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14. Optometry

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Peripheral Refractions in Myopic Children: Spectacles vs. Contact Lenses

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ABSTRACT Purpose. Lenses designed to provide peripheral myopic defocus may slow progressive myopia. Our purpose was to compare peripheral optics of three clinical options for childhood myopia: 1) spectacles, 2) single vision soft contact lenses and 3) multifocal soft contact lenses. We hypothesized that multifocal soft lenses would provide the most peripheral myopia. Methods. Five myopic children were corrected normally with spectacles, single vision soft and multifocal soft contact lenses. We performed cycloplegic retinoscopy centrally and in 16 peripheral positions (full circle every 45 degrees, at two eccentricities each). Refractions were compared to see which correction mode provided the most peripheral myopia for each subject. We also measured higher order aberrations centrally. Results. Results were displayed on polar plots that allowed easy comparison of peripheral refractions. The correction mode with the most peripheral myopia varied between subjects. Multifocal soft lenses were best for only one subject and second best for three others. Central spherical aberration showed no correlation with peripheral defocus. Discussion. Among our subjects, multifocal soft contact lenses did not always provide the best optics for myopia control. Further study is needed. The methods we developed (peripheral retinoscopy and polar plots) may be helpful for future myopia research.
05.14.02 **Survey of Teachers’ Knowledge of Common Childhood Vision Disorders**

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Purpose: Vision is the most used sense for learning as 80% of learning is done visually. Disorders of the visual system can have a lasting impact on a child’s development throughout life. The necessary skills for efficient reading include visual acuity, eye focusing, eye teaming, eye tracking, eye-hand coordination, and visual perception. The common childhood disorders that can negatively affect these skills are refractive error, binocular vision disorders (strabismus, amblyopia, accommodative dysfunction, and convergence insufficiency) as well as oculomotor dysfunction. Teachers are in a primary position to recognize symptoms and make referrals appropriately.

Methods: Kindergarten through eighth grade teachers in the Tahlequah, OK area were sent an online survey to determine their comfort levels in recognizing the signs and symptoms of the most common childhood vision disorders.

Results: We obtained 48 of 246 complete survey responses. We used regression analysis to analyze our data but found no correlation between years of teaching experience and comfort levels.

Discussion: Overall, the majority of teachers surveyed was aware of vision and its importance in learning and most felt comfortable recognizing symptoms of vision problems and knowing when to refer.

05.14.03 **Reproducibility of Anterior Chamber Angle Measurements using SD-OCT**

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Purpose. Our purpose is to evaluate the variability between observers when measuring the anterior chamber angle with the iVue SD-OCT. Methods. Anterior chamber angle scans were obtained of sixteen right eyes by the iVue SD-OCT. The angles were then measured by using the software’s protractor by three optometry students to determine the reproducibility of the angle measurements.

Results. When comparing observers 1 versus 2, 1 versus 3, and 2 versus 3 the mean differences were -1.3°, -0.88°, and 0.4° respectively. The average absolute difference between observers were 6.44°, 4.96°, and 4.28°. Conclusion. There is good interobserver reliability when measuring the anterior chamber angle using iVue SD-OCT. We believe that gonioscopy is still the gold standard and should not be replaced by SD-OCT due to the limited information that it provides. Key Words: anterior chamber angle, spectral domain optical coherence tomography, iVue
05.14.04 Efficacy of Anti-Fatigue Single Vision Lenses

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Purpose. Evaluate the efficacy of the new Hoya Sync™ 5 lens to relieve symptoms of asthenopia and to improve vergence and accommodative posture under visually stressful, sustained, near point tasks.

Methods. We administered the Conlon Visual Discomfort Survey to 30 optometry students to collect subjective complaints of asthenopia. Using a Saladin card, we measured the subjects' fixation disparity prior to fitting them in a Hoya Sync™ 5 lens. After four days of continued lens wear, fixation disparity was re-measured through the reading segment of the lens and the Conlon Survey re-administered. Subjects were given a logging sheet to monitor duration and activity with wear. Results. We found the Sync™ 5 has a statistically significant effect on reducing occurrence of near symptoms of diplopia, aching, and soreness after four days of continued use. There was a moderate positive relation between number of hours of usage while performing near tasks and reduction in subjective symptoms. However, we found no statistically relevant changes in horizontal and vertical fixation disparity. Conclusion. We found that the Hoya Sync™ 5 provides improvement in symptoms of asthenopia as experienced by subjects. However, objective measurements of fixation disparity in this study were not statistically related to lens usage. Key Words: anti-fatigue lenses, asthenopia, fixation disparity, accommodation, Hoya Sync™ 5

05.14.05 Comparison of Central Corneal Thickness using the iVue SD-OCT and Pachmate DGH-55

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Purpose. To evaluate and compare CCT measurements with the gold-standard Pachmate ultrasound pachymeter and the newer less invasive iVue SD-OCT. Repeatability was evaluated for the iVue.

