

(2001). "Consultation section. Cataract surgery problem." J Cataract Refract Surg **27**(6): 805-810.

(2007). "Consultation section: Cataract surgical problem." J Cataract Refract Surg **33**(10): 1680-1687.

Abela-Formanek, C., M. Amon, et al. (2011). "Biocompatibility of hydrophilic acrylic, hydrophobic acrylic, and silicone intraocular lenses in eyes with uveitis having cataract surgery: Long-term follow-up." J Cataract Refract Surg **37**(1): 104-112.

PURPOSE: To evaluate the long-term uveal and capsular biocompatibility of 5 intraocular lenses (IOLs) in eyes with uveitic cataract. **SETTING:** Department of Ophthalmology, Medical University of Vienna, Vienna, Austria. **DESIGN:** Comparative case series. **METHODS:** Patients with uveitis of various origin were consecutively recruited for cataract surgery (1998-2006) and received 1 of 3 hydrophilic acrylic IOLs (Hydroview, AcrySof MA60BM, or Injectacryl F3000), a silicone IOL (CeeOn 911), or a hydrophilic acrylic IOL with heparin surface modification (BioVue(3)). A 7-year follow-up was performed in the Hydroview, AcrySof, and CeeOn groups. Visual acuity, anterior chamber flare measurements, specular microscopy, biomicroscopy, and funduscopy were performed postoperatively at 6 months and 1, 2, and 3 years. **RESULTS:** The study enrolled 136 eyes of 115 patients. There were no significant differences in anterior chamber flare results between the 5 groups. The Hydroview group had the highest grade and the CeeOn IOL and AcrySof groups had the lowest grade of posterior capsule opacification. The BioVue(3) and Injectacryl IOLs had good uveal biocompatibility. Patients in all groups had better visual acuity postoperatively. **CONCLUSIONS:** Overall, patients with uveitis benefited from cataract surgery. The long-term results indicate that all sharp-edged hydrophilic and hydrophobic IOLs performed well in eyes with uveitis. Higher uveal biocompatibility was achieved with the modern hydrophilic acrylic IOLs than with the hydrophobic acrylic IOL. Modern hydrophilic acrylic IOLs seem to be a good option in these cases. **FINANCIAL DISCLOSURE:** No author has a financial or proprietary interest in any material or method mentioned.

Abela-Formanek, C., M. Amon, et al. (2002). "Results of hydrophilic acrylic, hydrophobic acrylic, and silicone intraocular lenses in uveitic eyes with cataract: comparison to a control group." J Cataract Refract Surg **28**(7): 1141-1152.

PURPOSE: To evaluate the uveal and capsular biocompatibility of hydrophilic acrylic, hydrophobic acrylic, and silicone intraocular lenses (IOLs) in eyes with uveitis. **SETTING:** Department of Ophthalmology, University of Vienna, Vienna, Austria. **METHODS:** This prospective study comprised 72 eyes with uveitis and 68 control eyes having phacoemulsification and IOL implantation by 1 surgeon. Patients received 1 of the following IOLs: foldable hydrophilic acrylic (Hydroview, Bausch & Lomb), hydrophobic acrylic (AcrySof, Alcon), or silicone (CeeOn 911, Pharmacia). Postoperative evaluations were at 1, 3, and 7 days and 1, 3, and 6 months. Cell reaction was evaluated by specular microscopy of the anterior IOL surface and the anterior and posterior capsule reaction, by biomicroscopy.

RESULTS: Small round cell deposition was observed on all IOLs in the immediate postoperative period, especially in eyes with uveitis. This reaction decreased 3 to 6 months after surgery. Although the CeeOn 911 had a higher mean grade of small cells, there was no statistical difference between the 3 IOL types after 6 months in the uveitis and control groups. Foreign-body giant cells (FBGCs) increased after 1 week to 1 month. The AcrySof IOLs had the highest number of FBGCs; after 6 months, there was a statistically significant difference between the AcrySof and Hydroview uveitis groups ($P = .036$) and the AcrySof and CeeOn 911 uveitis groups ($P = .003$) but there was no difference among the 3 IOL types in the control group. Lens epithelial cell outgrowth persisted on the Hydroview IOLs in control eyes and regressed on all 3 IOL types in uveitic eyes and on the AcrySof and CeeOn 911 IOLs in control eyes ($P = .0001$). Anterior capsule opacification (ACO) was more severe on all IOL types in uveitic eyes and on the CeeOn 911 IOL in control eyes. Posterior capsule opacification (PCO) was more severe in uveitic eyes. The Hydroview group had more severe PCO than the AcrySof and the CeeOn 911 groups in uveitis and control eyes. Six months postoperatively, the difference was significant ($P = .0001$). There was no significant difference between the AcrySof and CeeOn 911 IOLs.

CONCLUSIONS: Intraocular lens biocompatibility is inversely related to inflammation. Hydrophilic acrylic material had good uveal but worse capsular biocompatibility. Hydrophobic acrylic material had lower uveal but better capsular biocompatibility. Silicone showed a higher small cell count (mild) and more severe ACO but achieved PCO results comparable to FBGC results and better than those with the AcrySof lens 6 months after surgery. Despite the differences in IOL biocompatibility, all patients benefited from the surgery.

Abela-Formanek, C., M. Amon, et al. (2002). "Uveal and capsular biocompatibility of 2 foldable acrylic intraocular lenses in patients with uveitis or pseudoexfoliation syndrome: comparison to a control group." *J Cataract Refract Surg* **28**(7): 1160-1172.

PURPOSE: To evaluate the uveal and capsular biocompatibility of hydrophilic acrylic (Hydroview) and hydrophobic acrylic (AcrySof) intraocular lenses (IOLs) after phacoemulsification in eyes with pseudoexfoliation syndrome (PEX) or uveitis and compare the results with those in a control group. **SETTING:** Department of Ophthalmology, University of Vienna, Vienna, Austria. **METHODS:** This prospective nonrandomized comparative trial comprised 143 eyes recruited consecutively. Of these, 49 eyes had PEX, 43 had uveitis, and 51 served as controls. A standardized surgical protocol was used. Cell reaction, anterior (ACO) and posterior (PCO) capsule opacification, and flare were evaluated 1 year after cataract surgery. **RESULTS:** Regarding uveal biocompatibility, the number of foreign-body giant cells (FBGCs) increased in proportion to associated ocular pathologies in both IOL groups. The difference between the Hydroview control and Hydroview uveitis groups was statistically significant. The number of FBGCs was greater on AcrySof IOLs than on Hydroview IOLs in all 3 groups. The difference in FBGCs between the 2 IOL types was statistically significant in the control and PEX groups. Regarding capsular biocompatibility, lens epithelial cell (LEC) outgrowth was inversely correlated with intraocular inflammation.

Outgrowth was statistically significantly higher with Hydroview IOLs, occurring in 85% in the control group, 45% in the PEX group, and 28% in the uveitis group ($P < .0001$). With AcrySof lenses, the percentages were 0%, 8%, and 4%, respectively. The PEX and uveitis groups were more likely to develop ACO than the control group ($P < .012$). There was no statistically significant difference in ACO between the 2 IOL types in the 3 patient groups. The PCO was statistically significantly greater in the uveitis group than in the control group ($P < .026$) and statistically significantly more dense on Hydroview than on AcrySof IOLs in all 3 patient groups ($P < .002$). Flare was statistically significantly higher in the uveitis group than in the PEX and control groups with both IOL types ($P < .012$). There was no statistically significant difference in flare between the 2 IOL types.

CONCLUSIONS: Uveal and capsular biocompatibility depends on the intensity of ocular inflammation. The greater the inflammation, the less the biocompatibility of hydrophilic and hydrophobic acrylic materials. AcrySof stimulated more FBGCs. The Hydroview material had better uveal but poorer capsular biocompatibility than AcrySof. The sharp optic edge effect of the AcrySof IOL and the advantages of the Hydroview lens in normal eyes are less apparent in compromised eyes.

Abela-Formanek, C., M. Amon, et al. (2002). "Inflammation after implantation of hydrophilic acrylic, hydrophobic acrylic, or silicone intraocular lenses in eyes with cataract and uveitis: comparison to a control group." J Cataract Refract Surg **28**(7): 1153-1159.

PURPOSE: To compare the course of inflammation after small-incision cataract surgery with implantation of 1 of 3 types of foldable intraocular lenses (IOLs) in eyes with uveitis. **SETTING:** Department of Ophthalmology, University of Vienna, Vienna, Austria. **METHODS:** Seventy-four eyes with uveitis and cataract and 68 control eyes with cataract were prospectively selected to receive a foldable hydrophilic acrylic (Hydroview, Bausch & Lomb), hydrophobic acrylic (AcrySof, Alcon), or silicone (CeeOn 911, Pharmacia) IOL. All surgery was performed by the same surgeon using a standardized protocol: clear corneal incision, capsulorhexis, phacoemulsification, and in-the-bag IOL implantation. Preoperative and postoperative inflammation was evaluated by measuring aqueous flare preoperatively and 1, 3, 7, 28, 90, and 180 days after surgery using the Kowa FC-1000 laser flare-cell meter. All uveitic eyes were in remission for at least 3 months before surgery. **RESULTS:** In the uveitic eyes, there was no statistically significant difference in the postoperative course of flare and cell among the 3 IOL groups. Six months after surgery in uveitic eyes, flare values reached preoperative levels and the cell count was lower than preoperatively in all 3 IOL groups. Relative flare values were higher in the eyes with uveitis and a CeeOn 911 IOL; however, the difference between this group and the 2 acrylic IOL groups was not significant. **CONCLUSIONS:** There were no significant differences in inflammation after implantation of foldable IOLs in uveitic eyes. Although absolute flare values and cell counts in eyes with uveitis were higher than in control eyes, primarily because of a damaged blood-aqueous barrier (BAB), BAB recovery was similar between the 2 groups. The changes in the BAB indicate that foldable IOL implantation is safe in uveitic eyes.

Adan, A., O. Gris, et al. (2009). "Explantation of intraocular lenses in children with juvenile idiopathic arthritis-associated uveitis." J Cataract Refract Surg **35**(3): 603-605. We report the outcome in 2 eyes of 2 patients with juvenile idiopathic arthritis-associated uveitis who had intraocular lens (IOL) explantation. The primary reason for explantation was persistent and uncontrolled inflammation with secondary cystoid macular edema.

Agrawal, S., J. Agrawal, et al. (2003). "Concern about long-term results of IOL implantation in Fuchs' heterochromic uveitis." J Cataract Refract Surg **29**(8): 1469-1470.

Ahmed, II, C. Kranemann, et al. (2002). "Revisiting early postoperative follow-up after phacoemulsification." J Cataract Refract Surg **28**(1): 100-108.

PURPOSE: To determine whether postoperative evaluation of routine phacoemulsification can be safely and effectively performed on the day of surgery and 4 days postoperatively and evaluate the incidence and management of early intraocular pressure (IOP) elevations 3 to 7 hours postoperatively in patients with or without glaucoma. **SETTING:** Community-based hospital. **METHODS:** This retrospective series comprised 465 consecutive patients who had phacoemulsification and intraocular lens implantation. All patients had postoperative follow-up on the day of surgery (3 to 7 hours postoperatively) and at 4 days. Patients were classified into 2 groups: nonglaucoma (NG), 396 patients; and glaucoma (GL), 69 patients. The main outcome measures were the incidence and management of postoperative complications including IOP spikes, wound leaks, uveitis, and endophthalmitis. **RESULTS:** Three to 7 hours postoperatively, 73 NG (18.4%) and 32 GL (46.4%) patients had IOP elevations greater than 28 mm Hg, a significant change from baseline ($P < .0001$). Fourteen NG (3.6%) and 13 GL (18.8%) patients had IOP elevations greater than 40 mm Hg ($P < .0001$). Significant IOP elevations were effectively managed with a paracentesis with or without short-term antiglaucoma medications on the day of surgery, with 75 NG (18.9%) and 39 GL (56.5%) patients requiring IOP intervention. There were no IOP elevations greater than 21 mm Hg on the next day or at 4 days. There were no complications that were missed at the same-day evaluation that may have been identified at the 1-day postoperative visit. **CONCLUSIONS:** The results indicate that after routine phacoemulsification, patients can be safely and effectively reviewed on the day of surgery and 4 days postoperatively to identify and manage early postoperative IOP spikes. A significant number of patients, particularly those with preexisting glaucoma, had potentially harmful IOP spikes 3 to 7 hours postoperatively.

Akova, Y. A., C. Kucukerdonmez, et al. (2006). "Clinical results of phacoemulsification in patients with uveitis." Ophthalmic Surg Lasers Imaging **37**(3): 204-211.

BACKGROUND AND OBJECTIVE: To evaluate the results of phacoemulsification and posterior chamber intraocular lens (IOL) implantation in patients with uveitis. **PATIENTS AND METHODS:** Review of records of 37 eyes of 31 patients with uveitis (14 men and 17 women; mean age, 49.8 years; age

range, 26 to 71 years) who underwent phacoemulsification with IOL implantation. The data recorded were age, gender, IOL type, treatment modalities, final visual outcome, and complications. RESULTS: Panuveitis, anterior uveitis, posterior uveitis, and intermediate uveitis were detected in 16 (51.6%), 9 (29.0%), 5 (16.1%), and 1 (3.3%) of the patients, respectively. At 6 months postoperatively, 32 (86.5%) eyes had achieved a best-corrected visual acuity of 20/40 or better, and 22 (59.5%) eyes had a visual acuity of 20/20. Five (13.5%) eyes showed limited improvement in postoperative visual acuity due to posterior segment problems. Postoperative recurrence of inflammation occurred in 12 eyes (32.4%) of 10 patients and was treated and controlled with medical therapy. CONCLUSION: When inflammation in uveitic eyes is under complete control, phacoemulsification and implantation of a foldable acrylic IOL in the posterior chamber is safe, effective, and tolerated well. To minimize vision-limiting complications, these patients must be observed closely after surgery, and must be treated aggressively if the inflammation recurs.

Alio, J. L., E. Chipont, et al. (2002). "Comparative performance of intraocular lenses in eyes with cataract and uveitis." J Cataract Refract Surg **28**(12): 2096-2108.

PURPOSE: To evaluate the postoperative outcomes in uveitic eyes after phacoemulsification and posterior chamber intraocular lens (IOL) implantation. SETTING: Multicenter (19) international study. METHODS: This prospective randomized comparative interventional case series comprised 140 eyes of 140 patients who had phacoemulsification and implantation of IOLs of various materials: hydrophobic acrylic (n = 48), silicone (n = 44), poly(methyl methacrylate) (PMMA) (n = 26), or heparin-surface-modified PMMA (HSM PMMA) (n = 22). Preoperative and postoperative grading and control of intraocular inflammation were performed. Clinically significant observations, visual outcomes, and the incidence of postoperative complications were recorded. RESULTS: At the final follow-up, 64 eyes (46.3%) had a best corrected visual acuity of 20/40 or better, an improvement that was highly significant (P <.0001). One day after surgery, the acrylic group had the lowest inflammation values and the silicone group the highest (P =.02). The acrylic group continued to have the lowest inflammation grade values until the 3-month follow-up. The acrylic and HSM PMMA groups had the lowest incidence of relapses. Posterior capsule opacification developed in 48 eyes (34.2%), with the highest incidence in the silicone group. CONCLUSIONS: Phacoemulsification with IOL implantation in selected uveitic eyes was safe and effective. Acrylic IOLs provided a better visual outcome and lower complication rate than IOLs of other materials.

Alkawas, A. A., A. M. Hamdy, et al. (2010). "Intraoperative intravitreal injection of triamcinolone acetonide for cataract extraction in patients with uveitis." Ocul Immunol Inflamm **18**(5): 402-407.

PURPOSE: To evaluate the efficacy of intravitreal triamcinolone injection in controlling postoperative inflammation after cataract extraction in patients with uveitis. METHODS: This retrospective study included 30 eyes with uveitis that had phacoemulsification or extracapsular cataract extraction with intraocular lens

implantation. Intravitreal triamcinolone acetonide (4 mg) was injected at the end of surgery. No systemic steroids were given after surgery. RESULTS: Visual acuity improvement of 2 lines or more occurred in 26 eyes (86.7%). Six eyes (20%) had a best-corrected visual acuity of 6/60 or better before surgery, which increased to 22 eyes (73.3%) after surgery. Five eyes (16.7%) had a visual acuity of 6/12 or better after surgery. Intravitreal triamcinolone injection controlled the postoperative inflammation in all eyes for at least 3 months following surgery. CONCLUSION: Intravitreal triamcinolone injection was effective in controlling postoperative inflammation after cataract extraction in patients with uveitis sparing the use of systemic steroids.

Amino, K. and R. Yamakawa (2000). "Long-term results of out-of-the-bag intraocular lens implantation." J Cataract Refract Surg **26**(2): 266-270.

PURPOSE: To evaluate long-term results of out-of-the-bag intraocular lens (IOL) implantation. SETTING: Department of Ophthalmology, Tenri Yorozu Hospital, Nara, Japan. METHODS: This study comprised 22 patients, 13 women and 9 men, who had cataract surgery by phacoemulsification and out-of-the-bag IOL implantation because of a posterior lens capsule rupture. Sixteen patients had in-the-bag IOL implantation in the fellow eye, and these eyes were used as a control group. The IOL's position was determined by ultrasound biomicroscopy (UBM). Anterior chamber flare counts were measured by a laser flare meter. The corneal endothelium was observed by specular microscopy. RESULTS: Mean follow-up after cataract surgery was 35 months +/- 22 (SD). The UBM revealed that in the 19 eyes with sulcus-to-sulcus IOL fixation, the optics touched the iris. In 3 eyes, 1 haptic was fixated at the sulcus and the other at the ciliary body. In 2 of these eyes, the optics did not touch the iris. Anterior chamber flare counts in eyes with sulcus-to-sulcus IOL fixation were significantly higher than in eyes with in-the-bag or sulcus-to-ciliary-body fixation ($P < .05$). There were no statistical differences in corneal endothelial cell counts based on haptic placement. CONCLUSION: Rubbing between the IOL optic and iris seems to contribute to the high flare counts in eyes with a sulcus-to-sulcus IOL fixation. A larger haptic angle may be needed to prevent contact between the iris and IOL optic in such cases.

Androudi, S., M. Ahmed, et al. (2005). "Combined pars plana vitrectomy and phacoemulsification to restore visual acuity in patients with chronic uveitis." J Cataract Refract Surg **31**(3): 472-478.

PURPOSE: To report the outcomes of combined phacoemulsification and pars plana vitrectomy (PPV) to restore visual acuity in patients with cataract and posterior segment involvement secondary to chronic uveitis. SETTING: Ocular Immunology and Uveitis Service, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, Massachusetts, USA. METHODS: This study comprised 34 patients (20 women, 14 men; 36 eyes) with posterior segment involvement secondary to chronic uveitis who had combined phacoemulsification and PPV from 1998 to 2002. The main outcome measures were visual acuity, intraocular pressure, and cystoid macular edema. RESULTS: The mean patient age was 45

years +/- 16.09 (SD). The mean duration of uveitis before surgery was 56 +/- 44.17 months. In 24 eyes (66.7%), an intraocular lens (IOL) was implanted during surgery; 12 eyes (33.3%) were left aphakic. Five eyes (13.8%) received an intraocular steroid injection intraoperatively. Visual acuity improved in 26 eyes (72.2%), deteriorated in 5 (13.9%), and was unchanged in 5 (13.9%). The main reason for decreased visual acuity was refractory macular edema. During the follow-up, 2 IOLs were explanted secondary to lens intolerance. One IOL was repositioned because of iris capture by the haptics, and 1 dislocated inferiorly, causing monocular diplopia. The mean follow-up was 23.4 +/- 16.7 months. CONCLUSIONS: Results indicate that combined phacoemulsification and PPV is a feasible technique for the removal of cataract and pathologic vitreous in eyes with chronic uveitis. Although the exact role of vitrectomy in patients with uveitis remains to be determined, the combined surgery successfully restored useful vision in most cases.

Avisar, R. and D. Weinberger (2010). "Corneal endothelial morphologic features in toxic anterior segment syndrome." *Cornea* **29**(3): 251-253.

PURPOSE: To investigate the clinical and laboratory findings of toxic anterior segment syndrome (TASS) following cataract surgery with intraocular lens (IOL) implantation, with emphasis on the morphologic features of the corneal endothelium. METHODS: A single-center retrospective observational case-control design was used. The sample consisted of 15 patients (mean age 60.3 +/- 11.2 years) with a diagnosis of TASS following unilateral cataract surgery with IOL implantation. In all cases, cataract surgery with IOL implantation had already been performed in the fellow pseudophakic eye without complications. Data on the corneal endothelial morphologic features in both eyes were collected from the files as follows: endothelial cell density, coefficient of variation of cell size, and percentage of hexagonal cells. Values in the eyes with TASS (study group) were compared with the fellow eyes (control group). Between-group differences were analyzed with Student's t test at a significance level of 5%. RESULTS: The eyes with TASS were characterized by a significantly lower endothelial cell density than the control eyes (2302 +/- 220 cells/mm vs. 2853 +/- 145 cells/mm), higher mean cell area (coefficient of variation; 38 +/- 1.4 vs. 24 +/- 2.5), and lower mean percentage of hexagonal cells (22 +/- 1.5% vs. 48 +/- 3.2%; P < 0.01 for all). Common presenting symptoms and signs were blurred vision (60%), anterior segment inflammation (100%), and cell deposition (20%). CONCLUSIONS: TASS following cataract surgery with intraocular lens implantation is associated with a low corneal endothelial cell density.

Baker, M. L., P. Allen, et al. (2007). "Immune recovery uveitis in an HIV-negative individual." *Clin Experiment Ophthalmol* **35**(2): 189-190.

Immune recovery uveitis (IRU) is an intraocular inflammatory disorder originally described in individuals with human immunodeficiency virus (HIV) and inactive cytomegalovirus retinitis following highly active antiretroviral therapy. Although relatively common in individuals with acquired immune deficiency syndrome in

the United States it is an extremely uncommon presentation in Australia. IRU also occurs in iatrogenically immunosuppressed individuals with a similar incidence to HIV-infected individuals. We report one case of IRU in an HIV-negative individual following a volunteer unrelated donor allogeneic stem cell transplant for non-Hodgkin's lymphoma. In the context of tapering the immunosuppression the patient developed bilateral IRU, consisting of panuveitis and macular oedema. The visual acuity (VA) at presentation of IRU was limited to counting fingers bilaterally. The IRU resolved with the re-intensification of the immunosuppression. VA restored to right 6/18 and left 6/12.

Belair, M. L., S. J. Kim, et al. (2009). "Incidence of cystoid macular edema after cataract surgery in patients with and without uveitis using optical coherence tomography." Am J Ophthalmol **148**(1): 128-135 e122.

PURPOSE: To determine the incidence of cystoid macular edema (CME) after cataract surgery among eyes with and without uveitis using optical coherence tomography (OCT) and to determine risk factors for postoperative CME among eyes with uveitis. **DESIGN:** Prospective, comparative cohort study. **METHODS:** Single-center, academic practice. Forty-one eyes with uveitis and 52 eyes without uveitis underwent clinical examination and OCT testing within 4 weeks before cataract surgery and at 1-month and 3-month postoperative visits. The main outcome measure was incidence of CME at 1 and 3 months after surgery. **RESULTS:** Both uveitic and control eyes gained approximately 3 lines of vision ($P = .6$). Incidence of CME at 1 month was 12% (5 eyes) for uveitis and 4% (2 eyes) for controls ($P = .2$). Incidence of CME at 3 months was 8% (3 eyes) for uveitis and 0% for eyes without uveitis ($P = .08$). Eyes with uveitis treated with perioperative oral corticosteroids had a 7-fold reduction in postoperative CME (relative risk [RR], 0.14; $P = .05$). In uveitic eyes, active inflammation within 3 months before surgery increased the risk of CME when compared with eyes without inflammation (RR, 6.19; $P = .04$). CME was significantly associated with poorer vision ($P = .01$). **CONCLUSIONS:** Eyes with well-controlled uveitis may obtain similar outcomes to control eyes after cataract surgery (up to 3 months). Use of perioperative oral corticosteroids and control of uveitis for more than 3 months before surgery seemed to decrease the risk of postoperative CME among uveitic eyes in this study.

