recovered uneventfully, indicating that deep tissue inflammation, dacryoadenitis, and dacryocystitis are likely to be common manifestations of adenoviral conjunctivitis.

Jonathan C. Horton, MD, PhD
Steven Miller, MD, PhD

Author Affiliations: Beckman Vision Center, University of California, San Francisco (Horton); Department of Laboratory Medicine, University of California, San Francisco (Miller).

Corresponding Author: Jonathan C. Horton, MD, PhD, Beckman Vision Center, University of California, San Francisco, 10 Koret Way, San Francisco, CA 94143 (hortonj@vision.ucsf.edu).


Author Contributions: Drs Horton and Miller had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Horton.

Acquisition, analysis, or interpretation of data: Horton, Miller.

Drafting of the manuscript: Horton.

Critical revision of the manuscript for important intellectual content: Horton, Miller.

Obtained funding: Horton.

Administrative, technical, or material support: Horton, Miller.

Study supervision: Horton.

Conflict of Interest Disclosures: All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

Funding/Support: This work was supported by grants EY02317 (Dr Horton) and EY02162 (Beckman Vision Center) from the National Eye Institute and a physician-scientist award from Research to Prevent Blindness (Dr Horton).

Role of the Funder/Sponsor: The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

En Face Optical Coherence Tomography of Outer Retinal Discontinuity and Fan-Shaped Serous Macular Detachment in Diabetic Macular Edema

We report en face optical coherence tomographic (OCT) imaging of serous macular detachment secondary to retinal microangiopathy in a patient with diabetic retinopathy and macular edema. The en face OCT clearly delineated a fan shape of the detachment. Our findings implicate an outer retinal discontinuity as the site through which fluid may have entered the subretinal space.

Optical coherence tomographic examinations have identified discontinuities of the outer aspect of the swollen neurosensory retina in eyes with serous macular detachment from retinal vascular disease. To our knowledge, the pathophysiologic relationship between such outer retinal discontinui-
ties and their contribution to the extent and distribution of macular detachment has not been determined.

En face (C-scan) OCT imaging is growing in use.2,3 In this study, we report a case of outer retinal discontinuity in a patient with retinal microangiopathy associated with diabetic retinopathy and demonstrate the use of en face OCT imaging to determine the pathophysiology of the associated macular detachment.

Report of a Case | A woman in her early 60s described sudden onset of an inverted fan-shaped scotoma in her right eye. Her history was significant for myopia, glaucoma, diabetes mellitus, and hypertension. She had a history of laser therapy in the left eye for a branch retinal vein occlusion. On examination, best-corrected visual acuity was 20/40 OD and 20/20 OS and intraocular pressure was 11 mm Hg OU. Fundus examination revealed increased cup-disc ratios in both eyes (0.8 OU). The right macula showed edema (approximately 1.5 disc areas) just below the fovea. Fluorescein angiography of the right eye showed prominent punctate macular leakage from a cluster of microaneurysms inferior to the fovea and a few scattered microaneurysms elsewhere (Figure 1). Optical coherence tomographic examination of the right eye showed inferior macular edema and subfoveal detachment of the sensory retina. Notably, there was a discontinuity in the outer layers of the detached retina contiguous with both the macular edema and foveal detachment. En face imaging with correlation with B-scan spectral-domain OCT (Figure 2) showed a fan-shaped foveal detachment with the outer retinal discontinuity at its apex and within the border of retinal edema. This finding was not appreciated by ophthalmoscopy.

The patient received focal, direct, thermal laser treatment only to areas of punctate leakage in the inferior macula of the right eye 7 months after initial presentation. Three months later, best-corrected visual acuity remained unchanged at 20/40 OD, but fluorescein angiography showed reduced leakage. En face OCT showed reduction of the macular detachment and reduced prominence of the outer retinal discontinuity (not shown). The patient also noted reduction in the scotoma size.
In this case of macular edema, correlation of en face B-scan OCT images implicated an outer retinal discontinuity as a site through which intraretinal fluid may have entered the subretinal space by virtue of its location at the apex of the detachment. The orientation of the fan-shaped detachment, spreading diagnostically away from the fluorescein leakage site, suggested a directional component to fluid flow away from this site. The presumed focality of flow through an outer retinal discontinuity combined with a distant source of primary leakage were unique features of this case. En face OCT demonstrated the orientation of the fan in a manner less easily visualized by B-scan OCT and helped identify the physiologically important leakage site. We speculate that expansion of a cystoid space and dehiscence of the contiguous outer retina may have created such a discontinuity, opening a path for the fluid to enter the subretinal space. In this case, laser treatment at the leakage site, although distant from the outer retinal discontinuity, was associated with improvement of the macular detachment.

Mortada A. Abozaid, MD
Drew Scoles, BS
Joseph Carroll, PhD
Dennis P. Han, MD

Author Affiliations: Department of Ophthalmology, Sohag University, Sohag, Egypt (Abozaid); Department of Ophthalmology, Medical College of Wisconsin, Milwaukee (Abozaid, Goldberg, Carroll, Han); Department of Biomedical Engineering, University of Rochester, Rochester, New York (Scoles); Department of Cell Biology, Neurobiology, and Anatomy, Medical College of Wisconsin, Milwaukee (Carroll); Department of Biophysics, Medical College of Wisconsin, Milwaukee (Carroll).

Corresponding Author: Dennis P. Han, MD, Department of Ophthalmology, Medical College of Wisconsin, 925 N 87th St, Milwaukee, WI 53226 (dhan@mcw.edu).


Author Contributions: Dr Han had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Han.

Acquisition, analysis, or interpretation of data: All authors.

DRAFTING OF THE MANUSCRIPT: Abozaid, Goldberg, Han.

Critical revision of the manuscript for important intellectual content: Scoles, Goldberg, Carroll, Han.

Obtained funding: Carroll.

Administrative, technical, or material support: All authors.

Study supervision: Han.

Conflict of Interest Disclosures: All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

Funding/Support: This work was supported in part by an unrestricted grant from Research to Prevent Blindness, the Jack A. and Elaine D. Klieger Professorship, the Thomas M. Aaberg Retina Research Fund, and grants P30EYO10931 and T32GM07356 from the National Institutes of Health.

Role of the Funder/Sponsor: The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

