Postoperative capsulorrhexis diameter

**Objective:** To evaluate the effect of capsulorrhexis size and anterior capsule opacity on straylight following cataract surgery.

**Design:** Prospective observational clinical study.

**Participants/Methods:** 56 patients who underwent uncomplicated phacoemulsification with implantation of a foldable acrylic aspheric intraocular lens (IOL) were enrolled in the study. Patients underwent slit lamp examination, which included determination of the diameter of the capsulorrhexis and grading of the density of anterior capsule opacification. Patients also underwent measurement of straylight using a straylight meter both before and after pupillary dilation. A statistical model of the effect of capsular diameter and severity of anterior capsule opacity was performed in order to evaluate these effects on the amount of straylight.

**Results:** The mean age of subjects was 66 years. The mean diameter of the capsulorrhexis was 4.5 mm (range, 2.9 to 6.2 mm). In total, 91% of patients had no visible capsular edge within the pupillary diameter prior to pupillary dilation. A significant increase (62%) in the severity of straylight was seen after pupillary dilation. Statistical analysis demonstrated that the severity of capsule opacity and capsulorrhexis diameter

**Conclusions:** Capsulorrhexis size and severity of anterior capsule opacification influence straylight in patients following cataract surgery.

**Reviewer’s Comments:** In order to achieve a final postoperative capsular diameter of at least 4 mm, an intraoperative capsulorrhexis diameter of 5 mm is often required. This allows stable fixation of the IOL with overlap between the capsular margin and the IOL, ensuring adequate IOL stability while allowing for a slight amount of capsular contraction postoperatively and maintaining an adequate postoperative capsulorrhexis diameter. In addition, careful cleaning of lens epithelial cells and cortical strands from the anterior capsule can reduce anterior capsule opacification and contraction. In this era of increasing patient expectations following cataract surgery, attention to these details can improve visual outcomes and patient satisfaction.

Additional Keywords: None

Print Tag: Refer to original journal article
The cost of intracameral cefuroxime prophylaxis against postoperative endophthalmitis is $1403 per case of endophthalmitis prevented, which is considerably less than the cost of treatment of this complication.

**Objective**: To evaluate the cost-effectiveness of intracameral cefuroxime for prevention of endophthalmitis after cataract surgery, and to determine comparable cost-effectiveness of other alternative antibiotic regimens.

**Design**: Cost-effectiveness analysis.

**Methods**: The cost-effectiveness model was constructed to evaluate different antibiotic prophylactic regimens for prevention of endophthalmitis after cataract surgery. Data were obtained from published sources regarding the cost and efficacy of a wide range of antibiotic regimens using intracameral cefuroxime as the reference standard. Efficacy was defined by the estimated reduction in rate of infection from the baseline infection rate without therapy. The cost analysis included not only the cost of antibiotics, but also the cost of equipment and labor for the administration of antibiotics. In addition, the cost of treatment of 1 case of endophthalmitis was estimated from published data sources.

**Results**: The estimated cost of prophylaxis with intracameral cefuroxime per case of postoperative endophthalmitis prevented was $1403. Given the substantially higher cost of treatment with topical fluoroquinolone antibiotics, such therapy would have to be at least 8 times more effective than intracameral cefuroxime in order to achieve equivalent cost-effectiveness. The newest and most expensive topical fluoroquinolones studied, gatifloxacin and moxifloxacin, would have to be at least 19 times more effective than intracameral cefuroxime to achieve comparable cost-effectiveness.

**Conclusions**: Intracameral cefuroxime is a cost-effective prophylactic therapy against endophthalmitis after cataract surgery. Due to high costs of topical antibiotics, most commonly used topical fluoroquinolones are not cost-effective in comparison to single-dose intracameral cefuroxime.

**Reviewer's Comments**: Topical Betadine applied to the ocular surface prior to cataract surgery had been for many years the only proven method of reducing the occurrence of postoperative endophthalmitis. Recent publications from large randomized clinical trials have demonstrated efficacy of intracameral cefuroxime in reducing the rate of infection as well. This study goes further in demonstrating its cost-effectiveness, and it seems that this is the direction that we should be moving toward for routine prophylaxis against this serious complication of ophthalmic surgery.

Additional Keywords: None

Print Tag: Refer to original journal article
Objective: To evaluate risk factors for traumatic wound rupture after penetrating keratoplasty (PK) or deep anterior lamellar keratoplasty (DALK).

Design: Retrospective non-comparative clinical case series.

Participants/Methods: Medical records were reviewed of a consecutive series of patients who underwent either PK (1776 eyes) or DALK (186 eyes) at a single institution during an 8-year period. Statistical analysis was performed to determine the frequency and risk factors for the development of traumatic globe rupture following these procedures.

Results: 36 open-globe injuries occurred in the patients following PK or DALK in this series. Consequently, the authors reported 1.8% of patients having developed open-globe injury during the approximate 10-year follow-up period. All open-globe injuries resulted from dehiscence of the graft host junction. The interval between surgery and occurrence of open-globe injury was 61 months (range, 4 months to 14 years). In younger patients, intentional assault was the most common cause of open-globe injury. In elderly patients, blunt trauma associated with a falling episode was the most common cause of injury.

