Quality of life is significantly reduced even in individuals with only mild visual impairment.

Objective: To determine the relationship between visual impairment and health-related quality of life and depression in elderly individuals in residential care facilities.

Participants/Methods: 76 residents of low-level residential care facilities in Australia were recruited for participation in the study. Assessment of visual acuity and completion of questionnaires to determine health-related quality of life, depression, and cognitive function were completed. Statistical analysis was performed to correlate the presence of visual impairment with quality of life, cognitive function, and depression. Mild visual impairment was defined by binocular visual acuity <20/40. Severe visual impairment was defined by binocular visual acuity ≤20/200.

Results: The mean age of study participants was 83.9 ± 9.9 years, and 60% of subjects were female. Binocular visual acuity was <20/40 in 59% of individuals who were considered to have at least mild visual impairment. Severe visual impairment with acuity <20/200 was present in 10% of participants. There was no statistically significant relationship between a diagnosis of major depression and the presence of visual impairment, but depressive symptoms were reported more frequently in those with mild or severe visual impairment. In addition, both mild and severe visual impairment were associated with a reduction in health-related quality of life as assessed by the study instrument.

Conclusions: Visual impairment is a common disability in individuals in residential care facilities and has an important impact on quality of life, both from a functional and a social standpoint.

Reviewer's Comments: This study highlights the importance of maximizing visual acuity for improvement of the quality of life in elderly individuals. Many of the study subjects simply needed up-to-date glasses to improve their vision, and access to care can be an important factor in institutionalized patients. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Visual Impairment, Quality of Life

Print Tag: Refer to original journal article
Patients with diffuse macular thickening, as opposed to those with cystoid macular edema or vitreomacular traction, have better clinical outcomes after focal laser photocoagulation.

**Objective:** To identify patterns of diabetic macular edema from optical coherence tomography (OCT) imaging of the retina that are predictive of clinical outcome after laser photocoagulation.

**Design:** Prospective, interventional clinical case series.

**Methods:** 70 eyes of 45 patients were included in this clinical study. All patients underwent OCT imaging of the retina to confirm a diagnosis of clinically significant diabetic macular edema. Each patient then underwent laser photocoagulation, which included focal therapy to leaking microaneurysms and grid therapy to areas of diffuse retinal thickening. A follow-up evaluation through 6 months was performed with repeat measurement of visual acuity and repeat OCT imaging to compare the clinical response according to characteristics of the baseline OCT. Patients were categorized into 4 groups based on pretreatment OCT: diffuse retinal thickening, cystoid macular edema, serous retinal detachment, or vitreomacular interface abnormalities.

**Results:** After laser photocoagulation, changes in retinal thickness were significantly different between groups according to OCT findings. Visual acuity improvement was greatest in the group with diffuse retinal thickening compared to the other 3 groups. A greater reduction in retinal thickening was also seen with diffuse retinal thickening and serous retinal detachment compared to the other 2 groups.

**Conclusions:** OCT imaging of the retina allows the identification of characteristics that correlate with the clinical outcome after laser photocoagulation.

**Reviewer's Comments:** This study is important in that it demonstrates the ability of OCT imaging to help provide prognostic information prior to laser photocoagulation for diabetic macular edema. It highlights the importance of determining characteristics of OCT images and the objective use of this information in the management of patients. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Diabetic Retinopathy, Laser Photocoagulation

Print Tag: Refer to original journal article
Has Diabetic Retinopathy Improved in Type 1 Diabetics Over the Years?


Klein R, Lee KE, et al:

Ophthalmology 2009; 116 (October): 1937-1942

Improvements in glycemic control and modern therapy for the management of diabetic retinopathy have resulted in a significant reduction in visual impairment in type 1 diabetics.

**Objective:** To evaluate the relationship of the period of diagnosis of type 1 diabetes to the risk of developing visual impairment.

**Design:** Population-based, longitudinal study.

**Participants:** 955 individuals between the ages of 4 and 80 years at the time of baseline examination living in southern Wisconsin who were diagnosed with type 1 diabetes before the age of 30 were enrolled in the study.

**Methods:** 5 eye examination visits took place during the period of 1980 through 2007. Individuals were categorized both by the duration of diabetes and the time period during which they were diagnosed with type 1 diabetes. Visual impairment was defined as best-corrected visual acuity of 20/40 or worse in the better-seeing eye. Statistical analysis allowed the evaluation of both duration of diabetes and the time at which diabetes was diagnosed as risk factors for visual impairment.

**Results:** Controlling for the duration of type 1 diabetes, a significantly lower prevalence of visual impairment was seen for individuals diagnosed with diabetes in more recent time periods. For example, individuals diagnosed in the 1960s were 50% less likely to develop visual impairment than those diagnosed before 1960. In addition, those diagnosed in the first half of the 1970s were 70% less likely to develop visual impairment than those diagnosed in the 1960s.

