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FEMTOSECOND LASERS IN OPHTHALMOLOGY

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INTER-DEVICE VARIABILITY OF THE STRATUS OPTICAL COHERENCE TOMOGRAPHY

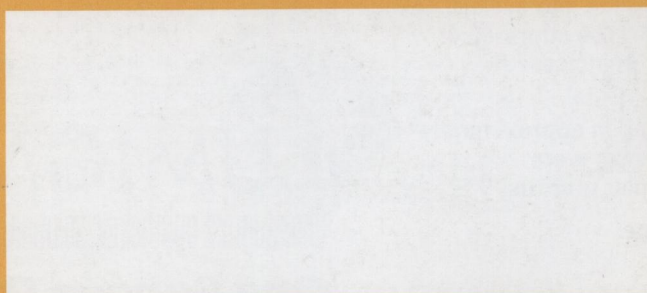
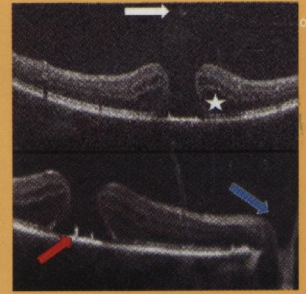
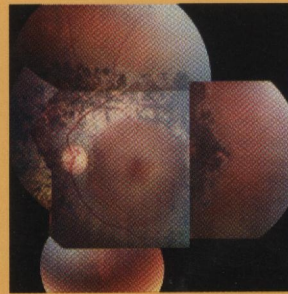
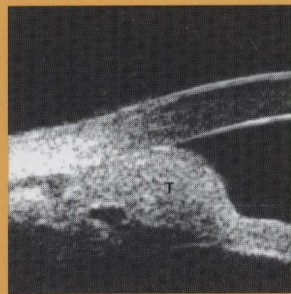
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PROSPECTIVE COMPARISON OF CIRRUS AND STRATUS OPTICAL COHERENCE TOMOGRAPHY FOR QUANTIFYING RETINAL THICKNESS

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REDUCED ZINC AND COPPER IN THE RETINAL PIGMENT EPITHELIUM AND CHOROID IN AGE-RELATED MACULAR DEGENERATION

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EXECUTIVE EDITORS

PERSPECTIVE

- **189 Femtosecond lasers in ophthalmology.** *H. Kaz Soong and João Baptista Malta*

The prototype of the first ophthalmic surgical femtosecond (FS) laser was designed and tested in the early 1990s at the University of Michigan, which eventually led to the development of the first commercial clinical system in 2001. Since then, its effectiveness, precision, safety, and versatility have been demonstrated in diverse ophthalmologic applications. Through ongoing research, more clinical uses of the FS laser are currently being investigated.

ORIGINAL ARTICLES

- **198 Tear cytokine profiles in Dysfunctional Tear syndrome.** *Helene Lam, Lauren Bleiden, Cintia S. De Paiva, William Farley, Michael E. Stern, and Stephen C. Pflugfelder*
This study compared tear cytokines in patients with Dysfunctional Tear syndrome (DTS) with and without meibomian gland disease (MGD) and asymptomatic subjects and determined the correlation between these inflammatory mediators and markers of clinical severity. Interleukin (IL)-6, IL-8, and tumor necrosis factor alpha were significantly higher in DTS with or without MGD. IL-6 showed the greatest correlation with clinical signs and symptoms. These findings confirm that levels of inflammatory cytokines in tears are higher of patients with DTS.

- **206 A comparison of vitamin A and cyclosporine A 0.05% eye drops for treatment of Dry Eye syndrome.** *Eun Chul Kim, Jun-Sub Choi, and Choun-Ki Joo*
Vitamin A eye drops in this study were composed of retinyl palmitate 0.05% and polysorbate 80 1%. After treatment

with topical cyclosporine A 0.05%, vitamin A eye drops, or artificial lubricants in patients with Dry Eye syndrome, both vitamin A eye drops and topical 0.05% cyclosporine A treatments improved blurred vision, tear film break-up time, schirmer i score, and impression cytologic findings. vitamin A eye drop can be used as adjunct therapy in Dry Eye syndrome.

