Segregation of patients with suspected adenoviral keratoconjunctivitis can dramatically reduce the incidence of nosocomial transmission of this common infection.

**Objective:** To evaluate the frequency of nosocomial adenoviral keratoconjunctivitis (AKC) infection and to assess the effect of an improved infection control policy on reduction of its incidence.

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

**Participants/Methods:** Patients with suspected AKC and treated at Moorefields Eye Hospital emergency department were evaluated as well as a collection of viral cultures. Those who developed a confirmed infection within 3 weeks of another visit to the eye unit for an unrelated, noninfectious condition were considered to have a nosocomial infection. The proportion of cases of nosocomial and community-acquired AKC was compared before and after implementation of an improved infection control policy that included segregation of patients with suspected infection to their own waiting area and the use of an examination room dedicated to the evaluation of patients suspected of having an ocular infection.

**Results:** During the first 12 months after implementation of the new infection control policies, the proportion of patients with AKC decreased from 48% to 25%. During the subsequent 12 months, once the staff was fully cooperative with the new policies, the proportion of nosocomial cases decreased to 3.4%.

**Conclusions:** The incidence of nosocomial AKC can be dramatically reduced by implementation of a strict infection control policy that includes segregation of patients and use of dedicated equipment for their evaluation.

**Reviewer's Comments:** Adenoviral infections are the most common infections encountered by ophthalmologists. In this day and age, every effort must be made to reduce the risk of cross contamination of patients in our offices. This study illustrates important steps that can be implemented to achieve this goal. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Adenoviral Infection

Print Tag: Refer to original journal article
Crosslinking of corneal collagen is effective in increasing corneal stiffness and stabilizing corneal topography in patients with progressive corneal ectasia due to keratoconus.

**Objective:** To evaluate the safety and efficacy of corneal collagen crosslinking with riboflavin/ultraviolet A (UVA) therapy in patients with progressive keratoconus.

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

**Participants/Methods:** 102 patients >18 years of age with progressive keratoconus were enrolled in this uncontrolled clinical trial. All patients had central corneal thickness of at least 400 μm and experienced at least 1 D of increased mean corneal power during the year prior to enrollment. Preoperative and postoperative evaluation through 1 year of follow-up included measurement of visual acuity, corneal topography, Pentacam rotating Scheimpflug imaging of the anterior segment, and retinal imaging using optical coherence tomography (OCT). Comparison of corneal topographic parameters allowed the determination of stability of the cornea following treatment.

**Results:** No significant change in mean corneal power, corneal astigmatism, anterior or posterior corneal curvature, or corneal thickness was seen during the 1 year of follow-up. Lens and retinal imaging were also unchanged, as was best corrected visual acuity, suggesting that UVA exposure had no detrimental effect on the lens or retina.

**Conclusions:** Corneal topography can be stabilized in patients with progressive keratoconus for at least 1 year with riboflavin/UVA corneal collagen crosslinking.

**Reviewer’s Comments:** Riboflavin/UVA corneal collagen crosslinking represents a major shift in the treatment of keratoconus, as it represents a means of altering the natural history of the disease rather than responding to loss of vision as the disease progresses. Further investigation is needed to determine the safety and efficacy of this type of treatment in patients with earlier disease to determine at what stage it can be most effectively used to reduce the impact of keratoconus on the quality of life of affected patients. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Progressive Keratoconus

Print Tag: Refer to original journal article
Surface Irregularity Affects Visual Acuity After DSEK

Effect of Anterior and Posterior Corneal Surface Irregularity on Vision After Descemet-Stripping Endothelial Keratoplasty.

Yamaguchi T, Negishi K, et al:


Anterior corneal surface irregularity is an important cause of decreased visual acuity after DSEK in patients with good graft clarity.

Objective: To evaluate factors affecting the visual outcome following Descemet stripping endothelial keratoplasty (DSEK).

Design: Prospective clinical study.

Participants/Methods: 13 consecutive eyes of 12 patients who underwent DSEK for bullous keratopathy were evaluated. The surgical procedure consisted of stripping of the central 8 mm of Descemet's after creating a corneal incision, and then implanting a pre-cut donor graft of posterior lamellar cornea. Postoperative evaluation included measurement of best-correct visual acuity (BCVA), traditional corneal topography, and evaluation of corneal anatomy with the Pentacam. A control group of 13 eyes was also evaluated with the same imaging techniques.

Results: The mean preoperative BCVA in patients undergoing DSEK was 20/250. Three months after surgery, BCVA improved to 20/40. Patients who had greater anterior corneal irregularity also had worse postoperative visual acuity than those with a more regular corneal surface. No correlation was seen between regularity of the posterior corneal surface and the visual outcome after surgery.

Conclusions: Anterior corneal surface irregularity is a cause of decreased visual acuity following DSEK.