**Conclusions:** Individuals in this study diagnosed with type 1 diabetes were less likely to have developed visual impairment after controlling for the duration of diabetes.

**Reviewer's Comments:** This study strongly suggests that the improvement in glycemic control that has been practiced in more recent years and the evolution of therapy with laser photocoagulation for the management of diabetic retinopathy have both contributed to a dramatic reduction in visual impairment from type 1 diabetes. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Diabetic Retinopathy, Visual Impairment

Print Tag: Refer to original journal article
Objective: To determine whether surgical outcomes of external dacryocystorhinostomy (DCR) are affected by the use of silicone intubation in conjunction with the surgical procedure.

Design: Prospective, randomized clinical trial.

Participants: 100 patients with primary, uncomplicated nasolacrimal duct obstruction were enrolled in this clinical trial. Patients were all aged ≥18 years and had no history of lacrimal surgery or trauma to the ocular or nasal region. They were also free from any cause of secondary or inflammatory nasolacrimal duct obstruction.

Methods: Patients all underwent DCR with a similar surgical technique. The only difference in management was the placement of silicone tubes through the upper and lower canaliculi, and through the lacrimal system into the nasal cavity in one group. Patients were monitored for 6 months after surgery, and comparison of the success rate for patency of the lacrimal system and resolution of symptoms was made at that time point.

Results: The success rate for DCR with silastic intubation was 90%. No significant difference in the success rate was seen in patients without silastic intubation (87%). No complications were encountered in either group.

Conclusions: In the management of patients with uncomplicated primary nasolacrimal duct obstruction, DCR without silastic intubation shows similar clinical outcomes to the procedure performed with placement of tubes.

Reviewer's Comments: The results of this surgery demonstrate that, in primary nasolacrimal duct obstruction, the costs and potential complications associated with silastic intubation are not necessary. Although complications are uncommon, any time hardware is implanted in the body, it has the potential for erosion through tissues and other related complications. However, these results cannot be applied to cases of inflammatory or other secondary causes of nasolacrimal duct obstruction since such patients were excluded from this study. The surgeon must use his or her own judgment on the potential benefits of silastic intubation in other situations. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Nasolacrimal Duct Obstruction, External Dacryocystorhinostomy, Silicone Intubation

Print Tag: Refer to original journal article
Topical and oral beta-blocker use has been associated with an increased risk of the development of nuclear cataract.

**Objective:** To evaluate the association between antihypertensive medication use and the long-term incidence of cataracts and cataract surgery.

**Design:** Prospective, population-based cohort study.

**Participants/Methods:** 3654 individuals aged ≥49 years were enrolled in the Blue Mountains Eye Study. Detailed medical history and demographic information were obtained, as were lens photographs, which allowed the determination of cataract severity by subtype. The association between antihypertensive medication use, topical beta-blocker use, and the development of cortical, posterior subcapsular, and nuclear cataract was analyzed. In addition, cataract surgery was used as an end point that was evaluated with regard to the use of these medications.

**Results:** No association was found between the use of antihypertensive medications and cortical or posterior subcapsular cataract. The use of topical or oral beta-blockers was, however, associated with an increased incidence of the development of nuclear cataract, with a 45% increased risk observed in the study population. In addition, a 61% increased risk in requiring cataract surgery was noted in association with the use of these medications, and an even higher association was seen in the development of nuclear cataract or requiring cataract surgery when evaluating the use of topical beta-blockers alone.

**Conclusions:** The use of oral or topical beta-blockers is associated with an increased risk of developing nuclear cataract or requiring cataract surgery.

**Reviewer's Comments:** This study should remind us that the use of any medication may have unforeseen consequences, indicating the importance of using medications only when an important medical indication exists. The biological association between beta-blocker use and cataract is hypothesized to relate to an alteration of lens metabolism and/or electrolytes within the lens, resulting from beta blockade. In addition, the rate and nature of aqueous humor production (which is altered by beta-blocker use) and the fact that aqueous provides oxygen and nutrition to the lens may have implications for cataract development. (Reviewer-Scott D. Smith, MD, MPH).
Objective: To evaluate global and focal visual field progression before and after the occurrence of an optic disc hemorrhage.

Design: Retrospective, observational clinical case series.

Methods: A large clinical database from a glaucoma specialty practice was searched to identify patients with open-angle glaucoma who had at least 5 SITA-standard 24-2 Humphrey visual fields in either eye. The optic disc photographs of patients were then reviewed to identify individuals who had a disc hemorrhage during the period of visual field follow-up. Point-wise linear regression analysis was performed on the series of visual fields to determine global and focal rates of glaucoma progression before and after the occurrence of the disc hemorrhage. The contralateral eyes of individuals with unilateral disc hemorrhage were also evaluated to compare the rate of visual field progression to that of eyes with disc hemorrhage.