Conclusions: The risk of open-globe injury is increased after penetrating keratoplasty and remains elevated for >14 years after surgery.

Reviewer's Comments: This study should remind us of the importance of recommending protective eyewear for patients after PK. Patients must be aware of the increased risk of significant injury from what might otherwise be incidental trauma, and they must protect themselves through appropriate use of protective eyewear. This study also reminds us of the added benefit of endothelial keratoplasty, which is now being commonly performed for patients with corneal disease restricted to the endothelium. Not only is visual recovery quicker, but the small incision results in significantly less alteration of the structural integrity of the eye.
Systemic administration of methotrexate can be effective in improving control of ocular inflammation and reducing the need for systemic steroids in patients with a full range of ocular inflammatory diseases.

**Objective:** To evaluate clinical outcomes of treatment with methotrexate for noninfectious ocular inflammatory disease.

**Design:** Retrospective cohort study.

**Methods:** Data for this study were derived from the Systemic Immunosuppressive Therapy for Eye Diseases Cohort Study. All participants who were treated with methotrexate at this longitudinal cohort study conducted at 4 tertiary referral centers were included. Demographic and clinical characteristics of patients, including details of methotrexate dosage, and clinical outcomes, including control of inflammation and visual acuity, were recorded.

**Results:** Data were available from 639 eyes of 384 patients. The category of ocular inflammatory disease in patients enrolled in the study was anterior uveitis in 32.8%, intermediate uveitis in 9.9%, posterior or panuveitis in 21.4%, scleritis in 14.6%, ocular mucus membrane pemphigoid in 15.1%, and other forms of ocular inflammatory disease in 6.3%. Complete suppression of inflammation sustained for at least 28 days was achieved within 6 months of initiation of therapy in approximately 50% of patients regardless of uveitis type. Control of inflammation with successful reduction of systemic prednisone to a dose of ≤10 mg/day was achieved within 6 months in approximately 40% of patients. Within 1 year, the successful control of inflammation was achieved in 66.0% of patients, and with successful reduction of prednisone to ≤10 mg/day in 58.4% of patients. Discontinuation of methotrexate took place within 1 year in 13% of patients due to lack of efficacy and in 16% because of side effects. Thirty percent of patients had methotrexate withdrawn due to successful induction of remission of inflammation. Recurrent uveitis occurred in 7.7% of patients with remission who had discontinued methotrexate.

**Conclusions:** Methotrexate appears to be a moderately effective anti-inflammatory therapy and can frequently result in a lower requirement for systemic steroids.

**Reviewer's Comments:** Use of systemic steroid-sparing immunosuppressive agents is extremely important in controlling inflammation and minimizing the numerous long-term side-effects of chronic steroid use. Control of inflammation is critical to avoid the long-term complications that may occur from chronic inflammation including band keratopathy, cataract, and cystoid macular edema.

Additional Keywords: None

Print Tag: Refer to original journal article
Azithromycin Wipes Out Trachoma in Undeveloped Areas

Complete Local Elimination of Infectious Trachoma From Severely Affected Communities After Six Biannual Mass Azithromycin Distributions.

Ophthalmology 2009; 116 (November): 2047-2050

Trachoma can be eliminated in endemic communities with 6 biannual mass distributions of azithromycin.

Objective: To determine whether infectious trachoma can be completely eliminated from endemic regions through a mass distribution program of azithromycin.

Design: Prospective survey of villages participating in a randomized clinical trial for the treatment of trachoma.

Participants/Methods: 758 individuals in 2 villages in Ethiopia with high baseline prevalence of trachoma were included in this study. Baseline evaluation of the prevalence of trachoma was accomplished through clinical examination of children aged 1 to 5 years for signs of active trachoma. In addition, conjunctival swab specimens were obtained for detection of chlamydial RNA in the entire study population. Azithromycin was distributed for single-dose oral use to all members of each village. Over 90% of village residents participated. Follow-up evaluations took place during 42 months in order to determine the efficacy of treatment, which was administered every 6 months for 6 doses for long-term eradication of infection.

Results: Baseline prevalence of active trachoma in children was between 78% and 83% in the 2 villages. In total, 48% of participants showed evidence of chlamydial RNA from conjunctival swabs. At the conclusion of the study, no evidence of active trachoma or chlamydial RNA was seen in the study population.

Conclusions: Biannual mass distribution of azithromycin can eliminate chlamydial infection, even from communities with high baseline prevalence.

Reviewer's Comments: Although the definitive solution to the problem of trachoma comes through economic development with availability of good sanitation and clean water, the methods described in this study have extremely important public health implications in preventing the severe consequences of trachoma in populations where the infection remains prevalent.

Additional Keywords: None

Print Tag: Refer to original journal article
Study Shows No Link Between Cataract Surgery and Neovascular AMD

Progression of Age-Related Macular Degeneration After Cataract Surgery.

During the first year of follow-up, no significant difference in the rate of development of neovascular AMD was seen after cataract surgery in patients with dry macular degeneration prior to surgery.

