 35 healthy eyes that did not have Fuchs. Outcome measures were high- and low-

Points to Remember

- A study of 49 eyes with Fuchs dystrophy compared with 35 healthy eyes indicates that visual function after Descemet stripping with endothelial keratoplasty is affected by residual haze in the anterior host cornea more so than in the surgical interface.
- Outcome measures were high- and low-contrast visual acuity and forward light scatter.
- Results show that haze partially improves after surgical intervention and does not affect visual acuity. Haze also improved more in younger patients.

contrast visual acuity and forward light scatter. Corneal haze, keratocyte density, and corneal nerves were assessed through use of in vivo confocal microscopy.

For More Information

"Confocal microscopy of Fuchs endothelial dystrophy before and after endothelial keratoplasty" was presented in part at The Association for Research in Vision and Ophthalmology annual meeting in May 2012 and will be published in an upcoming issue of *Archives of Ophthalmology*.

"Corneal Haze Determined by Confocal Microscopy 2 Years After Descemet Stripping With Endothelial Keratoplasty for Fuchs Corneal Dystrophy" was published in the July 2012 issue of *Archives of Ophthalmology*

(130[7]:868-74) and can be found online at www.archophth.ama-assn.org.

“Decreased Corneal Sensitivity and Abnormal Corneal Nerves in Fuchs Endothelial

Dystrophy” was published in the November 2012 issue of *Cornea* (31[11]:1257-63) and can be found online at www.journals.lww.com/corneajrnl/pages/default.aspx.

Anti-VEGF Therapy for Age-Related Macular Degeneration Yields Improved Acuity for Eyes With VMID



Sophie J. Bakri, MD

Retrospective research conducted at Mayo Clinic in Rochester, Minnesota, explored the clinical and imaging features of eyes with and without vitreomacular interface disease (VMID) that were treated with intravitreal anti-vascular endothelial growth factor (anti-VEGF) injections for exudative age-related macular degeneration (AMD).

Relevant Research

Several factors—including genetic and environmental inputs, oxidative stress, inflammation, and ischemia—have been explored as major contributors to the disease process of AMD, but its origins and effects continue to be incompletely characterized. Recent studies have also examined the vitreoretinal interface as an important element in the origins and effects of AMD. Indications include the following:

- Posterior vitreous detachment is considerably less common in eyes with AMD than in eyes without disease
- Persistent attachment of the posterior vitreous cortex to the macula is more common in eyes with exudative AMD than control eyes and eyes with nonexudative AMD

The Mayo Clinic Study

“There were no longitudinal data describing patients with VMID undergoing treatment for exudative AMD. Our aim was to describe clinical and imaging features of this group of patients, observed over the 4-year period since the widespread initiation of anti-VEGF therapy,” says Sophie J. Bakri, MD, of the Department of Ophthalmology at Mayo Clinic in Minnesota and the principal investigator of the study.

The research team identified 178 patients who received a diagnosis of exudative AMD from Dr Bakri and who were treated with anti-VEGF injection between January 1, 2005, and December 31, 2009. These patients met the following inclusion criteria:

- Age 50 years or older at their initial visit
- Available results of an optical coherence tomographic examination
- Available data from at least 1 year of follow-up

Points to Remember

- Several factors have been explored as major contributors to the disease process of age-related macular degeneration (AMD), including genetics, environment, oxidative stress, inflammation, and ischemia.
- Recent studies have also examined the vitreoretinal interface as a contributor, but there were no longitudinal data describing patients with vitreomacular interface disease (VMID) undergoing treatment for exudative AMD.
- A retrospective study found that, among eyes with VMID, anti-vascular endothelial growth factor therapy improved best-corrected visual acuity and decreased central foveal thickness despite continued traction.

Exclusion criteria included a history of any vitreoretinal surgery, retinal detachment, diabetic retinopathy, macular hole, uveitis, vascular occlusion, or myopia greater than -2 diopters.

