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EDITORIAL

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PERSPECTIVE

- **208 Retinopathy of prematurity: evolving treatment with anti-vascular endothelial growth factor.** *M. Elizabeth Hartnett*

This perspective introduces retinopathy of prematurity and describes the changes in retinopathy of prematurity evolution and differences in risk profile worldwide; advances in treatment; clinical evidence; ongoing questions and conclusions.

- **337 Retinal biomarkers of Alzheimer disease.** *Cecilia S. Lee and Rajendra S. Apte*

Advances in imaging technology have identified promising retinal biomarkers for Alzheimer's disease, but there are important research challenges ahead. Investigation of potential markers must include determining the connection between imaging findings and pathology, appropriate classification of patients, and validation that biomarkers that are specific for AD and can be assessed in patients with comorbidities. We provide important considerations for further investigation including the use of big data.

ORIGINAL ARTICLES

- **1 Endothelial cell loss after Descemet's membrane endothelial keratoplasty for Fuchs endothelial dystrophy: DMEK compared to triple-DMEK.** *David Shahnazaryan, Aida Hajar Sese, and Emma J. Hollick*

Descemet's membrane endothelial keratoplasty (DMEK) can be performed as a staged procedure before or after cataract surgery or combined with phacoemulsification in patients with both endothelial dysfunction and cataract. This interventional case series of 114 DMEKs performed for Fuchs endothelial dystrophy shows significantly higher endothelial cell loss at both 1 month and 1 year in patients undergoing concurrent cataract surgery (triple-DMEK) than in pseudophakic patients who had only a DMEK procedure.

- **7 Four-year Survival of Descemet Membrane Endothelial Keratoplasty in Patients with Previous Glaucoma Surgery.** *Nir Sorkin, Michael Mimouni, Eli Kisilevsky, Tanguy Boutin, Eyal Cohen, Tanya Trinh, Gisella Santaella, Allan R. Slomovic, Clara C. Chan, and David S. Rootman*

Four-year graft survival analysis of Descemet membrane endothelial keratoplasty performed in eyes with previous glaucoma surgery found that although early outcomes are good, longer-term rejection and failure rates are high, much more than rejection and failure in a control group comprised of patients with Fuchs dystrophy. Physicians and patients should be cognizant of the high likelihood of graft failure in this setting.

- **17 Quantitative Analysis of the Choriocapillaris in Uveitis Using En Face Swept-Source Optical Coherence Tomography Angiography.** *Zhongdi Chu, Jessica E. Weinstein, Ruikang K. Wang, and Kathryn L. Pepple*

This retrospective study used swept-source optical coherence tomography angiography to automatically identify and quantify flow deficits in choriocapillaris in a uveitis cohort. This approach demonstrated that posterior uveitis showed increased choriocapillaris flow deficit size and density. The main significance of this study is that changes in the choriocapillaris can be automatically quantified, and

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this method could be developed into a clinical tool for monitoring patients with posterior uveitis.

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- **28 Chorioretinal toxicity of perfluorooctane (ala octa). Results From 48 Surgical Procedures in Geneva.** *Stéphan J. Tobalem, Andreas Weinberger, Martina Kropp, Ariane Malcles, Christian Jonescu-Cuypers, Georges Souteyrand, and Gabriele Thumann*

Outcomes of patients treated with the perfluorooctane Ala Octa during pars plana vitrectomy were compared to those of patients treated with the perfluorodecalin perfluorodecalin in a Swiss single-center retrospective observational case series. Ala Octa caused unusual and lot-dependent toxic retinal damage that was not observed with perfluorodecalin therapy. Special consideration should be given to develop a central European control agency for medical devices and to reevaluate safety procedures currently accepted by the European Union and International Organization for Standardization (Geneva, Switzerland) for intraocular surgery.