**Objective:** To evaluate the progression of age-related macular degeneration (AMD) after cataract surgery.

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

**Participants/Methods:** 108 subjects with dry macular degeneration who had unilateral visually significant cataract were enrolled in this study. Patients underwent preoperative examination including fluorescein angiography performed in both eyes. The contralateral phakic eye served as a control. The study eye underwent phacoemulsification posterior chamber intraocular lens implantation. Follow-up fluorescein angiography was performed 1 month, 3 months, and 1 year after surgery. A comparison was made in the rate of development of neovascular AMD and the change in geographic atrophy after surgery.

**Results:** The mean patient age was 76 years. In total, 12% of study eyes were found to have newly identified neovascular macular degeneration during the 12-month follow-up period. However, 5 cases were identified at the 1-week follow-up visit, strongly suggesting that quality of preoperative fluorescein angiography was limited by the cataract, and preoperative classification of patients resulted from the poor image quality. After excluding those cases, there was no significant difference in the rate of development of neovascular AMD between study and control eyes (4.6% vs 3.0%). No difference in the rate of progression of geographic atrophy was seen between groups.

**Conclusions:** The rate of progression of dry macular degeneration to its more advanced stages is low during the first year following cataract surgery, and does not appear to differ from the natural history of disease without cataract surgery.

**Reviewer’s Comments:** This study suggests that cataract surgery does not significantly impact the rate of progression of macular degeneration to its more advanced stages. Longer follow-up is needed to answer this question definitively, but it appears reasonable at this point to conclude that cataract surgery should not be withheld from patients with dry macular degeneration out of fear of inducing progression of disease. When visually significant cataracts are present, surgery can be appropriately offered to patients. This study also suggests that the diagnostic ability of detecting neovascular AMD can be improved following cataract surgery and that this procedure may offer benefits in terms of earlier diagnosis of corneal neovascularization.

Additional Keywords: None

Print Tag: Refer to original journal article
Objective: To evaluate long-term changes in the corneal endothelium after laser in situ keratomileusis (LASIK) and photorefractive keratectomy (PRK).

Design: Prospective longitudinal observational study.

Methods: 29 eyes of 16 patients who underwent LASIK or PRK were included in the study. All patients underwent refractive surgery following comprehensive ophthalmic examination, including specular microscopy to measure corneal endothelial cell density. Follow-up specular microscopy performed 9 years after surgery allowed the evaluation of changes in corneal endothelial cell density with long-term follow-up. A control group of 42 patients without corneal pathology had similar measurements, allowing a comparison of the annual rate of endothelial cell loss following LASIK to the natural history related to age.

Results: Corneal endothelial cell density 9 years after LASIK and PRK decreased by 5.3% from baseline. The mean annual rate of endothelial cell loss did not differ between operated and control eyes. No significant differences were seen as a function of ablation depth, mean refractive spherical equivalent, residual bed thickness, or the performance of a second enhancement procedure and the density of endothelial cells after surgery. In addition, there was no evidence of a difference in corneal endothelial cell morphology between operated and unoperated eyes during follow-up.

Conclusions: LASIK and PRK appear to have no long-term effect on the corneal endothelium.

Reviewer's Comments: Excimer laser refractive surgery has become one of the most common surgical procedures performed in ophthalmology. Although it has been widely accepted, long-term follow-up studies of its safety are just now beginning to appear. Any ophthalmic surgical procedure has the potential to affect the corneal endothelium, which can be the cause for late complications and vision loss. These results offer reassurance to refractive surgeons and patients considering this procedure with regard to its long-term safety from a corneal endothelial standpoint.

Additional Keywords: None

Print Tag: Refer to original journal article
Patients with visually significant cataract and macular degeneration experience improvement in visual acuity after surgery, even in more advanced cases of macular degeneration.

**Objective:** To evaluate the visual acuity outcomes after cataract surgery in patients with age-related macular degeneration (AMD).

**Design:** Prospective cohort study.

**Methods:** Data for this study were derived from the Age-Related Eye Disease Study (AREDS). Of the 4757 participants in the study, 1939 underwent cataract surgery and had data available to be included in this analysis. Comparison of best-corrected visual acuity measured at AREDS study visits before and after cataract surgery permitted the evaluation of improvement in visual acuity after surgery as a function of AMD severity. Based on fundus photographs obtained at each study visit, AMD severity was classified as being either absent, mild, moderate, or severe. Severe AMD was based upon a diagnosis of neovascular AMD or geographic atrophy affecting the fovea.

**Results:** The mean improvement in visual acuity after cataract surgery in eyes without AMD was 8.4 letters on the Early Treatment Diabetic Retinopathy Study visual acuity chart. Eyes with mild, moderate, and severe AMD improved 6.1 letters, 3.9 letters, and 1.9 letters in visual acuity, respectively. All of these amounts of improved visual acuity were statistically significant. The mean period of time of improved visual acuity lasted 1.4 years after cataract surgery, at which time progression of macular degeneration or other ocular pathology resulted in acuity similar to baseline levels.

**Conclusions:** On average, participants with macular degeneration of every severity benefited from cataract surgery with persistence of improved acuity for 1.5 years following the procedure.