- **214 Anterior segment optical coherence tomography and ultrasound biomicroscopy in the imaging of anterior segment tumors.** *Charles J. Pavlin, Luz María Vásquez, Richard Lee, E. Rand Simpson, and Iqbal Ike K. Ahmed*
Anterior segment optical coherence tomography (OCT) provides in-depth imaging of the anterior segment. Because this imaging technique is light-based, penetration of opaque tissue is limited. Anterior segment OCT can penetrate small hypopigmented tumors and supply some information on internal characteristics of other tumors. Ultrasound biomicroscopy is preferable for clinical anterior tumor assessment and follow-up because of its superior ability to penetrate large tumors, highly pigmented tumors, and ciliary body tumors.

- **220 Busin guide vs forceps for the insertion of the donor lenticule in Descemet stripping automated endothelial keratoplasty.** *Irit Bahar, Igor Kaiserman, Wium Sansanayudh, Eliya Levinger, and David S. Rootman*
This prospective comparative study compared the outcomes of Busin guide-assisted vs Forceps-assisted insertion of the corneal lenticule graft in Descemet stripping automated endothelial keratoplasty (DSAEK). The Busin

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guide-assisted DSAEK resulted in lower percentage of endothelial cell loss compared with forceps insertion, 6 months following surgery.

• **227 Long-term keratometric changes after penetrating keratoplasty for keratoconus and Fuchs endothelial dystrophy.** *Matthew E. Raecker, Jay C. Erie, Sanjay V. Patel, Jay W. McLaren, David O. Hodge, and William M. Bourne*
This retrospective, comparative case series demonstrates delayed, progressive keratometric instability for up to 30 years after penetrating keratoplasty (PK) for keratoconus. Using a similar suturing technique, no significant long-term keratometric changes were detected after PK for Fuchs endothelial dystrophy. These data provide evidence that keratometric instability after PK for keratoconus is attributable to progressive ectasia in the host corneal rim.

• **234 Liquid nitrogen cryotherapy of superior limbic keratoconjunctivitis.** *Frederick W. Fraunfelder*
This clinical practice case series evaluates the effects of liquid nitrogen cryotherapy on superior limbic keratoconjunctivitis (SLK). Cryotherapy was performed on 4 female patients (7 eyes). In all cases, disease resolved within 2 weeks, recurring in 2 patients (3 eyes). Repeat cryotherapy performed at the 3-month postoperative visit eradicated SLK in every case. There were no adverse ocular events. Cryotherapy with liquid nitrogen appears to be an effective alternative to other treatments for SLK.

• **239 Ocular trauma and visual outcome secondary to paintball projectiles.** *Kyle J. Alliman, William E. Smiddy, James Banta, Yousuf Qureshi, Daniel M. Miller, and Joyce C. Schiffman*
Ocular paintball injuries are frequently severe and may require surgical intervention. Prevention through using

safety equipment has been successful in decreasing the frequency of injuries in organized games, but the injuries in this report were usually from usage in an informal setting without eye protection.

• **243 The competency of pars plana vitrectomy incisions: a comparative histologic and spectrophotometric analysis.** *Omesh P. Gupta, Joseph I. Maguire, Ralph C. Eagle, Jr, Sunir J. Garg, and Gregory E. Gonye*
The competency of 20-gauge (G), 23 G, and 25 G pars plana vitrectomy sclerotomies is compared in a laboratory model. India ink was applied over each incision and the intraocular pressure was varied. Histologic and spectrophotometric analysis demonstrated that India ink penetrates only sutureless sclerotomies and entered the vitreous cavity. Smaller-gauge beveled incisions tended to resist entry of India ink.