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- **40 Optical Gap Biomarker in Cone-Dominant Retinal Dystrophy.** *Jin Kyun Oh, Joseph Ryu, Jose Ronaldo Lima de Carvalho, Jr, Sarah R. Levi, Winston Lee, Emmanouil Tsamis, Vivienne C. Greenstein, Vinit B. Mahajan, Rando Allikmets, and Stephen H. Tsang*

The authors describe the spectral-domain optical coherence tomography features of optical gaps in a retrospective cohort study of 36 patients diagnosed with inherited retinal dystrophies, including 2 novel candidate etiologies of the phenotype. Optical gap height was noted to correlate well with measures of central retinal thickness at the fovea. Longitudinal analysis of 19 patients revealed that optical gaps progressively widen, suggesting a potential use of this phenotype as a biomarker of disease progression.

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- **54 Association of dry eye disease with dyslipidemia and statin use.** *Khalid M. Aldaas, Omar M. Ismail, Judi*

Hakim, Eric D. Van Buren, Feng-Chang Lin, Joshua S. Hardin, and Jay J. Meyer

This database study identified approximately 40% greater odds of a diagnosis of dry eye disease for individuals taking statin medications and approximately 40%-60% greater odds for those with abnormal lipid panel values. Clinicians should be aware of this association, given the high prevalence of both dyslipidemia and statin use in an aging population. Additional research is required to determine the separate effects of statin use and dyslipidemia and to elucidate any pathogenic mechanisms involved.

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- **59 Nonexudative Perifoveal Vascular Anomalous Complex: The Subclinical Stage of Perifoveal Exudative Vascular Anomalous Complex?** *Riccardo Sacconi, Enrico Borrelli, Srinivas Sadda, Giulia Corradetti, K. Bailey Freund, Lawrence A. Yannuzzi, Eric Souied, Vittorio Capuano, David Sarraf, Lea Querques, Francesco Bandello, and Giuseppe Querques*

This retrospective cohort study was conducted to describe the nonexudative perifoveal vascular anomalous complex, which could represent the pre-exudative stage of exudative perifoveal vascular anomalous complex. Demographics and multimodal imaging findings were analyzed in 4 retina referral centers worldwide. Nonexudative perifoveal vascular anomalous complex is an isolated, perifoveal, aneurysmal lesion that is surrounded by focal microvascular abnormalities without exudation. These lesions may develop signs of exudation during follow-up, leading to metamorphopsia and visual impairment.

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- **68 Choroidal thickness in diabetic patients without diabetic retinopathy: a meta-analysis.** *Hiroaki Endo, Satoru Kase, Michiyuki Saito, Masahiko Yokoi, Mitsuo Takahashi, Susumu Ishida, and Manabu Kase*

This meta-analysis integrated 17 studies using enhanced depth imaging and swept-source optical coherence tomography to study choroid thickness in diabetic eyes without

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diabetic retinopathy. It was found that diabetic eyes without diabetic retinopathy had significantly thinner choroidal thickness compared to control eyes. In addition, a sub-analysis of axial length, HbA1c, and duration of diabetes revealed that these were factors affecting choroid thickness.

• **78 Clinical manifestation and risk factors associated with remission in patients with filamentary keratitis.** *Seung Min Lee, Roo Min Jun, Kyu-Ryong Choi, and Kyung Eun Han*

We investigated the clinical features of patients with filamentary keratitis and remission-related factors. We found the most common cause of filamentary keratitis was brain lesion, followed by dry eye syndrome and autoimmune disease. Brain lesion demonstrated the lowest remission rate of filamentary keratitis among all causative factors, with statistical significance, and treatment failure of filamentary keratitis in patients with brain lesion was 6.602-fold higher than that associated with patients without brain lesion.

• **84 “Descemet membrane detachment”: A novel concept in diagnosis and classification.** *Harminder S. Dua, Rajesh Sinha, Sharon D’Souza, Frik Potgieter, Andrew Ross, Mohamed Kenawy, Ian Scott, and Dalia G. Said*

Clinical and optical coherence tomography (OCT) features of Descemet membrane detachment (DMD) of 41 patients, including histopathology of 5, were studied. Detachment of the pre-Descemet layer (Dua’s layer, PDL) was often associated with detachment of Descemet membrane (DM). Three types of DMD were confirmed: type 1, DM and PDL together; type 2, DM alone; and mixed type, where both layers were detached but also separated from each other. This is relevant to management of DMD.