**Reviewer’s Comments:** In conjunction with the other article discussing cataract macular degeneration this month, which demonstrated no apparent association between the performance of cataract surgery and acceleration of macular degeneration progression, this study illustrates the potential benefits of cataract surgery to patients with this disease. This affirms the conclusions that may be drawn from the other study, what are that cataract surgery should not be withheld from patients who have visually significant cataracts and AMD out of concerns of acceleration of their disease, nor out of concerns that visual acuity improvement cannot be enjoyed by these patients.

Additional Keywords: None

Print Tag: Refer to original journal article
VEGF Trap-Eye May Be Useful Therapy for Tx of Neovascular AMD

A Phase I Study of Intravitreal Vascular Endothelial Growth Factor Trap-Eye in Patients With Neovascular Age-Related Macular Degeneration.


VEGF Trap-Eye inhibits the function of VEGF-A, similar to ranibizumab, but also inhibits other members of the VEGF family and may be more effective for treatment of AMD.

Objective: To determine the safety, tolerability, and tolerated dosage, as well as bioactivity of intravitreal injection, of vascular endothelial growth factor (VEGF) Trap-Eye in patients with neovascular age-related macular degeneration (AMD).

Design: Multicenter interventional clinical trial.

Participants/Methods: 21 patients with neovascular AMD who had lesions ≤12 disc areas in size and who had at least 50% active choroidal neovascularization were enrolled. Eligible patients had best-corrected visual acuity (BCVA) of 20/40 or worse and received a single intraocular injection of VEGF Trap-Eye (dose ranging from 0.05 mg to 4 mg). Follow-up examinations took place periodically through 1 year in order to evaluate the safety and efficacy of treatment. After 12 weeks, patients were eligible to receive standard therapy at the discretion of the treating physician when necessary.

Results: No serious adverse events were attributable to treatment at any dosage level. These preliminary results demonstrated efficacy of treatment, with a mean reduction in excess foveal thickness for all patients of 104.5 µm at 6 weeks, and a mean increase in BCVA of 4.43 letters. In patients receiving 2-mg and 4-mg dosages, the mean increase in BCVA was 13.5 letters. Fifty percent of these patients had at least 3 lines of improved visual acuity and required no injunctive therapy of any type for 12 weeks.

Conclusions: Intravitreal injection of VEGF Trap-Eye in doses up to 4 mg appears to be safe, and early results suggest efficacy in the treatment of neovascular AMD.

Reviewer's Comments: VEGF Trap-Eye differs from current therapy with ranibizumab in that it inhibits a wider range of members of the VEGF family. Instead of inhibiting only VEGF-A, as is the case with ranibizumab, it inhibits all isoforms of VEGF-A, as well as VEGF-B and placental growth factors 1 and 2, which have also been implicated in the pathogenesis of neovascular AMD. We await phase 3 clinical trials to fully understand the role that this therapy may eventually play in the treatment of this condition.

Additional Keywords: None

Print Tag: Refer to original journal article
Intravitreal injection of ranibizumab is superior to laser therapy for the treatment of diabetic macular edema.

**Objective:** To compare intravitreal injection of the vascular endothelial growth factor (VEGF) inhibitor, ranibizumab, with focal/grid laser therapy or a combination of both in the management of diabetic macular edema (DME).

**Design:** Prospective, randomized, multicenter clinical trial.

**Participants/Methods:** 126 adult patients with type 1 or type 2 diabetes and DME were enrolled. Patients were required to have a central subfield macular thickness of at least 250 µm based on optical coherence tomography (OCT). In addition, patients with other causes of visual loss, or those who had recently received intraocular injections of steroid or VEGF inhibitors were excluded. Patients were randomly assigned to either receive 4 injections of intravitreal ranibizumab, standard focal/grid laser therapy, or a combination of both therapies. The visual and anatomic outcomes 6 months after treatment were reported.

**Results:** At the 6-month follow-up, the mean gain in best-corrected visual acuity (BCVA) was significantly greater in patients who received ranibizumab compared with laser therapy (7.2 letters of improvement compared with 0.4 letters of worsened visual acuity; \( P = 0.01 \)). Patients with combined therapy improved 3.8 letters, which was not significantly different from either of the other 2 groups. A greater degree of reduction in DME was also seen in patients who received ranibizumab therapy than in those who received laser treatment alone. Patients who received combination therapy had a reduction in macular thickness intermediate between the other 2 groups.

**Conclusions:** During 6 months of follow-up, treatment with intravitreal ranibizumab showed significantly better visual outcomes than focal/grid laser therapy in patients with DME.

**Reviewer's Comments:** This study demonstrated the benefits of intravitreal ranibizumab, and it showed that combination laser and ranibizumab therapy offered no advantage over ranibizumab alone. Although studies with longer follow-up are needed, and the need for ongoing injections seems likely since VEGF inhibition does not eliminate the underlying causes of DME, this study does offer hope to patients with this frustrating condition. One must not lose sight of the fact, however, that glycemic control and improvement of renal function are also important in the underlying prevention of DME.