Reviewer’s Comments: Corneal stromal opacity is a contraindication to DSEK since the opacity will remain after replacement of the posterior cornea. Anterior corneal irregularity also affects the results, but it is more difficult to predict patients whose corneal surface irregularity caused by corneal edema will not resolve after surgery. Posterior corneal irregularity does not influence the visual result significantly because it is immersed in aqueous, which is of similar refractive index to corneal tissue. In order to create a more regular anterior corneal surface, the use of a rigid gas permeable contact lens may be a good option when visual acuity is not adequate due to anterior corneal irregularity in spite of graft clarity following DSEK. (Reviewer-Scott D. Smith, MD, MPH).

© 2009, Oakstone Medical Publishing

Keywords: DSEK

Print Tag: Refer to original journal article
Additional Attention to Prevention of Retinal Detachment Can Be Effective

*Intraoperative Retinal Detachment Prophylaxis in Vitrectomy for Retained Cataract Fragments.*
Morris RE, Shere JL, et al:

J Cataract Refract Surg 2009; 35 (March): 491-495

Prophylactic 360° laser retinopexy can be effective in reducing the risk of retinal detachment following pars plana vitrectomy for the removal of retained nuclear fragments after complicated cataract extraction.

**Objective:** To evaluate the efficacy of 360° prophylactic peripheral laser retinopexy in reducing the risk of rhegmatogenous retinal detachment (RRD) following pars plana vitrectomy (PPV) for the management of retained nuclear fragments.

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

**Methods:** In this retrospective clinical case series, the clinical records were reviewed of 78 patients who required PPV for management of retained nuclear fragments in the posterior segment following complicated phacoemulsification with at least 1 year of follow-up. The surgical procedure consisted of a standard 3-port vitrectomy with 20-gauge instrumentation. After removal of the core vitreous, the residual lens material was removed with an ultrasonic fragmenter in the mid-vitreous. After removal of all retained lens material, 3 to 4 rows of 360° laser retinopexy were created in the retinal periphery, extending out to the ora serrata using an indirect ophthalmoscope. At the site of any lattice degeneration or retinal breaks, contiguous surrounding laser treatment was performed.

**Results:** The mean follow-up period was 6 years (range, 1 to 10 years). Postoperative RRD developed in only 1 patient (1.3%). No other surgical complications occurred in these patients.

**Conclusions:** Prophylactic 360° laser retinopexy appears to be effective in preventing RRD following PPV for the removal of retained nuclear fragments.

**Reviewer's Comments:** This uncontrolled study compared its results to those of previous case series, which showed RRD rates of 4% to 36% following PPV for removal of retained lens fragments. It is, of course possible that the efficacy that resulted from this treatment came from the careful peripheral retinal examination that necessarily accompanied the prophylactic retinopexy, along with the identification and treatment of any retinal breaks and areas of lattice degeneration. In either case, this study demonstrates that additional attention to the prevention of retinal detachment can be effective. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Cataract Surgery Complications

Print Tag: Refer to original journal article
Long-Term Rate of Posterior Capsule Opacification High With Acrylic IOLs


Vock L, Menapace R, et al:


Through 10 years of follow-up, posterior capsule opacification is less with round-edged silicone IOLs than with square-edged acrylic IOLs.

Objective: To compare the long-term development of posterior capsule opacification (PCO) in patients who have received a square-edged acrylic intraocular lens (IOL) or a round-edged silicone IOL.

Design: Retrospective, comparative clinical study.

Participants/Methods: This study included patients having cataract surgery by the same surgeon between 1994 and 1999. In order to be included in the study, each patient had to have had uncomplicated cataract surgery with in-the-bag fixation of either a 3-piece AcrySof MA60BM IOL, or 1 of 2 models of silicone foldable IOL, the SI-30NB or SI-40NB. The Acrysof acrylic IOL has a square edge on its posterior optic surface, while the SI-30NB and SI-40NB silicone lenses have a rounded edge on the posterior optic surface. Patients who met the inclusion criteria were invited to return for a follow-up evaluation that included digital assessment of the density of PCO and performance of Nd:YAG posterior capsulotomy.

Results: The follow-up period was similar between groups (acrylic, 9.4 years and silicone, 9.9 years). Posterior capsulotomy was performed in significantly more patients with the acrylic than with the silicone IOL (42% vs 18%; P <0.0001).

Conclusions: With long-term follow-up, visually significant posterior capsule opacification occurs more commonly in patients with square-edged acrylic IOLs than those with round-edged silicone IOLs.

Reviewer’s Comments: The authors believe that differences in the response of the lens capsule with the different optic materials leads to alteration in the configuration of the lens capsule. According to their observations, the barrier effect of the square posterior optic edge is eventually eliminated as capsular fibrosis develops, allowing posterior migration of lens epithelial cells across the posterior capsule in patients with the acrylic IOL. In those with a silicone IOL, they believe that greater adhesion of the anterior and posterior leaflets of the lens capsule results in less central migration of lens epithelial cells. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Posterior Capsule Opacity

Print Tag: Refer to original journal article
Correction of SA With Aspheric IOLs Affects Postoperative Visual Function

Comparative Study of Aspheric Intraocular Lenses With Negative Spherical Aberration or No Aberration.

