operation may reflect suboptimal surgical management and serves as an additional marker for outcomes assessment. Reported rates of unplanned return to the operating room within 30 days after surgery vary from 3.5% in general surgery to 28% in pediatric neurosurgery. In this study, the reoperation rate after resident-performed cataract surgery was 2.11%. Interestingly, the rate of return to the operating room was lowest in the first quarter of the academic year, which may reflect greater supervision at the beginning of the academic year. The rate of retained lens fragment was 0.7%, which is comparable to the previously published rate of 0.8% after resident-performed cataract surgery. Reoperations after cataract surgery can have important implications for visual prognosis, morbidity, and health care costs. Additional investigation is required to elucidate the perioperative risk factors associated with reoperation. The reasons for reoperation can provide another method for evaluating surgical skills and can help identify surgical competencies that require improvement.

Shivali A. Menda, MD
Todd H. Driver, BA
Alexandra E. Neiman, BA
Ayman Naseri, MD
Jay M. Stewart, MD

Author Affiliations: Department of Ophthalmology, University of California, San Francisco (Menda, Driver, Neiman, Naseri, Stewart); Department of Ophthalmology, San Francisco General Hospital, San Francisco, California (Neiman, Stewart); Department of Ophthalmology, San Francisco Veterans Affairs Medical Center, San Francisco, California (Naseri).

Corresponding Author: Jay M. Stewart, MD, Department of Ophthalmology, University of California, San Francisco, 10 Koret Way, K301, San Francisco, CA 94143 (stewartj@vision.ucsf.edu).


Author Contributions: Drs Menda and Stewart 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: Menda, Naseri, Stewart.
Acquisition of data: Menda, Driver, Neiman.
Analysis and interpretation of data: All authors.
Drafting of the manuscript: Menda, Driver.
Critical revision of the manuscript for important intellectual content: All authors.
Statistical analysis: Driver, Neiman, Naseri.
Administrative, technical, or material support: Menda, Neiman, Naseri, Stewart.
Study supervision: Naseri, Stewart.

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Pilot Study of Individuals With Diabetic Macular Edema Undergoing Cataract Surgery

Although cataract surgery is performed in individuals with diabetes mellitus, data are limited regarding visual acuity (VA) or macular edema (DME) outcomes after surgery in eyes with diabetic ME (DME) at the time of surgery. Prior to an interventional study to try to improve long-term outcomes in these eyes, the Diabetic Retinopathy Clinical Research Network (DRCR.net) conducted an observational study (protocol at http://www.drcr.net) to assess factors affecting success of such an interventional trial. The primary goal of this study was to assess feasibility of recruitment and logistics of interaction among DRCR.net sites and cataract surgeons. Secondary goals were to describe the management of these eyes, any changes in ME (due to DME, postoperative cystoid ME, or both), and short-term vision outcomes.

Methods | This was a prospective, noncomparative study conducted at 30 US sites. Adults with at least 1 eye with DME on clinical examination involving the center of the macula, optical coherence tomography (OCT) central subfield thickness of 250 μm or greater using time-domain OCT or 310 μm or greater using spectral-domain OCT, VA of light perception or better, and scheduled for cataract surgery within 14 days of enrollment were eligible. Cataract surgery was conducted per the individual surgeon’s practice. Protocol visits by study investigators (retina specialists) included a preoperative baseline visit and a 16-week postoperative visit. Preoperative, intraoperative, or postoperative treatments for ME followed the investigators’ and cataract surgeon’s standard care. Standardized best-corrected VA and OCT scans were performed by certified personnel. The protocol and Health Insurance Portability and Accountability Act–compliant informed consent forms were approved by the institutional review board for each participating site. Each participant gave written informed consent to participate in the study.

Results | Sixty-eight study participants were enrolled between October 9, 2009, and July 8, 2010, when enrollment was discontinued owing to a slow enrollment rate. Among 63 eyes for which eligibility was confirmed, with baseline characteristics in Table 1, 60 (95%) completed the 16-week visit. Twenty-one eyes (35%) received no treatment for ME during the study. Preoperative treatment, defined as focal/grid laser or intravitreal triamcinolone acetonide within 4 months of surgery or intravitreal anti–vascular endothelial growth factor within 2 months of surgery, was reported in 26 eyes (43%). Four eyes (7%) and 25 eyes (42%) received intraoperative and postoperative ME treatments, respectively. Among eyes receiving ME treatment during the study, 27 (69%) received anti-vascular endothelial growth factor drugs. One eye had a ruptured capsule during surgery. At the 16-week visit, mean change in VA letter score was +12 (95% CI, +8 to +16) (Table 2). Improvement of at least 4 lines in VA was reported in 19 eyes (32%; 95% CI, 20%...
Discussion Low recruitment in this study sheds doubt on the ability of the DRCR.net to recruit an adequate sample within a reasonable time to pursue an intervention trial for ME in the context of cataract surgery among patients with DME at the time of surgery. The functional and anatomical outcomes reflect heterogeneous presurgical and postsurgical ME management in a cohort with DME. Uncomplicated cataract surgery among persons without diabetic retinopathy typically yields vision outcomes that are more uniformly positive than those observed in this cohort.2,5 However, this study estimated that as many as half of the eyes may have had no meaningful improvement or had worsening of VA. Only a small percentage of eyes had substantial VA loss or definitive worsening in central retinal thickening.
The observational nature and the lack of standardization in DME management limit definitive conclusions from this study.