• **99 Association of systemic hypertension with primary open-angle glaucoma: a population-based case-control study.** *Tung-Mei Kuang, Sudha Xirasagar, Yi-Wei Kao, Ben-Chang Shia, and Heng-Ching Lin*

This case-control study studied the association between prior systemic hypertension and primary open-angle glaucoma using Taiwan’s national health insurance data. Among total 562,300 study patients, 52.8% had prior hypertension, 56.5% among primary open-angle glaucoma patients vs 51.9% among controls ($P < .001$), with adjusted analysis showing 31% greater likelihood of hypertension among cases (adjusted odds ratio 1.31, 95% CI 1.29-1.33). Patients with hypertension should be routinely referred for ophthalmologic evaluation to ensure early detection and treatment of glaucoma.

• **105 Optical Coherence Tomography Optic Nerve Head Morphology in Myopia I: Implications of Anterior Scleral Canal Opening Versus Bruch Membrane Opening Offset.** *Jim Wook Jeoung, Hongli Yang, Stuart Gardiner, Ya Xing Wang, Seungwoo Hong, Brad Fortune, Michaël J.A. Girard, Christy Hardin, Ping Wei, Marcelo Nicolela, Jayme R. Vianna, Balwantray C. Chauhan, and Claude F. Burgoyne*
We used optical coherence tomography (OCT) to quantify the size, shape, and offset of the anterior sclera canal opening (ASCO) relative to the Bruch membrane opening (BMO) so as to determine the direction, obliqueness, and minimum cross-sectional area (NCMCA) of the optic nerve head (ONH) neural canal in highly myopic and healthy control eyes. Our data suggest that increased temporal displacement of the BMO relative to the ASCO, enlargement and increased ovality of the BMO and the ASCO, and reduction and increased ovality of the NCMCA underlie myopic alteration to the ONH.

• **120 Efficacy of slit lamp breath shields.** *John Liu, Annie Y. Wang, and Edsel B. Ing*

This study evaluated the efficacy of 6 commercially available slit lamp breath shield designs and 1 design repurposed from a plastic container lid to prevent droplet overspray from a simulated sneeze. The performance of different designs varied, with overspray ranging from 54%

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to virtually none. Breath shields positioned anteriorly performed better than those positioned posteriorly of comparable size. Breath shields should continue to be used with other personal protective equipment during all slit lamp examinations.

• **128 National Trends in the United States Eye Care Workforce from 1995 to 2017.** *Paula W. Feng, Aneasha Ahluwalia, Hao Feng, and Ron A. Adelman*

This study examines changes in the ophthalmologist and optometrist workforces over the last 2 decades. The results indicate that the national density of ophthalmologists has decreased over time, while the density of optometrists has increased. In addition, the ophthalmologist workforce has aged, and there remain significant rural/urban disparities in ophthalmologist and optometrist availability. This study suggests that further efforts are necessary to address the declining ophthalmologist availability, particularly in rural areas.

• **136 Structural features associated with the development and progression of RORA secondary to maternally inherited diabetes and deafness.** *Philipp L. Müller, Peter Maloca, Andrew Webster, Catherine Egan, and Adnan Tufail*

This study describes structural features with potential prognostic relevance for the development and progression of retinal pigment epithelial and outer retinal atrophy in patients with maternally inherited diabetes and deafness using serial high-resolution optical coherence tomography images. The presented results not only give further insights into pathomechanisms of monogenic mitochondrial diseases, but also have implication for other retinal disease where mitochondrial dysfunction has been implicated in the pathogenesis like age-related macular degeneration.

• **148 The effect of obstructive sleep apnea on absolute risk of central serous chorioretinopathy.** *Carolyn K. Pan, Daniel Vail, Jayanta Bhattacharya, Michelle Cao, and Prithvi Mruthyunjaya*

An analysis of commercial insurance claims estimates the incidence of central serous chorioretinopathy to be higher than previously reported. The study also explores its association with obstructive sleep apnea in a large cohort in the United States and whether patients presenting with new-onset central serous chorioretinopathy may be candidates for evaluation of sleep apnea.