Results: 168 disc hemorrhages were identified in 122 patients. The mean patient age was 68.9 ± 11.2 years. The mean number of visual field tests was 9.0, spanning an average of 6.7 years. The mean rate of global progression of visual field loss before and after a disc hemorrhage was -0.6 ± 0.8 dB/y and 1.0 ± 1.2 dB/y, indicating more rapid progression of visual field loss after the disc hemorrhage. The mean rate of progression within the sector corresponding to disc hemorrhage before and after its detection was -2.0 ± 1.0 and -3.7 ± 3.6 dB/y, indicating more rapid progression within the sector both before and after disc hemorrhage. The rate of global and sectoral visual field loss was greater in eyes with disc hemorrhage than in contralateral control eyes without a disc hemorrhage.

Conclusions: Localized visual field loss is more rapid in regions corresponding to a disc hemorrhage, indicating that a disc hemorrhage is a clear sign of visual field instability in patients with open-angle glaucoma.

Reviewer's Comments: This study provides compelling evidence that disc hemorrhages represent a lack of stability of glaucoma and must be considered as a sign of glaucoma progression. Hemorrhages should be sought on follow-up examination with all glaucoma patients and must be acted on to prevent further glaucoma progression and loss of visual function. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Glaucoma, Disc Hemorrhage

Print Tag: Refer to original journal article
In older adults, glaucoma is associated with an increased probability of driving cessation.

**Objective:** To determine the relationship between glaucoma and driving limitation or cessation in an older adult population.

**Design:** A cross-sectional analysis of a longitudinal, population-based cohort study.

**Methods:** Individuals enrolled in the population-based Salisbury Eye Evaluation Project who reported having obtained a driver's license at any time in their life were included in this analysis. The diagnosis of glaucoma was made on the basis of a comprehensive eye examination, including optic disc examination and visual field testing. Driving habits of subjects were evaluated based on a questionnaire administered by an interviewer. Questions included whether driving cessation had taken place, and, if so, when and whether vision was related to the decision to discontinue driving. Subjects were classified on the basis of having no glaucoma, unilateral glaucoma, or bilateral glaucoma, which was then evaluated with regard to driving habits.

**Results:** 15% of subjects without glaucoma reported driving cessation by the end of the cohort study. In contrast, 21% of unilateral glaucoma subjects and 41% of bilateral glaucoma subjects reported driving cessation. Multivariate analysis adjusting for potential confounding factors confirmed that glaucoma diagnosis was associated with driving cessation.

**Conclusions:** Glaucoma diagnosis is associated with a significantly increased rate of driving cessation in older adults.

**Reviewer's Comments:** Although the association was weaker, indications that even unilateral glaucoma was associated with driving cessation in this elderly adult population were present. Clearly, bilateral glaucoma was associated with a considerably higher risk of driving cessation, indicating the importance of glaucoma on visual function and maintaining independence in older adults. Knowledge of this association may help patients become motivated to adhere to medical therapy to maintain their independence as they reach older age. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Glaucoma, Functional Impairment, Driving

Print Tag: Refer to original journal article
Combining sitting and supine IOP measurements to assess IOP fluctuation during the day may provide a more accurate picture of what the peak IOP may be during nonoffice hours.

**Objective:** To determine whether office-hour measurements of intraocular pressure (IOP) in the sitting and supine position can estimate the characteristics of 24-hour IOP.

**Design:** Prospective, observational clinical study.

**Methods:** A 24-hour IOP curve was made in 29 healthy individuals and 30 untreated glaucoma patients. Measurements were made at 9 AM, 12, 3, 6, and 9 PM, and 12, 3, and 6 AM in both the sitting and the supine positions. Sitting measurements were made with a Goldmann applanation tonometer, and supine measurements were made with the TonoPen. Statistical analysis was performed to determine whether the sitting, supine, or a combination of both sitting and supine IOP measurements most accurately predicted the 24-hour peak IOP.

**Results:** In glaucoma patients, the peak IOP occurred outside of office hours in 42% of cases, while in control subjects, peak IOP occurred outside of office hours in >62% of cases. Although combining sitting and supine IOP measurements made during office hours did not improve the prediction of the mean 24-hour IOP, the average of the sitting and supine peak IOP taken during office hours more accurately reflected the peak 24-hour IOP.

**Conclusions:** Compared with using measurements made in the sitting position alone, the measurement of both supine and sitting IOP during office hours may improve the prediction of the true 24-hour peak IOP in both control subjects and patients with glaucoma.

**Reviewer's Comments:** Further study is needed to determine exactly how IOP assessment during office hours can best reflect variability in IOP throughout the day. This study, however, suggests that making measurements both in the sitting and supine position offers some benefit in correctly interpreting IOP readings in patients in whom diurnal IOP measurements are needed. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Intraocular Pressure Measurement

Print Tag: Refer to original journal article
RNFL Measurements by OCT--View With Caution

Effect of Diabetic Retinopathy and Panretinal Photocoagulation on Retinal Nerve Fiber Layer and Optic Nerve Appearance.