BenEzra, D. and E. Cohen (2000). "Cataract surgery in children with chronic uveitis." Ophthalmology **107**(7): 1255-1260.

OBJECTIVE: To evaluate the visual outcome of cataract surgery in children's eyes with chronic uveitis and the feasibility of intraocular lens (IOL) implantation in these cases. **DESIGN:** Retrospective noncomparative case series. **PARTICIPANTS:** Seventeen children (20 eyes) with chronic uveitis, dense cataract, and a preoperative visual acuity of 6/120 or less with follow-up of 5 years after the initial cataract surgery. **METHODS:** In 10 eyes of 10 children (five with juvenile rheumatoid arthritis [JRA] and five with non-JRA-associated uveitis) with unioocular or markedly unequal binocular disease, surgery was carried out through the limbus and a posterior chamber IOL was implanted. In seven

children (10 eyes), three with JRA and four with non-JRA-associated disease, a pars plana approach was used, and contact lenses or glasses (for the bilateral cases) were prescribed. RESULTS: The postoperative course and immediate restored visual acuities were similar whether an IOL was implanted or not. One month after the surgery, visual acuity improved in all operated eyes. After monocular surgery, in the younger children, contact lenses were poorly tolerated and their use discontinued. These aphakic eyes remained with low vision, developing strabismus on longer follow-up. Children with JRA-associated uveitis were younger, demonstrated an active intraocular inflammation for an extended period after surgery, and tended to have secondary membranes develop, necessitating a second surgical intervention. Five years after the initial surgery, only two of nine eyes (22%) in the JRA group (one aphakic of a bilaterally affected child and one pseudophakic in a child undergoing cataract surgery in one eye) retained a visual acuity of 6/9 and 6/6, respectively. In the other seven eyes, the visual acuity was 6/60 in one pseudophakic eye and 6/240 or less in six eyes (three aphakic and three pseudophakic). In children with non-JRA-associated uveitis, 6 (four aphakic in two patients bilaterally affected and two pseudophakic) of 11 eyes (54.5%) retained a vision of 6/12 or better. CONCLUSIONS: Cataract surgery in children's eyes with uveitis may be beneficial. IOL implantation seems preferable to correction with contact lenses in young children needing surgery in one eye. In children with JRA-associated uveitis, the final visual results remain guarded because of irreversible amblyopia and a more complicated postoperative course. For these cases, a modified management approach and a better surgical technique are needed.

Berker, N., E. Soykan, et al. (2004). "Phacoemulsification cataract extraction and intraocular lens implantation in patients with Behcet's disease." Ophthalmic Surg Lasers Imaging **35**(3): 215-218.

BACKGROUND AND OBJECTIVE: To evaluate the outcomes of phacoemulsification cataract extraction and intraocular lens implantation in patients with Behcet's disease. PATIENTS AND METHODS: This prospective study was based on 40 eyes of 34 patients with Behcet's disease who underwent phacoemulsification cataract extraction and intraocular lens implantation between May 2000 and February 2003. Their postoperative ocular complications and visual outcomes were observed during a mean follow-up period of 18.35 +/- 6.17 months (range, 6 to 32 months). RESULTS: Postoperative visual acuity increased in 29 eyes (72.5%) and was 20/40 or better in 18 eyes (45%). It decreased in 7 eyes (17.5%), resulting in a visual acuity of 20/400 or worse. The most frequent postoperative complication was posterior capsular opacification, which developed in 15 eyes (37.5%). Other complications were posterior synechiae formation in 7 eyes (17.5%), severe inflammation in 5 eyes (12.5%), cystoid macular edema in 5 eyes (12.5%), epiretinal membrane in 3 eyes (7.5%), and optic atrophy in 2 eyes (5%). CONCLUSION: With appropriate preoperative and postoperative suppression of inflammation, phacoemulsification and intraocular lens implantation are safe procedures leading to visual improvement in patients with Behcet's disease without preexisting fundus lesions.

Bilge, A. H., U. Aykan, et al. (2005). "Review of sterile, postoperative, anterior segment inflammation following cataract extraction and intraocular lens implantation." Eur J Ophthalmol **15**(2): 224-227.

PURPOSE: To evaluate unexpected, acute intraocular anterior segment inflammation following uneventful cataract extraction by phacoemulsification and foldable posterior chamber intraocular lens (PCIOL) implantation. **METHODS:** This retrospective study evaluated five cases of postoperative inflammation that occurred after cataract extraction with foldable PCIOL implantation. Medical records were reviewed to analyze the unexplained postoperative inflammation. **RESULTS:** The five patients who developed inflammatory activity during the postoperative period responded well to corticosteroid treatment. Toxic maculopathy developed in one patient after aggressive antibacterial therapy. Vitrectomy was performed for one patient with prolonged vitreal inflammatory activity. **CONCLUSIONS:** Noninfectious endophthalmitis developing upon surgery may be caused by a multifactorial process or an interindividual variable response to a common factor as a hypersensitivity reaction. It should be remembered in inflammatory cases after surgery in order to prevent the toxic, irreversible side effects of bacterial endophthalmitis treatment.

Bodaghi, B., M. E. Weber, et al. (2005). "Comparison of the efficacy and safety of two formulations of diclofenac sodium 0.1% eyedrops in controlling postoperative inflammation after cataract surgery." Eur J Ophthalmol **15**(6): 702-711.

PURPOSE: To compare the efficacy and safety of diclofenac sodium 0.1% eyedrops packaged in an Abak multidose container without preservative (Dicloabak) with the reference product, sodium merthiolate-preserved diclofenac sodium 0.1% eyedrops, in controlling postoperative inflammation after cataract surgery. **METHODS:** The multicenter, controlled, randomized, single-masked study included 194 patients (Dicloabak 96, preserved diclofenac 98) scheduled to have cataract surgery by phacoemulsification with foldable intraocular lens. All were evaluated preoperatively and postoperatively after 1, 7, and 28 days. Postoperative inflammation was measured by the total score of anterior chamber cells and flare. Ocular pain, conjunctival hyperemia and ciliary flush were also assessed. Postoperative patient assessments also included visual acuity, objective tolerance by slit-lamp, fluorescein test, and subjective evaluation of local tolerance. **RESULTS:** There was no statistically significant difference between the groups in the total score of flare and cells or the degree of conjunctival hyperemia and ciliary flush at any study visit. Dicloabak was demonstrated to be not inferior to preserved diclofenac at all assessment times. The overall assessment of local tolerance was similar for both study medications. **CONCLUSIONS:** Preservative suppression did not alter diclofenac efficacy. Results support the good safety profile of both formulations when dosed three times daily for 4 weeks in absence of concomitant use of drugs potentially toxic for cornea. Preservative-free formulations like Dicloabak should be preferred to generic diclofenac formulations including other ingredients and may improve the safety profile of this topical nonsteroid anti-inflammatory drug.

Brilakis, H. S. and J. M. Lustbader (2003). "Bilateral dislocation of in-the-bag posterior chamber intraocular lenses in a patient with intermediate uveitis." J Cataract Refract Surg **29**(10): 2013-2014.

We present a case of bilateral dislocation of in-the-bag intraocular lenses (IOLs) in a patient with intermediate uveitis. The IOLs dislocated into the vitreous cavity 24 and 41 months postoperatively. A complete pars plana vitrectomy with sutured posterior chamber IOL implantation was performed after each dislocation. The final visual acuity was 20/20(-) in each eye.

Buzard, K., J. R. Zhang, et al. (2010). "Two cases of toxic anterior segment syndrome from generic trypan blue." J Cataract Refract Surg **36**(12): 2195-2199.

We report 2 cases of toxic anterior segment syndrome (TASS) resulting from impurities in generic trypan blue that was administered intracamerally to improve visualization of the capsule. Histology of the corneal buttons revealed foci of inflammatory response and complete loss of endothelial cells. Cell culture analysis showed that the generic trypan blue was approximately twice as toxic to the endothelium as a proprietary trypan blue. Ophthalmologists should be aware that any substance administered intraocularly can be a source of complications, and they should know the source of all material used in surgery.

Caronia, R. M., H. D. Perry, et al. (2002). "Antiinflammatory effect of preoperative ketorolac in phacoemulsification." J Cataract Refract Surg **28**(10): 1880-1881.

We report the antiinflammatory effect and efficacy of preoperative treatment with ketorolac in a patient with rheumatoid arthritis having phacoemulsification. This 70-year-old woman was on a maintenance dose of systemic methylprednisolone at the time of uneventful phacoemulsification in the left eye. She developed a sterile hypopyon on the first postoperative day and was treated aggressively with topical and systemic therapy, resulting in a gradual resolution of the inflammatory response. The patient subsequently had phacoemulsification in the right eye. The only significant difference in the preoperative management this time was that the patient received topical ofloxacin and ketorolac 4 days before surgery. The postoperative inflammatory response was much more controlled. The patient was continued on ketorolac and prednisolone acetate, resulting in the usual postoperative inflammatory response.

Cheng, B., Y. Liu, et al. (2011). "Early changes in morphology and intraocular pressure by size of clear corneal incision." Cornea **30**(6): 634-640.

PURPOSE: We compared changes in morphology and intraocular pressure (IOP) induced by clear 2.2-mm and 3.0-mm corneal incisions in a cohort of patients with cataracts. **METHODS:** In 160 eyes (from 70 men and 90 women at the Ophthalmic Center of Sun Yat-sen University), optical coherence tomography and tonometry were performed at 1, 5, and 24 hours after cataract surgery. The main outcome measures were IOP, postoperative changes in Descemet membrane detachment (DMD), healing of the surgical incision, and inflammation of the anterior chamber. **RESULTS:** Five hours after surgery, patients with

2.2-mm and 3.0-mm incisions had lower IOPs ($P < 0.017$) as measured by noncontact tonometry, but the difference was significant only among patients with grade V cataracts (2.2 mm, 12.6 +/- 1.2 mm Hg; 3.0 mm, 14.5 +/- 0.9 mm Hg, $P < 0.05$). The incidence of endothelial gap at 24 hours after surgery was significantly higher in the 2.2-mm (50%) versus 3.0-mm (11.1%) group of patients with grade V cataracts ($P < 0.05$). The incidence of DMD at 5 hours was also significantly higher in the 2.2-mm group (75%) than in the 3.0-mm group (22.2%) only among patients with this grade ($P < 0.05$). CONCLUSIONS: Incision width made no difference among patients with grade I-IV lens nuclei; but among those with grade V, 3.0-mm incisions had significantly less endothelial gaping, less DMD, and higher mean IOPs. For these patients, smaller incisions may not be optimal, and eyes may be especially vulnerable within 5 hours of surgery.

Chieh, J. J., A. N. Carlson, et al. (2008). "Combined fluocinolone acetonide intraocular delivery system insertion, phacoemulsification, and intraocular lens implantation for severe uveitis." Am J Ophthalmol **146**(4): 589-594.

PURPOSE: To determine whether a three-year fluocinolone acetonide sustained drug delivery system can be implanted safely at the same time that phacoemulsification and intraocular lens (IOL) implantation are performed for a visually significant cataract in eyes with uveitis. DESIGN: Retrospective, single-center case series. METHODS: All consecutive patients treated from April 1998 through September 2006 at an academic clinical practice with intermediate uveitis, posterior uveitis, or panuveitis requiring immunosuppressive therapy, periocular corticosteroid injections, or both. Phacoemulsification, IOL implantation, and fluocinolone acetonide implant insertion were performed during a single surgical session. The main outcome measures were preoperative and postoperative ocular inflammation, visual acuity (VA), intraoperative complications, anti-inflammatory medication use, IOP, and postoperative adverse events. RESULTS: Twenty-four eyes of 21 patients were studied. Mean follow-up duration was 27 months (range, six to 60 months). No patients had intraoperative complications. The mean Snellen VA at baseline was 20/316, which improved significantly to 20/75 at 12 months. The average number of recurrences in the 12 months before implantation was 2.2 episodes per eye. Only one eye experienced a recurrence at seven months after implantation. Topical corticosteroids, posterior sub-Tenon capsule injections, and systemic anti-inflammatory medications were reduced significantly at 12 months. Average IOP was unchanged after surgery compared with preoperative IOP; 15% underwent glaucoma filtering surgery. CONCLUSIONS: A fluocinolone acetonide implant insertion can be combined safely with phacoemulsification plus IOL implantation during the same surgical session in eyes with uveitis. VA generally was improved, uveitis recurrences decreased, and the need for immunosuppression decreased. The most common side effect was increased IOP.

Colapinto, P. and C. Rostron (2010). "Grubby forceps: grubby intraocular lens?" Can J Ophthalmol **45**(5): 540.

Coombs, J. M. and F. J. Durcan (2001). "Postoperative inflammation in a patient with multiple sclerosis." J Cataract Refract Surg **27**(5): 787-788.

We report a 51-year old white woman with a history of relapsing episodes of multiple sclerosis (MS) who developed acute anterior uveitis 11 days after having uneventful phacoemulsification with posterior chamber intraocular lens implantation. Topical corticosteroids relieved the pain and inflammation within hours. A week after the episode of anterior uveitis, the patient had a severe systemic relapse of MS. Acute inflammation in MS patients during the postoperative period may be noninfectious and could be a prodrome for a relapse of MS.

Dada, T., M. Dhawan, et al. (2007). "Safety and efficacy of intraoperative intravitreal injection of triamcinolone acetonide injection after phacoemulsification in cases of uveitic cataract." J Cataract Refract Surg **33**(9): 1613-1618.

PURPOSE: To evaluate the safety and efficacy of a single intraoperative intravitreal injection of triamcinolone acetonide after phacoemulsification in patients with chronic idiopathic anterior uveitis or intermediate uveitis. **SETTING:** Dr. R.P. Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India. **METHODS:** This prospective randomized controlled study included 40 eyes (40 patients) with chronic idiopathic anterior uveitis or intermediate uveitis that had phacoemulsification with intraocular lens implantation. Twenty eyes received an intravitreal injection of triamcinolone acetonide (4 mg/0.1 mL) intraoperatively (triamcinolone acetonide group), and 20 received oral steroids (steroid group) postoperatively. Outcome measures were Early Treatment Diabetic Retinopathy Study best corrected visual acuity (BCVA), anterior chamber reaction, intraocular pressure (IOP) by applanation tonometry, and central macular thickness by optical coherence tomography. **RESULTS:** The mean BCVA (decimal) improved from a baseline of 0.13 +/- 0.14 to 0.64 +/- 0.32 in the triamcinolone acetonide group and from 0.05 +/- 0.06 to 0.61 +/- 0.36 in the steroid group (P = .74). There were no statistically significant differences between the 2 groups in postoperative anterior chamber reaction, IOP, or central macular thickness. Four patients in the triamcinolone acetonide group and 5 in the steroid group had recurrence of uveitis; 5 patients in the triamcinolone acetonide group had ocular hypertension. One patient in the triamcinolone acetonide group and 3 in the steroid group had cystoid macular edema postoperatively. **CONCLUSION:** A single intraoperative intravitreal injection of triamcinolone acetonide seemed to be a safe and efficacious route of steroid delivery during phacoemulsification in patients with chronic idiopathic anterior uveitis or intermediate uveitis and is recommended as a substitute for postoperative oral steroid administration.

DeAngelis, D., N. Gupta, et al. (2000). "Cataract extraction by phacoemulsification in a sympathizing eye." Can J Ophthalmol **35**(1): 26-28.

Derakhshan, A. (2004). "Visual outcome of extracapsular cataract extraction and intraocular lens replacement in leprosy patients." East Mediterr Health J **10**(1-2):

187-191.

The study was carried out in Meshed, Islamic Republic of Iran, from 1998 to 2000 to explore the visual outcome of eye surgery with extracapsular cataract extraction and intraocular lens replacement on 18 leprosy patients (20 eyes). The most common complications of leprosy were madarosis (90%) and partial or total corneal opacity (90%). Visual acuity before surgery ranged from 'light perception' to 1/10, and this improved after surgery to 5/10-8/10 for 55% of patients. Postoperative infection leading to endophthalmitis occurred in only 1 patient and was treated with drugs; this patient's visual acuity remained at 10 cm finger count. Posterior synechia due to chronic uveitis in leprosy was diagnosed in 70% of eyes, obstructed iris in 25%, keratic precipitates in 25% and moderate iris atrophy in 10%.

Dick, H. B., O. Schwenn, et al. (2000). "Inflammation after sclerocorneal versus clear corneal tunnel phacoemulsification." *Ophthalmology* **107**(2): 241-247.

OBJECTIVE: To compare the postoperative inflammation after phacoemulsification followed by intraocular lens (IOL) implantation by means of sclerocorneal versus clear corneal tunnel incision. **DESIGN:** Randomized controlled clinical trial. **PARTICIPANTS:** One hundred eyes of 100 patients were examined at a German University eye hospital. **INTERVENTION:** One hundred eyes with cataract necessitating phacoemulsification with posterior chamber IOL implantation were randomly assigned to receive a temporal sclerocorneal or clear corneal tunnel incision by a single surgeon. **MAIN OUTCOME MEASURES:** Preoperative and postoperative inflammation was evaluated by measurement of flare using laser flare photometry. Statistical inference was mainly based on nonparametric group comparisons by use of two sample Wilcoxon tests. **RESULTS:** Mean anterior chamber flare in the group with sclerocorneal tunnel increased from 7.5 photon counts/ms preoperatively to 19.6 at 6 hours postoperatively and decreased to 11.1 (day 1), 11.7 (day 2), 11.6 (day 3), and 9.2 (5 months) during the postoperative course. The mean flare in the clear corneal tunnel incision group increased from 7.7 preoperatively to 12.9 at 6 hours postoperatively and then decreased to 9.2 (day 1), 9.8 (day 2), 9.1 (day 3), and 9.2 (5 months). Individual postoperative flare changes were significantly lower in the clear corneal tunnel group at the day of surgery ($P < 0.0001$), as well as at day 1 ($P = 0.0011$), day 2 ($P = 0.0079$), and day 3 ($P = 0.0020$). After 5 months, no statistically significant difference was found. **CONCLUSIONS:** After phacoemulsification and foldable IOL implantation, postoperative alteration in the blood-aqueous barrier was statistically significantly lower with the clear corneal tunnel incision group compared with the sclerocorneal incision group, in the first 3 days postoperatively.

Donnenfeld, E. D., E. J. Holland, et al. (2011). "A multicenter randomized controlled fellow eye trial of pulse-dosed difluprednate 0.05% versus prednisolone acetate 1% in cataract surgery." *Am J Ophthalmol* **152**(4): 609-617 e601.

PURPOSE: To compare the effects of 2 corticosteroids on corneal thickness and visual acuity after cataract surgery. **DESIGN:** Multicenter, randomized,

contralateral-eye, double-masked trial. **METHODS:** Fifty-two patients (104 eyes) underwent bilateral phacoemulsification. The first eye randomly received difluprednate 0.05% or prednisolone acetate 1%; the fellow eye received the alternative. Before surgery, 7 doses were administered over 2 hours; 3 additional doses were given after surgery, before discharge. For the remainder of the day, corticosteroids were administered every 2 hours, then 4 times daily during week 1 and twice daily during week 2. Corneal pachymetry, visual acuity, and corneal edema were evaluated before surgery and at days 1, 15, and 30 after surgery. Endothelial cell counts were evaluated before surgery and at 30 days after surgery. Retinal thickness was evaluated before surgery and at 15 and 30 days after surgery. **RESULTS:** Corneal thickness at day 1 was 33 μm less in difluprednate-treated eyes ($P = .026$). More eyes were without corneal edema in the difluprednate group than in the prednisolone group at day 1 (62% vs 38%, respectively; $P = .019$). Uncorrected and best-corrected visual acuity at day 1 were significantly better with difluprednate than prednisolone by 0.093 logMAR lines ($P = .041$) and 0.134 logMAR lines ($P < .001$), respectively. Endothelial cell density was 195.52 cells/ mm^2 higher in difluprednate-treated eyes at day 30 ($P < .001$). Retinal thickness at day 15 was 7.74 μm less in difluprednate-treated eyes ($P = .011$). **CONCLUSIONS:** In this high-dose pulsed-therapy regimen, difluprednate reduced inflammation more effectively than prednisolone acetate, resulting in more rapid return of vision. Difluprednate was superior at protecting the cornea and reducing macular thickening after cataract surgery.

Donnenfeld, E. D., E. J. Holland, et al. (2007). "Bromfenac ophthalmic solution 0.09% (Xibrom) for postoperative ocular pain and inflammation." Ophthalmology **114**(9): 1653-1662.

OBJECTIVE: To evaluate the efficacy and ocular safety of bromfenac ophthalmic solution 0.09% (Xibrom) for the treatment of postoperative inflammation and reduction of ocular pain in subjects who have undergone cataract extraction (CE). **DESIGN:** Two phase III, multicenter, randomized, double-masked, parallel, placebo-controlled clinical trials were conducted under a common protocol. Data were pooled for analyses. **PARTICIPANTS:** Five hundred twenty-seven subjects were sequentially assigned, according to a computer-generated randomization list (2:1), to bromfenac ($n = 356$) or a placebo ($n = 171$). **INTERVENTION:** Subjects who underwent cataract surgery without prior antiinflammatory treatment with a postsurgical Summed Ocular Inflammation Score (SOIS) of $>$ or $=3$ were treated with either bromfenac or the placebo, instilled twice daily for 14 days in the study eye, and observed for an additional 14 days for safety evaluation. **MAIN OUTCOME MEASURE:** Cleared ocular inflammation with a SOIS of 0 (cells $<$ or $=5$ and absence of flare after 14 days of treatment). Secondary outcomes included time to resolution of ocular inflammation, time to resolution of ocular pain, proportion of subjects with photophobia, and ocular adverse events. **RESULTS:** Baseline characteristics were comparable between groups for age, gender, and race. The baseline mean SOIS was 3.7 in both groups. A greater proportion of bromfenac (64.0%) than placebo subjects (43.3%) achieved complete clearance of ocular inflammation at study day 15

($P < 0.0001$). The effect of bromfenac on clearance of ocular inflammation was as early as study day 3 after initiation of treatment, compared with the placebo (8.4% vs. 1.2%, $P = 0.0012$). The median time to resolution of ocular pain was 2 days (bromfenac) versus 5 days (placebo) ($P < 0.0001$). Numbers of most ocular adverse events were lower for the bromfenac group than for the placebo group. Eye irritation was reported in a lower percentage of subjects for bromfenac (2.5%) versus placebo (4.7%), as were burning and stinging (1.4% vs. 2.5%), and photophobia (2.0% vs. 11.1%). **CONCLUSIONS:** Bromfenac ophthalmic solution 0.09% effectively and rapidly cleared ocular inflammation and reduced ocular pain after CE. There were no serious ocular adverse events, and fewer adverse events were reported for the bromfenac group.

Donnenfeld, E. D., L. D. Nichamin, et al. (2011). "Twice-daily, preservative-free ketorolac 0.45% for treatment of inflammation and pain after cataract surgery." Am J Ophthalmol **151**(3): 420-426 e421.