• **156 Demographic and socioeconomic differences in outpatient ophthalmology utilization in the United States.** *Chandruganesh Rasendran, George Tye, Konrad Knusel, and Rishi P. Singh*

This retrospective analysis on Medical Expenditure Panel Survey respondents, a nationally representative data set, reported reduced outpatient ophthalmologic utilization among disadvantaged groups (minority, lower income, uninsured, and less educated). Concurrently, minority patients had more ophthalmic emergency department visits. Facilitating access to ophthalmologic professionals for these groups is essential to improving health outcomes. Current prediction models are insufficient for expected population demographic shifts, and characterization of this study's findings can better predict future ophthalmologic care needs.

• **164 Bruch's membrane opening minimum rim width provides objective differentiation between glaucoma and nonglaucomatous optic neuropathies.** *John C. Leaney, Vuong Nguyen, Eduardo Miranda, Yael Barnett, Kate Ahmad, Sui Wong, and Mitchell Lawlor*

Minimum rim width at Bruch's membrane opening (MRW-BMO) provides an optical coherence tomography (OCT) measurement that differentiates glaucomatous from nonglaucomatous optic neuropathies. Cross-sections of normal tension glaucoma and nonglaucomatous optic neuropathy patients were examined to ascertain whether measurements of MRW-BMO using OCT accurately characterized cupping in glaucoma patients and therefore

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distinguished glaucoma from other noncupping optic neuropathies. It was found that patients with glaucoma had lower Bruch's membrane opening values than patients with nonglaucomatous optic neuropathies. This paper presents a novel method for differentiating the 2 diseases.

• **173 Understanding the impact of residual amblyopia on functional vision and eye-related quality of life using the PedEyeQ.** Sarah R. Hatt, David A. Leske, Yolanda S. Castañeda, Suzanne M. Wernimont, Laura Liebermann, Christina S. Cheng-Patel, Eileen E. Birch, and Jonathan M. Holmes

In this prospective cross-sectional study, eye-related quality of life and functional vision were assessed in 17 children with residual amblyopia and 48 visually normal controls using Child, Proxy, and Parent PedEyeQ. Scores were significantly lower (worse) for children with residual amblyopia than for controls across all domains. Residual amblyopia affects reported functional vision and eye-related quality of life in children and also affects the quality of life of their parents.

• **182 Diagnostic accuracy of wide-field map from swept-source optical coherence tomography for primary open-angle glaucoma in myopic eyes.** Yong Woo Kim, Jinho Lee, Jin-Soo Kim, and Ki Ho Park

The wide-field maps from swept-source optical coherence tomography (OCT) had better accuracy for glaucomatous defects and greater diagnostic power for primary open-angle glaucoma than the conventional maps from spectral-domain OCT in myopic eyes.

• **192 Foveal crack sign: an OCT sign preceding macular hole after vitrectomy for rhegmatogenous retinal detachment.** Tomoyuki Ishibashi, Yasuaki Iwama, Hiroshi Nakashima, Toshihide Ikeda, and Kazuyuki Emi

This retrospective study describes formation of a foveal hyperreflective vertical line on optical coherence tomog-

raphy images preceding a macular hole after vitrectomy for rhegmatogenous retinal detachment. This sign was accompanied by parafoveal epiretinal membrane in all cases. Among 518 eyes that underwent vitrectomy for rhegmatogenous retinal detachment, 10 of 13 eyes with this sign developed secondary macular hole in the follow-up period. Cases with this sign may need careful follow-up to ensure early detection of a succeeding macular hole formation.

• **199 Independent influence of parental myopia on childhood myopia in a dose-related manner in 2,055 trios: the Hong Kong children eye study.** Shu Min Tang, Ka Wai Kam, Amenda N. French, Marco Yu, Li Jia Chen, Alvin L. Young, Kathryn A. Rose, Clement C. Tham, Chi Pui Pang, and Jason C. Yam

This is a population-based study of 2,055 family trios (1 child and 2 parents) to evaluate the effects on childhood myopia of parental myopia, parental education, children's outdoor time, and children's near work. Among parental and environmental factors, parental myopia confers, in a dose-related manner, the strongest independent effect on childhood myopia. Therefore children with high risk of myopia can be identified for early prevention, based on parental myopia data.