Additional Keywords: None

Print Tag: Refer to original journal article
**Objective:** To evaluate the role of hemoglobin level in predicting new onset proliferative diabetic retinopathy (PDR) in individuals with type 1 diabetes.

**Design:** Prospective, longitudinal, cohort study.

**Participants/Methods:** 426 participants of the Pittsburgh Epidemiology of Diabetes Complications (EDC) study were included in the present analysis. This study was an 18-year prospective study of individuals with childhood onset type 1 diabetes. Clinical examinations took place annually for 10 years, and the final follow-up evaluation took place 8 years later. In addition to obtaining blood glucose and other laboratory tests, clinical examination and stereo fundus photography were performed at each follow-up visit. This allowed the analysis of the association between blood hemoglobin level and the 18-year incidence of PDR, progression of non-PDR, and diabetic macular edema (DME).

**Results:** The overall incidence of PDR during the 18 years of follow-up was 48%. Elevated diastolic blood pressure, elevated glycosylated hemoglobin, and elevated total hemoglobin levels were all associated with an increased risk of the development of PDR. For each 1 g/dL increase in the blood hemoglobin level, a 29% increased risk of developing PDR was observed. An elevated hemoglobin level was also associated with an increased risk of developing DME and in developing a 2-step increase in severity of non-PDR.

**Conclusions:** Elevated blood hemoglobin levels are associated with an increased risk of progression of PDR and DME.

**Reviewer's Comments:** There are numerous potential mechanisms by which elevated blood hemoglobin may advance retinopathy, including elevated blood viscosity. The authors also discuss various reasons why erythropoietin, the hormone that stimulates red blood cell production may be elevated in individuals with diabetes, including adaptation to chronic ischemia and/or hypoxia. This study points to potential new areas of research for studying the pathogenesis of diabetic retinopathy, as well as potential new therapeutic pathways once the precise mechanisms underlying this observation are better understood.

Additional Keywords: None

Print Tag: Refer to original journal article
Both visual acuity and subjective symptoms improve following surgery to correct trichiasis in patients with trichiasis due to trachoma.

**Objective:** To assess the efficacy of trichiasis surgery in improving visual acuity in an Ethiopian population with trichiasis caused by trachoma.

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

**Methods:** 439 Ethiopian patients with trachoma complicated by trichiasis were enrolled in the Surgery for Trichiasis, Antibiotics to Prevent Recurrence (STAR) trial and underwent surgical correction of their trichiasis. Visual acuity and subjective concerns about their condition were assessed before and after surgery. Visual acuity was measured using an illiterate-E version of the Early Treatment Diabetic Retinopathy Study visual acuity chart following a standardized protocol. Improvement in visual acuity was defined by improvement in visual acuity of at least 1 line (5 letters).

**Results:** Surgery was associated with improvement in visual acuity of 0.129 logMAR units, which corresponds to approximately 1 line of acuity. Patients who underwent surgery were 68% more likely to experience improvement in visual acuity compared to those who did not have surgery ($P$)

**Conclusions:** Significant improvements in subjective symptoms, as well as improved visual acuity, occur after surgery to correct trachoma-related trichiasis.

**Reviewer's Comments:** The global impact of corneal blindness due to trachoma remains high, and is often the result of secondary cicatricial complications including trichiasis. This surgery confirms the benefits of surgery to correct trichiasis in individuals affected by this condition. Continued support of public health programs to support treatment for the management of the complications of trachoma is important to reduce the impact of this disease in developing countries.

Additional Keywords: None

Print Tag: Refer to original journal article
Hyperdry AM Patch for Tx of Corneal Perforations, Bleb Leaks

A Hyperdry Amniotic Membrane Patch Using a Tissue Adhesive for Corneal Perforations and Bleb Leaks.

Kitagawa K, Yanagisawa S, et al::

A single layer patch of hyperdry amniotic membrane fixed to the ocular surface with biological tissue adhesive can be effective in managing bleb leaks and corneal perforations.

Objective: To evaluate the efficacy of a hyperdry amniotic membrane (AM) patch using biological tissue adhesive for the management of corneal perforations and conjunctival bleb leaks.

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

Participants/Methods: 5 eyes of 5 patients with corneal perforation or conjunctival bleb leak after glaucoma filtering surgery were included in this series. A single layer of hyperdry AM tissue was cut to an appropriate size and fixed to the ocular surface using a biological tissue adhesive. A hydrogel bandage contact lens was placed over the site, and follow-up evaluation allowed documentation of the success of the procedure in sealing the site of leakage.

Results: In each of the 5 cases, successful sealing of the site of corneal perforation or bleb leak was observed within 21 days of the procedure. No adverse effects were seen, and during the period of follow-up, no recurrent leaks occurred.

Conclusions: The hyperdry AM appears to be a promising method to manage corneal perforation and bleb leak following glaucoma filtering surgery.

Reviewer’s Comments: The hyperdry AM tissue is prepared by exposure to far-infrared rays and microwave irradiation and is sterilized using gamma irradiation. The manner of preparation appears to result in less alteration of the collagen structure in comparison to cryo-preparations or other methods of preparing the tissue. The properties of the tissue allow relatively easy handling, which may be useful as a substrate for growth of ocular surface tissues and promote healing of the ocular surface, as demonstrated by the results of this study.