PURPOSE: To evaluate the efficacy and safety of twice-daily, preservative-free ketorolac 0.45% (Acuvail; Allergan, Inc, Irvine, California, USA) administration for treatment of inflammation and pain after cataract surgery. **DESIGN:** Prospective, randomized trial. **METHODS:** Two multicenter, double-masked studies randomized 511 cataract surgery patients (2:1) to receive twice-daily ketorolac 0.45% or vehicle in the operative eye for 16 days, beginning 1 day before surgery. The primary efficacy end point was the percentage of patients with a summed ocular inflammation score of 0 for anterior chamber cell and flare on postoperative day 14. The main secondary efficacy end point was the percentage of patients with no pain on postoperative day 1. **RESULTS:** On day 14, 52.5% of ketorolac patients and 26.5% of vehicle patients had an summed ocular inflammation score of 0 ($P < .001$). On day 1, 72.4% of ketorolac patients and 39.7% of vehicle patients had a pain score of 0 ($P < .001$). Median time to pain resolution was 1 day in the ketorolac group and 2 days in the vehicle group ($P < .001$). The percentage of ketorolac and vehicle patients who had a +3-line or more improvement in best-corrected visual acuity from baseline was 60.5% versus 44.0% on day 14 ($P = .002$). Overall, adverse events were more prevalent in the vehicle group than in the ketorolac group (48.5% vs 35.2%; $P = .004$). Burning or stinging (per a composite Medical Dictionary for Regulatory Activities) was reported by 1.5% of ketorolac patients and 0.6% of vehicle patients. **CONCLUSIONS:** Twice-daily ketorolac 0.45% was well tolerated and effectively treated inflammation and pain following cataract surgery.

Duong, H. V., K. C. Westfield, et al. (2007). "Ketorolac tromethamine LS 0.4% versus nepafenac 0.1% in patients having cataract surgery. Prospective randomized double-masked clinical trial." J Cataract Refract Surg **33**(11): 1925-1929.

PURPOSE: To compare the clinical, subjective, and objective outcomes of the use of 2 topical nonsteroidal antiinflammatory drugs--ketorolac tromethamine LS 0.4% (Acular) and nepafenac 0.1% (Nevanac)--in patients having cataract surgery. **SETTING:** Single-center private practice, Las Vegas, Nevada, USA. **METHODS:** One hundred eighty-three patients (193 eyes) with visually

significant cataract were recruited for the study. Consenting patients were randomized to a standard regimen of Acular, gatifloxacin 0.3% (Zymar), and prednisolone acetate 1% (Pred Forte) (ketorolac group) or Nevanac, moxifloxacin hydrochloride 0.5% (Vigamox), and prednisolone acetate (Econopred) (nepafenac group). Analysis included subjective complaints (burning, itching, foreign-body sensation, pain level after surgery) and objective findings (visual function, degree of inflammation in the anterior segment, complications). RESULTS: The ketorolac group consisted of 94 patients (100 eyes) and the nepafenac group, 89 patients (93 eyes). The between-group differences in visual outcomes and anterior chamber inflammation were not statistically significant (mean $P = .33$). There was a higher incidence of posterior capsule opacification in the nepafenac group ($P = 0.019$). Patient satisfaction, patient compliance, and postoperative pain control were statistically significantly better in the ketorolac group ($P = .022$, $P = .023$, and $P = .025$, respectively). CONCLUSION: Ketorolac tromethamine was statistically significantly better than nepafenac in terms of patient satisfaction, compliance, and postoperative pain control.

Eguchi, S. (2002). "Postsurgical inflammation after bilateral cataract surgery using different intraocular lenses in each eye." Int Ophthalmol Clin **42**(1): 93-98.

El-Asrar, A. M. and S. A. Al-Obeidan (2001). "Sympathetic ophthalmia after complicated cataract surgery and intraocular lens implantation." Eur J Ophthalmol **11**(2): 193-196.

PURPOSE: To report a case of sympathetic ophthalmia (SO) associated with cataract surgery and intraocular lens (IOL) implantation. METHODS: Case report. RESULTS: A 50-year-old man developed SO two months after complicated cataract surgery and IOL implantation. Adequate and prompt use of immunosuppressive medications and removal of the IOL by pars plana vitrectomy techniques resulted in control of the uveitis with significant visual improvement. CONCLUSIONS: Sympathetic ophthalmia should be included as one of the devastating complications of IOL insertion. A high index of suspicion must be maintained whenever inflammation occurs in the fellow eye of an eye that has undergone intraocular surgery.

Endo, N., S. Kato, et al. (2010). "Efficacy of bromfenac sodium ophthalmic solution in preventing cystoid macular oedema after cataract surgery in patients with diabetes." Acta Ophthalmol **88**(8): 896-900.

PURPOSE: To compare the efficacy of bromfenac sodium ophthalmic solution (BF) and a steroidal solution (ST) administered prophylactically against cystoid macular oedema and anterior-chamber inflammation after phacoemulsification and intraocular lens implantation and to assess macular thickness changes using optical coherence tomography (OCT). METHODS: In this prospective study, 62 eyes of 62 patients were randomized to either the BF group ($n=31$) or the ST group ($n =31$). The average perifoveal thickness (AFT) was measured by OCT preoperatively, and 1 day and 1, 2, 4 and 6 weeks postoperatively. The best-corrected visual acuity, intraocular pressure and flare in the anterior chamber were recorded at each visit. The same method was used to compare

patients with non-proliferative diabetic retinopathy (NPDR) in the BF (n = 16) and ST (n = 11) groups. RESULTS: In the analysis of all patients, flare in the anterior chamber was significantly (p = 0.007) lower in the BF group 2 weeks postoperatively. In patients with NPDR, the anterior chamber flare values were significantly lower in the BF group at 4 weeks (p = 0.0009) and 6 weeks (p = 0.005). The AFT values were significantly lower in the BF group at 4 weeks (p < 0.0001) and 6 weeks (p < 0.0001). No adverse events occurred in either group. CONCLUSION: BF suppressed anterior chamber inflammation and increasing retinal thickening after cataract surgery in patients with NPDR.

Estafanous, M. F., C. Y. Lowder, et al. (2001). "Phacoemulsification cataract extraction and posterior chamber lens implantation in patients with uveitis." Am J Ophthalmol **131**(5): 620-625.

PURPOSE: This study reports outcomes of phacoemulsification cataract extraction and posterior chamber intraocular lens implantation within the capsular bag in patients with uveitis. METHODS: We retrospectively reviewed the charts of 32 patients (39 eyes) with uveitis who underwent phacoemulsification cataract extraction and posterior chamber intraocular lens implantation by two surgeons at The Cleveland Clinic Foundation from January 1990 to June 1998. Patients with less than 3 months of follow-up were excluded. RESULTS: Diagnoses of uveitis included idiopathic (15 eyes), sarcoidosis (10 eyes), pars planitis (four eyes), CMV retinitis (two eyes), Fuchs heterochromic iridocyclitis (two eyes), syphilis (two eyes), and one eye each of tuberculosis, Crohn's disease, HLA-B27 associated, and acute retinal necrosis. Average follow-up was 20 months (range, 3 to 63 months). Best-corrected visual acuity improved in 37 eyes (95%). Average improvement was 4 +/- 3 Snellen acuity lines (range, 1 to 10 lines). Thirty-four eyes (87%) attained final visual acuity better than or equal to 20/40. Visual loss occurred in one eye (3%) with CMV retinitis. No improvement in visual acuity was seen in one eye (3%) that developed a retinal pigment epithelial detachment. Posterior capsule opacification occurred in 24 eyes (62%), 12 of which required Nd:YAG capsulotomy (31%). Other postoperative complications included recurrence of uveitis (41%), cystoid macular edema (33%), epiretinal membrane formation (15%), and posterior synechiae (8%). CONCLUSIONS: Phacoemulsification cataract extraction with posterior chamber intraocular lens implantation is safe in patients with uveitis. The incidences of recurrence of uveitis, cystoid macular edema, epiretinal membrane, and posterior synechiae were lower than those reported previously for extracapsular cataract extraction.

Fan, D. S., C. K. Chan, et al. (2006). "Multistage approach to uveitic cataract management in children." J Pediatr Ophthalmol Strabismus **43**(3): 172-175.

Phototherapeutic keratectomy, cataract extraction and hydrophobic acrylic lens implantation, Nd:YAG laser capsulotomy, glaucoma valve implantation, and intravitreal steroid injections resulted in substantial visual improvement in three eyes of two children with complicated cataract due to severe uveitis. At follow-up of 6 months to 4 years, the children had clear corneas and normal intraocular pressures.

Fasina, O. and C. O. Bekibebe (2010). "Visual outcome of uveitic cataract in Ibadan." Afr J Med Med Sci **39**(4): 323-328.

The aim of this study is to evaluate the factors responsible for poor visual outcome in patients who had surgery for cataract due to uveitis in our subpopulation. A nonrandomized retrospective chart review of 28 patients (28 eyes) diagnosed with uveitic cataract that had cataract surgery between June 2001 and May 2007 at the University College Hospital, Ibadan, Nigeria was carried out. All had extracapsular cataract extraction with or without IOL implantation. The outcome measure was post-operative best corrected visual acuity. Over 60% of our patients achieved final best corrected visual acuity (BCVA) of 6/18 or better. The major causes of poor vision were posterior capsule opacity (PCO) in 6 patients, cystoid macular oedema (CMO) in 2 patients and pre-existing chorioretinal scar in 1 patient. We conclude that post uveitic cataract surgery results in good visual outcome with few complications in Ibadan.

Findl, O., M. Amon, et al. (2003). "Early objective assessment of intraocular inflammation after phacoemulsification cataract surgery." J Cataract Refract Surg **29**(11): 2143-2147.

PURPOSE: To evaluate the time course of blood-aqueous barrier (BAB) disturbance in the early period after small-incision cataract surgery. **SETTING:** Department of Ophthalmology, Vienna University, Vienna, Austria. **METHODS:** In a prospective study, 15 eyes of 15 patients with age-related cataract had small-incision cataract surgery by phacoemulsification with intraocular lens implantation. Care was taken to minimize trauma to the uvea during surgery. Postoperative inflammation was assessed by measuring aqueous flare and cell count with a laser flare-cell meter. Postoperative measurements were performed hourly for the first 6 hours, every 2 hours until 12 hours, every 4 hours until 40 hours, and every 8 hours until 56 hours. **RESULTS:** The time course of aqueous flare and cell count differed significantly among patients. The peak inflammatory response in most cases was 1 hour after surgery, with the response decreasing thereafter. The pattern of the time course was classified into subgroups defined by the presence and size of an initial spike immediately after surgery and the intensity of the subsequent inflammatory reaction. A slight increase in flare and cells was seen in the morning hours of the first postoperative day. **CONCLUSIONS:** Acute BAB disturbance within the first 48 hours after small-incision cataract surgery showed high interpatient variability. However, many differences were not detectable 1 day after surgery.

Foster, C. S. and S. Rashid (2003). "Management of coincident cataract and uveitis." Curr Opin Ophthalmol **14**(1): 1-6.

Cataract surgery in a patient with uveitis is more complex than senile cataract extraction, because it involves multiple considerations related to the cause of uveitis, prospects of visual rehabilitation, appropriate surgical timing and technique, and the type and material of the intraocular lens used. Establishing the diagnosis, thorough eye examination, careful patient selection and

meticulous control of perioperative inflammation are key elements to a successful visual outcome. Our aims in this article are to review the literature on this subject over the past year and highlight the behavior of intraocular lenses of various biomaterials in the uveitic eye. In addition, we also reemphasize the idea of a model of zero tolerance to intraocular inflammation to minimize the incidence of irreversible damage to ocular structures essential to good vision.

Fukushima, H., S. Kato, et al. (2001). "Effect of subconjunctival steroid injection on intraocular inflammation and blood glucose level after cataract surgery in diabetic patients." J Cataract Refract Surg **27**(9): 1386-1391.

PURPOSE: To prospectively evaluate the usefulness of a subconjunctival steroid injection given at the completion of cataract surgery in patients with diabetes mellitus. **SETTING:** University of Tokyo School of Medicine, Tokyo, Kaiya Eye Clinic, Hamamatsu, and Jyosai Hospital, Tokyo, Japan. **METHODS:** One hundred four eyes of 104 diabetic patients having routine small incision cataract surgery were randomized into 2 groups. One group received a subconjunctival injection of dexamethasone and the other group did not. Aqueous flare intensity was measured with the laser flare meter preoperatively and 1, 2, 5, 7, and 14 days postoperatively. Another 19 diabetic patients having routine cataract surgery were randomized to receive a subconjunctival steroid injection or not; blood glucose concentration was measured 4 times a day for 3 days postoperatively. **RESULTS:** There was no significant difference between the 2 groups in aqueous flare values at any postoperative time. The subconjunctival steroid injection induced a transient but significant increase in blood glucose on the day of surgery. **CONCLUSION:** A subconjunctival steroid injection given at the completion of cataract surgery in diabetic patients had no beneficial effects.

Ganesh, S. K., K. Babu, et al. (2004). "Phacoemulsification with intraocular lens implantation in cases of pars planitis." J Cataract Refract Surg **30**(10): 2072-2076.

PURPOSE: To analyze the results of phacoemulsification cataract surgery with implantation of posterior chamber intraocular lenses (IOLs) of different biomaterials in eyes with pars planitis. **SETTING:** Medical and Vision Research Foundations, Sankara Nethralaya, Chennai, India. **METHODS:** The records of 86 patients (100 eyes) with pars planitis who had phacoemulsification with IOL implantation between January 1997 and April 2003 were retrospectively analyzed. The eyes were divided into 3 groups depending on IOL biomaterial: poly(methyl methacrylate) (PMMA) (n=32), heparin-surface-modified PMMA (n=39), or acrylic (n=29). The postoperative visual outcome and complications in each group were analyzed. **RESULTS:** Forty-seven patients were men and 39, women. The mean age was 38 years (range 10 to 65 years) and the mean follow-up, 19.67 months (range 3.00 to 54.53 months). At the final follow-up, 91 eyes (91%) had better visual acuity than preoperatively; 79 had an improvement of 2 or more Snellen lines, 12 had an improvement of 1 Snellen line, 4 had no change, and 5 had a decrease as a result of reactivation of the pars planitis and progression of cystoid macular edema (CME). Significant posterior capsule opacification occurred in 10 eyes (10%), CME in 50 eyes (50%), reactivation of

pars planitis in 51 eyes (51%), IOL deposits in 29 eyes (29%), IOL decentration in 1 eye (1%), and anterior capsule fibrosis in 14 eyes (14%). The most frequent cause of poor visual recovery was CME, submacular fibrosis, and epiretinal membrane. There was no statistically significant difference in these complications between the 3 groups. CONCLUSIONS: Phacoemulsification with IOL implantation in eyes with pars planitis was safe and led to good visual outcomes in most cases. The factors in surgical success were control of inflammation, meticulous surgery, in-the-bag IOL implantation, and vigilant postoperative care.

Ganesh, S. K., Padmaja, et al. (2004). "Cataract surgery in patients with Vogt-Koyanagi-Harada syndrome." J Cataract Refract Surg **30**(1): 95-100.

PURPOSE: To evaluate the outcomes of cataract surgery in patients with Vogt-Koyanagi-Harada's (VKH) syndrome. SETTING: Medical Research Foundation, Sankara Nethralaya, Chennai, India. Methods: Fifty-nine eyes of 39 patients with VKH syndrome who had cataract surgery between May 1985 and June 2001 were retrospectively analyzed. RESULTS: Extracapsular cataract extraction (ECCE) with intraocular lens (IOL) implantation was performed in 15 eyes and without IOL implantation in 31 eyes. Phacoemulsification with IOL implantation was performed in 13 eyes. Twenty-three eyes (38.9%) had mixed cataract (posterior subcapsular and posterior polar). Small pupils were managed by synechiolysis with an iris spatula (43 eyes) or iris hooks (8 eyes). Nine eyes were lost to follow-up and not included in the postoperative analysis. The mean postoperative follow-up was 39.4 months (range 9 to 120 months). Visual acuity improved by 1 or more lines in 40 eyes (80.0%). Subretinal gliosis and optic atrophy, sequelae of the syndrome, restricted improvement in vision in the remaining eyes. Posterior capsule opacification developed in 38 eyes (76.0%), of which 21 (42.0%) required a neodymium:YAG laser posterior capsulotomy. There were no significant differences in postoperative inflammation or syndrome reactivation between the types of surgery. CONCLUSIONS: The results show that cataract extraction in patients with VKH syndrome can be safely and successfully performed if there are good preoperative and postoperative control of inflammation, careful surgical planning, and meticulous surgical technique. The final visual outcome depends on the posterior segment complications of the syndrome.

Ganesh, S. K., P. M. Sundaram, et al. (2004). "Cataract surgery in sympathetic ophthalmia." J Cataract Refract Surg **30**(11): 2371-2376.

PURPOSE: To analyze the results of cataract surgery in patients with sympathetic ophthalmia. SETTING: Sankara Nethralaya, Medical Research Foundation, Chennai, India. METHODS: This study comprised 66 patients (132 eyes) with sympathetic ophthalmia seen at the uveitis referral clinic between January 1990 and July 2001; 42 eyes (31.8%) had cataract. Cataract surgery was performed in 17 sympathizing eyes and 1 exciting eye (17 patients). The records of these 18 eyes were retrospectively analyzed. Three eyes had extracapsular cataract extraction (ECCE) with intraocular lens (IOL) implantation,

6 eyes had ECCE without IOL implantation, and 9 eyes had phacoemulsification with IOL implantation. The mean follow-up was 28.7 months (range 3 to 60 months). RESULTS: The causes of sympathetic ophthalmia were penetrating trauma (n = 8 eyes), ocular surgery (n = 6), perforated corneal ulcer (n = 2), and cyclocryotherapy (n = 1). The most common cataract type, present in 7 eyes (38.8%), was mixed (posterior subcapsular and posterior polar). Visual acuity improved after surgery in 13 eyes (72.2%). The main factors impairing visual recovery were submacular scar and optic atrophy, which were sequelae of the sympathetic ophthalmia. Posterior capsule opacification was noted in 14 eyes (77.7%); it was visually significant in 6 eyes. There was no significant difference in postoperative inflammation or disease reactivation between the 3 types of surgery. CONCLUSIONS: Cataract extraction in cases of sympathetic ophthalmia can be safely and successfully performed with vigilant preoperative and postoperative control of inflammation, careful surgical planning, and meticulous surgical technique. The final visual outcome, however, depends on the posterior segment complications of the disease.

Gatinel, D., T. Lebrun, et al. (2001). "Aqueous flare induced by heparin-surface-modified poly(methyl methacrylate) and acrylic lenses implanted through the same-size incision in patients with diabetes." *J Cataract Refract Surg* **27**(6): 855-860.

PURPOSE: To compare the degree of blood-aqueous barrier (BAB) breakdown in eyes of diabetic patients after phacoemulsification and implantation of heparin-surface-modified poly(methyl methacrylate) (PMMA) or soft hydrophobic acrylic intraocular lenses (IOLs) performed using the same technique with the same incision size to determine the influence of the IOLs on postoperative inflammation independent of other surgical factors. SETTING: Department of Ophthalmology, University of Paris XIII, Bobigny, France. METHODS: In a prospective study, 44 eyes of 31 diabetic patients with or without mild to moderate diabetic retinopathy were randomly assigned to receive an HSM PMMA IOL (22 eyes) or a soft hydrophobic acrylic IOL (22 eyes) after standardized phacoemulsification surgery. Both types of IOLs had a 6.0 mm optic, were inserted unfolded, and were placed in the bag through a calibrated 6.0 mm superior scleral incision. Anterior chamber flare was measured preoperatively and 1, 7, 30, and 240 days postoperatively using the Kowa 500 laser flare meter. RESULTS: The mean flare value was higher on the first postoperative day in both groups. There were no statistically significant between-group differences in flare scores or clinical parameters preoperatively or at any postoperative visit. CONCLUSIONS: No significant difference was observed in inflammation between eyes having HSM PMMA IOL implantation or those having soft hydrophobic acrylic IOL implantation through the same-size incision. This indicates that hydrophobic acrylic and HSM PMMA materials induce the same degree of BAB breakdown after phacoemulsification in eyes of diabetic patients.

Goel, R., L. Thangkhiew, et al. (2010). "Management of bilateral idiopathic healed sclerokeratouveitis with ciliary and intercalary staphyloma with complicated cataract and

secondary glaucoma." Indian J Ophthalmol **58**(5): 444-445.

Harper, S. L. and C. S. Foster (2000). "Intraocular lens explantation in uveitis." Int Ophthalmol Clin **40**(1): 107-116.

Visual rehabilitation after cataract surgery has been improved with the development of IOLs. These lenses are well tolerated in many uveitis patients when complete control of preoperative inflammation is achieved. However, in some patients, IOL placement after cataract extraction results in chronic inflammation, deposition of inflammatory cells and debris on the IOL surface, and inflammatory membrane formation despite antiinflammatory coverage. Patients with systemic diseases characterized by chronic inflammation, such as sarcoidosis and JRA, and those with chronic ocular inflammatory conditions or inflammation involving the intermediate segment of the eye may be at high risk for these complications. In patients in whom antiinflammatory therapy fails, adequate control of inflammation may be achieved after lens explantation.

Hazari, A. and V. S. Sangwan (2002). "Cataract surgery in uveitis." Indian J Ophthalmol **50**(2): 103-107.

PURPOSE: To study the visual outcome of cataract surgery in eyes with uveitis.
METHODS: A retrospective analysis of patients with uveitis operated for cataract.
RESULTS: 106 eyes of 89 patients with uveitis were operated for cataract. In 62.3% eyes (66/106), post-operative follow-up was at least 6 months. There was significant improvement ($P < 0.001$) in visual acuity after cataract surgery. Provided the uveitis was well controlled for three months pre-operatively, additional pre-operative anti-inflammatory medications did not significantly affect ($P = 0.842$) post-operative inflammation. Patients who received extracapsular cataract extraction (ECCE) or phacoemulsification with posterior chamber IOL (PCIOL) obtained better visual acuity at 6 weeks ($P = 0.009$ and $P = 0.032$ respectively) than those with only ECCE without IOL. In 37 eyes vision did not improve due to persistent uveitis (23.9%, 16/67), cystoid macular oedema (20.9%, 14/67), and posterior capsule opacification (14.9%, 10/67).
CONCLUSION: Cataract extraction and PCIOL implantation is safe in eyes with uveitis. Additional preoperative medications may not alleviate post-operative inflammation if uveitis is well controlled for at least three months before surgery.

Heiligenhaus, A. (2006). "When should intraocular lenses be implanted in patients with juvenile idiopathic arthritis-associated iridocyclitis?" Ophthalmic Res **38**(6): 316-317.

Henderson, B. A., J. L. Gayton, et al. (2011). "Safety and efficacy of bromfenac ophthalmic solution (Bromday) dosed once daily for postoperative ocular inflammation and pain." Ophthalmology **118**(11): 2120-2127.

PURPOSE: To evaluate the efficacy and ocular safety of bromfenac ophthalmic solution (bromfenac) 0.09% dosed once daily for the treatment of ocular inflammation and pain after cataract surgery with posterior chamber intraocular lens implantation. **DESIGN:** Randomized, double-masked, vehicle-controlled or active-controlled, multicenter, clinical trials. **PARTICIPANTS AND CONTROLS:** A

total of 872 subjects (872 study eyes: bromfenac in 584, placebo in 288). METHODS: Four randomized, double-masked, vehicle or active-controlled, clinical trials were conducted at 134 ophthalmology clinics in the United States. Subjects aged ≥ 18 years were randomized to receive either bromfenac 0.09% or placebo dosed once daily beginning 1 day before cataract surgery (day -1), continuing on the day of surgery (day 0), and continuing for an additional postoperative 14 days. Subjects were evaluated for efficacy and safety on days 1, 3, 8, 15, and 22. The primary efficacy end point was cleared ocular inflammation, measured by the summed ocular inflammation score (SOIS; anterior chamber cells and flare) by day 15. The secondary efficacy end point was the number of subjects who were pain-free at day 1. The data from the 4 trials were pooled for analyses. MAIN OUTCOME MEASURES: The SOIS and ocular pain. RESULTS: The proportion of subjects who had cleared ocular inflammation by day 15 was significantly higher in the bromfenac 0.09% group than in the placebo group ($P < 0.0001$). The mean SOIS in the bromfenac 0.09% group was significantly lower than in the placebo group at days 3, 8, 15, and 22 ($P < 0.0001$). The proportion of subjects who were pain-free at days 1, 3, 8, and 15 was significantly higher in the bromfenac 0.09% group than in the placebo group ($P < 0.0001$). The incidence of adverse events reported in the bromfenac 0.09% group was significantly lower than in the placebo group ($P < 0.0001$). On day 15, 84.0% of the bromfenac subjects had ≥ 1 -line improvement in visual acuity compared with 66.1% of placebo subjects ($P < 0.0001$). CONCLUSIONS: Bromfenac 0.09% dosed once daily was clinically safe and effective for reducing and treating ocular inflammation and pain associated with cataract surgery. FINANCIAL DISCLOSURE(S): Proprietary or commercial disclosure may be found after the references.