Of the study patients, 146 had eyes with no traction and 32 had vitreomacular interface disease in the study eye. Of these 32 patients, 15 eyes had vitreomacular traction; 17 patients had a diagnosis of an epiretinal membrane.

The patients were monitored for an average of approximately 2.5 years. Their medical records were reviewed for best-corrected visual acuity, manually measured central foveal thickness from optical coherence tomographic imaging, and the number and timing of intravitreal anti-VEGF injections.

Implications for Future Studies

The study indicated that the induction of a complete PVD may not be necessary for improvement in either best-corrected visual acuity or anatomic outcome. Continued tractional forces on the retina did not appear to limit visual acuity or anatomic improvement, although the presence of a PVD may allow the retinal thickness to respond better to treatment

with each anti-VEGF injection. “We found that, among eyes with VMID, the anti-VEGF therapy yielded improved best-corrected visual acuity and decreased central foveal thickness despite continued traction. Eyes with VMID did require more anti-VEGF agents than eyes without VMID,” says Dr Bakri. “If confirmed in larger prospective studies, these results will have important implications for the treatment of exudative AMD in patients with VMID.”

For More Information

Dr Bakri presented these research results at the 2012 annual meetings of the American Society of Retina Specialists and The Retina Society.

The report “Visual and Anatomic Outcomes of Anti-VEGF Therapy in Exudative Age-Related Macular Degeneration and Vitreomacular Interface Disease: Vitreomacular Adhesion and Epiretinal Membrane” will be published in an upcoming issue of *Retina*.

Blepharoptosis Repair Improves Patients’ Quality of Life

Blepharoptosis causes substantial reduction in a patient’s quality of life. The limitations resulting from this reduction may affect the patient’s perceived general vision, peripheral vision, and ability to drive.

A research team at Mayo Clinic in Rochester, Minnesota, examined the effects of blepharoptosis and its surgical repair on health-related quality of life using 2 validated response measures:

- The 25-item National Eye Institute Visual Functioning Questionnaire (NEI VFQ-25), a vision-specific instrument
- The EuroQol Group’s EQ-5D, a generic, health-related quality-of-life instrument

“We found that surgical blepharoptosis repair was associated with statistically and clinically significant improvement in patient quality of life comparable in magnitude to what other investigators have reported for exudative age-related macular degeneration treatment with anti-vascular endothelial growth factor therapy,” says Elizabeth A. Bradley, MD, an ophthalmic plastic and reconstructive surgeon in the Department of Ophthalmology.

The team conducted a prospective pre- and postsurgery survey analysis of 48 adults who underwent blepharoptosis surgery by Dr Bradley between March 2008 and March 2009. The age of participants ranged from 43 to 87 years, and 32 women and 16 men comprised the study group. Of the participants, 37 had bilateral and 11 had unilateral blepharoptosis repair under local anesthesia with sedation. The time between pre- and postsurgery surveys ranged from 14 to 252 days.

Survey Comparisons

The NEI VFQ-25 uses 25 subscale scores in 11 categories and generates an unweighted

Points to Remember

- In a prospective pre- and postsurgery analysis of 48 adults, surgical blepharoptosis repair was associated with statistically and clinically significant improvement in patient quality of life.
- Clinically significant change for this study was set at a conservative 10 or more points.
- The research team examined the effects of blepharoptosis and its surgical repair on quality of life using both vision-specific and generic health-related instruments.



Elizabeth A. Bradley, MD

composite score that averages all visual activity scores. The EQ-5D assesses 5 domains of health-related quality of life to generate index scores that correspond to related health states. The team used *t* tests for paired data to compare both the NEI VFQ-25 subscale scores and composite scores and the EQ-5D index and overall quality-of-life scores.

“Prior studies show that individual subscore changes of 5 or more points indicate clinically significant change,” says Dr Bradley. “Clinically significant change for this study was set at an even more conservative 10 or more points. The EQ-5D showed statistically significant change in individual scores for usual activities, with a reduction in deficits reported across all dimensions.”