Diabetic Retinopathy Clinical Research Network Authors/Writing Committee

Corresponding Author: Talat Almukhtar, MBCB, Jaeb Center for Health Research, 15310 Amberly Dr, Ste 350, Tampa, FL 33647 (drcrstat6@jaeb.org).


Authors/Writing Committee: The following investigators of the Diabetic Retinopathy Clinical Research Network take authorship responsibility for the study results: Susan B. Bressler, MD; Carl W. Baker, MD; Talat Almukhtar, MBCB; Neil M. Bressler, MD; Paul A. Edwards, MD; Adam R. Glassman, MS; Michael H. Scott, MD.

Authors/Writing Committee Affiliations: Wilmer Eye Institute, The Johns Hopkins University, Baltimore, Maryland (S. B. Bressler, N. M. Bressler); Paducah Retinal Center, Paducah, Kentucky (Baker); Jaeb Center for Health Research, Tampa, Florida (Almukhtar, Glassman); Henry Ford Health System, Detroit, Michigan (Edwards); Medical Associates Clinic, PC, Dubuque, Iowa (Scott).

Author Contributions: Dr Almukhtar 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: S. B. Bressler, Baker, N. M. Bressler, Edwards, Glassman.

Acquisition of data: S. B. Bressler, Baker, Almukhtar, Edwards, Scott.

Analysis and interpretation of data: S. B. Bressler, Baker, Almukhtar, N. M. Bressler, Edwards, Glassman.

Drafting of the manuscript: S. B. Bressler, Baker, Almukhtar, Edwards.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Almukhtar, Glassman.

Obtained funding: N. M. Bressler, Glassman.

Administrative, technical, or material support: Almukhtar, Scott.

Study supervision: S. B. Bressler, Baker, N. M. Bressler, Glassman.

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Effect of Azithromycin on Lipid Accumulation in Immortalized Human Meibomian Gland Epithelial Cells

Meibomian gland dysfunction (MGD) is believed to be the leading cause of dry eye disease (DED), which affects tens of millions of Americans.1 Of particular interest, the most common pharmaceutical treatment for the management of MGD in the United States is the off-label use of topical azithromycin.2 This macrolide antibiotic is presumed to be effective because of its anti-inflammatory and antibacterial actions, which may suppress the MGD-associated posterior blepharitis and growth of bacteria on the eyelid.3 However, to our knowledge, no published, peer-reviewed data demonstrate that azithromycin has the ability to act directly on the human meibomian gland to enhance this tissue’s function and to ameliorate the pathophysiology of MGD.

We hypothesize that azithromycin can act directly on human meibomian gland epithelial cells to stimulate their differentiation, enhance the quality and quantity of their lipid production, and promote their holocrine secretion. Our purpose was to begin to test our hypothesis.

Methods | Immortalized human meibomian gland epithelial cells (IHMGECS; passages 20-22) were cultured in the presence or absence of 10% fetal bovine serum as previously reported.4 Cells were treated with the ethanol vehicle or azithromycin (10 μg/mL; Santa Cruz Biotechnology) for varying periods. Cellular morphological appearance was recorded; cells were counted with a hemocytometer, and lipid accumulation was assessed by staining cells with LipidTOX green neutral lipid stain (Invitrogen Corp) according to reported methods.4 Staining fluorescent intensities were quantified using ImageJ software (http://rsbweb.nih.gov/ij/index .html). Statistical analyses were performed with t test (2-tailed, unpaired).

Results | Our results show that azithromycin induces a striking, time-dependent accumulation of lipid in IHMGECS (Figure 1A). Within 3 days of azithromycin exposure, the number, size, and staining intensity of intracellular lipid-containing vesicles had markedly increased as compared with those of vehicle-treated control cells. This azithromycin effect on lipids appeared to become maximal at days 3 to 7 of the study (Figure 1B).

Evaluation of cellular morphology indicated that azithromycin may promote terminal maturation of IHMGECS given that vesicle accumulation was often followed by a cell break-up and vesicle release (Figure 1C).