Additional Keywords: None

Print Tag: Refer to original journal article
Ahmed Valve Successfully Controls IOP in Primary Congenital Glaucoma

Outcomes of Ahmed Glaucoma Valve Implantation in Children With Primary Congenital Glaucoma.


A second Ahmed implant is often needed to provide IOP control in children with primary congenital glaucoma who are managed with the Ahmed glaucoma valve.

Objective: To evaluate the efficacy of the Ahmed glaucoma valve (AGV) in controlling intraocular pressure (IOP) in children with primary congenital glaucoma.

Design: Retrospective, interventional, clinical case series.

Methods: Medical records of a consecutive series of children with primary congenital glaucoma who underwent implantation of an AGV with at least 6 months of follow-up data were reviewed. Surgical success was defined by an IOP between 6 and 22 mm Hg, with a reduction of at least 15% from baseline IOP without serious complications, additional glaucoma surgery, or loss of light perception. Children with secondary diagnoses, such as aphakia or pseudophakia, Sturge-Weber syndrome, uveitic glaucoma, aniridia or anterior segment dysgenesis, were excluded. Patients underwent surgery with an adult size AGV, either model S-2 or model FP-7.

Results: 30 eyes of 19 patients were included in the study. The mean number of prior surgical procedures was 1.8. The cumulative probability of achieving surgical success at 1 year was 63%, but by 5 years, the rate of success decreased to 33%. When including children who underwent implantation of a second AGV, the 5-year success rate was 69%.

Conclusions: Successful control of IOP was achieved in 33% of children with primary congenital glaucoma after AGV implant surgery. With the implantation of a second AGV, the majority of children had successful control of IOP.

Reviewer's Comments: Most children with primary congenital glaucoma can achieve controlled IOP with performance of angle procedures such as goniotomy and trabeculotomy. When children require additional surgery due to failure of a primary angle procedure, placement of a glaucoma implant is often considered. This study suggests that the success of Ahmed valve placement is lower than what we generally expect to see in adults. However, with placement of 1 or 2 implants, IOP control can be achieved in most cases. Whether better results can be achieved with other types of glaucoma implants should be evaluated with future research.

Additional Keywords: None

Print Tag: Refer to original journal article
Mitomycin-C is associated with a higher rate of failure of IOP control following implantation of the Ahmed glaucoma valve in children ≤2 years of age at the time of surgery.

**Objective:** To evaluate the effect of the use of mitomycin-C as an adjunctive therapy during Ahmed glaucoma implant surgery in young children.

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

**Methods:** This study involved a consecutive series of 31 eyes of 27 patients aged ≤2 years at the time of Ahmed glaucoma implant surgery. The mean age of children at the time of surgery was 11.1 months. All patients had at least 2 years of follow-up data available after the date of surgery. Analysis of the postoperative intraocular pressure (IOP) was correlated with the use or lack of use of adjunctive mitomycin-C during surgery.

**Results:** Successful surgery was defined by an IOP between 6 and 21 mm Hg with or without the use of supplemental glaucoma medications and without the need for additional surgery. Based on this definition, the proportion of patients with success at 2 years was significantly higher in those who did not receive mitomycin-C during surgery (80% vs 31%; \( P = 0.001 \)).

**Conclusions:** The use of adjunctive use of mitomycin-C during Ahmed glaucoma implant surgery reduces the success of the procedure in children ≤2 years of age.

**Reviewer's Comments:** The authors speculate that reactive fibrosis surrounding the Ahmed valve may actually increase as a result of a tissue reaction induced by mitomycin-C in young children. While this remains uncertain, the results of this study certainly suggest that not only is mitomycin-C ineffective in improving the outcome of this surgery, but it also may be counterproductive. In adults, studies have not shown a consistent effect of its use in the outcome of glaucoma implant surgery either in improving or worsening the rate of success.

Additional Keywords: None

Print Tag: Refer to original journal article
Bleb revision surgery can be an effective approach to manage a variety of bleb-related complications following trabeculectomy, including chronic hypotony, bleb leakage, and bleb-induced ocular discomfort.

**Objective:** To investigate the outcome of surgical bleb revision in patients with bleb-related complications following trabeculectomy.

**Design:** Retrospective, noncomparative, interventional clinical case series.

**Methods:** Medical records were reviewed of a consecutive series of 177 eyes of 167 adult patients who underwent surgical bleb revision at a single academic institution between 1994 and 2007. All patients underwent surgery in response to chronic hypotony, chronic bleb leakage, or bleb-associated ocular dysesthesia. Successful outcomes were defined by elimination of the primary surgical indication, no further intraocular pressure (IOP)-lowering surgery required, no major complications, and no new bleb-related problems.

**Results:** The mean age of subjects was 67 ± 14 years. The mean follow-up was 2.8 ± 2.7 years, and the mean time between trabeculectomy and bleb revision was 3.5 ± 3.7 years. The overall success rate of surgery was 63%, which was similar for leak repair (65%) and hypotony (63%) but was slightly lower for bleb dysesthesia (57%). Significant improvements in visual acuity and IOP were seen in the hypotony and bleb leakage groups. Failure of the original trabeculectomy with the need for additional glaucoma surgery was seen in 9% of patients.