Denoyer A, Denoyer L, et al:


Patients with negative spherical aberration IOLs report more improved night driving performance than those with no spherical aberration or spherical IOLs.

**Purpose:** To compare visual function in patients following bilateral phacoemulsification with implantation of different types of aspheric IOLs.

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

**Participants/Methods:** 40 patients scheduled for routine cataract surgery were enrolled in this randomized clinical trial. Each patient had no ocular pathology other than bilateral cataract. Patients were randomly assigned to have bilateral implantation of the Support Advanced Optics IOL, a lens that has no spherical aberration (SA), or the Tecnis Z9000 IOL that has negative spherical aberration designed to compensate for the spherical aberration present in the typical cornea. Postoperative evaluation included measurements of contrast sensitivity and wavefront analysis; patients also underwent a visual quality-of-life assessment.

**Results:** No differences in visual acuity or refractive error were seen between groups. Patients in the negative-SA IOL group reported better night driving performance and had better mesopic contrast sensitivity than those in the no-SA IOL group. However, corrected near vision scores were better in the no-SA IOL group.

**Conclusions:** Different aspects of visual performance are enhanced with different types of aspheric IOLs following cataract surgery.

**Reviewer's Comments:** It has been argued that the greater effective depth of focus induced by residual SA may lead to improved satisfaction with near vision after cataract surgery. However, improved contrast sensitivity and night driving performance are clear indications that optical clarity is enhanced by the use of IOLs that also correct for typical corneal SA. These lenses should probably not be used in patients who do not have typical corneal aberrations, such as those who have undergone hyperopic LASIK or following corneal trauma. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Aspheric Intraocular Lenses

Print Tag: Refer to original journal article
When necessary to avoid zonular dialysis during IOL exchange surgery, haptics of the initial IOL that are tightly adherent to the lens capsule can be cut free and left in the capsular bag.

Objective: To evaluate the clinical outcomes of IOL exchange by removing the optic alone.

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

Participants/Methods: All patients who underwent IOL exchange due to visually significant opacification of a 1-piece hydrophilic acrylic foldable IOL (ACRL-C160) at a single institution were identified. Those who underwent removal of the optic alone, or the optic and 1 haptic only due to adherence of 1 haptic to the capsular bag were included in this case series. If attempts to separate 1 or both haptics from the capsular bag failed due to extensive adherence, then the haptic was cut free from the optic at the haptic-optic junction and the haptic was left in the eye. The optic was cut in half and removed through a clear corneal incision. A new IOL was placed in the ciliary sulcus with haptics aligned 90° away from the haptic or haptics that were left in the capsular bag.

Results: 23 eyes of 20 patients were included in the analysis. Posterior capsule rupture occurred during the IOL exchange procedure in 10% of eyes, and zonular dialysis occurred in spite of leaving adherent haptics in place in 5% of eyes. Improvement in visual acuity was seen in all but 2 eyes through at least 1 year of follow-up. The only other late complications seen were 1 case of recurrent anterior uveitis and 1 case of IOL decentration due to progressive zonular dialysis. There were no cases of posterior dislocation of any of the haptics that were cut free and left in the eye.

Conclusions: Removal of the optic alone is an acceptable option when excessive adhesion to the lens capsule is present.

Reviewer's Comments: When IOL exchange is required more than a few weeks following initial implantation, excessive adherence of the haptic to the lens capsule may lead to zonular dialysis or capsule breakage if the haptic is pulled or rotated, complicating the surgery. This study found that leaving one or both haptics in the eye by cutting them from the optic is a viable alternative that can reduce capsule-related complications. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Cataract Surgery Complications

Print Tag: Refer to original journal article
The amount of US energy used to remove the nucleus correlates with the amount of endothelial cell loss following cataract surgery.

Objective: To assess factors affecting the amount of endothelial cell loss after phacoemulsification.

Design: Randomized clinical trial.

Participants/Methods: 60 patients scheduled for routine cataract surgery who had moderate (3+) nuclear sclerosis were enrolled in this study. Patients with a history of prior ocular surgery, diabetes, or other eye disease apart from cataracts were excluded. Patients were assigned at the time of surgery to be in 1 of 2 groups. In one group, high vacuum and flow parameters were used during the nucleus removal phase of surgery. In the other group, low vacuum and flow parameters were used. The total ultrasound (US) energy and total irrigating fluid volume were recorded for each case. Factors associated with endothelial cell loss, as determined by specular microscopy, were performed before and 4 months after surgery.

Results: The total US energy and irrigating fluid volume used was similar in the 2 groups. The mean endothelial cell loss was also similar between the 2 groups, with an average of 9% in the low-vacuum group and 10% in the high-vacuum group. The only factor found to significantly correlate with greater endothelial was total US energy. After accounting for the amount of US energy, the total irrigating fluid volume was not correlated with the amount of endothelial cell loss.

Conclusions: Total US energy used to remove the nucleus correlates with the amount of endothelial cell loss after cataract surgery.