• **251 Comparison of the in vitro safety of intraocular dyes using two retinal cell lines: a focus on brilliant blue G and indocyanine green.** *Darana Yuen, John Gonder, Alain Proulx, Hong Liu, and Cindy Hutnik*
All dyes demonstrated relatively safe viability profiles in both the retinal pigment epithelial (ARPE-19) cell line and the mixed primary culture of ganglion and Muller cells at surgically relevant concentrations and times. It is the parameters of use, rather than the nature of the dye itself, which had the greatest influence on toxicity.

• **260 Inter-device variability of the Stratus optical coherence tomography.** *Yaniv Barkana, Zvia Burgansky-Eliash, Yariv Gerber, Shlomo Melamed, Meira Neudorfer, Isaac Avni, Elisha Bartov, and Yair Morad*
Statistically significant differences were not observed in any macular and all but one retinal nerve fiber layer parameters between four Stratus machines. There was a

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statistically significant inter-device difference in signal strength, and signal strength was significantly correlated with the measurement of some nerve fiber layer parameters. Signal strength may be an important source of inter-device variability and should be taken into account when interpreting and comparing Stratus optical coherence tomography measurements.

• **267 Prospective comparison of Cirrus and Stratus optical coherence tomography for quantifying retinal thickness.** Daniel F. Kiernan, Seenu M. Hariprasad, Eric K. Chin, Claire L. Kiernan, James Rago, and William F. Mieler
This prospective comparison of 101 eyes with and without macular edema demonstrates differences and variability of retinal thickness measurements between the Stratus and Cirrus optical coherence tomography systems. Data from all nine zones and average macular thickness, a function of macular volume, indicate that the Cirrus system accurately assesses macular thickness including the outer photoreceptor layers. Comparison between 512×128 and 220×200 Cirrus cube scans show few differences in each zone.

• **276 Reduced zinc and copper in the retinal pigment epithelium and choroid in age-related macular degeneration.** Jay C. Erie, Jonathan A. Good, John A. Butz, and Jose S. Pulido

This laboratory study found that zinc and copper concentrations in the retinal pigment epithelium and choroid of donor eyes with age-related macular degeneration (AMD) were reduced 24% and 23% when compared with donor eyes with AMD. It is not possible to know if this association is truly the result of cause and effect, and further study is indicated.

• **283 Retinal vein occlusion and the risk of stroke development: a five-year follow-up study.** Jau-Der Ho, Shioh-Wen Liou, and Heng-Ching Lin

Collectively 350 patients with a first-time diagnosis of retinal vein occlusion (RVO) from 1999 to 2001 and a matched comparison cohort of 2,100 patients were randomly selected from the Taiwan National Health Insurance Research Database. Although RVO was not associated with an increased risk of subsequent stroke development for the total sample, it was a significant predictor for stroke development after adjusting for possible confounding factors among the age group of 60 to 69 years.

• **291 Combined laser and intravitreal triamcinolone for proliferative diabetic retinopathy and macular edema: one-year results of a randomized clinical trial.** Otacilio O. Maia, Jr, Beatriz S. Takahashi, Rogerio A. Costa, Ingrid U. Scott, and Walter Y. Takahashi

In this randomized clinical trial, superior morphofunctional effects were observed at one year after combined laser (panretinal and macular) photocoagulation and intravitreal triamcinolone when compared with laser treatment alone in the management of patients with bilateral treatment-naïve moderate proliferative diabetic retinopathy and clinically significant macular edema.

• **298 Prospective study of intravitreal ranibizumab as a treatment for decreased visual acuity secondary to central retinal vein occlusion.** Richard F. Spaide, Louis K. Chang, James M. Klancnik, Lawrence A. Yannuzzi, John Sorenson, Jason S. Slakter, K. Bailey Freund, and Robert Klein
A prospective study of intravitreal ranibizumab for decreased visual acuity (VA) secondary to central retinal vein occlusion found approximately a three-line improve-