Herbort, C. P., A. Jauch, et al. (2000). "Diclofenac drops to treat inflammation after cataract surgery." *Acta Ophthalmol Scand* **78**(4): 421-424.

PURPOSE: To compare the anti-inflammatory effect of topical diclofenac sodium 0.1% in a fixed combination with gentamicin 0.3% to the anti-inflammatory effect of dexamethasone phosphate 0.1% in a prospective randomized double-masked double-dummy study in patients undergoing cataract surgery. SETTING: Trial performed from June 1991 to April 1992 at the Hopital Jules Gonin, Department of Ophthalmology, University of Lausanne, Lausanne, Switzerland. METHODS: Inclusion of patients scheduled for extracapsular cataract extraction (ECCE) with implantation of an all PMMA intraocular lens (IOL). Double-masked comparison of post-operative inflammation in two randomized treatment groups: (1) fixed diclofenac sodium 0.1%/gentamicin 0.3% and vehicle drops 4X/day until day 12-14 and diclofenac sodium 0.1% 3X/day until day 28. (2) dexamethasone phosphate 0.1% drops 4X/day until postoperative day 12-14 and 3X/day until day 28 and gentamicin 0.3% drops 4X/day until day 12-14. Anterior chamber flare and cells, measured by laser flare-cell photometry, were analyzed as the primary outcomes. RESULTS: Eighty-seven patients were recruited, 45 being assigned to the diclofenac group and 42 to the dexamethasone control group. Diclofenac was significantly better than dexamethasone at controlling flare at day 3 ($p < 0.05$).

=0.01) and day 12-14 ($p < 0.002$). Mean anterior chamber cells were also significantly lower at day 12-14 ($p < 0.021$) and day 28 ($p < 0.012$). The commonest adverse event was transient punctate keratitis, which occurred in 15 diclofenac and 3 dexamethasone patients. **CONCLUSIONS:** While both treatments were effective at controlling post-operative inflammation, the diclofenac-gentamicin combination followed by diclofenac alone was significantly better at suppressing flare and cells but showed a slightly higher incidence of punctate keratitis and eye discomfort.

Hirneiss, C., A. S. Neubauer, et al. (2005). "Comparison of prednisolone 1%, rimexolone 1% and ketorolac tromethamine 0.5% after cataract extraction: a prospective, randomized, double-masked study." *Graefes Arch Clin Exp Ophthalmol* **243**(8): 768-773.

PURPOSE: To compare the efficacy, safety and patient comfort of two topical steroids (prednisolone 1% and rimexolone 1%) and a topical non-steroidal anti-inflammatory agent (ketorolac tromethamine 0.5%) after extracapsular cataract extraction. **METHODS:** Forty-five patients were enrolled in this prospective, randomized, double-blind study. They were assigned to receive topical treatment with either prednisolone, rimexolone or ketorolac tromethamine ophthalmic solution after phacoemulsification for cataract extraction. On postoperative days 1, 3, 5, 14 and 28 best-corrected visual acuity, intraocular pressure (IOP), slit-lamp examination of the anterior segment and report of the patients' comfort were assessed and compared by Friedman rank time analysis. **RESULTS:** Regarding the primary outcome efficacy of inflammation control the assessment of cells did not differ ($p=0.165$), while flare in the anterior chamber was lowest ($p=0.008$) in the non-steroidal anti-inflammatory drug (NSAID) group. Surface inflammation was lowest with prednisolone ($p=0.002$). Regarding safety, visual acuity did not differ among the groups. In the prednisolone group one patient, however, responded to steroid treatment with elevated IOP and had to be excluded. In the remaining patients IOP was even lower in the two steroidal treatment groups than with ketorolac ($p=0.030$). One patient receiving ketorolac had to be excluded because a corneal erosion developed. Patient comfort was highest with prednisolone ($p=0.041$). **CONCLUSIONS:** Ketorolac tromethamine provides good control of intraocular inflammation after cataract extraction without the risk of a steroidal IOP increase, which was also not observed under rimexolone therapy. The best surface inflammation control and patient comfort was observed with prednisolone, which remains a good choice.

Holzer, M. P., K. D. Solomon, et al. (2002). "Comparison of ketorolac tromethamine 0.5% and loteprednol etabonate 0.5% for inflammation after phacoemulsification: prospective randomized double-masked study." *J Cataract Refract Surg* **28**(1): 93-99.

PURPOSE: To compare the efficacy of a topical nonsteroidal antiinflammatory agent (ketorolac tromethamine ophthalmic solution 0.5%) and a topical steroid (loteprednol etabonate ophthalmic suspension 0.5%) in controlling inflammation after cataract surgery. **SETTING:** Magill Research Center for Vision Correction, Storm Eye Institute, Medical University of South Carolina, Charleston, South

Carolina, USA. METHODS: Sixty patients were prospectively and randomly assigned to receive topical treatment with ketorolac tromethamine ophthalmic solution 0.5% or loteprednol etabonate ophthalmic suspension 0.5% starting the day after routine phacoemulsification for cataract extraction. Both patient and investigator were masked to treatment. All patients had uneventful small-incision phacoemulsification with placement of a foldable posterior chamber intraocular lens (IOL). Patients used 1 of the 2 antiinflammatory agents 4 times a day starting 24 hours after surgery. Signs and symptoms of inflammation as documented by external slitlamp examination, intraocular pressure (IOP), and Kowa cell and flare measurements were evaluated on postoperative days 1, 4, 7, and 30. RESULTS: There was no statistically significant difference in any measurement of postoperative inflammation between the 2 groups. There was no difference in objective or subjective cell and flare measurements or in IOP between groups. No patient in either group was removed from the study for lack of treatment efficiency. CONCLUSIONS: Ketorolac tromethamine ophthalmic solution 0.5% was as effective as loteprednol etabonate ophthalmic suspension 0.5% in reducing inflammation after routine phacoemulsification and IOL implantation. These results suggest that ketorolac tromethamine 0.5% is a safe and effective antiinflammatory alternative to steroids after cataract extraction.

Honda, S., A. Matsuo, et al. (2004). "Effect of eye patching on postoperative inflammation after cataract surgery." J Cataract Refract Surg **30**(1): 273-274.

Hug, D. (2010). "Intraocular lens use in challenging pediatric cases." Curr Opin Ophthalmol **21**(5): 345-349.

PURPOSE OF REVIEW: The technological advancement of intraocular lenses (IOLs) in recent years has increased their use in the pediatric population. This has led to the use of IOLs in children in whom they would not have been considered in the past. Yet, the majority of the literature looking at the use of specialty IOLs is in the adult literature. This review will look at the use of IOLs in special circumstances as reported in the pediatric population. RECENT FINDINGS: A Medline search of the use of IOLs in children reveals 27 articles published in the past year. The data available on the use of IOLs in special circumstances in children are significantly less. This paper will review the safety and efficacy of the use of IOLs in children with uveitis. Options available to treat aphakia in children with inadequate support for posterior chamber IOLs are explored. Finally, the role of using multifocal and other specialty IOLs is reviewed. SUMMARY: The use of IOL implantation in the pediatric population is evolving. There is much promise in using IOLs in specialty circumstances, but caution should be applied when using these new technologies in the pediatric population. Efforts must be made to study these areas within the pediatric population.

Ikeda, N., S. Hayasaka, et al. (2001). "Effects of traditional Sino-Japanese herbal medicines on aqueous flare elevation after small-incision cataract surgery." J Ocul Pharmacol Ther **17**(1): 59-65.

We evaluated prospectively the effects of traditional Sino-Japanese herbal medicines on elevation of aqueous flare. Fifty-four patients with age-related cataract undergoing phacoemulsification with intraocular lens implantation were studied. In the control group, 20 patients received no herbal medicine. In the treated groups, 14 patients were given Orengedoku-to (Huanglian-Jie-Du-Tang in Chinese) granules (7.5 g daily), 10 patients were given Kakkon-to (Ge-Gen-Tang in Chinese) granules (7.5 g daily), and 10 patients were given Sairei-to (Cai-Ling-Tang in Chinese) granules (9.0 g daily), for 3 days before surgery, the day of surgery, and for 7 days after surgery. Aqueous flare was measured before and after surgery. The differences in preoperative flare intensities among the four groups were not significant. In the control group, the flare was 29.4 photon counts/msec on day 1, and then gradually decreased. The flare intensities on days 1, 3, and 5 in the Orengedoku-to and Kakkon-to groups were significantly lower than in the control group. The flare intensities in the Sairei-to group were the same as those of the controls. Oral administration of Orengedoku-to and Kakkon-to decreased aqueous flare elevation after small-incision cataract surgery. Sairei-to had no effect on the elevation.

Iwase, T. and N. Tanaka (2010). "Reiterative membranous proliferation with giant-cell deposits on hydrophobic acrylic intraocular lenses after triple procedures in eyes with cataracts and uveitis." Cutan Ocul Toxicol **29**(4): 306-311.

PURPOSE: To report 2 cases of reiterative membranous proliferation with giant-cell deposits on hydrophobic acrylic intraocular lenses (IOLs) after a triple procedure of vitrectomy, phacoemulsification, and IOL implantation in uveitic eyes with cataracts and vitreous opacity. **METHODS:** A 72-year-old Japanese woman and a 67-year-old Japanese man underwent AcrySof IOL (SA60AT) implantation in their eyes (both eyes in the first case and the left eye in the second case) for the treatment of cataract and vitreous opacity with uveitis. Although intraocular inflammation seemed to be successfully controlled, the number of giant-cell deposits on the posterior surface of the posterior capsule was gradually increased with the development of posterior capsular opacification in 5 and 9 months, respectively, and neodymium-doped yttrium-aluminum-garnet (Nd:YAG) laser capsulotomy was required. **RESULTS:** After the treatment, Nd:YAG laser membranotomy (4 and 5 times) was required because of repeated membranous proliferation with giant-cell deposits occurring on the posterior surface of the IOL monthly, although postoperative intraocular inflammation seemed to be controlled. **CONCLUSIONS:** The possibility of development of this undesirable complication, which is believed to be limited in cases with hydrophobic acrylic IOL implantation, should be kept in mind. Also, Nd:YAG laser membranotomy for the proliferative membrane is an available option for recovery of vision.

Jabbarpoor Bonyadi, M. H., R. Soheilian, et al. (2011). "Topiramate-induced bilateral anterior uveitis associated with hypopyon formation." Ocul Immunol Inflamm **19**(1): 86-88.

PURPOSE: To report a rare case of bilateral anterior uveitis with hypopyon

formation following systemic topiramate use. **MATERIALS AND METHODS:** A 40-year-old woman with migraine headache who was under topiramate treatment referred with bilateral ocular pain and visual blurring. Physical examination disclosed shallow anterior chamber and high intraocular pressure in both eyes. Following discontinuation of topiramate a severe bilateral anterior uveitis with posterior synechiae and hypopyon developed. **RESULTS:** Ocular inflammation resolved with systemic and topical steroid. Because of severe cataract and synechiae formation she underwent phacoemulsification/posterior chamber intraocular lens implantation and visual acuity of both eyes improved to 20/25. **CONCLUSION:** Topiramate should be added to the list of drugs that may cause anterior uveitis and hypopyon formation.

Jancevski, M. and C. S. Foster (2010). "Cataracts and uveitis." Curr Opin Ophthalmol **21**(1): 10-14.

PURPOSE OF REVIEW: To describe recent evidence from the literature regarding cataract surgery and lens implantation in patients with uveitis.

RECENT FINDINGS: Most uveitic patients enjoy good vision despite potentially sight-threatening complications, including cataract development. In those patients who develop cataracts, successful surgery stems from educated patient selection, careful surgical technique, and aggressive preoperative and postoperative control of inflammation. Although commonly accepted in the adult patient population, recent investigations reflect the increased tolerance for primary intraocular lens placement in the pediatric cohort. The role of absolute control of inflammation continues with greater focus on immunomodulatory therapies. However, these agents bear their own side effect and complication profiles, including recent evidence of increased mortality. As a result, localized treatment with not only these agents but also with corticosteroids offers a potential balance. **SUMMARY:** Cataract extraction with intraocular lens implantation in the setting of meticulous control of inflammation can optimize visual outcome in adults and children with uveitis.

Javadi, M. A., M. R. Jafarinasab, et al. (2005). "Outcomes of phacoemulsification and in-the-bag intraocular lens implantation in Fuchs' heterochromic iridocyclitis." J Cataract Refract Surg **31**(5): 997-1001.

PURPOSE: To evaluate the visual outcomes and complications of phacoemulsification (PE) and posterior chamber intraocular lens implantation, (PC IOL) in patients with Fuchs heterochromic iridocyclitis (FHIC). **SETTING:** Private clinic and an academic hospital. **METHODS:** In this noncomparative interventional case series, existing data for 41 eyes of 40 consecutive patients clinically diagnosed with FHIC and cataract were studied retrospectively. Scleral tunnel PE and in-the-bag IOL implantation were performed in all cases. Preoperative and postoperative visual acuities and intraoperative and postoperative complications were evaluated. **RESULTS:** Twenty-four male and 16 female patients aged 12 years to 70 (SD) (mean 35 +/- 12 years) were operated on and followed for 17.8 +/- 8.7 months. Preoperatively, best corrected visual acuity (BCVA) was less than 20/40 in all patients, which improved to 20/40

or better after surgery. Twenty-two eyes (53.6%) achieved BCVA of 20/20. The major cause of postoperative visual acuity less than 20/20 was vitreous haze. There were no major intraoperative complications. Postoperatively, mild anterior chamber fibrin reaction occurred in 4 patients (9.7%), IOL deposits occurred in 11 eyes (26.8%), and decentration was observed in 1 eye. During follow-up, 6 eyes (14.6%) developed posterior capsule opacification requiring a neodymium:YAG (Nd:YAG) laser capsulotomy. There was 1 case of clinical cystoid macular edema that resolved with medication. There were no cases of posterior synechias, postoperative glaucoma, or retinal detachment.

CONCLUSION: Phacoemulsification with PC IOL implantation is a safe procedure with good visual outcomes in patients with FHIC and cataract.

Jones, N. P. (2002). "Secondary posterior chamber intraocular lens implantation in Fuchs' heterochromic uveitis." Eye (Lond) **16**(4): 494-496.

Jurowski, P., R. Gos, et al. (2005). "Comparative analysis of the eye function and complications after removal of complicated cataract due to uveitis and senile cataract." Klin Oczna **107**(7-9): 421-425.

PURPOSE: retrospective, comparative analysis of the effectiveness of the results among patients who underwent removal of complicated cataract due to uveitis and senile cataract. **MATERIAL AND METHODS:** Patients with cataract enrolled in this study were divided into two groups. Group 1 comprised 30 eyes with complicated cataract due to uveitis. The main causes of uveitis were: rheumatoid arthritis in 8 eyes, ankylosing spondylitis in 7, Reiter syndrome in 3, psoriatic arthritis in 3, systemic sarcoidosis in 2, post-traumatic uveitis in 1. In 6 patients (6 eyes) the etiology of uveitis was unknown. Group 2 comprised 30 eyes with senile cataract. In 5 patients in each group there were coexisting glaucoma. In both groups phacoemulsification or phacoaspiration and foldable three piece IOL implantation were performed. The follow-up period was 12 months. Best corrected visual acuity and intra and postoperative complications were taken into consideration. **RESULTS:** There were no differences in gender and cataract hardness between the two groups. Significantly younger patients were in group 1 $p < 0.01$. Mean preop./ postop. visual acuity was better in group 2 as compared with group 1: 0.4/ 0.8 and 0.2/ 0.5, respectively, $p < 0.01$. In both groups however, the preoperative visual acuity was significantly lowest in patients with coexisting glaucoma: group 1, 0.1 $p < 0.01$ and in group 2: 0.25 $p < 0.001$. Significantly more frequent intraoperative complications were observed in group 1 as compared with group 2 e.g., corneal burn 10% and 6.6%, local sphincter damage 10% and 0%, zonular rupture 10% and 3.3% respectively. Similarly, in the late postoperative period more frequent complications were observed in group 1 than in group 2 e.g.: secondary cataract 50% and 13.3%, IOL decentration 40% and 6.6%, capsule contraction 80% and 10%, glaucoma 10% and 3.3% respectively. Recurrence of uveitis was observed in 30% of eyes in group 1. **CONCLUSIONS:** Although the modern microsurgical technology and IOL implantation have led to more effective treatment of senile cataract, the surgery of complicated cataract due to uveitis is still not free from complications.

Future surgical strategy of complicated cataract owing to uveitis has to comprise the most adequate qualification criteria e.g. choice of the optimal period for surgery and the most convenient surgical technique as well as the most effective perioperative anti-inflammatory treatment.

Kadayifcilar, S., S. Gedik, et al. (2002). "Cataract surgery in patients with Behcet's disease." J Cataract Refract Surg **28**(2): 316-320.

PURPOSE: To evaluate the outcomes and complications of cataract surgery in patients with Behcet's disease. **SETTING:** Department of Ophthalmology, Hacettepe University School of Medicine, Ankara, Turkey. **METHODS:** Thirty-three eyes of 26 patients with Behcet's disease that had extracapsular cataract surgery between January 1993 and July 1999 were analyzed retrospectively. The mean age of the patients was 38.9 years (range 20 to 54 years). The mean postoperative follow-up was 22.9 months (range 6 to 66 months). **RESULTS:** Extracapsular cataract extraction (ECCE) was performed in 22 eyes with and in 6 eyes without intraocular lens (IOL) implantation. Phacoemulsification with IOL implantation was performed in 5 eyes. Postoperatively, the visual acuity was better in 29 eyes (87.8%) and was 0.5 or better in 14 eyes (42.4%). Posterior segment complications of Behcet's disease, mainly optic atrophy and macular alterations from preoperative inflammatory episodes, restricted final acuity. No significant difference was detected in postoperative inflammation among the types of surgery; that is, ECCE, ECCE with IOL implantation, and phacoemulsification with IOL implantation. A neodymium:YAG laser posterior capsulotomy was performed in 3 cases. **CONCLUSIONS:** In patients with Behcet's disease, inflammation after extracapsular surgery was mild when surgery was performed after at least 3 months of no inflammatory signs. The results show that the outcomes of extracapsular cataract surgery mainly depend on the degree of preoperative posterior segment involvement.

Kamboj, B., S. Chawla, et al. (2007). "Dislocation of in-the-bag posterior chamber intraocular lens in a patient with intermediate uveitis." Can J Ophthalmol **42**(1): 153-154.

Kamoi, K. and M. Mochizuki (2008). "Phaco dislocation technique in young patients with uveitis." J Cataract Refract Surg **34**(8): 1239-1241.

We describe a small-incision technique that reduces the phacoemulsification time. It reduces the risk for strong intraocular inflammation after surgery and posterior capsule rupture during surgery in young patients with uveitis.

Kato, S., T. Suzuki, et al. (2002). "Risk factors for contraction of the anterior capsule opening after cataract surgery." J Cataract Refract Surg **28**(1): 109-112.

PURPOSE: To investigate the factors contributing to contraction of the anterior capsule opening (ACO) after cataract surgery in normal eyes. **SETTING:** Department of Ophthalmology, University of Tokyo, School of Medicine, Tokyo, and Kaiya Eye Clinic, Hamamatsu, Japan. **METHODS:** This study included 141 eyes of 141 patients scheduled to have cataract surgery. The area of the ACO

was determined by diaphanoscopy using the EAS-1000 anterior eye segment analysis system 1 day and 9 months postoperatively, after which the percentage reduction in the ACO area was calculated. Aqueous flare intensity was measured with a laser flare-cell meter 1 week and 9 months after surgery. Multiple regression analysis was performed to determine which factors were correlated with the percentage reduction in the ACO area. Variables tested included patient age, axial length, the ACO area on the first postoperative day, and flare values 1 week and 9 months after surgery. RESULTS: Patient age ($r = 0.193$, $P = .029$) and flare intensity 9 months after surgery ($r = 0.255$, $P = .007$) were significantly correlated with the percentage reduction in the ACO area ($R(2) = 0.133$). The axial length, ACO area 1 day postoperatively, and flare value at 1 week were not correlated with ACO contraction. CONCLUSION: Contraction of the ACO after cataract surgery is related to instability of the blood-aqueous barrier.

Kawaguchi, T., M. Mochizuki, et al. (2007). "Phacoemulsification cataract extraction and intraocular lens implantation in patients with uveitis." J Cataract Refract Surg **33**(2): 305-309.

PURPOSE: To analyze the outcomes of phacoemulsification cataract extraction and intraocular lens (IOL) implantation in patients with uveitis. SETTING: Miyata Eye Hospital, Miyakonojo, Miyazaki, Japan. METHODS: The records of 95 patients (131 eyes) with uveitis who had phacoemulsification cataract extraction and IOL implantation between 1990 and 2001 were retrospectively examined. The postoperative visual outcomes and complications were analyzed. RESULTS: The mean age of the 36 men and 59 women was 61.7 years (range 30 to 87 years) At the final follow-up examination, 111 eyes (84.7%) had improved visual acuity and 97 eyes (74.0%) had a final visual acuity of 0.5 or better. Patients with Behcet's disease had significantly worse visual outcomes than patients with other clinical etiologies of uveitis such as human T-lymphotropic virus type 1 uveitis and Vogt-Koyanagi-Harada disease. In 17 eyes (13.0%), relapse of intraocular inflammation occurred within 6 months after surgery; the rate of relapse was highest in patients with Behcet's disease (35.2%). Posterior synechias occurred in 8 eyes (6.1%), pupillary capture in 1 eye (0.8%), intraocular pressure elevation in 11 eyes (8.4%), and cystoid macula edema in 8 eyes (6.1%). In 31 eyes (23.7%), posterior capsule opacification required neodymium:YAG capsulotomy. CONCLUSIONS: The outcomes of phacoemulsification cataract extraction and IOL implantation in patients with uveitis were satisfactory. Patients with Behcet's disease related to intraocular inflammation, however, appeared to have a higher risk for complications and therefore worse outcomes than patients with other clinical etiologies of uveitis.

Kim, C. Y., S. J. Kang, et al. (2002). "Opacification of a hydrophilic acrylic intraocular lens with exacerbation of Behcet's uveitis." J Cataract Refract Surg **28**(7): 1276-1278. Behcet's disease is 1 of the most common causes of uveitis in the Eastern world. Its common ocular complications are uveitis, cataract, and obliteration of retinal vessels. Phacoemulsification with intraocular lens (IOL) implantation in patients with Behcet's disease is known to be a safe procedure. We managed a patient

with Behcet's disease who had aggravated uveitis and opacification of a hydrophilic acrylic IOL (ACRL-C160, Ophthalmed) 4 months after cataract surgery. Recalcitrant uveitis despite maximum tolerable medication and IOL opacification with vitreous opacity necessitated an IOL exchange and trans pars plana vitrectomy. After the procedure, the eye became quiescent. However, the visual acuity was 20/200 because of the obliteration of retinal vessels.