**Conclusions:** Bleb revision is effective in the majority of patients with bleb-related complications, including bleb leakage, chronic hypotony, and bleb dysesthesia.

**Reviewer’s Comments:** The presence of a filtering bleb can lead to a wide range of problems following trabeculectomy, including bleb leaks predisposing to infection, chronic hypotony leading to maculopathy and decreased vision, and discomfort due to the morphology of the bleb and its relation to the cornea and tear film. Bleb revision can be very effective in creating a smoother conjunctival surface and can result in increased IOP regardless of whether hypotony was initially present. Although the IOP may be at risk, this study confirms that complete failure of the original trabeculectomy occurs in only a small minority of patients. However, this possibility must be discussed in advance of bleb revision as one of the risks of surgery that may lead to the need for additional glaucoma surgery.

Additional Keywords: None

Print Tag: Refer to original journal article
How Common Is Blindness in Type I Diabetics?

Blindness in a 25-Year Follow-Up of a Population-Based Cohort of Danish Type 1 Diabetic Patients.

Grauslund J, Green A, Sjølie AK:

Ophthalmology 2009; 116 (November): 2170-2174

The cumulative 25-year incidence of blindness in this cohort of type 1 diabetics was 7.5%

Objective: To assess the long-term incidence of blindness in a population of type 1 diabetics and to identify risk factors for blindness in this population.

Design: Retrospective cohort study.

Methods: A population-based cohort of 573 individuals with type 1 diabetes participated in a baseline ophthalmic examination in 1981 and 1982. In addition to the measurement of visual acuity, data collected included assessment of smoking habits and measurement of hemoglobin A, proteinuria, and blood pressure. Blindness was defined by the development of vision loss to a level of 20/200 or worse in the better-seeing eye. Determination of blindness was based on registration of members of the original cohort with the Danish blindness registry between baseline and January 2007. Statistical analysis allowed the determination of risk factors associated with blindness in this patient population.

Results: During the 25-year follow-up, blindness was reported in 7.5% of the study population. Adjustment for mortality led to an estimated 25-year adjusted incidence of blindness of 9.5%. The hemoglobin level and severity of diabetic maculopathy at baseline were both predictive of the later development of blindness. Age, duration of diabetes at baseline, smoking, proteinuria, and blood pressure were not found to be associated with blindness.

Conclusions: Blindness remains a common complication of type 1 diabetes.

Reviewer's Comments: The relatively high incidence of blindness during the 25-year follow-up period of this study should remind us of the importance of careful and regular surveillance of diabetic patients for retinopathy, and of the importance of timely intervention with laser therapy when necessary. In addition, it is hoped that improved glycemic control with modern therapy for diabetes will reduce the frequency of poor visual outcomes in the diabetic population.

Additional Keywords: None

Print Tag: Refer to original journal article
Adherence to Diabetes Guidelines Decreases Risk of Vision Loss

Effects of Receipt of Guideline-Recommended Care on Onset of Diabetic Retinopathy and Its Progression.
Sloan FA, Grossman DS, Lee PP::
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Patients who receive care for diabetes according to recommended guidelines have a significantly decreased risk of developing blindness or visual impairment due to diabetic retinopathy.

Objective: To determine whether diabetic patients who receive guideline-recommended care have a lower risk of blindness and visual impairment than other diabetic patients.

Design: Retrospective, longitudinal cohort analysis.

Methods: Data for this study were derived from the Medicare Current Beneficiary Survey and included 5989 persons diagnosed with diabetes who had no prior diagnosis of retinopathy. Receipt of guideline-recommended care was defined by having a physician and an ophthalmologist visit at least once every 16 months, and having a urinalysis, blood lipid level, and hemoglobin A1c level measured with at least the same frequency. Visual outcomes were based on reported diagnoses and on the receipt of care for treatment of diabetic retinopathy or for low vision.

Results: Persons diagnosed with diabetes who received guideline-recommended care had no difference in time to onset of proliferative diabetic retinopathy, macular edema, or complications of proliferative retinopathy. However, those who received guideline-recommended care had a substantially lower risk of onset of low vision/blindness than did other individuals.

Conclusions: Receipt of guideline-recommended care of diabetes significantly reduces the risk of blindness/low vision.

Reviewer’s Comments: This study demonstrates that receipt of recommended therapy for management of hyperglycemia in patients with diabetes translates into improved outcomes from a visual standpoint. Ophthalmologists who manage patients with diabetic retinopathy should reinforce the importance of proper management of diabetes to prevent progression of retinopathy and associated vision loss. Since the definition of recommended therapy for the purpose of this study was relatively basic, those who receive better levels of care may have an even greater reduction in the risk of diabetes-related vision loss.

Additional Keywords: None

Print Tag: Refer to original journal article
Bevacizumab is more effective than sub-Tenon triamcinolone in treating myopic choroidal neovascularization

Intravitreal Bevacizumab vs Sub-Tenon Triamcinolone Acetonide for Choroidal Neovascularization Attributable to Pathologic Myopia.