• **214 Vision loss in optic disc drusen correlates with increased macular vessel diameter and flux and reduced peripapillary vascular density.** Yan Yan, Xiao Zhou, Zhongdi Chu, Laurel Stell, Mohammad Ali Shariati, Ruikang K. Wang, and Yaping Joyce Liao

This is a structure-function study using perimetry and optical coherence tomography and angiography in patients with optic disc drusen and age-matched controls. There were 5 key imaging measurements that most correlated with visual field loss. This data suggest that increased macular flow may be an early biomarker of visual field loss, while decreased

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peripapillary vessel density and retinal nerve fiber layer thickness are late biomarkers of visual field loss in optic disc drusen.

• **225 Cost-utility analysis of VEGF inhibitors for treating neovascular age-related macular degeneration.** Gary C. Brown, Melissa M. Brown, Sara Rapuano, and David Boyer

An 11-year ophthalmic cost perspective average cost-utility analysis of neovascular age-related macular degeneration therapies showed bevacizumab was the most cost effective (\$11,033/quality-adjusted life-year [QALY]), followed by aflibercept (\$44,801/QALY) and then ranibizumab (\$79,600/QALY). Similar parameters in a 2-year model using the same \$100,000/QALY upper cost effectiveness limit revealed bevacizumab therapy was cost effective (\$40,355/QALY), whereas ranibizumab (\$335,596/QALY) and aflibercept (\$168,006/QALY) were not. All these agents are cost effective from a societal cost perspective. Incremental analysis showed that aflibercept surpassed ranibizumab but was not cost effective versus bevacizumab.

• **242 Pseudostrabismus in the first year of life and the subsequent diagnosis of strabismus.** Timothy T. Xu, Cole E. Bothun, Tina M. Hendricks, Sasha A. Mansukhani, Erick D. Bothun, David O. Hodge, and Brian G. Mohney

In this population-based cohort, pseudostrabismus was diagnosed in nearly 1% of infants during the 10-year study period. Strabismus was subsequently diagnosed in 4.9% of infants with pseudostrabismus, a rate that was lower than that in previous reports but similar to those observed in the same pediatric population. These findings suggest that the apparent elevated strabismus risk among patients with pseudostrabismus may not be causal, but instead, due to confounding factors.

• **247 Prognostic utility of optical coherence tomography for long-term visual recovery following pituitary tumor surgery.** Michael T.M. Wang, James King, R.C. Andrew Symons, Stanley S. Stylli, Joos Meyer, Mark D. Daniell, Peter J. Savino, Andrew H. Kaye, and Helen V. Danesh-Meyer

This two-year prospective cohort study of 239 patients investigated the association between optical coherence (OCT) parameters and long-term visual recovery following optic chiasm decompression surgery. Multiple logistic regression analysis demonstrated that increased inferior retinal nerve fibre layer (RNFL) thickness was associated with higher odds of long-term visual field recovery and maintenance. The multivariable risk prediction model developed in the current study may assist with pre-operative patient counselling and prognostication.

• **255 Late-onset pseudoxanthoma elasticum associated with a hypomorphic ABCC6 variant.** Peter Charbel Issa, Carolyn Tysoe, and Richard Caswell

Pseudoxanthoma elasticum is a systemic disease characterized by premature calcification of elastic tissue, usually affecting the eye, the skin, the cardiovascular system, and other organs. This study found that characteristic ocular features may be the only clinically relevant manifestations of mild, late-onset pseudoxanthoma elasticum. Differentiation from age-related macular degeneration may be possible based on multimodal imaging and genetic testing.

• **261 Fellowship match outcomes in the U.S. from 2010 to 2017: analysis of San Francisco match.** Sidra Zafar, Neil M. Bressler, Karl C. Golnik, Divya Srikumaran, Zara Ghous, Samantha Ip, Xinyi Chen, and Fasika A. Woreta

Objective data describing the characteristics of ophthalmology fellowship applicants and factors associated with matching are lacking. In this study, we analyzed

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participant and matching data for the 2010-2017 ophthalmology fellowship match cycles. The information provided by our study may be of value to future fellowship applicants and practicing ophthalmologists.