Kotaniemi, K. and H. Penttila (2006). "Intraocular lens implantation in patients with juvenile idiopathic arthritis-associated uveitis." Ophthalmic Res **38**(6): 318-323.

OBJECTIVE: To evaluate the development of cataract and the results of cataract surgery with intraocular lens (IOL) implantation in patients with chronic uveitis associated with juvenile idiopathic arthritis (JIA). **PATIENTS AND METHODS:** A hospital-based retrospective case series consisted of 25 patients with JIA-associated uveitis. The mean age of the patients was 5.8 years at the onset of arthritis and 6.8 years at the onset of uveitis. During the 15-year study period cataract surgery with implantation of an IOL was performed in 36 eyes. In 17 eyes phacoemulsification and initial posterior capsulectomy with anterior core vitrectomy were performed. The treatment of JIA and uveitis was carefully adjusted with systemic immunosuppressive drugs and topical corticosteroids perioperatively. The mean postoperative follow-up period was 3.3 years.

RESULTS: The first signs of cataract were observed 2.3 years (mean) after the diagnosis of uveitis and the cataract operation of the first eye was performed 4.5 years (mean) after the diagnosis of uveitis. After IOL surgery the visual result was good (≥ 0.5) in 64%, moderate ($0.3 < \text{visual acuity} < 0.5$) in 11% and impaired (< 0.3) in 25% of eyes. Secondary cataract developed in 16 eyes but in none of the eyes with initial posterior capsulectomy and core vitrectomy. Secondary glaucoma developed in 18 eyes, retinal detachment in 2, cystoid macular edema in 16 and band keratopathy in 12 eyes. **CONCLUSION:** Cataract is an early complication of JIA-associated uveitis. Under strict control of uveitis, IOL implantation is an important alternative in visual rehabilitation for this type of patient.

Kruger, A., M. Amon, et al. (2002). "Effect of heparin in the irrigation solution on postoperative inflammation and cellular reaction on the intraocular lens surface." J Cataract Refract Surg **28**(1): 87-92.

PURPOSE: To evaluate the influence of heparin sodium in the irrigation solution on postoperative inflammation and cellular reaction on the anterior surface of a hydrophilic intraocular lens (IOL). **SETTING:** Department of Ophthalmology, University of Vienna, Vienna, Austria. **METHODS:** This randomized prospective single-surgeon study included 50 patients with senile cataract only. Half the patients received 1 mL of heparin sodium (concentration 10 IU/mL) in addition to the regular irrigating solution. In all other respects, the procedure was standardized: clear corneal incision, phacoemulsification, and implantation of a Hydroview foldable hydrogel IOL (Bausch & Lomb). The parameters of inflammation-anterior chamber flare and cells-were evaluated with the pupil dilated in a masked fashion using a Kowa FC-1000 laser flare-cell meter 1, 3, 7,

14, and 28 days and 3, 6 and 12 months postoperatively. The cellular reaction was semiquantitatively examined and analyzed by specular microscopy. RESULTS: In both groups, flare and cell values increased on the first postoperative day and successively decreased thereafter. In the first week, the flare and cell values were significantly higher in the group without heparin sodium in the irrigating solution. Subsequently, there were no differences between the 2 groups in flare or cells. At 1 day, the heparin sodium group had statistically significantly fewer IOLs with no cells on the surface. Subsequently, no differences in cellular reaction on the IOL were observed. CONCLUSIONS: Heparin sodium added to the standard irrigating solution reduced disturbances of the blood-aqueous barrier in the early postoperative period. There seemed to be no long-term effect, especially on cellular reaction, on the hydrophilic IOL surface.

Kruger, A. J., M. Amon, et al. (2001). "Postoperative inflammation after lens epithelial cell removal: 2 year results." J Cataract Refract Surg **27**(9): 1380-1385.

PURPOSE: To evaluate the influence on postoperative inflammation of lens epithelial cell (LEC) removal after phacoemulsification. SETTING: Department of Ophthalmology, University of Vienna, Vienna, Austria. METHODS: This randomized prospective single-surgeon study comprised 60 patients with senile cataract only. After a temporal clear corneal incision was made and phacoemulsification performed, no LECs were removed in Group A, LECs in the nasal half were removed in Group B, and LECs were removed from the entire anterior capsule in Group C. The LECs were removed with a Rentsch capsule curette (Geuder). In all eyes, a foldable hydrogel intraocular lens (Hydroview, Bausch & Lomb) was implanted. Anterior chamber flare was evaluated through dilated pupils in a double-masked fashion using a Kowa FC-1000 laser flare-cell meter (LFCM). Measurements were done preoperatively as well as 1, 3, 7, 14, and 28 days and 3, 6, 12, and 24 months postoperatively. RESULTS: In all 3 groups, the flare and cell values increased on the first postoperative day followed by a successive decrease thereafter. One month after surgery, the blood-aqueous barrier (BAB) was nearly restored in all groups. Between the first and fourth week, the flare values in Groups B and C were slightly lower than in Group A; however, mean flare and cell values among groups were not statistically significantly different at any measurement. CONCLUSION: The removal of LECs from the anterior capsule with a Rentsch curette did not influence postoperative BAB changes detected using an LFCM.

Kuchle, M. and G. O. Naumann (2003). "Intraocular inflammation after cataract surgery." Ophthalmology **110**(6): 1269-1270.

Kuchle, M. and G. O. Naumann (2003). "Intraocular inflammation after cataract surgery." Ophthalmology **110**(4): 632-633.

Kurokawa, T., T. Kikuchi, et al. (2003). "Ocular manifestations in Blau syndrome associated with a CARD15/Nod2 mutation." Ophthalmology **110**(10): 2040-2044.

PURPOSE: To report cases of Blau syndrome with a CARD15/Nod2 mutation. **DESIGN:** Observational and interventional case report. **PARTICIPANTS:** A 10-year-old Japanese boy (proband) was seen with secondary angle-closure glaucoma (iris bombe), uveitis, skin rashes, and camptodactyly. His sister had posterior synechia and camptodactyly. She had iritis in both eyes during the follow-up period. Both eyes of the father were phthisical because of granulomatous uveitis and secondary glaucoma. The father also had camptodactyly. **METHODS:** Surgery was performed to release the iris bombe. Ocular inflammation was treated by topical and systemic steroids. Biopsy specimens from the skin rash and from the iris (from iridectomy) were obtained from the proband. Genetic analyses were performed on the proband, his sister, and their mother for a CARD15/Nod2 mutation. **MAIN OUTCOME MEASURES:** Clinical features, pathologic findings of the skin and iris specimens, and genetic analysis of the CARD15/Nod2 gene. **RESULTS:** Phacoemulsification, intraocular lens implantation, and peripheral iridectomy released the iris bombe. The biopsy specimen from the skin rash showed noncaseating, granulomatous infiltration with epithelioid cells and lymphocytes. The iridectomy specimen showed nonspecific inflammation. Systemic and topical steroid therapy partly reduced the ocular inflammation. Genetic analyses showed that the proband and his sister had an R334W mutation in the CARD15/Nod2 gene, but their mother was of the wild type. **CONCLUSIONS:** Blau syndrome should be considered in the differential diagnosis of childhood uveitis. Genetic analysis of the CARD15/Nod2 gene is helpful in the diagnosis.

Kurz, S., F. Krummenauer, et al. (2010). "Biaxial microincision versus coaxial small-incision cataract surgery in complicated cases." J Cataract Refract Surg **36**(1): 66-72.

PURPOSE: To evaluate and compare the results of biaxial microincision and coaxial small-incision surgery in patients with cataract with coexisting exfoliation syndrome, uveitis, anterior or posterior synechias, phacodonesis, or previous intraocular surgery over an 8-week follow-up. **SETTING:** Department of Ophthalmology, Mainz University, Mainz, Germany. **METHODS:** Eyes were prospectively assigned (1:1) to have biaxial microincision (<1.5 mm) phacoemulsification or coaxial small-incision (2.8 mm) phacoemulsification using pulsed ultrasound energy (Sovereign WhiteStar) with variable duty cycles followed by implantation of a microincision intraocular lens. Intraoperative and postoperative complications, corrected distance visual acuity (CDVA), laser flare photometry values, effective phacoemulsification time (EPT), and endothelial cell count (ECC) were evaluated. **RESULTS:** The study enrolled 94 eyes. There were no statistically significant differences between the techniques in intraoperative or postoperative complications. The most frequent postoperative complications were corneal edema surrounding the incision (40%, biaxial group; 35%, coaxial group), pupil distortion (3% versus 7%), and fibrin exudation (3% versus 3%). No other postoperative complications occurred. The median EPT was statistically significantly shorter (1.34 seconds versus 5.4 seconds) and the median phaco power significantly lower (3.3% versus 12.9%) in the biaxial group than in the

coaxial group ($P < .001$). There were no differences between groups in CDVA, laser flare photometry values, or ECC. **CONCLUSIONS:** The EPT was shorter and the mean phaco power lower with biaxial phacoemulsification, perhaps because of better access of the phaco handpiece for grooving the nucleus with this technique. The 2 techniques were comparable in intraoperative and postoperative complications. **FINANCIAL DISCLOSURE:** No other author has a financial or proprietary interest in any material or method mentioned.

Lam, L. A., C. Y. Lowder, et al. (2003). "Surgical management of cataracts in children with juvenile rheumatoid arthritis-associated uveitis." Am J Ophthalmol **135**(6): 772-778. **PURPOSE:** To evaluate outcomes of cataract surgery with posterior chamber intraocular lens (IOL) implantation with or without trabeculectomy in children with juvenile rheumatoid arthritis (JRA)-associated uveitis. **DESIGN:** Interventional case series. **METHOD:** Retrospective chart review of five patients aged 12 years or younger with JRA-associated uveitis who underwent cataract surgery with posterior chamber IOL with or without trabeculectomy at the Cleveland Clinic Foundation from December 1995 to October 2001. **RESULTS:** Four female patients and one male patient ranging from age 7 to 12 years were identified. One patient had bilateral involvement; six eyes were included in the study. Three eyes underwent cataract extraction with posterior chamber IOL, and three underwent combined cataract surgery with posterior chamber IOL and trabeculectomy. Median age at surgery was 8.5 years, with a median follow-up of 43.5 months. Four of five children (five eyes) were on systemic methotrexate immunosuppressive therapy for a median length of 1.25 years before surgery. Two of five patients (three eyes) were also on additional systemic immunosuppressive or anti-inflammatory treatments. All eyes received frequent topical corticosteroid therapy for a median of 2 weeks preoperatively and 8.5 weeks postoperatively. A final postoperative Snellen visual acuity of 20/40 or better was achieved in all children. A median final visual acuity improvement of 7 Snellen lines was observed after cataract surgery. **CONCLUSIONS:** With adequate long-term preoperative and postoperative control of intraocular inflammation with systemic immunosuppressive therapy in addition to intensive topical corticosteroid treatment, children with JRA-associated uveitis can demonstrate favorable surgical outcomes after cataract surgery with posterior chamber IOL.

Lane, S. S., S. S. Modi, et al. (2007). "Nepafenac ophthalmic suspension 0.1% for the prevention and treatment of ocular inflammation associated with cataract surgery." J Cataract Refract Surg **33**(1): 53-58.

PURPOSE: To determine whether nepafenac ophthalmic suspension 0.1% decreases the incidence and severity of inflammation and pain after cataract surgery with posterior chamber intraocular lens implantation. **SETTING:** Twenty-one ophthalmology clinics in the United States. **METHODS:** A randomized double-blind vehicle-controlled trial was conducted in which adult patients were randomly assigned to receive nepafenac 0.1% or vehicle beginning 1 day before surgery and continuing on the day of surgery (day 0) for 14 days.

Patients were evaluated on days 1, 3, 7, and 14. The primary efficacy variable was the percentage of patients cured at day 14 (cure defined as aqueous cells score + aqueous flare score = 0). Other efficacy variables included percentage of patients who were pain free at all visits and aqueous cells, flare, and cells plus flare scores. RESULTS: The mean age of the 476 patients (243 nepafenac, 233 vehicle) was 70 years (range 27 to 93 years). At day 14, 152 patients (62.6%) in the nepafenac group and 40 (17.2%) in the vehicle group were cured ($P < .0001$). A higher percentage of patients in the nepafenac group was pain free at all visits ($P < .0001$). Throughout the study, most nepafenac-treated patients were pain free (83.1% to 93.0%) compared with less than half the vehicle-treated patients (41.6% to 46.4%). The nepafenac group had lower mean aqueous cells, flare, and cells plus flare scores at all visits ($P < .0001$). No treatment-related ocular adverse events occurred in either group. CONCLUSION: Nepafenac ophthalmic suspension 0.1% was safe and effective for preventing and treating ocular inflammation and pain associated with cataract surgery.

Laurell, C. G. and C. Zetterstrom (2000). "Inflammation and blood-aqueous barrier disruption." J Cataract Refract Surg **26**(3): 306-307.

Lee, S. Y. and S. P. Chee (2005). "Surodex after phacoemulsification." J Cataract Refract Surg **31**(8): 1479-1480.

Lin, C. J., C. Y. Tan, et al. (2008). "Uveitis-glaucoma-hyphema syndrome caused by posterior chamber intraocular lens--a rare complication in pediatric cataract surgery." Ann Ophthalmol (Skokie) **40**(3-4): 183-184.

We report a case of postoperative uveitis-glaucoma-hyphema (UGH) syndrome following pediatric cataract surgery due to posterior chamber intraocular lens (PC-IOL). Slit-lamp examination revealed the optic of PC-IOL migrated into anterior chamber. The PC-IOL explantation was performed and ocular inflammation subsided.

Luke, C., T. S. Dietlein, et al. (2001). "Massive anterior capsule shrinkage after plate-haptic silicone lens implantation in uveitis." J Cataract Refract Surg **27**(2): 333-336.

Two patients, both with bilateral uveitis, had synechiolysis, continuous curvilinear capsulorhexis (CCC), phacoemulsification, and in-the-bag implantation of a foldable single-piece plate-haptic silicone intraocular lens (IOL) in 1 eye. Several weeks postoperatively, massive anterior capsule shrinkage with obstruction of the visual axis occurred in both patients. Surgical revision was performed in both eyes. Both patients had CCC and phacoemulsification and confirmed in-the-bag acrylic IOL implantation in the second eye months after surgery in the first eye. Follow-up examinations showed no significant shrinkage of the anterior capsule opening in any eye. In patients with uveitis, intraoperative lens epithelial cell removal, creation of a large CCC, and careful selection of IOL style and material may prevent occlusion of the anterior capsule opening.

Lundvall, A. and C. Zetterstrom (2000). "Cataract extraction and intraocular lens implantation in children with uveitis." Br J Ophthalmol **84**(7): 791-793.

AIM: To evaluate the long term results of cataract surgery with intraocular lens implantation (IOL) in children with uveitis. METHODS: The study included 10 eyes in seven children (age 3.5-10 years, mean 6.5 years). The cataract surgery included capsulorhexis of the anterior and the posterior capsule, anterior vitrectomy in some eyes, and implantation of a heparin surface modified (HSM) poly(methyl methacrylate) (PMMA) IOL into the capsular bag. RESULTS: Follow up periods ranged from 1 to 5 years. Best corrected visual acuity after surgery reached 20/50-20/20 in all but two eyes. Opacities or membranes requiring reoperation developed in seven eyes. Glaucoma developed in three eyes after the cataract operation. CONCLUSION: These results suggest that implantation of a HSM PMMA IOL is an alternative to correct aphakia also in children with uveitis.

Malandrini, A., A. Balestrazzi, et al. (2008). "Diagnosis and management of traumatic cyclodialysis cleft." J Cataract Refract Surg **34**(7): 1213-1216.

A 48-year-old man presented with hyphema, iridocyclitis, iridophacodonesis, and maculopathy after a contusive trauma. Ultrasound biomicroscopy identified a 90-degree cyclodialysis cleft with severe damage of the zonular fibers. Echographic B-scan examination revealed intravitreal hemorrhage and a 360-degree choroidal detachment. One month later, phacoemulsification was performed and a single-piece poly(methyl methacrylate) intraocular lens was inserted into the ciliary sulcus, with the haptic rotated toward the cyclodialysis cleft area. Postoperatively, the visual acuity improved and the intraocular pressure returned to normal. Ultrasound biomicroscopy showed closure of the cleft by reattachment of the ciliary body to the scleral spur. Optical coherence tomography revealed complete resolution of the macular and choroidal folds. Ultrasound biomicroscopy is a useful method for appropriate management of traumatic cyclodialysis cleft. In cases of small cyclodialysis clefts, with the surgical method we describe, the lens haptics apply directional force toward the sclera, fostering adherence of the ciliary body fibers.

Mandic, Z., I. Petric, et al. (2005). "Postoperative outcomes after implantation of intraocular lenses in eyes with cataract and uveitis." Coll Antropol **29 Suppl 1**: 9-12.

Despite advances in surgical technique and implant materials, cataract surgery in patients with uveitis is still a challenging procedure. We retrospectively evaluated postoperative outcomes of cataract surgery in 35 eyes of 29 patients with uveitis. Phacoemulsification with posterior chamber intraocular lens implantation was performed in all eyes. Postoperative evaluations were performed at day 2, and then at 7 days, 1, 3, and 6 months respectively. There were 16 males, and 13 females, aged 31 to 68 years. Follow-up ranged from 4 to 35 months. At final follow-up 33 eyes (94%) had an improvement in visual acuity compared with preoperative levels ($p < 0,05$). Giant cells were observed in the intraocular lens optic in 7 eyes (20%). Posterior capsule opacification occurred in 10 eyes (29%). Clinical cystoid macular edema was observed in 4 eyes, and 2 eyes required

trabeculectomy with mitomycin C due to secondary glaucoma. Cataract surgery in patients with uveitis leads to successful visual results after correct surgical timing, and adequate anti-inflammatory therapy. There were no significant differences in the degree of inflammation after implantation of various types of intraocular lenses.

Marullo, M., R. Perilli, et al. (2004). "Intravitreal triamcinolone in cystoid macular edema due to uveitis and repeated surgery after a penetrating trauma." Eur J Ophthalmol **14**(6): 581-583.

PURPOSE: To test the effectiveness of intravitreal triamcinolone acetonide in treating macular edema due to multiple vitreoretinal surgical procedures and uveitis after a penetrating trauma with metallic foreign body retention in a 37-year-old man. **METHODS:** The patient received two intravitreal injections of triamcinolone acetonide-2 mg/0.05 mL and 4 mg/0.1 ml(-1) month apart. The 6-month follow-up included best-corrected visual acuity (BCVA) measurement and optical coherence tomography evaluation. **RESULTS:** After the first injection (2 mg) the foveal thickness (685 microm, as compared to a normal value of <165 microm) and the BCVA (20/200) remained unchanged with respect to the preinjection values; 1 week after the second injection (4 mg), the foveal thickness went down to 130 microm and the BCVA improved (20/80). Such results were unchanged at the 6-month control. No complications occurred. **CONCLUSIONS:** A 2 mg dose of triamcinolone acetonide did not improve the anatomic and functional status of the macula. A 4 mg dose markedly improved BCVA and reduced the macular thickness in this case of macular edema.

Mathys, K. C., K. L. Cohen, et al. (2008). "Identification of unknown intraocular material after cataract surgery: evaluation of a potential cause of toxic anterior segment syndrome." J Cataract Refract Surg **34**(3): 465-469.

PURPOSE: To describe and identify unknown opaque material between the optic of an AR40 intraocular lens (IOL) injected with the Emerald Series implantation system (both AMO, Inc.) and the posterior capsule at the conclusion of routine phacoemulsification to prevent an outbreak of toxic anterior segment syndrome (TASS). **SETTING:** Ambulatory care center operating room, University of North Carolina Hospitals and Department of Ophthalmology, University of North Carolina School of Medicine at Chapel Hill, Chapel Hill, North Carolina, USA. **METHODS:** After coaxial phacoemulsification in multiple patients, opaque material was present between the optic of a posterior chamber IOL and the posterior capsule. Although there was no TASS, the material was removed from 2 eyes and analyzed with scanning electron microscopy (SEM) and x-ray microanalysis (XRM). Similarly, crystalline lens, Klenzyme (Steris Corp.), Viscoat (sodium hyaluronate 3.0%-chondroitin sulfate 4.0%), and Provisc (sodium hyaluronate 1.0%) were analyzed. **RESULTS:** On SEM, the material had an irregular undulating surface similar to that of Provisc. Viscoat and the crystalline lens had smoother surfaces. On XRM, the material contained sodium, chlorine, and calcium, like Viscoat and Provisc, and phosphorous and sulfur, like Viscoat. The material also contained silicone, magnesium, aluminum, titanium, iron, and

zinc. Klenszyme had smaller peaks of sodium, chlorine, and calcium and a higher carbon background than the unknown material. CONCLUSIONS: The material was likely ophthalmic viscosurgical device that was chemically and structurally altered by the cleaning and sterilization process. The silicone and metallic elements were probably from the Emerald Series implantation system as the disposable cartridge is coated with silicone and the reusable injector is metal.

Matsuda, H., S. Kato, et al. (2001). "Anterior capsular contraction after cataract surgery in vitrectomized eyes." Am J Ophthalmol **132**(1): 108-109.

PURPOSE: To assess the contraction of continuous curvilinear capsulorhexis after cataract surgery in eyes with past pars plana vitrectomy. METHODS: In a prospective study, 16 eyes of 16 patients underwent phacoemulsification and implantation of a foldable acrylic intraocular lens after pars plana vitrectomy. Eyes after intensive or repeated vitrectomy were not included. Twenty eyes of 19 patients served as age-matched controls. Aqueous flare intensity was measured using the laser flare-cell meter 1 year after surgery. The area of anterior capsular opening (ACO) was determined by diaphanoscopy using the anterior eye segment analysis system EAS-1000 at 1 day and 1 year postoperatively. RESULTS: There was no significant difference in the mean ACO area between the vitrectomy and control groups both at 1 day and 1 year postoperatively. Aqueous flare intensity 1 year after surgery was slightly higher in the vitrectomy group, but the difference was not statistically significant. CONCLUSION: Eyes after simple vitrectomy are not at a higher risk of ACO contraction following cataract surgery.

Matsuo, T., M. Takahashi, et al. (2001). "Ocular attacks after phacoemulsification and intraocular lens implantation in patients with Behcet disease." Ophthalmologica **215**(3): 179-182.

PURPOSE: To elucidate factors related to ocular inflammatory attacks after cataract surgery, limited to a single procedure of phacoemulsification and intraocular lens implantation, in patients with Behcet disease. METHODS: This retrospective study included 12 consecutive patients (16 eyes) with Behcet disease, who underwent phacoemulsification and intraocular lens implantation during 4 years from January 1995 to December 1998 at three institutions. Their medical records were reviewed, and factors related to the ocular attacks were analyzed. RESULTS: Four eyes of 3 patients experienced ocular attacks during 1 year before cataract surgery, while 4 eyes of 4 patients developed ocular attacks during 1 year after the surgery. The development of ocular attacks after cataract surgery was significantly related with the presence of ocular attacks during 1 year before the surgery ($p = 0.0286$, chi(2) test). The patients' age or gender, the duration of Behcet disease or oral medications for Behcet disease did not show any relationship with the presence or absence of ocular attacks after cataract surgery. The visual acuity improved in all patients after the surgery, including those who developed ocular attacks. CONCLUSIONS: The experience of ocular attacks during 1 year before cataract surgery is related to postoperative ocular attacks. Despite postoperative ocular attacks, phacoemulsification with

intraocular lens implantation is a safe procedure to expect a good visual outcome in patients with Behcet disease.

Mavrikakis, I., E. Mavrikakis, et al. (2005). "Surgical management of iris defects with prosthetic iris devices." Eye (Lond) **19**(2): 205-209.