Reviewer's Comments: My preference of phaco/chop is primarily based upon the ability to efficiently disassemble the nucleus with a minimum of US energy, and this study supports the concept of using mechanical rather than US forces to help remove the nucleus. Whether using a chopping or divide-and-conquer technique, or any other strategy to remove the nucleus, it is important to remember that making efficient use of the phacoemulsification instrument leads to less endothelial cell loss, which may impact the patient's visual outcome, particularly in patients with either very dense cataracts or a tenuous endothelium due to corneal disease. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Cataract Surgery Complications

Print Tag: Refer to original journal article
Intracameral Cefazolin Reduces Risk of Endophthalmitis Post-Cataract Surgery

Prophylactic Intracameral Cefazolin After Cataract Surgery: Endophthalmitis Risk Reduction and Safety Results in a 6-Year Study.

Garat M, Moser CL, et al:


A significant reduction in the incidence of postoperative endophthalmitis is seen with the use of intracameral antibiotic injection after cataract surgery.

Objective: To evaluate the efficacy and safety of intracameral cefazolin in preventing endophthalmitis following cataract surgery.

Design: Prospective clinical study.

Methods: The study evaluated all patients who underwent phacoemulsification at a single institution during a 5-year period. In the middle of this time interval, intracameral cefazolin injection was instituted as a standard part of the surgical protocol for all patients. The injection consisted of 2.5 mg of the cephalosporin antibiotic cefazolin, prepared in 0.1 mL that was injected through the paracentesis as the last surgical maneuver. A diagnosis of postoperative endophthalmitis was made on the basis of clinical findings of hypopyon and other related signs and symptoms within 6 weeks after surgery. A comparison of the incidence of postoperative endophthalmitis made before and after institution of intracameral cefazolin injection.

Results: 18,579 phacoemulsification procedures were performed during the study. In the 2-year period prior to introduction of intracameral cefazolin injection, 5,930 surgical cases were performed. The cumulative incidence of endophthalmitis during this time period was 0.42%. After the introduction of intracameral cefazolin injection, 12,649 surgical procedures were performed, with an incidence of endophthalmitis of 0.05%. No complications related to cefazolin injection were reported.

Conclusions: Injection of 2.5 mg of intracameral cefazolin in 0.1 mL significantly reduces the risk of postoperative infectious endophthalmitis.

Reviewer's Comments: This study supports recent findings published by other groups of the efficacy of intracameral antibiotic injection at the end of cataract surgery. The optimal dose and type of antibiotic must still be determined. In addition, efforts are being made to simplify the administration of postoperative intracameral antibiotics by having pre-packaged and prepared vials in the appropriate dose to avoid medication errors. It is hoped that this form of prophylactic therapy will be instituted on a large scale in order to reduce the occurrence of this devastating complication of cataract surgery.  

(Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Cataract Surgery Complications

Print Tag: Refer to original journal article
Objective: To evaluate the outcomes of cataract surgery in children with chronic uveitis.

Design: Retrospective, no comparative, clinical case series.

Methods: Medical records were reviewed of a consecutive series of children with chronic uveitis who underwent cataract surgery by a single uveitis specialist. Patient demographics, aetiology of uveitis, and use of preoperative and postoperative topical and systemic immunomodulatory therapy were recorded. Clinical outcomes recorded included the change in visual acuity after surgery, the severity of postoperative inflammation, and the development of complications.

Results: 34 children (41 eyes) were identified who met the inclusion criteria. The mean age of the children at the time of surgery was 9.8 years (age range, 4 to 17 years). Twenty-one children had juvenile idiopathic arthritis-associated uveitis, 7 had pars planitis, and the remainder had a variety of other uveitis etiologies. IOL implantation was performed in 13 eyes. Improved visual acuity of at least 2 lines was seen in 88% of patients who received systemic immunomodulatory therapy. The cumulative probability of improved visual acuity by at least this degree was 91%. A selection of patients with quiescent inflammation and aggressive postoperative management of ocular inflammation resulted in no IOL-related complications.

Conclusions: With optimum control of intraocular inflammation, successful improvement in visual acuity can be achieved in children following cataract surgery.

Reviewer's Comments: All patients had quiescence of their uveitis for at least 3 months prior to surgery, which is an important part of achieving successful control of postoperative inflammation. Implantation of IOLs may be safely considered in those eyes with controlled inflammation, but aggressive management of postoperative inflammation with systemic therapy is essential in avoiding complications, including the development of membranes on the IOL surface. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Chronic Uveitis in Children

Print Tag: Refer to original journal article
Charles Bonnet Syndrome

An Examination of the Relationship Between Low Vision and Charles Bonnet Syndrome.
Gilmour G, Schreiber C, Ewing C:


Hallucinations may occur secondary to subnormal vision in patients with 20/40 acuity or worse.

Background: Charles Bonnet syndrome (CBS) is the presence of visual hallucinations among psychologically normal patients with reduced vision.