• **268 Prevalence and consequences of perceived vision difficulty in aging adults with HIV infection.** *Alison G. Abraham, Ann Ervin, Bonnie Swenor, Pradeep Ramulu, Roomasa Channa, Xiangrong Kong, Valentina Stosor, M. Reuel Friedman, Roger Detels, and Michael Plankey*
HIV-infected adults in the United States represent a vulnerable aging population as a result of long-term exposure to HIV viremia and barriers to care. In this study, perceived vision difficulty was more common among older HIV-infected MSM than in MSM who were HIV-uninfected age-matched controls. Perceived vision difficulty was also associated with higher risk of depression and loss of physical function. Vision screening in HIV-infected MSM may reduce the burden of vision impairment and resulting functional disability.

• **279 Exudative retinal detachment in ocular inflammatory diseases: risk and predictive factors.** *Deepika N. Shah, Ahmad Al-Moujahed, Craig W. Newcomb, R. Oktay Kaçmaz, Ebenezer Daniel, Jennifer E. Thorne, C. Stephen Foster, Douglas A. Jabs, Grace A. Levy-Clarke, Robert B. Nussenblatt, James T. Rosenbaum, H. Nida Sen, Eric B. Suhler, Nirali P. Bhatt, and John H. Kempen, on behalf of the Systemic Immunosuppressive Therapy for Eye Diseases Research Group*

The risk of and risk factors for exudative retinal detachment (ERD) were estimated in a large multicenter cohort of patients with noninfectious ocular inflammation. The estimated overall incidence was 0.0047%/eye-year. Vogt-Koyanagi-Harada disease and posterior scleritis were the most common associated conditions, especially early after onset, but ERD was observed with several other kinds of ocular inflammation as well. Active inflammation was

a key predictive factor associated with ERD risk, requiring prompt and vigorous treatment.

• **288 Long-term outcomes of descemet membrane endothelial keratoplasty in eyes with prior glaucoma surgery.** *Clemence Bonnet, Reza Ghaffari, Turad Alkadi, Simon K. Law, Joseph Caprioli, Fei Yu, and Sophie X. Deng*
Descemet membrane endothelial keratoplasty can be performed successfully and achieves good long-term visual outcomes in eyes that have previously undergone trabeculectomy and/or implantation of a glaucoma drainage device. However, a higher rate of endothelial cell loss over time without immune rejection that results in a higher rate of secondary graft failure is observed in these complex eyes than in those eyes without such comorbidities.

• **296 Prevalence of persistent corneal epithelial defects in chronic ocular graft-versus-host disease.** *Shruti Sinha, Rohan Bir Singh, Thomas H. Dohlman, Mengyu Wang, Yukako Taketani, Jia Yin, and Reza Dana*

The prevalence of persistent corneal epithelial defects (PED) in chronic ocular Graft-Versus-Host disease (oGVHD) is 8.1%. Diabetes, limbal stem cell deficiency, filamentary keratitis, subconjunctival fibrosis and a higher National Institutes of Health (NIH) oGVHD score are the risk factors.

• **304 Predicting the glaucomatous central 10-degree visual field from optical coherence tomography using deep learning and tensor regression.** *Linchuan Xu, Ryo Asaoka, Taichi Kiwaki, Hiroshi Murata, Yuri Fujino, Masato Matsuura, Yohei Hashimoto, Shotaro Asano, Atsuya Miki, Kazuhiko Mori, Yoko Ikeda, Takashi Kanamoto, Junkichi Yamagami, Kenji Inoue, Masaki Tanito, and Kenji Yamanishi*

Humphrey 10-2 visual field sensitivity at each test point was predicted from optical coherence tomography-

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measured retinal layers' thicknesses using deep learning and tensor regression, deep learning and tensor regression with pointwise regression model, support vector regression, and multiple linear regression. The root mean squared error (RMSE) with the deep learning and tensor regression with tensor regression model averaged 6.32 dB. Significantly larger RMSEs were obtained with other models.