Methods. Observational clinical study, 30 subjects over 18 years old. Exclusions: corneal astigmatism >2.0D, corneal anomalies, history of refractive surgery or contact lens wear within 24 hours. Each subject's right cornea was assessed using biomicroscopy, auto-keratometry, and iVue measurements were taken twice followed by the Pachmate. Results. The mean for the iVue and Pachmate were 530.23μm and 555.53μm, respectively. Overall mean for both devices was 542.88μm. Standard deviation of means was 29.90. The paired t-test for means was not significantly different after allowing for the consistent offset of 25μm (p=0.82). Utilizing Bland-Altman, the standard deviation of differences was 7.51μm. The iVue's repeatability index was r=0.997. Within-subject coefficient of variation was 5.59%. Conclusion. The iVue SD-OCT and Pachmate correlated very well with an offset of 25μm thinner readings with the iVue. This may be due to induced corneal edema from anesthetic or to inherent differences in the two instruments. Clinically, the readings did not show a significant difference. The iVue measurements were highly repeatable, allowing for accurate and consistent data. This study allows practitioners to utilize the less invasive, multipurpose iVue in practice to measu
InfantSEE Utilization by NSUOCO Optometrists

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The InfantSEE program has had a decrease in both the number of providers and the number of exams performed each year since it launch in 2005. We created a survey to evaluate the utilization of this program by Northeastern State University Oklahoma College of Optometry (NSUOCO) graduates to discover the reason for the decrease in exams performed. We created a survey using Survey Monkey. The survey contained ten questions that evaluated participants InfantSEE provider status, number of years practicing optometry, number of InfantSEE exams done per year, InfantSEE marketing strategies, how participants obtained education and training necessary to do infant eye exams, reasons for not participating in the program and if they felt comfortable being an InfantSEE provider. The survey was emailed out through Survey Monkey to graduates of NSUOCO. Survey Monkey collected the data and we analyzed it via regression analysis. Fifty percent of participants were registered InfantSEE providers, while the other half of participants reported that they were not. The majority of providers performed less than five InfantSEE exams per year. Regression analysis showed a strong correlation between the more ways the providers market the program the more exams they perform each year. We found that there is a relationship between marketing and the number of InfantSEE exams performed. We conclude that if more marketing is done for the program, more InfantSEE exams will be completed each year.

Color Vision Testing Among Practicing Optometrists

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ABSTRACT Purpose. A survey of optometrists to identify the frequency, type, and administration of color vision testing. There are currently no studies to determine how often color vision tests are performed, which tests are used, or whether the tests are being accurately administered under the specific testing conditions required. Methods. A survey was presented to optometrists at March 2014 Spring Oklahoma Association of Optometric Physicians Continuing Education (CE) Conference in Norman, OK. No participative incentives were provided. The surveys were collected anonymously and data analysis performed using Microsoft Excel. Results. The response rate was 138, of which 105 surveys were complete meaning all questions answered with the correct number of responses per question. Color vision testing is performed on every patient at every exam by 10.69% of optometrists. A screening only color vision test is used by 43.5% as their test of choice for diagnosing color vision anomalies. Inadequate fluorescent only lighting for test administration is used by 99% of respondents. Conclusions. Administering the correct color vision test under the correct testing conditions is crucial for accurate results. Given the importance of color vision testing, providing optometrists with tools, including continuing education, may help increase awareness of correct vision test administration.
Effect of blue-blocking spectacle lens coatings on subjective visual performance

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We compared blue-blocking spectacle lens coatings to broad-spectrum anti-reflective coatings to assess the effect on gross subjective visual perception, reading speed when viewing an LED display, glare perception, and visual comfort. We fitted 29 pre-presbyopic subjects in three pairs of spectacles, each with a different lens coating. Two pairs were coated with a blue-blocking treatment (Hoya Recharge and Essilor Provencia) and other control pair was coated with a standard anti-reflective coating (Hoya EX3). For each treatment, we asked subjects to state whether they thought the lens had blue-blocking properties, measured reading speed on an LED display, then surveyed visual comfort, perception of glare, and likelihood to wear the lenses habitually. We found that subjects were able to determine whether lenses had blue-blocking coatings based on gross visual perception. There was no statistically significant effect on reading speed, visual comfort or perception of glare. Subjects reported that they were more likely to wear EX3 habitually than Provencia. We found that while subjects are able to determine that they are wearing spectacle lenses with blue-blocking coatings, the difference in visual perception does not statistically affect reading speed, visual comfort, perception of glare, or likelihood to wear the lenses.