Objective: To describe the characteristics of CBS compared to a control group.

Design: Prospective questionnaire.

Participants: 258 patients in a low vision clinic and 251 controls from a single center in Canada.

Methods: Subjects were recruited from the Low Vision Clinic. Inclusion criteria involved age >40 years, passing the Mini-Mental Status Examination (MMSE), and acuity of 20/40 or worse in each eye or a visual field of <120°. Controls had better than 20/40 acuity and a visual field of >120°. Acuity was measured using the ETDRS chart. Questionnaires asked about medical history, medication use, and any hallucinations. CBS was defined as visual hallucinations. The individual had to have insight into the unreal nature of the hallucination. Also, the person could not have any other sensory hallucinations.

Results: Approximately 300 persons were invited to participate in each group, but about 50 either refused to participate or failed the MMSE. CBS occurred in one-third of the low-vision subjects and 2% of the controls. Approximately 75% of the subjects had age-related macular degeneration (AMD) and the prevalence of CBS did not differ between wet or dry AMD. Approximately 70% had formed hallucinations, with half seeing color and half seeing black and white images. The most common visions were animals. CBS did not develop until 5 years after vision loss on average. The time of day did not affect hallucinations, and the overwhelming majority of patients saw these visions with their eyes open and indoors. Hallucinations occurred on average 10 times per month and lasted seconds to minutes. CBS occurred at all acuities between 20/40 and 20/1600, but were more likely in those with acuities worse than 20/100. Medications known to cause hallucinations did not seem to affect who developed CBS. Only 10% sought an opinion regarding the visions.

Conclusions: CBS occurs in approximately 33% of patients with acuities of 20/40 or worse, and the prevalence increases with worsening vision.

Reviewer’s Comments: CBS is common enough that one should ask about it among patients with reduced vision. They should understand that it is a normal phenomenon and does not imply psychiatric disease. It should also be noted that these patients do not need to blind or nearly blind in order to develop CBS. (Reviewer-Michael S. Lee, MD).

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Keywords: Low Vision

Print Tag: Refer to original journal article
Decentration of the ablation zone leads to significant corneal aberration after refractive surgery.

**Objective:** To compare the clinical outcomes and wavefront characteristics in patients following LASIK with well-centered and decentered ablation zones.

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

**Methods:** A series of patients who underwent LASIK during a 4-year period was identified. Corneal topography following the procedure was used to classify patients with regard to centration of the laser ablation zone using standardized criteria. Patients with decentered ablation zones were compared to those with well-centered ablation zones with regard to visual and clinical outcomes. In addition, the results of postoperative wavefront analysis were used to compare the eyes with respect to postoperative corneal aberrations.

**Results:** 46 eyes of 38 patients were found to have decentered ablation zones and were enrolled as the study group. A control group of 60 eyes of 32 patients with well-centered ablation zones was also included. The mean decentration in the study group was 0.86 ± 0.29 mm. In eyes with decentered ablations, there were significantly greater corneal aberrations, including oblique astigmatism, vertical coma, and spherical aberration. Uncorrected visual acuity of 20/20 or better was seen in significantly more eyes with well-centered ablations (87% vs 70%).

**Conclusions:** Decentration of the treatment zone results in greater corneal aberrations and significantly lower uncorrected visual acuity following LASIK.

**Reviewer's Comments:** Proper centration of the treatment zone is an important factor in obtaining optimal patient outcomes after LASIK and other corneal refractive surgical procedures. This highlights the importance of the use of eye-tracking systems during refractive surgery to improve centration, and the need to verify the proper functioning of these systems to obtain optimal results. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Decentered Ablations

Print Tag: Refer to original journal article
Recurrent Ectasia May Occur Decades After PK for Keratoconus

Recurrent Ectasia in Corneal Grafts and Outcomes of Repeat Keratoplasty for Keratoconus.
Patel SV, Malto JB, et al:
Br J Ophthalmol 2009; 93 (February): 191-197

Recurrent ectasia in the corneal graft can occur decades after penetrating keratoplasty for keratoconus.

**Objective:** To evaluate the recurrence of corneal ectasia in patients with keratoconus following penetrating keratoplasty (PK).

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

**Methods:** Medical records were reviewed from a consecutive series of 36 eyes of 25 patients who underwent PK for keratoconus and who developed recurrence of ectasia at some point following surgery. Charts were abstracted to identify clinical and demographic factors in each patient. Data analysis was performed to identify factors associated with subsequent graft ectasia.

**Results:** The mean age of patients at the time of PK was 32.6 ± 8.5 years. The mean time of development of postoperative ectasia was 21.9 ± 7.0 years following the initial surgery. Progressive change in the corneal power and astigmatism was observed following final suture removal as recurrent ectasia developed. The mean keratometric sphere increased by 4.2 D, and the mean cylinder increased by 3.0 D. The most consistent clinical finding that preceded the development of recurrent ectasia was bulging of the recipient stroma at the site of the graft/host junction. Corneal regrafting was performed in 15 eyes. Histopathologic examination of the initial graft showed findings similar to those indicative of keratoconus in all cases. In 2 cases, recurrent ectasia in the second graft occurred.