PURPOSE: To evaluate the safety and efficacy of surgical implantation of prosthetic iris devices in patients with iris deficiency. **METHODS:** Nine patients with traumatic iris defects, congenital aniridia or iris coloboma, and surgical or optical iridectomies were included in a noncomparative case series. Cataract surgery with intraocular lens and prosthetic iris implantation was performed in 10 eyes. The visual acuity, subjective degree of glare disability, postoperative anatomic results, and intraoperative and postoperative complications were evaluated. **RESULTS:** The mean follow-up was 17.75 months (range 4-48 months). Best-corrected visual acuity improved in nine of 10 eyes (90%) and remained unchanged in one eye. Glare subjectively improved in four of five eyes (80%) of patients complaining of glare preoperatively. All eyes achieved the desired anatomic result. Intraoperative complications included one anterior capsular tear. Postoperative complications included a short period of mild postoperative anterior uveitis in four eyes. Secondary glaucoma was absent. **CONCLUSION:** In patients with iris deficiency, implantation of prosthetic iris device, and intraocular lens implant following cataract surgery appears to be safe and effective in reducing glare disability and improving visual outcomes.

McColgin, A. Z. and J. S. Heier (2000). "Control of intraocular inflammation associated with cataract surgery." Curr Opin Ophthalmol **11**(1): 3-6.

Major advances in cataract extraction techniques and instrumentation have occurred over the past decade. Smaller incisions, more efficient phacoemulsifiers, and decreased surgical times are a few of the changes that have helped to alleviate postoperative inflammation, but postoperative inflammation continues to be a cause of patient discomfort; delayed recovery; and, in some cases, suboptimal visual results secondary to cystoid macular edema. This article reviews the most recent literature regarding the control of intraocular inflammation associated with cataract surgery.

McCulley, J. P. (2008). "Ketorolac versus nepafenac in cataract surgery." J Cataract Refract Surg **34**(3): 345-346; author reply 346.

Meier, F. M., S. J. Tuft, et al. (2002). "Cataract surgery in uveitis." Ophthalmol Clin North Am **15**(3): 365-373.

There have been great improvements in the visual rehabilitation of patients who have uveitis and who develop cataract. Although cataract is a common complication for these patients, the absolute numbers of affected patients is small. This has led to many reports and case series in which relatively small numbers of patients are included with disease of varying types and severity. The result is that there is still uncertainty about many important aspects of patient management and outcome following surgery. These issues may best be

addressed by randomized studies collecting data from multiple centers. Developing these studies will be the next challenge facing clinicians who examine patients with these difficult problems.

Missotten, L., C. Richard, et al. (2001). "Topical 0.1% indomethacin solution versus topical 0.1% dexamethasone solution in the prevention of inflammation after cataract surgery. The Study Group." Ophthalmologica **215**(1): 43-50.

PURPOSE: To compare the efficacy and safety of topical 0.1% indomethacin with 0.1% dexamethasone after cataract surgery. METHODS: 145 patients (indo = 71, dexa = 74) were enrolled in a randomised, double-masked study and received one drop 4 times a day of indomethacin or dexamethasone for 1 month. RESULTS: Proteinic flare and cellular Tyndall decreased with time in both groups, with a difference in favour of indomethacin for cellular Tyndall on day 30 ($p = 0.046$). Conjunctival hyperaemia was less pronounced in the dexamethasone group on day 30 ($p = 0.03$). Tolerance of both drugs was good. CONCLUSION: 0.1% Indomethacin solution appears to be as safe and efficient as 0.1% dexamethasone eyedrops in the management of post-operative inflammation and could be a good alternative to the use of steroids.

Monnet, D., L. Tepenier, et al. (2009). "Objective assessment of inflammation after cataract surgery: comparison of 3 similar intraocular lens models." J Cataract Refract Surg **35**(4): 677-681.

PURPOSE: To compare postoperative inflammation in patients receiving 1 of 3 AcrySof intraocular lenses (IOLs): MA60AC (Group 1), SA60AT (Group 2), or SN60AT (Group 3). SETTING: Service d'Ophtalmologie, Universite Paris Descartes Hopital Cochin, Paris, France. METHODS: This prospective randomized 3-month study included eyes that received 1 of the 3 IOL models with standard surgery and postoperative care. Anterior chamber cells were assessed at the slitlamp and anterior chamber flare values, with a Kowa 500 flare meter. RESULTS: Fifty-nine patients (59 eyes) with a mean age of 72.7 years were evaluated. Group 1 and Group 2 comprised 20 eyes each and Group 3, 19 eyes. No eye had anterior chamber cells at baseline. In all 3 groups, the presence of anterior chamber cells was highest 1 week postoperatively and generally decreased at subsequent visits, with no statistically significant differences between IOL groups at 1 week ($P = .2655$), 1 month ($P = .073$), or 3 months ($P = .5766$). A similar proportion of eyes in each IOL group had residual cells in the anterior chamber at 3 months; the cells were not clinically significant. In all groups, the mean flare values were low (<11 photons/ms) at baseline ($P = .4522$) and statistically similar between groups at each subsequent visit ($P \geq .2801$). There were no adverse events. CONCLUSION: The 3 IOLs models, including the blue light-filtering model, had similar anterior chamber cells and flare values over a 3-month period, showing the lack of difference in inflammation induced by cataract surgery with implantation of the 3 similar IOL models.

Muccioli, C. and R. Belfort, Jr. (2000). "Cataract surgery in patients with uveitis." Int

Ophthalmol Clin **40**(2): 163-173.

Nemet, A. Y., J. Raz, et al. (2007). "Primary intraocular lens implantation in pediatric uveitis: a comparison of 2 populations." Arch Ophthalmol **125**(3): 354-360.

OBJECTIVE: To evaluate the visual outcome and postoperative complications of cataract surgery with posterior chamber intraocular lens implantation in children with uveitis. **DESIGN:** A multicenter, retrospective, interventional case series. The setting included 3 medical centers in Israel. The interventions were cataract surgery and intraocular lens implantation. Aggressive preoperative and postoperative systemic and topical anti-inflammatory treatment was instituted. The main outcome measures included postoperative inflammation, complications, and visual outcome. **RESULTS:** Children with juvenile rheumatoid arthritis (JRA)-associated uveitis were seen and underwent cataract surgery at an earlier age, and had a lower preoperative visual acuity and more severe uveitic complications when first seen, than those with non-JRA-associated uveitis. Visual acuity improved by 2 or more lines in all patients, and in 13 eyes the final visual acuity was 20/40 or better. Postoperative complications included elevated intraocular pressure, posterior and anterior capsular opacities, and macular dysfunction. **CONCLUSIONS:** Compared with those with non-JRA-associated uveitis, children with JRA-associated uveitis tend to have more severe manifestations of disease when first seen and after surgery, but there is no significant difference in postoperative course or complications. Intraocular lens implantation, including small-incision, foldable, intraocular lenses, is well tolerated, when combined with aggressive medical treatment, for controlling inflammation. We believe that intraocular lens implantation is not contraindicated in those with pediatric uveitis, including uveitis associated with JRA.

Nguyen, N. X., M. Kuchle, et al. (2005). "Quantification of blood-aqueous barrier breakdown after phacoemulsification in Fuchs' heterochromic uveitis." Ophthalmologica **219**(1): 21-25.

PURPOSE: To quantify the breakdown of the blood-aqueous barrier (BAB) following phacoemulsification with posterior chamber lens implantation in eyes with Fuchs' heterochromic uveitis (FHU). **PATIENTS AND METHODS:** In this retrospective study, 19 eyes of 19 patients with FHU (mean age 38 +/- 14 years) and 35 eyes of 35 patients with senile cataracts (mean age 63 +/- 9 years) underwent phacoemulsification with one-piece PMMA posterior chamber lens implantation. Aqueous flare was quantified using the laser flare-cell meter (LFCM, Kowa FC-1000) following medical pupillary dilation preoperatively and 1, 3, and 5 days, then 1 and 6 weeks and 6 months postoperatively. **RESULTS:** Mean preoperative aqueous flare (in photon counts per millisecond) in FHU vs. controls was 11.7 +/- 3.5 vs. 5.8 +/- 1.7. Following cataract surgery, mean aqueous flare increased to 27.8 +/- 4.4 vs. 16.0 +/- 4.5 on day 1, decreased to 23.6 +/- 4.0 vs. 11.8 +/- 3.5 on day 3, and to 18.0 +/- 3.0 vs. 9.5 +/- 1.7 on day 5. In FHU eyes, it was 13.9 +/- 2.7 after 1 week, and had returned to preoperative levels after 6 weeks (10.9 +/- 2.5) and remained stable for up to 6 months (mean

10.3 +/- 2.2). Pre- and postoperatively, aqueous flare values were 2-3 times higher in FHU eyes than in control eyes with senile cataract ($p = 0.01$). No postoperative complications such as fibrin formation, synechiae, macrophages on the intraocular lens optic or endophthalmitis were observed in any of the patients. CONCLUSIONS: BAB breakdown following phacoemulsification with posterior chamber lens implantation is relatively mild in eyes with FHU and the BAB appears to be fully reestablished to preoperative levels 6 weeks postoperatively, explaining the usually good outcome of cataract surgery in this condition.

Nguyen, N. X., A. Langenbacher, et al. (2001). "Blood-aqueous barrier breakdown after penetrating keratoplasty with simultaneous extracapsular cataract extraction and posterior chamber lens implantation." Graefes Arch Clin Exp Ophthalmol **239**(2): 114-117.

BACKGROUND: The purpose of this study was to quantify breakdown of the blood-aqueous barrier (BAB) following penetrating keratoplasty (PK) with simultaneous extracapsular cataract extraction and posterior chamber lens implantation (triple procedure) and compare it with the alterations following PK only. METHODS: This study included 72 eyes after triple procedure and 227 eyes after PK only. The diagnosis for PK was Fuchs dystrophy in 39%, keratokonus in 44%, stromal corneal dystrophy in 3% and avascular corneal scars in 6% of cases. The postoperative topical steroid treatment was standardized in both groups. Aqueous flare was quantified using the laser flare-cell meter (FC-1000, Kowa) at defined postoperative intervals (10 days, 6 weeks, then every 3 months until 1 year postoperatively). Patients with conditions associated with impairment of the BAB were excluded from the study. RESULTS: In the early postoperative course, aqueous flare values (photon counts/ms) were significantly higher in patients with triple procedure (21.9 +/- 11.0) than in patients with PK only (9.8 +/- 3.2; $P = 0.001$). At 6 weeks postoperatively, aqueous flare returned to normal levels in patients after PK only (5.2 +/- 2.3), whereas patients with triple procedure still showed significantly increased flare values (10.8 +/- 5.6; $P = 0.01$). At 6 months postoperatively, aqueous flare values of patients with triple had returned to normal levels (6.8 +/- 3.8) and did not differ significantly from those after PK only (5.2 +/- 1.9; $P = 0.09$). CONCLUSION: Our results indicate that triple procedure causes a more extensive and longer-lasting breakdown of the blood-aqueous barrier than PK only. Quantification of aqueous flare with the laser flare-cell meter is useful in the postoperative follow-up after triple procedure. Further studies are required to investigate the clinical relevance of BAB breakdown on endothelial cell count and the incidence of subsequent immunological graft rejection.

Noda, E., S. Yamanishi, et al. (2009). "Cataract surgery under infliximab therapy in a patient with Behcet's disease." J Ocul Pharmacol Ther **25**(5): 467-470.

PURPOSE: To report a case of a successful cataract surgery outcome in a patient with Behcet's disease (BD) without postoperative inflammation under infliximab therapy. CASE: A 40-year-old man who had frequent episodes of

hypopyon uveitis despite immunosuppressive therapy underwent cataract surgery. Infliximab (5 mg/kg) was given intravenously to prevent inflammation during the perioperative period. After the initial administration, infliximab was given at 2 and 6 weeks, and then it was given at 8 weeks intervals thereafter. The patient underwent cataract surgery in both eyes at the midpoint of the 8 weeks duration schedule with an uneventful postoperative clinical course for up to 12 months except for the contraction of the anterior capsule in both eyes and posterior capsule opacification in 1 eye. CONCLUSIONS: Infliximab therapy may be effective when performing cataract surgery on BD patients who have uncontrollable uveitis.

Okhravi, N., A. Morris, et al. (2007). "Intraoperative use of intravitreal triamcinolone in uveitic eyes having cataract surgery: pilot study." J Cataract Refract Surg **33**(7): 1278-1283.

PURPOSE: To report the outcomes of cataract extraction with intraoperative intravitreal triamcinolone (IVTA) in eyes with a history of posterior uveitis. SETTING: Moorfields Eye Hospital Uveitis Service, London, United Kingdom. METHODS: Nineteen eyes of 17 patients with posterior uveitis thought to require systemic corticosteroid prophylaxis for cataract surgery were included. The use of systemic corticosteroids at the time of surgery would have been problematic in 7 of the patients, who had a history of systemic hypertension. Three of the 7 patients were also diabetic. All patients were not happy about using oral corticosteroids. RESULTS: Median visual acuity 1 day after surgery was 20/40 (range 20/20 to counting fingers). At final follow-up (mean 25.2 months; range 7 to 41 months), 17 eyes (89.5%) eyes achieved visual acuity of 20/40 or better; 2 eyes failed to achieve a final visual acuity of 20/40 or better, 1 as a result of optic atrophy and the other as a result of macular edema. No patient lost acuity and no eye developed macular edema within 4 months of surgery. Intraocular pressure elevation occurred after surgery in 3 eyes; all were controlled by topical medication that was discontinued after 3 months. One patient developed severe intraocular inflammation after surgery that resolved with intensive topical corticosteroid therapy within 1 week. CONCLUSIONS: Cataract extraction by phacoemulsification with concurrent IVTA appears a useful treatment option. Targeted delivery of corticosteroid is achieved without the risks of systemic corticosteroid prophylaxis. The incidence of postoperative macular edema was markedly reduced. Levels of visual acuity after cataract surgery, similar to those in eyes without uveitis, were achieved in eyes with posterior uveitis.

Osher, R. H. (2007). "Pupil stretch technique." J Cataract Refract Surg **33**(3): 362; author reply 362.

Paganelli, F., J. A. Cardillo, et al. (2009). "A single intraoperative sub-tenon's capsule injection of triamcinolone and ciprofloxacin in a controlled-release system for cataract surgery." Invest Ophthalmol Vis Sci **50**(7): 3041-3047.

PURPOSE: To compare intraoperative injection of triamcinolone and ciprofloxacin in a controlled-release system (DuoCat) with prednisolone and

ciprofloxacin eye drops after cataract surgery. **METHODS:** In this randomized, double-masked, controlled trial, a total of 135 patients undergoing cataract surgery were randomly allocated to two groups: 67 patients treated after surgery with prednisolone 1% and ciprofloxacin 3% eye drops four times daily (week 1), three times daily (week 2), twice daily (week 3), and once daily (week 4) and 0.3% ciprofloxacin drops four times daily (weeks 1 and 2), and 68 patients treated at the end of surgery with a sub-Tenon's injection of 25 mg triamcinolone and 2 mg ciprofloxacin in biodegradable microspheres. The patients were examined on postoperative days 1, 3, 7, 14, and 28. The main outcome measures were postoperative anterior chamber cell and flare, intraocular pressure (IOP), lack of anti-inflammatory response, and presence of infection. **RESULTS:** No significant differences were observed between the groups in anterior chamber cell ($P > 0.14$) and flare ($P > 0.02$) at any postoperative visits. The mean (99% confidence interval) differences in IOP between the prednisolone and triamcinolone groups on days 1, 3, 7, 14, and 28 were -0.4 mm Hg (-2.1 to 1.3), 0.0 mm Hg (-1.4 to 1.3), 0.0 mm Hg (-1.1 to 1.1), -0.2 mm Hg (-1.1 to 0.8), and -0.1 mm Hg (-1.1 to 0.9), respectively. No patient had a postoperative infection. **CONCLUSIONS:** One injection of DuoCat had a therapeutic response and ocular tolerance that were equivalent to conventional eye drops in controlling inflammation after cataract surgery. (ClinicalTrials.gov number, NCT00431028.).

Paganelli, F., J. A. Cardillo, et al. (2004). "A single intraoperative sub-Tenon's capsule triamcinolone acetonide injection for the treatment of post-cataract surgery inflammation." *Ophthalmology* **111**(11): 2102-2108.

PURPOSE: To compare a single intraoperative sub-Tenon's capsule triamcinolone acetonide injection with steroid drops in the treatment of ocular inflammation after cataract surgery. **DESIGN:** Randomized, double-masked controlled trial. **PARTICIPANTS:** A total of 100 patients were randomized prospectively into 2 groups: 50 patients treated with 1% prednisolone eyedrops (control group A) and 50 patients treated with sub-Tenon's capsule triamcinolone (treatment group B). **METHODS:** All patients underwent phacoemulsification and intraocular posterior lens implantation. After surgery, patients were randomized to receive either (group B) an intraoperative 40 mg triamcinolone acetonide sub-Tenon's capsule injection or (group A) 1% prednisolone acetate eyedrops, according to the following schedule: 1 drop 4 times daily (week 1), 3 times daily (week 2), 2 times daily (week 3), once daily (week 4). To mask the study, group B received vehicle drops administered on a similar schedule, and group A received an intraoperative sub-Tenon's capsule injection of a 1 ml balanced salt solution. **MAIN OUTCOME MEASURES:** The main outcome measures included inflammation (cell, flare, ciliary flush), intraocular pressure, and lack of response. **RESULTS:** Triamcinolone was shown to have anti-inflammatory efficacy clinically equivalent to conventional 1% prednisolone eyedrops in reducing intraocular inflammation, as measured by clinical methods. Triamcinolone was found to be as safe as the prednisolone in terms of adverse effects, changes in visual acuity, intraocular pressure, and biomicroscopic and ophthalmoscopic variables. On the

third, seventh, fourteenth, and twenty-eighth postoperative days, a significantly lower intraocular pressure ($P < 0.01$) was noted in the triamcinolone group than in the prednisolone group. **CONCLUSIONS:** A single intraoperative 40-mg triamcinolone acetonide sub-Tenon's capsule injection demonstrated a clinically equivalent therapeutic response and ocular tolerance compared with 1% prednisolone drops in controlling postoperative inflammation after uncomplicated cataract surgery and merits further investigation.

Pahor, D., A. Pahor, et al. (2001). "Postoperative inflammation after cataract surgery in patients with rheumatoid arthritis." Ophthalmologica **215**(3): 174-178.

The purpose of the present study was to assess the influence of preoperative activity of rheumatoid arthritis (RA) on early postoperative anterior chamber inflammation after phacoemulsification and intraocular lens implantation. Twenty-three eyes in 18 patients were included in our study. On the first postoperative day, anterior chamber inflammation was observed in 11 eyes (47.8%). Five days after surgery, we found postoperative inflammation only in 1 eye (4.3%). Keratic precipitates were observed in 1 eye (4.3%) on the second postoperative day. We found no correlation between the extent of anterior chamber inflammation and the preoperative activity of RA. Postoperative anterior chamber inflammation was also not associated with the medical management of RA.

Pandit, R. T. and A. G. Coburn (2011). "Sudden corneal edema due to retained lens nuclear fragment presenting 8.5 years after cataract surgery." J Cataract Refract Surg **37**(6): 1165-1167.

A 79-year-old woman presented with a 1-week history of sudden onset of decreased vision, pain, and redness in the right eye. Ocular history included uneventful cataract surgery in both eyes more than 8 years prior to presentation. Slitlamp examination revealed significant corneal edema and mild iritis. Gonioscopy revealed a retained lens nuclear fragment in the inferior angle. Surgical removal of the fragment improved the patient's condition. The retained nuclear fragment presumably lodged behind the iris at the time of the initial surgery and spontaneously moved forward more than 8 years later. To our knowledge, this is the longest reported delay between phacoemulsification and presentation of a retained nuclear fragment. Before this case, retained nuclear fragments had been associated with complications within a year of surgery only. We recommend gonioscopy in cases of sudden-onset corneal edema extending to the inferior limbus in patients with a history of phacoemulsification.

Papa, V., G. Milazzo, et al. (2002). "Naproxen ophthalmic solution to manage inflammation after phacoemulsification." J Cataract Refract Surg **28**(2): 321-327.

PURPOSE: To explore the efficacy and safety of 2 concentrations (0.1% and 0.2%) of sodium naproxen ophthalmic solution in controlling ocular inflammation in patients having phacoemulsification and intraocular lens implantation.

SETTING: Service d'Ophtalmologie La Pitie' and Centre Ophtalmologique, Paris, and Clinique Sourdille, Nantes, France; Department of Ophthalmology, University

of Lausanne, Switzerland. **METHODS:** One hundred one patients were randomly treated with naproxen 0.1%, naproxen 0.2%, or diclofenac 0.1% 3 times a day for 30 days starting the day before surgery. Postsurgical ocular inflammation was measured after 1, 10, and 30 days using the Kowa FC-1000 laser flare-cell meter and a conventional slitlamp biomicroscope. Safety parameters were evaluated at the same visits. **RESULTS:** Naproxen 0.2% ophthalmic solution and diclofenac 0.01% were comparable in controlling postsurgical inflammation. The naproxen was well tolerated. No serious adverse events occurred during the study. **CONCLUSIONS:** These preliminary results suggest that naproxen ophthalmic solution may be effectively and safely used to control inflammation after uneventful phacoemulsification. Because of the limited number of patients, larger studies are needed to confirm these results.

Papaliadis, G. N., Q. D. Nguyen, et al. (2002). "Intraocular lens tolerance in surgery for cataracta complicata: assessment of four implant materials." Semin Ophthalmol **17**(3-4): 120-123.

PURPOSE: To evaluate various available intraocular lenses (IOL) (PMMA, acrylic, heparin coated PMMA, and silicone) in patients with cataracta complicata and evaluate IOL tolerance, post-operative inflammation, cystoid macular edema, and posterior capsular opacification(PCO) requiring Nd:YAG capsulotomy. **DESIGN:** randomized, double masked clinical trial. **PARTICIPANTS:** Patients evaluated in the Ocular Immunology and Uveitis Service of the Massachusetts Eye and Ear Infirmary and deemed to need cataract surgery by standard criteria were asked to participate in the clinical trial. Patients had to have a diagnosis of chronic uveitis, which was inactive for 3 months prior to cataract surgery. **RESULTS:** Acrylic lenses appeared to provide the best overall results when evaluated for post-operative inflammation, PCO rates, visual acuity, and cystoid macular edema (CME) (compared to PMMA, silicone, and heparin coated PMMA).

Park, U. C., J. K. Ahn, et al. (2006). "Phacotrabeculectomy with mitomycin C in patients with uveitis." Am J Ophthalmol **142**(6): 1005-1012.

PURPOSE: To evaluate the safety and efficacy of combined phacoemulsification, intraocular lens implantation, and trabeculectomy with mitomycin C for the management of uveitic complications. **DESIGN:** Retrospective case-control study. **METHODS:** We conducted a retrospective review of the records of 23 consecutive eyes with chronic noninfectious uveitis (uveitic group) and 43 nonuveitic eyes (control group) that had received primary phacotrabeculectomy. Mitomycin C was used in all the uveitic eyes. Considering the high preoperative intraocular pressure (IOP) of the uveitic group, nonuveitic eyes that had a preoperative IOP of ≥ 20 mm Hg or that had been given two or more medications were included in the control group. All patients were followed for at least one year. The main outcome measures were postoperative vision, IOP control, complications, and acute uveitis relapse rates. **RESULTS:** Visual outcome of the uveitic group was similar to the control group. In the uveitic group, the success rate of IOP control (91.3% at one year, 84.8% at two years) was

favorable but was significantly lower than in the control group ($P = .0423$). Complications were comparable between the groups. Primary surgical failure in the uveitic group was associated with the postoperative acute uveitis attack. In the uveitic group, the acute uveitis attack rate showed no change after surgery ($P = .283$). **CONCLUSION:** With adequate inflammation suppression, phacotrabeculectomy with mitomycin C is an effective and safe therapeutic option for the management of secondary cataract and glaucoma in uveitic eyes. A lower surgical success rate of the uveitic group might be attributable to the postoperative inflammation recurrence.