Lim MC, Tanimoto SA, et al:

Arch Ophthalmol 2009; 127 (July): 857-862

The retinal nerve fiber layer is thinner among eyes that been treated with panretinal photocoagulation.

**Background:** Panretinal photocoagulation (PRP) results in damage to the peripheral retina, which can result in visual field loss. Presumably, the retinal ganglion cells are damaged, causing thinning of the peripapillary retinal nerve fiber layer (RNFL).

**Objective:** To investigate the effect of PRP for diabetes on the RNFL thickness and optic disc appearance.

**Design:** Prospective, observational case series.

**Participants:** Diabetic patients from 2 centers in northern California and São Paulo, Brazil.

**Methods:** Diabetic patients with and without retinopathy were invited to participate. Patients who had received PRP at least 3 months previously were also included. The PRP was graded according to the involvement of the peripheral retina: mild, <50%; moderate, 50% to 75%; or heavy, 75%. Nondiabetic controls were recruited from comprehensive clinics and office staff. Each subject underwent a fast RNFL and optic disc protocol using the Stratus OCT 3. Optic disc photographs were evaluated in masked fashion as normal, suspicious for glaucoma, or nonglaucomatous optic atrophy.

**Results:** There were 94 healthy eyes, 89 diabetic eyes without PRP, and 37 diabetic eyes with PRP. There was no difference in race or gender among groups. The PRP eyes showed significant thinning of the nasal quadrant compared to diabetic eyes without PRP and normal eyes. No significant difference was found in the fast optic disc parameters. Eyes with diabetic retinopathy with and without PRP were more likely to be graded as suspicious for glaucoma or nonglaucomatous optic atrophy.

**Conclusions:** The RNFL is thinner among eyes that have been treated with PRP for diabetic retinopathy. The optic discs in post-PRP eyes are also more likely to appear abnormal.

**Reviewer's Comments:** This is yet another example of how the RNFL measurements by OCT need to be viewed with caution. Patients who are status post-PRP may look like they have glaucoma because the RNFL is thinner on OCT or because the disc simply looks more abnormal. However, it still may be possible to follow RNFL progression with OCT. (Reviewer-Michael S. Lee, MD).

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Keywords: Optical Coherence Tomography, Retinal Nerve Fiber Layer, Diabetic Retinopathy, Optic Nerve, Optic Disc, Panretinal Photocoagulation

Print Tag: Refer to original journal article
When masked reviewers felt they knew the author's identity, they gave more favorable publication recommendations for them in a subspecialty ophthalmic journal.

Background: Ophthalmic journals depend upon objective peer review to publish sound manuscripts. However, reviewer knowledge of the author may result in biased opinions.

Objective: To determine the effect on bias by masking peer reviewers to author identity.

Design: Retrospective, observational study.

Participants: Masked manuscript reviews submitted to a single ophthalmic journal.

Methods: All manuscripts submitted to the Journal of the American Association for Pediatric Ophthalmology and Strabismus (JAAPOS) from 2000 to 2005 were included. The policy during this time period was to conduct double masked reviews – the authors did not know the reviewer's identities and the reviewers did not know the author's identities. All identifying institutions and regional information were removed as appropriate. An editorial board member and an at-large expert reviewed each manuscript. Reviewers could choose to accept, reject, or revise the manuscript to 3 different degrees. If both reviewers chose to reject the manuscript, it did not get published. If both chose anything but reject, then the manuscript got published after author rebuttal. If 1 reviewer chose to reject, then the manuscript was sent to a third referee. The reviewers also described how they felt about the author's identity from "I know," "I strongly suspect" or "I have no idea." The Editor-in-Chief rated each review on a 1 to 5 scale, with 5 being the best. The most recent 30 reviewers who indicated knowledge or strong suspicion of author identity were contacted. Each reviewer was asked to identify a particular individual.

Results: There were 1182 masked reviews of 531 manuscripts. A total of 77% of reviewers stated they had no idea about the author's identity. When reviewers had no idea of author identity, only approximately 60% of the manuscripts were published. When reviewers knew or suspected author identity, the rate of publication went up to approximately 80% (P <0.001). Academic reviewers and editorial board members gave less favorable recommendations than private practitioners or nonboard members, respectively. Gender and location did not affect decisions. Reviewer's knowledge of the author's identity did not affect the review quality. Among the 30 reviewers who were recontacted, 53% correctly identified the author, 40% could not remember the author, and 7% were incorrect.

Conclusions: When masked reviewers felt they knew the author's identity, they gave more favorable publication recommendations.

Reviewer's Comments: Not many journals mask their reviewers. There are arguments that an unmasked reviewer can take into account the author's previous work and that masking handicaps the reviewer. This article seems to indicate that there is a much more favorable review when the reviewer feels they know the author's identity. Masking seems to reduce bias in the review. (Reviewer-Michael S. Lee, MD).