**Conclusions:** Recurrent ectasia tends to occur up to 2 decades after PK for keratoconus. Repeat grafting is generally successful in the intermediate term.

**Reviewer’s Comments:** The finding of recurrent ectasia in the corneal graft suggests that host cellular and/or biochemical factors may affect the donor tissue gradually over time, leading to pathological features of keratoconus in the corneal graft. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Keratoconus

Print Tag: Refer to original journal article
Objective: To characterize the clinical and histological features of graft failure in patients who have undergone Descemet's stripping automated endothelial keratoplasty (DSAEK).

Design: Retrospective, interventional clinical case series.

Methods: Records were reviewed of 15 patients (16 eyes) who underwent DSAEK and who experienced postoperative graft failure requiring repeat grafting. Some patients underwent repeat DSAEK, while others underwent penetrating keratoplasty as the second procedure. Details of the donor tissue, as well as the clinical and demographic characteristics of patients who required repeat corneal grafting, were recorded.

Results: In 88% of cases, detachment of the graft from the corneal stroma occurred prior to graft failure. In 9 cases, repositioning of the graft was required during the early postoperative period. Atrophic corneal endothelium with <1 cell per high power field was seen in 75% of specimens of excised graft tissue. Only 2 grafts had functional-appearing corneal endothelium. Histologic examination of the excised grafts also identified other aspects of the surgical technique that affected the surgical outcome. These factors included residual host Descemet's membrane and improper cutting of the donor tissue, resulting in a full-thickness corneal graft.

Conclusions: Endothelial cell loss is the principal cause of graft failure after DSAEK. Other aspects of surgical technique can also result in failure of the graft with a need for subsequent surgery.

Reviewer's Comments: Surgical technique is extremely important in performing endothelial keratoplasty to avoid excessive injury to the donor endothelial cells, since loss of these cells is the primary reason for graft failure after the procedure. A variety of techniques have been described to facilitate graft insertion while minimizing trauma to the donor endothelium. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: DSAEK

Print Tag: Refer to original journal article
The decreased corneal aberrations present after wavefront-guided LASIK compared to conventional LASIK result in improved night driving performance.

**Objective:** To compare night driving performance before and after myopic LASIK in patients undergoing conventional and wavefront-guided ablations.

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

**Methods:** All patients who underwent LASIK as a part of 2 randomized clinical trials were evaluated in this study. Each patient underwent preoperative assessment, with follow-up evaluation 6 months after surgery. These assessments included evaluation of night driving performance using a night driving simulator designed to determine the ability to read road traffic signs and road hazards under highway driving conditions at night.

**Results:** Mean night driving performance decreased significantly for all measured parameters in patients who underwent conventional LASIK. In contrast, an improvement in all parameters of night driving performance was seen after wavefront-guided LASIK. A clinically relevant reduction in night driving performance was observed in 32% to 38% of conventional LASIK patients, but was seen in only 3% of wavefront-guided LASIK patients.

**Conclusions:** Increased corneal aberrations after conventional LASIK can decrease night driving performance. Wavefront-guided LASIK, on the other hand, is associated with improved night driving performance.

**Reviewer's Comments:** In contrast to the increase in corneal aberrations and decline in night driving performance following conventional LASIK, wavefront-guided LASIK actually decreased the existing baseline corneal aberrations, yielding improved ability to discriminate road signs and other road hazards presented in the night driving test. Patients must understand the implications of having either conventional or wavefront-guided laser ablation not only on their distance visual acuity at daytime, but also on their night vision and near vision. These issues become even more important in older patients who are presbyopic and have early cataracts. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Night Driving

Print Tag: Refer to original journal article
Objective: To evaluate the intermediate-term clinical outcomes of combined phacoemulsification with posterior chamber intraocular lens (PCIOL) implantation and endothelial keratoplasty.

Design: Prospective, non-comparative interventional clinical case series.

Methods: The results of surgery were evaluated in a large series of patients with Fuchs’ corneal dystrophy who underwent Descemet’s stripping automated endothelial keratoplasty (DSAEK) alone (80 eyes), or combined with phacoemulsification and PCIOL implantation (225 eyes). Surgical complications, including graft dislocation and visual acuity, were recorded. In addition, refractive outcomes were evaluated and compared to the anticipated degree of refractive error as estimated by IOL power calculations.

Results: Graft dislocation occurred in 4% of eyes undergoing DSAEK alone and in 1.8% of eyes undergoing the combined procedure. Iatrogenic primary graft failure was not seen in this case series. Best-corrected visual acuity was 20/40 or better in 97% of eyes following the combined procedure at the 1-year follow-up. The mean spherical equivalent refractive error was 0.11 ± 1.08 D following surgery, with 73% of eyes within 1 D of the intended refractive correction.