Petric, I., V. L. Loncar, et al. (2005). "Cataract surgery and intraocular lens implantation in children with juvenile rheumatoid arthritis associated uveitis." Coll Antropol **29 Suppl 1**: 59-62.

Clinical records of 6 children (7 eyes) with juvenile rheumatoid arthritis (JRA) who underwent cataract surgery with IOL implantation between January 1998 and December 2002 were reviewed. The median age at the time of cataract surgery was 8 years (range 5-14 years). The median follow up was 48 months (range 26 to 60 months). Five of six children (6 eyes) were on systemic immunosuppressive or anti-inflammatory therapy. Glaucoma was present in three eyes before surgery, and all three eyes underwent combined cataract surgery and trabeculectomy with mitomycin C. A final best corrected visual acuity of 0.5 or better was achieved in all eyes. Postoperative complications included posterior capsule opacification ($n = 5$), glaucoma ($n = 1$), and cystoid macular edema ($n = 1$). Intraocular lens implantation in children with control of preoperative and postoperative ocular inflammation could lead to favorable visual results.

Petternel, V., O. Findl, et al. (2000). "Effect of tropicamide on aqueous flare before and after cataract surgery." J Cataract Refract Surg **26**(3): 382-385.

PURPOSE: To examine the effect of tropicamide on flare intensity under phakic and pseudophakic conditions and to differentiate between the possible mechanisms of action of tropicamide on aqueous flare. **SETTING:** Department of Ophthalmology, Vienna General Hospital, University of Vienna, Vienna, Austria. **METHODS:** In this prospective study, aqueous flare was measured with the laser flare-cell meter in 20 eyes of 20 patients with age-related cataract enrolled for cataract surgery. Measurements were performed before and 30, 90, and 180 minutes after pupil dilation with tropicamide 0.5%. This measurement was performed in the phakic eye on the day before surgery and in the pseudophakic eye on postoperative days 1, 3, 7, and 28. **RESULTS:** After tropicamide instillation, aqueous flare decreased preoperatively and on all postoperative days. There was a continuous flare decrease until 3 hours after instillation, reaching a maximum decrease of about 30%. Pupil diameter reached its maximum after 30 minutes. **CONCLUSION:** Tropicamide significantly decreased aqueous flare, seemingly by pharmacological means, not volumetric changes. The time between drug application and measurement should be kept constant.

Pradhan, Z. S., P. Jacob, et al. (2011). "Management of bilateral uveitis secondary to intraocular filariasis." Arch Ophthalmol **129**(10): 1378-1379.

Quek, D. T., A. Jap, et al. (2011). "Risk factors for poor visual outcome following cataract surgery in Vogt-Koyanagi-Harada disease." Br J Ophthalmol **95**(11): 1542-1546.

AIM: To determine risk factors for poor visual outcome following cataract surgery in Vogt-Koyanagi-Harada (VKH) disease. METHODS: Retrospective review of all VKH patients who underwent cataract surgery, for demographics, initial corticosteroid dose, treatment outcome, quiescence at time of cataract surgery, perioperative corticosteroid prophylaxis, preoperative best-corrected visual acuity (BCVA), cataract surgery technique, intraocular lens implanted, additional surgical procedures, complications and BCVA at 6 and 12 months postsurgery. RESULTS: 28 of 105 VKH patients (50 eyes) had cataract surgery. The mean age at surgery was 55 +/- 13 years. The mean duration of postoperative follow-up was 89.8 months (range 8-252 months). At 12 months postsurgery, no patients lost more than two lines of their preoperative acuity. Forty-one eyes (82%) improved by two or more Snellen lines. Thirty-four eyes (68%) had a BCVA of 20/40 or better. Sixteen eyes (32%) had a poor visual acuity, nine (18%) from pre-existing macular lesions, two from cystoid macular oedema, one from posterior capsule opacification and four from disease recurrence. Recurrent inflammation was the only significant risk factor for poor visual outcome ($p=0.004$, chi(2) test). CONCLUSION: Recurrent inflammation is a critical poor prognostic factor for cataract surgery in VKH, but with appropriate management, good visual outcomes can be achieved.

Quinones, K., R. A. Cervantes-Castaneda, et al. (2009). "Outcomes of cataract surgery in children with chronic uveitis." J Cataract Refract Surg **35**(4): 725-731.

PURPOSE: To evaluate the outcomes of cataract surgery in children with chronic uveitis. SETTING: Massachusetts Eye Research and Surgery Institution, Boston, Massachusetts, USA. METHODS: This retrospective chart review was of patients younger than 17 years with a history of uveitis who had cataract surgery before June 2004. RESULTS: Thirty-four children (41 eyes) were identified. The mean age of the 10 boys and 24 girls was 9.8 years (range 4 to 17 years) and the mean total follow-up, 4.1 years (range 0.3 to 15.7 years). Twenty-one children had juvenile idiopathic arthritis-associated uveitis, 7 had pars planitis, and 6 had other conditions. Sixteen patients had concomitant posterior segment pathology, 25 received perioperative immunomodulatory therapy, and 13 had intraocular lens (IOL) implantation. The postoperative best corrected visual acuity improved in 35 of 41 eyes; 31 eyes had an improvement of 3.6 lines at 1 year. Most patients (92%) improved after IOL implantation. Most patients (88%) who received immunomodulatory therapy attained better vision, but this was not statistically significant compared with those who did not ($P = .47$). Similarly, there was no statistically significant difference between those with posterior pathology and those without. At the end of the analysis (1 year), the cumulative probability of improvement in visual acuity in 41 eyes reached 0.91. CONCLUSION: In most

cases, and with optimum control of intraocular inflammation, cataract surgery improved the visual outcome in children with chronic uveitis. Intraocular lens implantation was well tolerated in most cases, which may result in optimal vision.

Rahman, I. and N. P. Jones (2005). "Long-term results of cataract extraction with intraocular lens implantation in patients with uveitis." Eye (Lond) **19**(2): 191-197.

OBJECTIVE: To investigate the long-term visual results after cataract extraction in patients with uveitis, and to demonstrate the long-term viability of intraocular lenses. **DESIGN:** In all, 61 patients (72 eyes), with update clinical examination, were retrospectively evaluated. Comparison of preoperative, postoperative, and latest visual function including best-corrected Snellen visual acuity, progression of uveitis and its complications, need for postoperative medical or surgical interventions. **RESULTS:** After a minimum follow-up of 5 years (mean 7 years 7 months), 82% of eyes maintained a visual improvement of two Snellen lines, 74% maintained 6/9 or better, and 14% had 6/18 or worse. The mode acuity was better than 6/6. The prevalence of macular oedema or scarring was 24%, of posterior capsule opacification 96%, and of glaucoma drainage, 15%.

CONCLUSIONS: We report the long-term follow-up of cataract extraction and intraocular lens (IOL) implantation performed by a single surgeon on patients with uveitis attending a regional tertiary referral uveitis clinic. Using stringent perioperative and postoperative control of inflammation, patients with uveitis usually maintain high visual acuity over long-term follow-up. The incidence of sight-threatening postoperative complications is low and no ongoing complication has been attributed to IOL implantation.

Ram, J., A. Gupta, et al. (2010). "Phacoemulsification with intraocular lens implantation in patients with uveitis." J Cataract Refract Surg **36**(8): 1283-1288.

PURPOSE: To evaluate the outcomes of phacoemulsification with intraocular lens (IOL) implantation in eyes with uveitis. **SETTING:** Tertiary care center, Chandigarh, India. **METHODS:** Consecutive patients with uveitis and visually significant cataract were retrospectively studied for outcomes after phacoemulsification and implantation of a poly(methyl methacrylate) (PMMA) or a hydrophobic acrylic IOL. **RESULTS:** The study comprised 108 eyes of 81 patients (50 women, 31 men) with a mean age of 42.3 years +/- 13.98 (SD) (range 18 to 75 years) and a mean follow-up of 21.95 months (range 12 to 66 months). Etiology of uveitis was presumed tuberculosis (n = 24), Vogt-Koyanagi-Harada syndrome (n = 9), Behcet disease (n = 8), sarcoidosis (n = 5), ankylosing spondylitis (n = 4), serpiginous choroiditis (n = 2), and idiopathic (n = 29). The mean corrected distance visual acuity (CDVA) was 1.08 +/- 0.85 logMAR preoperatively and 0.42 +/- 0.78 D logMAR postoperatively; the improvement was statistically significant (P<.001, paired t test); Seventy-seven eyes (71.30%) achieved a CDVA between 0.00 logMAR and 0.30 logMAR (20/20 to 20/40 Snellen). Posterior capsule opacification (PCO) requiring neodymium:YAG capsulotomy occurred in 31 eyes (28.70%); posterior synechias in 27 eyes (25.00%); cystoid macular edema (CME) in 23 eyes (21.30%); recurrent uveitis in 6 eyes (5.55%); and epiretinal membrane formation,

glaucoma, and iris bombe in 5 eyes (4.63%) each. **CONCLUSIONS:** Phacoemulsification with IOL implantation improved vision in most patients with coexisting cataract and uveitis. The main complications affecting visual outcomes were macular involvement, CME, PCO, and glaucoma. **FINANCIAL DISCLOSURE:** No author has a financial or proprietary interest in any material or method mentioned.

Ram, J., S. Kaushik, et al. (2002). "Phacoemulsification in patients with Fuchs' heterochromic uveitis." J Cataract Refract Surg **28**(8): 1372-1378.

PURPOSE: To evaluate the results of phacoemulsification with capsular bag fixation of a poly(methyl methacrylate) (PMMA), acrylic, or silicone intraocular lens (IOL) in patients with complicated cataract resulting from Fuchs' heterochromic uveitis (FHU). **SETTING:** Department of Ophthalmology, Postgraduate Institute of Medical Education and Research, Chandigarh, India. **METHODS:** This study evaluated 20 eyes of 19 patients with FHU and cataract who had uneventful phacoemulsification with endocapsular implantation of an IOL and completed a 1-year follow-up. **RESULTS:** Preoperatively, loss of the iris collarette and fine keratic precipitates were seen in all 20 eyes, iris heterochromia in 16, iris atrophy in 12, and iris nodules in 2. Fourteen eyes had mild or negligible preoperative anterior chamber inflammation. No eye had increased intraocular pressure. An acrylic IOL was implanted in 10 eyes, a silicone IOL in 4, and a PMMA IOL in 6. There were no significant differences in outcomes among the 3 IOL groups. Three patients had intraoperative hyphema that resolved spontaneously. Postoperatively, 16 eyes had mild anterior chamber reaction. Four patients had significant anterior chamber inflammation necessitating the use of frequent topical steroids. No case had secondary glaucoma or posterior synechias. The best corrected visual acuity was 6/5 in 6 eyes, 6/6 in 11, and 6/9 in 3. **CONCLUSIONS:** Uneventful phacoemulsification with endocapsular IOL implantation visually rehabilitated patients with FHU. All 3 IOLs yielded similar results except for increased early postoperative inflammation and late dense anterior capsule opacification in the silicone group. Further studies comparing the outcome of different IOL materials are required to determine their effectiveness in patients with FHU.

Ramos-Esteban, J. C., J. J. Servat, et al. (2007). "Necrotizing nocardial scleritis after combined penetrating keratoplasty and phacoemulsification with intraocular lens implantation: a case report and review of the literature." Arq Bras Oftalmol **70**(2): 355-359.

We report the history and clinical presentation of an 88-year-old female with Fuchs dystrophy who developed an acute anterior necrotizing scleritis in her left eye 23 months after an uncomplicated combined penetrating keratoplasty and phacoemulsification with intraocular lens implantation which progressed to scleral perforation with uveal prolapses. The patient underwent a complete systemic work-up for both autoimmune and infectious causes of scleritis. Surgical specimens of the area of scleral perforation were sent for histology and microbiologic studies. Analysis of surgical specimens revealed the presence of

culture-proven *Nocardia asteroides* as a causative agent for the patient's scleral perforation. Results of her systemic autoimmune work-up were not conclusive. Successful treatment with tectonic scleral reinforcement with donor corneal tissue and preserved pericardium, oral and topical trimethoprim-sulfamethoxazole and topical amikacin salvaged the globe and increased vision. The patient's final best-corrected visual acuity sixteen months after her last operation remains 20/70. Prompt surgical intervention with submission of appropriate specimens for pathological diagnosis and microbiology, along with consultation with rheumatologic and infectious disease specialists, are mandatory to minimize visual loss in cases of suspected infectious necrotizing scleritis.

Rao, S. K., R. W. Law, et al. (2001). "IOL use in children with uveitis-related cataract." J Pediatr Ophthalmol Strabismus **38**(3): 129, 176.

Rathinam, S. R. and N. A. Rao (2006). "Sympathetic ophthalmia following postoperative bacterial endophthalmitis: a clinicopathologic study." Am J Ophthalmol **141**(3): 498-507.
PURPOSE: Clinical and histopathologic documentation of sympathetic ophthalmia (SO) development in eyes with postoperative bacterial endophthalmitis. DESIGN: Observational case series; retrospective clinicopathologic study. METHODS: All patients who presented with a clinical diagnosis of SO during 2002 to 2004 were included in the study. The diagnosis of SO was made on the basis of history of penetrating ocular injury, followed by development of bilateral intraocular inflammation, ultrasonographic detection of bilateral diffuse thickening of the choroid, or both. Patients presenting with the additional finding of hypopyon underwent an anterior chamber tap and vitreous aspirate for microbiologic detection of bacteria and fungi. Eight exciting eyes were enucleated and submitted for histologic examination. RESULTS: Of a total of 26 patients with a clinical diagnosis of SO, four also had bacterial endophthalmitis. Of these, histologic examination of three exciting eyes revealed vitreous abscess and typical features of SO. Of the five remaining enucleated globes, histologic examination showed that two eyes had phacoanaphylactic endophthalmitis, and two others revealed features of SO; the one remaining eye had nongranulomatous diffuse choroiditis. CONCLUSIONS: Bacterial endophthalmitis cannot prevent the development of SO. Early diagnosis of coexistent mixed infectious and inflammatory processes, and initiation of antimicrobial treatment directed at the infection followed by immunomodulatory agents to address the autoimmune component may improve the prognosis in such cases.

Rauz, S., P. Stavrou, et al. (2000). "Evaluation of foldable intraocular lenses in patients with uveitis." Ophthalmology **107**(5): 909-919.

OBJECTIVE: To evaluate various foldable posterior chamber intraocular lenses (IOLs) after phacoemulsification in patients with uveitis. DESIGN: A prospective, noncomparative, interventional case series. PARTICIPANTS: Forty-nine consecutive patients (60 eyes) with various types of uveitis (anterior, n = 20;

posterior, n = 1; panuveitis, n = 37, intermediate, n = 2). INTERVENTION: All patients underwent phacoemulsification with foldable posterior chamber IOL implantation. All eyes were free of active inflammation at the time of surgery. A variety of IOL biomaterials were implanted: acrylic (n = 30), silicone (n = 17), and hydrogel (n = 13). MAIN OUTCOME MEASURES: Detailed examination was performed by one masked observer. Several parameters were compared for each implant biomaterial, including level of best corrected Snellen visual acuity at final follow-up, presence of posterior synechiae, anterior capsular phimosis, posterior capsule opacification, and the degree of cellular deposits on the IOL optic. RESULTS: There were 26 males and 23 females, aged 9 to 83 years (mean, 48 years). Follow-up ranged from 1 to 33 months (mean, 17.03 months). At final follow-up, 56 eyes (93.3%) had an improvement in visual acuity compared with preoperative levels as follows: 34 eyes (56.6%) achieved an improvement of four or more Snellen lines, and 44 eyes (73.3%) achieved 20/30 or better. Giant cells, observed on the IOL optic in 19 eyes (31.7%), were most often seen on the acrylic biomaterial at the 1-month follow-up, although this was not found to be statistically significant. Scratch marks produced by the lens-introducing forceps were seen in 24 eyes (40.0%), mainly on the acrylic and hydrogel optics. Posterior capsule opacification (PCO) occurred in 49 eyes (81.7%), with only 5 eyes requiring laser capsulotomy. There was no association between PCO and the various lens biomaterials. Other causes for reduced visual acuity included glaucomatous optic neuropathy (n = 5) and cystoid macular edema (n = 8). CONCLUSIONS: The use of foldable IOLs in eyes with uveitis is safe, but the optimal biomaterial has yet to be found.

Riedl, M., S. Maca, et al. (2003). "Intraocular ointment after small-incision cataract surgery causing chronic uveitis and secondary glaucoma." J Cataract Refract Surg **29**(5): 1022-1025.

Anterior uveitis and secondary glaucoma resulting from intraocular ointment has not been reported. The advent of small-incision surgery has likely reduced the incidence of this complication to low levels. We report a case of anterior uveitis after small-incision cataract surgery due to an intraocular ointment base. The course of this rare case is described and the literature reviewed.

Roesel, M., C. Heinz, et al. (2008). "Uveal and capsular biocompatibility of two foldable acrylic intraocular lenses in patients with endogenous uveitis--a prospective randomized study." Graefes Arch Clin Exp Ophthalmol **246**(11): 1609-1615.

BACKGROUND: To compare a hydrophobic and a hydrophilic acrylic single-piece intraocular lens (IOL) in uveitis patients with respect to biocompatibility and visual outcome. METHODS: Prospective, randomized study in patients with noninfectious uveitis after phacoemulsification and implantation of either a hydrophobic AcrySof (group 1, n = 30) or a hydrophilic Akreos adapt (group 2, n = 30), sharp-edged acrylic IOL. The primary outcome was uveal biocompatibility, detected by giant-cell deposition, anterior chamber cell count and laserflare photometry over a 6-month follow-up period. Secondary outcome measures were capsular biocompatibility, as detected by posterior capsule

opacification (PCO), lens epithelial cell outgrowth and Nd:YAG capsulotomies, and visual outcome. RESULTS: The groups did not differ with respect to anatomic type of uveitis, immunosuppressive treatment, associated systemic disease, and intraoperative manipulation. The number of giant cells on the anterior IOL surface was higher in group 1 than in group 2 ($p = 0.03$). The number of anterior chamber cells, laser flare photometry levels, and uveitis reactivations after surgery did not differ between the groups. After 6 months, the number of patients with PCO development ($p = 1.0$) and Nd:YAG capsulotomies ($p = 0.21$), lens epithelial cell outgrowth, visual outcome and uveitis complications were comparable in both groups. CONCLUSIONS: Both of the acrylic IOLs used had good uveal and capsular biocompatibility, leading to significant improvement in BCVA in patients with noninfectious uveitis. No obvious differences were detected at 6 months with respect to uveal and capsular biocompatibility and visual outcome.

Roesel, M., C. Heinz, et al. (2008). "Cataract surgery in uveitis." Ophthalmology **115**(8): 1431, 1431 e1431.

Roesel, M., C. Heinz, et al. (2010). "Comparison of orbital floor triamcinolone acetonide and oral prednisolone for cataract surgery management in patients with non-infectious uveitis." Graefes Arch Clin Exp Ophthalmol **248**(5): 715-720.

PURPOSE: To compare orbital floor triamcinolone acetonide and oral prednisolone in cataract surgery in patients with chronic non-infectious uveitis with regard to visual outcome, postoperative inflammation and macular edema. METHODS: Monocentric prospective randomized clinical trial with 40 eyes included. Patients underwent phacoemulsification with intraocular acrylic foldable lens (IOL) implantation. Patients were randomized either to intraoperative orbital floor triamcinolone acetonide (TA) (1 ml = 40 mg) (group 1, $n = 20$), or to 4-week postoperative oral prednisolone (group 2, $n = 20$). Laser flare photometry (LFM), cells in the anterior chamber (AC), best-corrected visual acuity (BCVA), IOL cell deposits, cystoid macular edema (CME) by means of fluorescein angiography, and central foveal thickness (OCT), posterior capsule opacification (PCO), and intraocular pressure (IOP) were analysed during a 6-months period. RESULTS: Mean BCVA postoperatively improved ($p < 0.01$) from logMAR 0.74 and 0.86 to 0.23 and 0.35 in groups 1 and 2 respectively. The number of AC cells, LFM and IOL cell deposits did not differ. Macular edema stayed unchanged in most cases in both groups, and mean foveal thickness (OCT) initially increased postoperatively, but after 6 months it nearly returned to baseline thickness. Differences between the groups were not significant. Up to 12% in group 1 and 28% of group 2 developed IOP elevation over 21 mmHg. CONCLUSIONS: A single intraoperative orbital floor injection of triamcinolone acetonide is as effective on postoperative inflammation, macular edema, and visual outcome as a 4-week course of postoperative oral prednisolone in cataract surgery with IOL implantation in uveitis patients.

Roesel, M., C. Tappeiner, et al. (2009). "Comparison between intravitreal and orbital

floor triamcinolone acetonide after phacoemulsification in patients with endogenous uveitis." Am J Ophthalmol **147**(3): 406-412.

PURPOSE: To compare the effect of intravitreal and orbital floor triamcinolone acetonide (TA) on macular edema, visual outcome, and course of postoperative inflammation after cataract surgery in uveitis patients. **DESIGN:** Prospective, randomized clinical trial. **METHODS:** Monocenter study (40 patients) with chronic endogenous uveitis who underwent phacoemulsification with intraocular lens implantation with either 4 mg intravitreal TA (n = 20) or 40 mg orbital floor TA (n = 20). The primary outcome was influence on cystoid macular edema (CME). Secondary outcome measures were best-corrected visual acuity (BCVA), anterior chamber cell grade, laser flare photometry, giant cell deposition, posterior capsule opacification (PCO), and intraocular pressure. **RESULTS:** Mean central foveal thickness decreased in the intravitreal TA group and increased in the orbital floor TA group ($P < .001$ at one and three months). CME improved in 50% of patients after intravitreal TA, whereas it was unchanged after orbital floor TA (difference between the groups at three months, $P = .049$). Mean BCVA (logarithm of the minimal angle of resolution) improved postoperatively ($P < .001$) from 0.76 and 0.74 to 0.22 and 0.23 in the intravitreal TA and orbital floor TA group, respectively. Anterior chamber cell count at one month was lower in the intravitreal TA than in the orbital floor TA group ($P = .02$). Laser flare photometry values and giant cell numbers were slightly higher after orbital floor TA than after intravitreal TA. The groups did not differ with respect to PCO rate and ocular hypertension. **CONCLUSIONS:** The CME improvement and anti-inflammatory effect after intravitreal TA was better than after orbital floor TA injection in cataract surgery in uveitis patients.

Rumelt, S., C. Stolovich, et al. (2006). "Intraoperative enoxaparin minimizes inflammatory reaction after pediatric cataract surgery." Am J Ophthalmol **141**(3): 433-437.

PURPOSE: To evaluate the effect of intraocular infusion of enoxaparin, a low-molecular-weight heparin, on postoperative inflammatory response in pediatric cataract surgery. **DESIGN:** Prospective, comparative, consecutive interventional case series. **METHODS:** Seventeen consecutive eyes (11 patients) underwent pediatric cataract surgery in two tertiary medical centers. During the procedure, balanced salt solution with enoxaparin (40 mg in 500 ml) was infused into the anterior chamber. Eleven consecutive eyes (eight patients) received balanced salt solution without enoxaparin in the infusion bottle. The inflammatory response in the anterior chamber was compared between the two groups by semiquantification with slit-lamp biomicroscopy. Postoperative inflammatory complications, including fibrin formation, intraocular lens precipitates, anterior and posterior synechiae, cyclitic and pupillary membrane formation, and anterior subluxation of the intraocular lens, were also compared. The follow-up period after surgery was between 3 and 36 months (average 12.3 months). **RESULTS:** The number of cells and the degree of flare were minimal in the group with enoxaparin in the infusion bottle ($P < .001$). The total number of postoperative inflammation-related complications was also lower in the enoxaparin-treated

group ($P = .007$). All corneas remained clear, and the endothelial cell count, which was performed in two patients, did not show substantial decrease in their density or changes in shape and size. No other enoxaparin-related complications were observed. **CONCLUSIONS:** Infusion of enoxaparin during pediatric cataract surgery may minimize the postoperative inflammatory response and decrease the number of postoperative inflammatory related complications. Enoxaparin should also be evaluated for cataract surgery in other conditions where postoperative inflammation may be exacerbated.