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Keywords: Peer Review, Mask, Blind, Publication, Manuscript

Print Tag: Refer to original journal article
It is possible to unintentionally biopsy a vein or a nerve when doing a temporal artery biopsy.

**Background:** There is some variability in the exact location of the temporal artery and unintentional biopsy of another similar appearing piece of tissue may occur.

**Objective:** The authors reviewed the frequency of unintended vein or nerve submitted for pathologic investigation after a temporal artery biopsy procedure.

**Design:** Retrospective, observational case series.

**Participants:** All biopsy specimens from 2 institutions in Atlanta.

**Methods:** All specimens submitted over a 17-year period at Emory University and a 14-year period at a veteran's hospital were included. Slides were retrieved and re-examined by a pathologist. The frequency of a slide with evidence of a vein or a nerve in the absence of an artery was determined.

**Results:** There were 567 specimens from 85 surgeons between the 2 institutions. Fourteen slides (2.5%), where a vein or nerve was inadvertently biopsied, were submitted by 10 different surgeons. There were 7 veins and 7 nerves. There was no statistical difference between institutions.

**Conclusions:** In this series, 2.5% of temporal artery biopsies did not get the artery, but got a vein or a peripheral nerve instead.

**Reviewer's Comments:** It can be challenging to find the temporal artery in patients with a poor pulse or substantial subcutaneous fat. Anesthetic injection can alter the course of the temporal artery and epinephrine can cause shrinkage of the artery caliber. When a patient has true giant cell arteritis, the vessel can become bright white and pulseless, which looks very similar to a peripheral nerve. Try to stay away from the stylomastoid foramen. By doing so, it is difficult to mistake the small caliber of the facial nerve for the temporal artery. Veins can sometimes run in the same direction as the temporal artery, but lie more superficial. A surgeon may find the vein and mistake it for the artery. I think arteries have a slight sponginess to them, which differs from the very collapsible vein. (Reviewer-Michael S. Lee, MD).

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Keywords: Temporal Artery Biopsy, Giant Cell Arteritis, Vein, Facial Nerve

Print Tag: Refer to original journal article
Approximately 33% of asymptomatic patients with typical white matter lesions on brain MRI can convert to clinically definite multiple sclerosis.

**Background:** Patients get brain MRI studies for multiple "soft" reasons, and sometimes they show white matter lesions consistent with demyelination. These lesions are asymptomatic and are described as a radiologically isolated syndrome (RIS).

**Objective:** The authors followed patients with RIS for the development of multiple sclerosis (MS).

**Design:** Prospective, observational case series.

**Participants:** 70 patients from multiple sites in France.

**Methods:** The patients received MRIs for various nondemyelinating reasons and the scans showed asymptomatic T2 hyperintensities of ≥3 mm. When most of the accepted criteria were fulfilled, further testing was recommended including blood tests to rule out mimickers of MS, cerebrospinal fluid (CSF) analysis, and visual evoked potentials (VEP). A second MRI was performed 3 to 6 months after the first.

**Results:** There were 53 women and 17 men, with a mean age of 36 years, involved in the study. The average follow up time was 5 years. Twenty-five patients had some type of medical history including migraine, depression, endocrine disorder, eczema, and breast cancer. The first brain MRI was for headache in >50% of the patients. Various other causes included depression, tinnitus, endocrinopathy, anosmia, and dystonia. CSF demonstrated oligoclonal bands in 30 patients and increased IgG index in 28 patients, while VEP showed prolonged latencies in 45 patients. During follow-up, 33% of the patients converted to clinically definite MS with the development of optic neuritis (n=6), myelitis (n=6), brainstem demyelination (n=5), sensory paresthesias (n=4), and cerebellar and cognitive symptoms (n=1 each). The mean time from first brain MRI to a second event was slightly >2 years.

**Conclusions:** Among patients with radiologically asymptomatic white matter lesions consistent with demyelination, one-third of patients clinically converted to MS during 5 years of follow-up.

**Reviewer’s Comments:** If you order enough defensive brain MRIs, you will get back some that show a surprising finding of typical white matter lesions. Up to 33% of these patients may go on to develop MS. The big question is whether a patient with these lesions should start on immunomodulating therapy or not, and the answer is not yet available. (Reviewer-Michael S. Lee, MD).

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Keywords: MRI, White Matter Lesion, Multiple Sclerosis, Asymptomatic, Incidental

Print Tag: Refer to original journal article
Optical coherence tomography imaging of the tear menisci offers objective measures that can be useful in identifying aqueous tear deficiency.

**Objective:** To measure characteristics of the upper and lower tear menisci by anterior segment optical coherence tomography (AS-OCT) and to identify measures that correlate with aqueous tear deficiency (ATD).