For More Information

John P. Brach, MD, resident in the Department of Ophthalmology at Mayo Clinic in Minnesota, and Dr Bradley presented this research at The Association for Research in Vision and Ophthalmology annual meeting in May 2012.

Editorial Board:

Leo J. Maguire, MD
Sanjay V. Patel, MD

Ophthalmology Update is written for physicians and should be relied upon for medical education purposes only. It does not provide a complete overview of the topics covered and should not replace the independent judgment of a physician about the appropriateness or risks of a procedure for a given patient.

Contact Us

Mayo Clinic welcomes inquiries and referrals, and a request to a specific physician is not required to refer a patient.

Arizona

866-629-6362

Florida

800-634-1417

Minnesota

800-533-1564

Resources

mayoclinic.org/medicalprofs

Clinical trials, CME, Grand Rounds, scientific videos, and online referrals

New Faculty in Florida

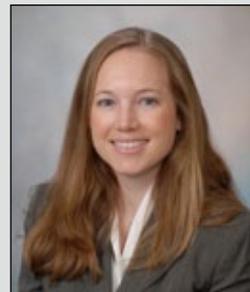
The Department of Ophthalmology at Mayo Clinic in Florida is pleased to announce the addition of 2 faculty members:

Syril K. Dorairaj, MD, joined the Mayo Clinic faculty after completing a fellowship in advanced imaging in glaucoma at The New York Eye and Ear Infirmary and New York Medical College, New York. Later, Dr Dorairaj served as director of research and imaging laboratory at The New York Eye and Ear Infirmary. He was also chief fellow in glaucoma at the University of California, San Diego. Dr Dorairaj completed residency training in ophthalmology at The New York Eye and Ear Infirmary and the Regional Institute of Ophthalmology, Bangalore, India. He has also completed a fellowship in molecular and developmental genetics at The Indian Institute of Science, India. In his new position, Dr Dorairaj provides expertise in advanced imaging in glaucoma, molecular genetics of glaucoma, recent advances in cataract and glaucoma surgeries, and continuous monitoring of intraocular pressure.



Syril K. Dorairaj, MD

Katherine G. Gold, MD, joined the Mayo Clinic faculty after she completed a fellowship on ophthalmic plastic and reconstructive surgery at New York University, The New York Eye and Ear Infirmary, and Columbia University, New York. She completed residency training in ophthalmology at Wills Eye Institute, Philadelphia, Pennsylvania. Dr Gold's primary focus in this new position includes orbital disease, ptosis, lacrimal disease, and thyroid eye disease.



Katherine G. Gold, MD

New Faculty in Minnesota

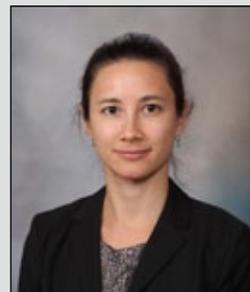
The Department of Ophthalmology at Mayo Clinic in Rochester, Minnesota, is pleased to announce the addition of 2 faculty members:

Cherie B. Nau, OD, joined the Mayo Clinic faculty after an anterior segment optometry residency in Madison, Wisconsin, and training at the Illinois College of Optometry, Chicago. Dr Nau provides expertise for contact lens fitting in corneal disease while also furthering her background in anterior segment imaging research studies.



Cherie B. Nau, OD

Wendy M. Smith, MD, joined the Mayo Clinic faculty after completing a 2-year fellowship in uveitis and medical retina at the National Institutes of Health, Bethesda, Maryland, and residency training at The Ohio State University, Columbus. In her new position, Dr Smith focuses primarily on uveitis while also providing medical retina services.



Wendy M. Smith, MD

Upcoming Continuous Professional Development Courses

For information on continuing education programs or to register for courses, visit www.mayo.edu/cme/ophthalmology.

2013 Visiting Faculty/Guest Lecturer Series

If you are interested in receiving advance notice of guest speakers or would like to attend a presentation, please contact Sanjay V. Patel, MD, at patel.sanjay@mayo.edu. There is no fee, and your visit will include a tour of the department if requested. The lectures may also provide credits in continuing medical education.