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- **314 A simple modified way of glueless, sutureless scleral fixation of an IOL: a retrospective case series.** *Subhendu Kumar Boral and Deepak Agarwal*

This retrospective interventional study was conducted involving cases with in whom the posterior capsule support was absent. Two diagonally opposed paralimbal curved, self-sealing scleral pockets were made along with vitrectomy. Haptics of a multipiece IOL were fixed under the scleral pockets inside a linear scleral tunnel. Postoperative anterior segment optical coherence tomography and ultrasound biomicroscopy showed stable position of scleral fixated intraocular lens. Statistically significant visual improvement was seen. This technique decreases the duration of surgery and poses minimal complication.

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- **320 Ratio of axial length to corneal radius in Japanese patients and accuracy of intraocular lens power calculation based on biometric data.** *Miki Kamikawatoko Omoto, Hidemasa Torii, Ken Hayashi, Masahiko Ayaki, Kazuo Tsubota, and Kazuno Negishi*

The mean axial length-to-corneal radius (AL/CR) ratio in Japan was the highest compared with previously published data from other countries. The AL/CR ratio explains the total variation in the SE better than the AL alone. The SRK/T formula performed less accurately in eyes with medium ALs with high AL/CR ratios. Furthermore, the Holladay 1 and Hoffer Q formulas performed less accurately in eyes with long ALs with high AL/CR ratios. The Barrett Universal II formulas performed well across a range of ALs and AL/CR ratios. Surgeons should pay

attention to the selection of IOL power calculation formulas in eyes with high AL/CR ratios.

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- **330 Analysis of Etiologic Factors in Pediatric Rhegmatogenous Retinal Detachment with Genetic Testing.** *Chonglin Chen, Sijian Huang, Limei Sun, Songshan Li, Li Huang, Zhirong Wang, Xiaoling Luo, and Xiaoyan Ding*

This study investigated the etiology and clinical features of nontraumatic rhegmatogenous retinal detachment in children based on genetic testing. The most common etiologic factors were congenital/developmental anomalies (51/102, 50%), followed by myopia (34/102, 33.3%) and previous intraocular surgery (6/102, 5.9%). More than half (31/51, 60.8%) of the patients with congenital/developmental anomalies had familial exudative vitreoretinopathy.

CORRESPONDENCE

- **353 Comment on: a prospective, randomized trial of povidone-iodine 0.6% and dexamethasone 0.1% ophthalmic suspension for acute bacterial conjunctivitis.** *Piotr Kanclerz and William G. Myers*
- **354 Reply to comment on: a prospective, randomized trial of povidone-iodine 0.6% and dexamethasone 0.1% ophthalmic suspension for acute bacterial conjunctivitis.** *Christopher N. Ta, Michael B. Raizman, Robert D. Gross, Sunir Joshi, Sushanta Mallick, Yuemei Wang, and Bruce Segal*
- **354 Comment on: accuracy of intraocular lens formulas in eyes with keratoconus.** *Eduardo Gonzalez-Lubcke, Nicolas Kahum-Lopez, Alejandro Navas, Arturo Ramirez-Miranda, and Enrique O. Graue-Hernandez*
- **355 Reply to Comment on: accuracy of intraocular lens formulas in eyes with keratoconus.** *Kendrick M. Wang, Albert S. Jun, John G. Ladas, Aazim A. Siddiqui, Fasika Woreta, and Divya Srikumaran*
- **356 Corrigendum for macular vascularity in ischemic optic neuropathy compared to**

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glaucoma by projection-resolved optical coherence tomography angiography. *Masoud Aghsaei Fard and Robert Ritch*

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• **342 Quantitative assessment of the severity of diabetic retinopathy.** *Srinivas R. Sadda, Muneeswar G. Nittala, Wongsiri Taweebanjongsin, Aditya Verma, Swetha B.*

Velaga, Ahmed Roshdy Alagorie, Connie M. Sears, Paolo S. Silva, and Lloyd P. Aiello

Precise quantification of the number, area, and location (eccentricity) of diabetic retinopathy lesions can enhance prediction of progression to proliferative diabetic retinopathy, and may open the door to a more precise, quantitative staging system for diabetic retinopathy.

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SARAH L. DUNCAN POWERS, *Managing Editor*

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