**Design:** Cross-sectional, observational, clinical study.

**Participants/Methods:** 48 subjects identified as having ATD based upon the presence of symptoms, findings on clinical examination, and Schirmer testing were enrolled in this study. In addition, 47 healthy subjects without ATD were enrolled. Imaging of the upper and lower tear menisci was performed with real-time AS-OCT. Measurements obtained from these images included the tear meniscus radius and height. Statistical analysis allowed the comparison of these parameters between ATD patients and normal subjects.

**Results:** Values for upper and lower tear meniscus radius and height were significantly lower in ATD patients than in normal subjects. A strong correlation between the values of the upper and lower tear menisci was seen in all study subjects. Values for tear height and radius were similar between the upper and lower tear menisci in ATD patients, but in normal subjects, the lower tear meniscus was significantly larger than the upper meniscus. Cutoff values were found for the lower tear meniscus height that allowed a high degree of diagnostic accuracy for ATD (92% sensitivity and 90% specificity).

**Conclusions:** Imaging of the tear menisci may be a useful tool in the diagnosis of ATD.

**Reviewer's Comments:** AS-OCT has potential to improve the objectivity of the evaluation of patients with dry eye symptoms for aqueous tear deficiency, and improve their treatment by identifying the cause of their underlying symptoms. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Dry Eye, Tear Film

Print Tag: Refer to original journal article
Injection of an inflamed pterygium with the vascular endothelial growth factor inhibitor bevacizumab can result in regression of vascularity of the lesion.

Objective: To assess the efficacy of injection of the vascular endothelial growth factor (VEGF) inhibitors, bevacizumab or ranibizumab, in reducing vascularity of inflamed pterygia or early recurrent pterygia after excision.

Design: Intervenional clinical case series.

Methods: 3 patients with inflamed pterygium or early inflammatory recurrence of a pterygium after excision were treated with a single intralesional injection of either bevacizumab 2.5 mg or ranibizumab 1 mg. All patients had symptomatic lesions, and desired to undergo treatment after being informed of the off-label nature of the proposed therapy. Following injection, each patient was monitored to observe the effect of treatment on the vascularity of the lesion and reduction in symptoms.

Results: Prompt regression of conjunctival vascularity was observed within 1 week of treatment in all cases. No adverse effects were noted to occur in any of the patients during follow-up of between 1-month and 1-year. All patients reported prompt improvement in inflammatory symptoms within days after receiving the injection.

Conclusions: Intralesional injection of a VEGF inhibitor can be effective in inducing prompt regression of vascularity and improvement in inflammatory symptoms in patients with inflamed pterygia.

Reviewer's Comments: This study demonstrates another potential application of VEGF inhibitors, which have become increasingly used in the treatment of a wide range of ophthalmic conditions. It must be emphasized, of course, that the only currently Food and Drug Administration-approved use for VEGF inhibitors in ophthalmology is by intravitreal injection of Macugen and Lucentis for the treatment of exudative macular degeneration. Avastin (bevacizumab) is not approved for ophthalmic use, but has been used widely off label, and is much less expensive than the other drugs. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Inflamed Pterygia, Residual Pterygial Bed, Treatment

Print Tag: Refer to original journal article
Central Corneal Thickness Has Strong Genetic Component

Heritability of Central Corneal Thickness in Nuclear Families.
Landers JA, Hewitt AW, et al:
Invest Ophthalmol Vis Sci 2009; 50 (September): 4087-4090

Objective: To evaluate the heritability of central corneal thickness (CCT) within nuclear families.

Design: Cross-sectional cohort study.

Methods: 33 index cases with thick CCT (>578 µm) or “thin” CCT (<510 µm) were identified at a tertiary referral center. All subjects were Caucasian and of western European descent. Those with any type of corneal pathology were excluded. Measurements of CCT were obtained from all available family members. Analysis of the variability of CCT within and between family members allowed the determination of heritability of this trait.

Results: For purposes of analysis, a mean value of CCT of 445 µm and standard deviation (SD) of CCT of 34 µm were obtained from a previously published meta-analysis of CCT. Children of individuals in the present study whose CCT fell >1 standard deviation (SD) above the mean had a significantly greater CCT than those whose parent’s CCT fell <1 SD below the mean (568 vs 521 µm; P <0.0001). The parent-child heritability of CCT was estimated to be 0.68 (95% CI, 0.64 to 0.73), which is considered to be a high value, indicating that there was a strong genetic component in the determination of CCT in this study population. Conclusions: A strong familial component exists with regard to CCT.

Reviewer’s Comments: This study suggests that some pedigrees with familial “glaucoma” may actually have familial increased CCT, resulting in perceived IOP elevation. In addition, some pedigrees of familial “normal tension glaucoma” may actually have typical high pressure glaucoma with perceived normal tension due to thin CCT. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Corneal Thickness, Heritability

Print Tag: Refer to original journal article
Objective: To evaluate the usefulness of hydroxypropylmethylcellulose (HPMC) in the removal of silicone oil droplets adherent to the surface of silicone intraocular lenses (IOLs).