Choroidal neovascularization caused by pathologic myopia appears to respond more favorably to intravitreal bevacizumab injection than to sub-Tenon's triamcinolone.

Objective: To compare the efficacy of intravitreal injection of bevacizumab and sub-Tenon's injection of triamcinolone acetonide as therapy for choroidal neovascularization (CNV) due to pathologic myopia.

Design: Retrospective, comparative, interventional clinical case series.

Methods: Medical records were reviewed of a consecutive series of 54 eyes of 53 patients treated for CNV caused by pathologic myopia. Treatment consisted of either bevacizumab (Avastin) administered as a 1-mg intravitreal injection (n=20) or triamcinolone acetonide (Kenalog) administered as a 20-mg sub-Tenon's injection (n=34). The primary outcome measure was best-corrected visual acuity (BCVA) 12 months after therapy.

Results: A significant improvement in BCVA was seen at the 12-month follow-up in patients treated with intravitreal bevacizumab, with an improvement of 1.9 lines of visual acuity. In contrast, no significant change in visual acuity was seen during follow-up in patients treated with sub-Tenon's triamcinolone. Thus, the intravitreal bevacizumab group had a significantly better visual outcome than those in the sub-Tenon's triamcinolone group. In addition, older patient age was predictive of a worse visual outcome.

Conclusions: This retrospective study suggests that treatment of CNV caused by pathologic myopia with intravitreal bevacizumab results in better visual outcomes than treatment with sub-Tenon's triamcinolone.

Reviewer's Comments: Although this retrospective study cannot be considered definitive, the results presented appear to support the use of bevacizumab for the treatment of myopic choroidal neovascularization. It must be emphasized that the use of bevacizumab for this condition is not an FDA-approved therapy, and prospective evaluations in a clinical trial would be required to validate the results of this study.

Additional Keywords: None

Print Tag: Refer to original journal article
Although regression of choroidal neovascularization due to angioid streaks can regress with intravitreal bevacizumab, recurrence is common in patients with this underlying etiology.

**Objective**: To investigate the efficacy of treatment of choroidal neovascularization with intraocular injection of bevacizumab in patients with angioid streaks.

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

**Methods**: 15 eyes of 13 patients with choroidal neovascularization caused by angioid streaks were included in the interventional case series. Patients were treated with a 1-mg injection of intravitreal bevacizumab (Avastin). During periodic follow-up examinations, repeat injections were given if persistence or recurrence of choroidal neovascularization was identified on fluorescein angiography. The primary outcome measures were best-corrected visual acuity (BCVA) and the probability of achieving regression of the neovascular membrane.

**Results**: During a mean follow-up of 19 months, the mean number of bevacizumab injections was 4.5 (range, 1 to 9). The mean BCVA was 20/51 at baseline and 20/43 at the final visit. BCVA improved by at least 2 lines in 33% of patients. The final fluorescein angiogram showed no leakage in 67% of eyes. Recurrent choroidal neovascularization occurred in 33% of eyes within 4 to 7 months after final treatment.

**Conclusions**: Stabilization of visual acuity can be achieved in eyes with choroidal neovascularization due to angioid streaks with intravitreal bevacizumab. However, recurrence of choroidal neovascularization is common.

**Reviewer's Comments**: This study indicates the importance of considering the underlying cause of choroidal neovascularization when making treatment decisions and counseling patients about the prognosis following therapy. Since VEGF inhibition does not affect the underlying cause of choroidal neovascularization, the risk of recurrence varies widely depending on the underlying pathology.
Objective: To compare the natural history of visual acuity in eyes with predominantly classic, minimally classic, and occult choroidal neovascularization (CNV) caused by age-related macular degeneration (AMD).

Methods: Data from untreated eyes of clinical trials for the treatment of AMD were analyzed using meta-analysis methods to compare the visual outcome without treatment of the different categories of CNV caused by AMD. Data were compiled from the Macular Photocoagulation Study, Treatment of Age-related Macular Degeneration with Photodynamic Therapy Study, Verteporfin in Photodynamic Therapy Study, Anecortave Acetate Trial, VEGF Inhibition Study in Ocular Neovascularization, and Minimally Classic/Occult Trial of the Anti-VEGF Antibody Ranibizumab in the Treatment of Neovascular Age-Related Macular Degeneration Trials.

Results: Multivariate analysis allowed determination of the coefficient of determination (the proportion of variability of visual acuity) explained by baseline visual acuity, time, and type of CNV. Using baseline acuity alone as a predictor, the coefficient of determination was 0.90, indicating that 90% of variation in visual acuity was explained by time alone. Type of CNV did not alter the time course of loss of visual acuity according to the available data.

Conclusions: The type of CNV is not a strong determinant of the course of vision loss in untreated patients with AMD.

Reviewer's Comments: This study suggests that the fluorescein angiographic characteristics of choroidal neovascularization are not very important in predicting the visual outcome, and thus may not be relevant when making treatment decisions in patients with macular degeneration.