Conclusions: Combined phacoemulsification with PCIOL implantation and DSAEK offers excellent visual outcomes in patients with Fuchs’ dystrophy and cataract. Complications are not increased compared to DSAEK alone, visual recovery is rapid, and reasonable accuracy of IOL calculations can be achieved.

Reviewer's Comments: Lens extraction in patients with cataract that is approaching visual significance also avoids the subsequent endothelial damage that invariably occurs in the donor tissue when cataract surgery is performed subsequent to keratoplasty. Although the donor graft may have variable refractive power, depending on the convexity or concavity of the tissue after cutting, reasonable accuracy of IOL power calculations is still achieved. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Fuch's Dystrophy

Print Tag: Refer to original journal article
Objective: To assess the visual performance and subjective level of satisfaction with vision in patients with pseudophakic monovision.

Design: Retrospective, interventional clinical case series.

Participants/Methods: 82 patients between the ages of 49 and 87 years who underwent bilateral cataract extraction with pseudophakic monovision using monofocal intraocular lenses (IOLs) were included in the study. All patients underwent preoperative evaluation, including determination of ocular dominance and the absence of ocular pathology other than cataract. All patients had 20/20 vision without correction in the dominant eye, which was corrected for distance. In addition, patients with astigmatism >1.50 D or a history of manifest strabismus were excluded. Patients with exophoria >12 prism diopters were excluded. Postoperative evaluation included measurement of uncorrected visual acuity and contrast sensitivity, and assessment of patient use of spectacles and satisfaction with vision.

Results: The mean difference in spherical equivalent refractive error between the 2 eyes was 2.27 D. Most patients had uncorrected visual acuity of 20/25 or better at all distances. Binocular contrast sensitivity was reduced at distance. Patient satisfaction was greater in those who were ≥60 years of age. In patients <60 years of age, only 64% felt satisfied with their vision, compared to 87% of those 61 to 70 years of age and 94% of those ≥70 years of age.

Conclusions: Pseudophakic monovision can be an effective method of managing loss of accommodation after cataract surgery. However, patient selection and appropriate patient expectations are important.

Reviewer’s Comments: Based on their findings, the authors point out that pseudophakic monovision is probably not suitable for individuals who require precise vision under low-illumination conditions. In addition, patients should be aware that pseudophakic monovision may not be suitable for night driving without refractive correction. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Refractive Error

Print Tag: Refer to original journal article
Individuals who use both oral and inhaled steroids for the management of inflammatory disorders of the respiratory system are at particularly high risk of developing cataracts.

**Objective:** To evaluate the risk of cataract formation related to the use of oral and inhaled corticosteroids.

**Design:** Population-based cohort study.

**Methods:** Data for this study were derived from the Blue Mountains Eye Study, a longitudinal study of the epidemiology of eye disease conducted in a suburban community in Australia. A total of 4654 adults aged ≥49 years were enrolled. Follow-up evaluations were conducted 5 and 10 years after initial enrollment. The past and current use of oral or inhaled corticosteroids for the treatment of asthma, allergy, arthritis, or other inflammatory conditions was assessed at baseline. Follow-up examinations allowed the identification of new-onset cataract, which was diagnosed using a standardized lens grading system from lens photographs. Separate lens opacity scores were determined for posterior subcapsular cataract (PSC) and for nuclear and cortical lens opacities.

**Results:** Current users of both oral and inhaled steroids had an increased risk of developing PSC (inhaled: OR, 2.04; 95% CI, 1.33 to 4.69; oral: OR, 4.11; 95% CI, 1.67 to 10.1). A similar increase in the risk of developing a nuclear cataract was also seen with each steroid type, but there was no increased risk of cortical cataract. A significant interaction was seen between the use of oral and inhaled steroids on the risk of both PSC and nuclear cataract.

**Conclusions:** The combined use of oral and inhaled corticosteroids significantly increases the risk of developing PSC and nuclear cataracts.

**Reviewer’s Comments:** The finding that there is interaction between oral and inhaled steroid use indicates that the risk of cataract related to the combined use of these 2 types of steroids results in a risk of cataract even greater than the sum of the risks related to the use of either type of steroid alone. This synergistic effect of the 2 types of steroids on the development of PSC and nuclear lens opacities implies that patients who use both types are at particularly high risk of developing cataracts. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Cataract

Print Tag: Refer to original journal article
Objective: To identify factors associated with development of the intraoperative floppy iris syndrome (IFIS) during cataract surgery.

Design: Retrospective, interventional, comparative clinical case series.

Methods: A retrospective review was conducted of 899 eyes of 660 patients who underwent routine cataract surgery. All patients underwent preoperative evaluation, which included ophthalmic examination and a history including medication and herbal remedy use. This history specifically elicited information on the use of the $\alpha_1$ antagonist tamsulosin (Flomax), other $\alpha_1$ antagonists, palmetto, angiotensin-converting enzyme antagonists, and the use of other drugs with cholinergic or anticholinergic effects. The use of these drugs and clinical and demographic factors were investigated as risk factors for the occurrence of IFIS.