Design: Laboratory experiment.

Methods: A laboratory setup was designed with an artificial anterior chamber filled with balanced salt solution, and with either a silicone or an acrylic IOL. Silicone oil droplets were placed on the IOL surface, and the diameter and height of the droplets were measured to estimate their volume. Measurements were repeated after injection of HPMC 0.5%, 1%, or 2% into the chamber. Measurements were again repeated with each concentration of the material, with the addition of a mechanical sweeping across the IOL surface with a 30 g cannula.

Results: Silicone oil droplets did not adhere to acrylic IOLs. The use of HPMC at a concentration of 2% in conjunction with mechanical sweeping of the IOL surface allowed complete removal of the silicone oil droplets. Lower concentrations of the material or failure to perform the mechanical procedure resulted in persistent adherence of the silicone oil droplets to silicone IOLs.

Conclusions: Mechanical sweeping of silicone oil droplets from the surface of silicone IOLs in the presence of HPMC 2% is effective in their removal.

Reviewer's Comments: This study should, of course, remind us of the importance of avoiding implantation of silicone IOLs in patients who have had or who are likely to require silicone oil in conjunction with vitreoretinal surgery. In those patients who already have silicone oil in place, when it is required for retinal reattachment, visually significant adherence of oil droplets to the IOL may occur. This study demonstrates a method that can be effective in managing this complication when it occurs. HPMC 2% is available commercially as Ocucoat. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Vitreoretinal Surgery, Silicone Oil, Hydroxypropylmethylcellulose

Print Tag: Refer to original journal article
Single Sustained-Release DuoCat as Effective as Topical Ciprofloxacin, Triamcinolone


Paganelli F, Cardillo JA, et al:

Invest Ophthalmol Vis Sci 2009; 50 (July): 3041-3047

A single injection of sustained-release triamcinolone/ciprofloxacin (DuoCat) results in comparable clinical outcomes as 4-week tapering topical therapy following cataract surgery.

Objective: To compare the efficacy of a single intraoperative injection of controlled release triamcinolone/ciprofloxacin (DuoCat) with topical prednisolone and ciprofloxacin eye drops following routine phacoemulsification.

Design: Randomized, double-masked, controlled clinical trial.

Methods: 135 patients scheduled for routine phacoemulsification were enrolled in this clinical trial. Patients were randomly assigned to receive an intraoperative injection of DuoCat or topical therapy for 4 weeks with prednisolone and ciprofloxacin 4 times daily for the first week, tapered weekly over 3 additional weeks. Masking was accomplished by the use of a placebo vehicle injection in the topical therapy group and placebo eye drops in the DuoCat group. Patients were followed for 4 weeks. Study visits included grading of anterior chamber cell and flare, as well as other signs of ocular inflammation, and patient-reported symptoms.

Results: At the 1-day and 3-day follow-up visits, anterior chamber cell grade tended to be smaller in the DuoCat group than in those receiving topical therapy. No other significant differences in study outcomes were seen between the 2 groups.

Conclusions: A single sustained-release injection of DuoCat was at least as effective as topical prednisolone and ciprofloxacin in managing postoperative inflammation after routine phacoemulsification.

Reviewer’s Comments: The use of a single sustained release injection of steroid and antibiotic following cataract surgery could have advantages with regard to cost, patient adherence to therapy, and convenience. In the event of a steroid-induced elevation of IOP, however, topical therapy can be discontinued while elimination of sustained-release steroid can be difficult. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Ophthalmic Surgery, Drug Therapy, Triamcinolone, Ciprofloxacin

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Diet Influences Risk of Progression of AMD

Does Eating Particular Diets Alter the Risk of Age-Related Macular Degeneration in Users of the Age-Related Eye Disease Study Supplements?

Chiu C-J, Klein R, et al:

Br J Ophthalmol 2009; 93 (September): 1241-1246

Dietary modification to reduce glycemic index and increase intake of omega-3 fatty acids reduces the risk of progression of early AMD, even in individuals already using Age-Related Eye Disease Study supplements.

**Objective:** To determine whether diet can affect the risk of progression of age-related macular degeneration (AMD) in individuals who are already using Age-Related Eye Disease Study supplements.

**Design:** Prospective, observational clinical study.

**Participants/Methods:** This is a report published from the Age-Related Eye Disease Study (AREDS). A total of 3640 eligible subjects were recruited who had early AMD, and were randomly assigned to receive either placebo or 1 of 4 different combinations of dietary supplements. In addition to clinical examination and fundus photography, dietary information was collected at baseline. Follow-up examination with fundus photography allowed the identification of cases of progression of AMD, which were based upon standardized criteria and evaluated by a masked examiner. Analysis of the risk of progression based upon reported dietary intake was performed in each of the treatment groups.

**Results:** Dietary intake was associated with the risk of AMD progression in each of the treatment groups, independent of the use of dietary supplements. A lower glycemic index diet, or a diet rich in docosahexaenoic acid or eicosapentaenoic acid were each associated with a 25% reduction in the risk of progression from early to late AMD.

**Conclusions:** Dietary modification can further contribute to the reduction in risk of progression from early to late AMD that is seen with the use of AREDS dietary supplements.

**Reviewer’s Comments:** Patients with AMD should be reminded that AREDS vitamin supplements are not a "magic pill" that prevents the progression of macular degeneration. They must be aware that a variety of other factors are at least as important, including smoking cessation and dietary modification. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Age-Related Macular Degeneration, Diet, Supplements

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VEGF Neutralization May Improve Results of High-Risk Corneal Transplantation

Transient Postoperative Vascular Endothelial Growth Factor (VEGF)-Neutralisation Improves Graft Survival in Corneas With Partly Regressed Inflammatory Neovascularisation.

Bachmann BO, Luetjen-Drecoll E, et al:


Inhibition of VEGF can reduce reactivation of previously regressed corneal neovascularization and may improve the results of high-risk corneal transplantation.

**Objective:** To investigate the effect of vascular endothelial growth factor (VEGF) inhibition on the survival of corneal grafts performed in the presence of regressed corneal neovascularization in an animal model.

**Design:** In vivo laboratory experiment.

**Methods:** Corneal limbal neovascularization was induced by placement of three 11-0 nylon sutures at the corneoscleral limbus of 6- to 8-week-old mice. The sutures were left in place for 6 weeks. Six months after removal of the sutures, significant regression of neovascularization had occurred. Corneal grafting was performed, and the animals were divided into a treatment and control group. The treatment group received an intraperitoneal injection of VEGF-A specific cytokine trap (VEGF-trap) 4 times during the first 2 weeks after graft placement. The other group had no additional treatment.

**Results:** 3 days after surgery, significantly less re-activation of previously regressed corneal neovascularization was observed in animals that received the VEGF-trap treatment in comparison to control animals. In addition, graft survival at 8 weeks was significantly greater in VEGF-trap–treated animals (36% vs 9%; P <0.05).

**Conclusions:** VEGF inhibition in animal eyes with regressed corneal neovascularization significantly reduces corneal revascularization and improves graft survival.

**Reviewer’s Comments:** This study demonstrates the potential of VEGF inhibition in improving the results of corneal transplantation in eyes that are at high risk for graft failure. Patients with corneal opacity due to trauma, herpetic keratitis, and other inflammatory conditions often have corneal neovascularization. Even when this neovascularization has regressed prior to surgery reactivation of these abnormal vessels can significantly reduce the likelihood of a good clinical outcome. This study demonstrates that inhibition of VEGF during the inflammatory phase following surgery can reduce this reactivation of regressed neovascularization and shows promise in improving the results of high risk corneal transplantation. (Reviewer-Scott D. Smith, MD, MPH).

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**Keywords:** Keratoplasty, VEGF Neutralization, Graft Survival

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Bevacizumab appears to require more time to reach maximum efficacy, but a longer duration of action than ranibizumab in its effect on reducing macular thickness in patients with AMD.

Objective: To compare the efficacy and duration of action of ranibizumab (Lucentis) and bevacizumab (Avastin) in reducing macular volume in patients with exudative age-related macular degeneration (AMD).

Design: Retrospective, comparative, interventional, clinical case series.

Methods: Medical records were reviewed of a consecutive series of 316 patients treated with intravitreal injection of ranibizumab or bevacizumab for exudative AMD at a single center. Sequential images of the macula obtained with optical coherence tomography (OCT) allowed the estimation of the time required to obtain maximum efficacy of reduction of macular volume, and the duration of effect of each drug.

Results: A similar reduction in macular volume was observed in patients treated with either of the 2 drugs. The mean macular volume in ranibizumab-treated patients decreased from 7.22 mm³ to 6.69 mm³ and from 7.36 mm³ to 6.50 mm³ in bevacizumab treated-patients. The time to minimum macular volume was greater with bevacizumab than with ranibizumab (62 vs 47 days). However, the duration of action of bevacizumab appeared to be greater than with ranibizumab (102 vs 74 days; \( P = 0.04 \)).

Conclusions: Ranibizumab and bevacizumab have similar efficacy in reducing macular volume in patients treated for exudative AMD, but appear to have a different time course in their efficacy.

Reviewer's Comments: Thus far, only ranibizumab has Food and Drug Administration approval for the treatment of wet AMD by intravitreal injection. However, this study suggests that bevacizumab injections may offer similar efficacy and may need to be given less frequently to achieve a sustained beneficial effect. Ongoing clinical trials comparing these drugs will answer these questions more definitively. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Retinal Disease, Medical Therapy

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