Results: IFIS occurred in 4.7% of patients in this case series. The use of tamsulosin and other $\alpha_1$ antagonists was the strongest risk factor for the occurrence of IFIS (tamsulosin: OR, 47.0; $P = 0.001$; other $\alpha_1$ antagonist: OR, 18.6; $P = 0.004$). Systemic hypertension was also a risk factor for the development of this syndrome (OR, 2.57; $P = 0.05$). Although no other medication or herbal remedy use was identified as a risk factor, several patients who developed IFIS had no history of $\alpha_1$ antagonist use.

Conclusions: The use of $\alpha_1$ antagonists such as tamsulosin is strongly predictive of the development of IFIS. However, this syndrome can occur in patients who have no history of use of these medications.

Reviewer's Comments: The finding that IFIS can occur in patients who are not current or former users of tamsulosin or other similar drugs indicates that other factors can lead to this syndrome. All cataract surgeons should be familiar with effective techniques to manage this condition during surgery, including the use of iris hooks or other mechanical devices to control the pupil size and iris tension during surgery. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Cataract Surgery

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Conjunctival autografts secured with fibrin glue are as secure as those fixated with sutures, and there is less postoperative inflammation.

**Objective:** To evaluate graft stability and postoperative inflammation when performing pterygium excision with conjunctival autografting using sutures or fibrin glue for fixation of the autograft.

**Design:** Prospective, observer-masked, randomized, clinical trial.

**Methods:** 40 eyes of 40 patients requiring pterygium excision were enrolled in this clinical trial. No patient had undergone previous pterygium excision surgery. Patients were randomly assigned to 1 of 2 groups. In each group, the surgical procedure was identical with the exception of the method of fixating the conjunctival autograft. In one group, the autograft was secured to the sclera using multiple interrupted 10-0 polyglactin absorbable sutures. In the other group, the autograft was fixated using fibrin glue. Postoperative evaluation was performed by an observer masked as to the treatment group. Standardized methods were used to grade the severity of postoperative inflammation in the graft. In addition, the security of fixation and the occurrence of subconjunctival hemorrhage were documented.

**Results:** There was no difference in autograft security or the development of subconjunctival hemorrhage between the 2 groups through the 3 months of follow-up. The severity of postoperative inflammation in the graft was significantly less in the fibrin glue group at the 1-month follow-up ($P=0.02$).

**Conclusions:** Conjunctival autografts secured with fibrin glue are as secure as those secured with sutures but are associated with less postoperative inflammation.

**Reviewer's Comments:** This study is the first prospective clinical trial demonstrating the advantages of the use of fibrin glue for the fixation of the conjunctival autograft during pterygium excision. The reduction of postoperative inflammation may play a role in the development of recurrence of pterygium, which will be the subject of a future clinical trial. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Conjunctival Autograft

Print Tag: Refer to original journal article
Timolol induces more conjunctival inflammatory infiltration than latanoprost, which may be important in affecting the success of glaucoma filtering surgery in patients with glaucoma.

**Objective**: To compare the histologic features of the conjunctiva in patients treated with topical timolol or latanoprost for the management of glaucoma.

**Design**: Prospective clinical study.

**Methods**: This study included 20 patients treated with either timolol 0.5% or latanoprost 0.005% for the management of primary open-angle glaucoma or ocular hypertension. In addition, a control group of 10 patients, who were not using any topical medications, was also enrolled. Each patient had visually significant cataract and was scheduled to undergo cataract extraction. During the cataract surgical procedure, a conjunctival biopsy was obtained from the inferior conjunctival fornix. Specimens were evaluated using light microscopy and immunohistochemistry using antibodies against markers affecting the composition of extracellular matrix, including matrix metalloproteinases and tissue inhibitors of matrix metalloproteinases (MMP-1, MMP-3, TIMP-2, TIMP-3, and CD 68).

**Results**: The number of conjunctival collagen fibrils was significantly lower in latanoprost-treated specimens compared to those treated with timolol ($P<0.01$). There was no significant difference when compared to control specimens. A moderate infiltration of macrophages and other inflammatory cells was seen in the specimens from patients treated with timolol. Significant upregulation of MMP-1, MMP-3, TIMP-2 and TIMP-3 was observed in latanoprost-treated eyes.

**Conclusions**: Conjunctival specimens treated with latanoprost showed less dense extracellular matrix composition and reduced inflammatory cell infiltration than those treated with timolol.

**Reviewer’s Comments**: This study demonstrates that infiltration of inflammatory cells into the conjunctiva is greater with the use of timolol than with latanoprost. Although conjunctival hyperemia may be induced by the use of topical prostaglandin analogs, these results suggest that this is not associated with inflammatory cell infiltration into the tissues as much as with timolol. Since conjunctival inflammatory cell activation can affect the outcome of glaucoma filtering surgery, this finding suggests that prostaglandin analogs may have a less deleterious effect on the outcome of this surgery than other medications. (Reviewer-Scott D. Smith, MD, MPH).

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Keywords: Glaucoma Medications

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