Russo, P., V. Papa, et al. (2005). "Topical nonsteroidal anti-inflammatory drugs in uncomplicated cataract surgery: effect of sodium naproxen." Eur J Ophthalmol **15**(5): 598-606.

PURPOSE: To investigate whether topical nonsteroidal antiinflammatory drugs (NSAIDs) are useful, in the absence of concomitant corticosteroid therapy, in limiting postoperative inflammation after uncomplicated cataract surgery. **METHODS:** A total of 328 patients were enrolled in a prospective, randomized, double-masked, parallel-group, active-controlled study. Anterior chamber inflammation (ACI) was evaluated as the primary efficacy parameter. Only patients with moderate inflammation (ACI score of $< \text{or} = 4$) the day after surgery were randomized and treated with NSAIDs. A novel topical formulation containing 0.2% sodium naproxen was compared with 0.1% diclofenac. Both were administered three times a day for 14 consecutive days. Ocular inflammation was measured after 7 and 14 days by using slit-lamp biomicroscopy. Safety parameters were also evaluated at the same time. **RESULTS:** Both treatments were equally effective in controlling postsurgical inflammation. No statistically significant differences between treatment groups were observed for the safety variables. No serious adverse events (AEs) occurred during the course of the study. The most frequent AE reported with naproxen was eye redness. **CONCLUSIONS:** NSAIDs can effectively be used without concurrent administration of corticosteroids to control postoperative inflammation after uncomplicated cataract surgery. In addition, naproxen ophthalmic solution may be considered a suitable alternative to the currently available NSAIDs.

Saari, J. M. and K. Nummelin (2005). "Iris atrophy, serous detachment of the ciliary body, and ocular hypotony in chronic phase of Vogt-Koyanagi-Harada disease." Eur J Ophthalmol **15**(2): 277-283.

PURPOSE: To describe iris atrophy, serous detachment of the ciliary body, and ocular hypotony in a patient with chronic phase of Vogt-Koyanagi-Harada (VKH) disease. **METHODS:** Ocular examination and follow-up including digital infrared transillumination imaging of the iris was done in a 52-year-old woman with chronic phase of VKH disease. **RESULTS:** Infrared transillumination imaging showed extensive atrophy of the iris stroma and occasional pigment clumps both in the pupillary and ciliary zones of the iris, and detachment of the ciliary body in both eyes. Conventional transpupillary transillumination using white light showed only minute patchy atrophy of the pigment epithelium in the pupillary zone.

Treatment did not normalize bilateral shallow retinal detachment of the posterior pole, serous detachment of the ciliary body, or severe ocular hypotony.

CONCLUSIONS: Severe atrophy of the iris stroma, retinal detachment of the posterior pole, serous detachment of the ciliary body, and ocular hypotony may occur in chronic phase of VKH disease.

Saari, K. M., L. Nelimarkka, et al. (2006). "Comparison of topical 0.7% dexamethasone-cyclodextrin with 0.1% dexamethasone sodium phosphate for postcataract inflammation." Graefes Arch Clin Exp Ophthalmol **244**(5): 620-626.

BACKGROUND: To compare 0.7% dexamethasone-cyclodextrin aqueous eye drop solution applied once daily with 0.1% dexamethasone sodium phosphate eye drops applied three times a day for the control of postoperative inflammation after cataract surgery. METHODS: Twenty cataract patients who underwent phacoemulsification and intraocular lens implantation were randomly divided into two postoperative treatment groups. Postoperative medication in group I included 0.1% dexamethasone sodium phosphate eye drops three times daily and in group II 0.7% dexamethasone-cyclodextrin eye drop solution once daily. Testing of visual acuity, biomicroscopic examination, applanation tonometry and laser flare cell meter (LFCM) examination were carried out before operation and days 1, 3, 7 and 21 after surgery. RESULTS: Preoperative and postoperative visual acuity, aqueous flare and cells in biomicroscopic examination, and the mean intraocular pressure did not show any statistically significant differences between the treatment groups. LFCM examination showed that the mean postoperative photon count values ($P=0.032$) and the median cell count values on the 1st ($P=0.014$), 3rd ($P=0.031$), 7th ($P=0.034$), and 21st ($P=0.0097$) postoperative days in group I were more elevated than in group II. CONCLUSIONS: 0.7% dexamethasone-cyclodextrin eye drops applied once daily is a more effective postoperative anti-inflammatory medication than 0.1% dexamethasone sodium phosphate applied three times a day. In both groups, 3 weeks after the operation the mean visual acuity was normal and intraocular pressure significantly lower than before operation. The use of 0.7% dexamethasone-cyclodextrin eye drops may be useful especially in elderly people who cannot apply themselves the eye drops onto the eye.

Sakai, T., A. Kanetaka, et al. (2010). "Intraocular surgery in patients receiving infliximab therapy for Behcet disease." Jpn J Ophthalmol **54**(4): 360-361.

Samanta, T. K. (2004). "Late recurrent uveitis after phacoemulsification." Indian J Ophthalmol **52**(4): 347; author reply 347.

Sandoval, H. P., L. E. De Castro, et al. (2006). "Evaluation of 0.4% ketorolac tromethamine ophthalmic solution versus 0.5% ketorolac tromethamine ophthalmic solution after phacoemulsification and intraocular lens implantation." J Ocul Pharmacol Ther **22**(4): 251-257.

PURPOSE: The aim of this study was to compare the effectiveness and patient tolerance of 0.4% ketorolac tromethamine ophthalmic solution and 0.5%

ketorolac tromethamine ophthalmic solution after routine phacoemulsification and lens implantation. Setting: The setting for this study was the Storm Eye Institute and Magill Research Center for Vision Correction, Medical University of South Carolina (Charleston, SC). METHODS: This work was a prospective, double-masked study that included 40 eyes of 40 patients randomly assigned to receive topical treatment with 0.4% ketorolac or 0.5% ketorolac, starting 15 min prior to routine phacoemulsification and foldable posterior chamber intraocular lens implantation. Following the procedure, patients were instructed to use the assigned treatment agent 4 times a day after surgery for 1 week and twice a day for 3 weeks, when drops were discontinued. Slit-lamp examination, intraocular pressure (IOP), laser cell and flare measurements, and subjective patient tolerance were evaluated postoperatively at 1, 7, and 30 d. Comparisons between the 2 groups were made at each visit, as well as comparisons to baseline. A P-value less than .05 was considered statistically significant. RESULTS: At day 1, a higher percentage of patients (70% vs. 40%) reported symptoms (mainly foreign body sensation and stinging/burning) in the 0.5% ketorolac group, compared to the 0.4% ketorolac group. No significant differences were found between the 2 groups over time regarding best-corrected visual acuity (BCVA), IOP, slit-lamp assessment of cells, and cell and flare measured using the laser cell/flare meter. CONCLUSIONS: Treatment with 0.4% ketorolac tromethamine ophthalmic solution is as effective as 0.5% ketorolac tromethamine ophthalmic solution in reducing inflammation after routine cataract surgery. Patients reported less discomfort using 0.4% ketorolac.

Sanghvi, C., K. Mercieca, et al. (2010). "Very severe HLA B27-associated panuveitis mimicking endophthalmitis: a case series." Ocul Immunol Inflamm **18**(2): 139-141. PURPOSE: To report rare but important instances of very severe, hyperacute HLA B27-associated panuveitis, mimicking infective endophthalmitis and providing challenges to both diagnosis and management. DESIGN: Retrospective case review. METHODS: Four patient records were reviewed. Demographic features, clinical findings, course of uveitis, diagnostic/therapeutic measures, and outcomes are reported. RESULTS: All cases presented with severe panuveitis with visual acuities below 6/60 and poor fundal views. Three patients underwent intraocular fluid sampling for microbiology. All required systemic high-dose corticosteroid treatment, and two also needed oral immunosuppression. All eventually required cataract extraction. Final visual acuity varied from 6/12 to 6/6. CONCLUSIONS: HLA B27-associated uveitis may be unusually severe and may cause a panuveitis, mimicking infective endophthalmitis. The course may be prolonged and difficult with frequent complications including cataract.

Saraf, P. K. (2004). "Late recurrent uveitis after phacoemulsification." Indian J Ophthalmol **52**(2): 158-159.

It is now assumed that recurrent late onset uveitis after phacoemulsification with intraocular lens (IOL) is due to indolent infection. Fifteen such cases were observed after uncomplicated phacoemulsification with-in-the-bag IOL implant.

These cases were considered noninfective and treated medically with good visual recovery.

Schauersberger, J., M. Amon, et al. (2001). "Comparison of the biocompatibility of 2 foldable intraocular lenses with sharp optic edges." J Cataract Refract Surg **27**(10): 1579-1585.

PURPOSE: To compare the clinical performance of 2 foldable intraocular lenses (IOLs) with sharp optic edges in terms of uveal and capsular biocompatibility. **SETTING:** Department of Ophthalmology, University Hospital of Vienna, Vienna, Austria. **METHODS:** Fifty eyes scheduled for cataract surgery were included in this comparative study. A standardized surgical protocol was used, and all operations were performed by 1 experienced surgeon. Two posterior chamber lens types of similar design with a 6.0 mm sharp-edged optic and poly(methyl methacrylate) haptics were used. Twenty-five eyes received an AcrySof acrylic IOL (Alcon), and 25 eyes received a CeeOn 911A silicone IOL (Pharmacia). Relevant data were collected at a 3-year follow-up examination. To evaluate uveal biocompatibility, anterior chamber laser flare and cell measurements and inflammatory cell reactions were monitored. Cellular biocompatibility was investigated by examining anterior capsule opacification (ACO), posterior capsule opacification (PCO), and lens epithelial cell (LEC) ongrowth on the IOL's anterior surface. Factors such as intralenticular glistenings and IOL decentration were also evaluated. **RESULTS:** Anterior chamber flare and cells and the inflammatory cell reaction were significantly lower in the CeeOn 911A group. There was no statistically significant difference in ACO, PCO, and LEC ongrowth between the 2 groups. The AcrySof lenses showed significantly better centration and a higher density of intralenticular glistening. **CONCLUSIONS:** The findings show that a sharp-edged optic design is, to date, the most effective method of reducing the rate of PCO. Despite a subclinical foreign-body reaction in the AcrySof group, both lenses had a high degree of capsular and uveal biocompatibility.

Scott, R. A., P. M. Sullivan, et al. (2001). "The effect of pars plana vitrectomy in the management of Fuchs heterochromic cyclitis." Retina **21**(4): 312-316.

PURPOSE: Fuchs heterochromic cyclitis (FHC) is characterized by a unilateral chronic iridocyclitis of insidious onset and uncertain cause. Our aim was to evaluate the effect of vitreous surgery in patients with FHC and clinically significant visual symptoms caused by inflammatory vitreous debris. **METHODS:** This study was a review of 12 eyes of 12 consecutive patients with FHC who underwent pars plana vitrectomy for visually significant vitreous opacities. Cataract extraction with posterior chamber lens implantation had been performed on four eyes preoperatively. Four eyes had a concomitant lensectomy for cataracts, and one had a surgical posterior capsulotomy. Visual and anatomic data were recorded before surgery and for at least 6 months after surgery. **RESULTS:** Visual acuity improved in all patients from an average logMAR of 0.57 to 0.007 ($P = 0.0004$) and by more than 2 Snellen lines in 8 of 12 of the eyes ($P < 0.05$). Symptoms of floaters resolved in all 11 patients in whom they

were a symptom. Vitreous haze was cleared completely from an average Nussenblatt grade of 1.7 to 0 after 1 week ($P = 0.0001$). CONCLUSIONS: Pars plana vitrectomy is a safe and effective treatment for the visual symptoms associated with FHC and can be combined safely with a lensectomy if required.

Scuderi, B., G. B. Driussi, et al. (2003). "Effectiveness and tolerance of piroxicam 0.5% and diclofenac sodium 0.1% in controlling inflammation after cataract surgery." Eur J Ophthalmol **13**(6): 536-540.

PURPOSE: To compare the efficacy and tolerance of piroxicam 0.5% ophthalmic solution and diclofenac sodium 0.1% ophthalmic solution in controlling inflammation after phacoemulsification and intraocular lens (IOL) implantation. **SETTING:** Ophthalmological Department, San Dona di Piave Hospital, Venice, Italy. **MATERIALS AND METHODS:** Forty consecutive patients--18 men and 22 women--between 55 and 85 years of age (mean age, 75.1 +/- 7.12 years) who were scheduled for cataract extraction with phacoemulsification and IOL implantation were randomized to receive 0.5% piroxicam ophthalmic solution (piroxicam group, 20 patients) or 0.1% diclofenac sodium ophthalmic solution (diclofenac group, 20 patients) for 1 month postoperatively. Best-corrected visual acuity (BCVA) and intraocular pressure (IOP) measurements and slit-lamp biomicroscopy for the evaluation of corneal edema, Descemet membrane folds, Tyndall, and cells in the anterior chamber were carried out in all patients 1 day, 4 days, and 1 month postoperatively. Subjective symptoms after the nonsteroidal anti-inflammatory drug (NSAID) ophthalmic solution instillation were assessed using a questionnaire. **RESULTS:** There were no significant differences between the two groups in postoperative IOP, BCVA, anterior chamber flare and cell levels, corneal edema, or Descemet membrane folds. Ocular discomfort, evaluated as burning or stinging sensation after NSAID ophthalmic solution instillation, was significantly more frequent and intense in the diclofenac-treated eyes. Two eyes in the diclofenac group had a mild transient punctate keratitis. **CONCLUSIONS:** These results suggest that piroxicam is as effective as diclofenac sodium in preventing inflammation after cataract surgery with IOL implantation, and its better tolerance and safety can provide higher patient compliance.

Secchi, A. G. (2008). "Cataract surgery in exudative uveitis: effectiveness of total lens removal, anterior vitrectomy, and scleral fixation of PC IOLs." Eur J Ophthalmol **18**(2): 220-225.

PURPOSE: Cataract surgery in exudative uveitis is often followed by severe complications (pupillary seclusion/occlusion, dense posterior capsule/anterior vitreous opacification, cystoid macular edema following repeat YAG laser procedures) which often drastically limit functional recovery. Total removal of cataract, anterior vitrectomy, and scleral fixation of a posterior chamber (PC) intraocular lens (IOL) has been tried as a surgical alternative, searching for lessened postsurgical complications and a better outcome. **METHODS:** Group A was a cohort of 12 patients with cataract after exudative (mostly sarcoidosis and Vogt-Koyanagi-Harada) uveitis, subjected to intracapsular cataract extraction,

anterior vitrectomy, and scleral fixation of PC IOLs. Group B was the control group, including 12 patients with a similar clinical condition subjected to phacoemulsification or extracapsular cataract extraction plus in-the-bag or in-the-sulcus IOL implantation. Follow-up time for both groups was at least 7 years. RESULTS: Postoperative inflammatory signs were substantially less in Group A patients, from 2 days up to >7 years postsurgery. Group A patients showed no cells/exudates adhering to the IOL surfaces, no synechiae, minimal (as compared to Group B) vitreous opacifications, and significantly higher visual acuity ($p=0.024$ at the seventh year control). Group A patients reported less frequent relapses of uveitis postsurgery, but the relevant clinical data did not allow statistical evaluations. CONCLUSIONS: Total removal of cataract in highly exudative uveitic eyes, plus anterior vitrectomy and scleral fixation of PC IOLs, although technically a more demanding surgical procedure, proved to be safe and more effective than classical procedures.

Shingleton, B. J., C. A. Campbell, et al. (2006). "Effects of pupil stretch technique during phacoemulsification on postoperative vision, intraocular pressure, and inflammation." J Cataract Refract Surg **32**(7): 1142-1145.

PURPOSE: To determine whether pupil stretch during phacoemulsification affects postoperative best corrected visual acuity (BCVA), intraocular pressure (IOP), and inflammation compared with results in patients without pupil stretch. METHODS: A retrospective analysis of 115 eyes that had pupil stretch during phacoemulsification (study group) and 125 eyes without pupil stretch (control group) was performed with a minimum of 12 months follow-up. Single-factor analysis of variance and 2-tailed homoscedastic t tests were used for statistical analysis. RESULTS: The mean preoperative logMAR equivalent BCVA was 0.5 ± 0.3 (SD) in the study group and 0.6 ± 0.4 in the control group. The mean preoperative IOP was 16.2 ± 4.1 mm Hg in the study group and 16.0 ± 3.5 mm Hg (control group). There was no statistically significant difference at postoperative follow-up of 1 year in BCVA or IOP between the 2 groups (1 year BCVA 0.2 ± 0.2 [study group], 0.2 ± 0.2 [control group] [$P<.1$]; IOP 14.5 ± 3.5 mm Hg and 14.7 ± 3.3 mm Hg, respectively [$P<.7$]). There was no significant difference in the number of glaucoma medications required for glaucoma patients preoperatively and postoperatively between the 2 groups ($P<.5$). Complications were rare, and there was no significant difference in the complications (ie, iritis, hyphema, cystoid macular edema, epiretinal membrane formation) between the 2 groups at 1 year. CONCLUSION: Pupil stretch during phacoemulsification was not associated with a statistically significant difference in BCVA, IOP, inflammation, or other complications postoperatively compared with results in the control group without pupil stretch.

Sijssens, K. M., L. I. Los, et al. (2010). "Long-term ocular complications in aphakic versus pseudophakic eyes of children with juvenile idiopathic arthritis-associated uveitis." Br J Ophthalmol **94**(9): 1145-1149.

AIM: To evaluate the long-term follow-up of aphakic and pseudophakic eyes of children with juvenile idiopathic arthritis (JIA)-associated uveitis with a special

interest in whether intraocular lens implantation increases the risk of developing ocular complications. **METHODS:** Data were obtained from the medical records of 29 children (48 eyes) with JIA-associated uveitis operated on for cataract before the age of 16 years from January 1990 up to and including March 2007. Main outcome measures were long-term postsurgical complications and visual acuity in aphakic and pseudophakic eyes of children with JIA-associated uveitis. **RESULTS:** The number of complications after cataract extraction including new onset of ocular hypertension and secondary glaucoma, cystoid macular oedema and optic disc swelling did not differ between aphakic and pseudophakic eyes. Moreover, no hypotony, perilenticular membranes and phthisis were encountered in the pseudophakic group. Better visual acuity was observed in the pseudophakic eyes up to and including 7 years of follow-up ($p=0.012$ at 7 years of follow-up). No differences in the preoperative or adjuvant perioperative treatment with periocular or systemic corticosteroids were found between the two groups; however, significantly more children were treated with methotrexate in the pseudophakic group ($p=0.006$). **CONCLUSION:** With maximum control of perioperative inflammation and intensive follow-up, the implantation of an intraocular lens in well-selected eyes of children with JIA-associated uveitis is not associated with an increased risk of ocular hypertension, secondary glaucoma, cystoid macular oedema and optic disc swelling and showed better visual results up to and including 7 years after cataract extraction.

Snyder, M. E. (2000). "Cataract surgery with ciliary sulcus fixation of intraocular lenses in patients with uveitis." *Am J Ophthalmol* **130**(2): 257-258.

Soheilian, M., S. A. Mirdehghan, et al. (2008). "Sutureless combined 25-gauge vitrectomy, phacoemulsification, and posterior chamber intraocular lens implantation for management of uveitic cataract associated with posterior segment disease." *Retina* **28**(7): 941-946.

PURPOSE: To report visual outcomes and complication rates associated with one-stage surgery for the management of uveitic cataract associated with posterior segment disease. **METHODS:** In this interventional case series, 19 eyes (19 patients) with posterior segment involvement due to chronic uveitis underwent sutureless scleral tunnel incision phacoemulsification combined with total vitrectomy using 25-gauge instruments and posterior chamber intraocular lens (PC-IOL) implantation. Membrane peeling and endolaser photocoagulation were performed when indicated. Outcome measures were visual acuity, inflammatory activity, macular edema, and complications of surgery. **RESULTS:** After a minimum 12-month follow-up, visual acuity was $\geq 20/100$ in 12 eyes (63.2%); 6 eyes (31.6%) had visual acuity of $\geq 20/40$. A decrease in postoperative inflammatory activity of 1 grade was observed in 8 eyes (42.1%). Sixteen eyes had cystoid macular edema before surgery; and 12 eyes had cystoid macular edema after surgery. Early postoperative complications included the following: transient corneal edema, 10 eyes (50.3%); fibrin reaction, 3 eyes (15.8%), and posterior synechiae, 9 eyes (47.3%). Glaucoma was the most common late postoperative complication (3 eyes [18.8%]). Nine eyes (47.4%)

needed YAG laser capsulotomy during the first year. CONCLUSION: Sutureless combined 25-gauge total vitrectomy, phacoemulsification, and PC-IOL implantation may be well tolerated with an acceptable complication rate for selected uveitic eyes with significant cataract and coexisting posterior segment disease for restoring useful vision.

Solomon, K. D., J. K. Cheetham, et al. (2001). "Topical ketorolac tromethamine 0.5% ophthalmic solution in ocular inflammation after cataract surgery." Ophthalmology **108**(2): 331-337.

PURPOSE: To compare the efficacy and safety of ketorolac 0.5% ophthalmic solution with its vehicle in the treatment of ocular inflammation after cataract surgery and intraocular lens implantation. DESIGN: Multicenter clinical study. PARTICIPANTS: One hundred four patients were prospectively randomized, 52 patients in treatment group, 52 patients in control group. METHODS: Patients received either ketorolac or vehicle four times daily in the operated eye for 14 days starting the day after surgery in a prospective, double-masked, randomized, parallel group study. Only patients with moderate or greater postoperative inflammation the day after surgery were enrolled. MAIN OUTCOME MEASURES: The main outcome measures include inflammation (cell, flare, ciliary flush), intraocular pressure and visual acuity. RESULTS: Ketorolac was significantly more effective than vehicle in reducing the manifestations of postoperative ocular inflammation, including: anterior chamber cells (P: = 0.002) and flare (P: = 0.009), conjunctival erythema (P: = 0.010), ciliary flush (P: = 0.022), photophobia (P: = 0.027), and pain (P: = 0.043). Five times as many patients were dropped from the study for lack of efficacy from the vehicle group (22/52) than from the ketorolac group (4/52; P: = 0.001). Ketorolac was found to be equally as safe as vehicle in terms of adverse events, changes in visual acuity, intraocular pressure, and biomicroscopic and ophthalmoscopic variables. CONCLUSIONS: Ketorolac tromethamine 0.5% ophthalmic solution was significantly more effective than vehicle in the treatment of moderate or greater ocular inflammation following routine cataract surgery, while being as safe as vehicle.

Solomon, K. D., D. T. Vroman, et al. (2001). "Comparison of ketorolac tromethamine 0.5% and rimexolone 1% to control inflammation after cataract extraction. Prospective randomized double-masked study." J Cataract Refract Surg **27**(8): 1232-1237.

PURPOSE: To compare the efficacy of a topical nonsteroidal anti-inflammatory agent (ketorolac tromethamine 0.5%) with that of a topical steroid (rimexolone 1%) to control inflammation after cataract surgery. SETTING: Storm Eye Institute, Department of Ophthalmology, Medical University of South Carolina, Charleston, South Carolina, USA. METHODS: Thirty-six patients were prospectively and randomly assigned to receive topical treatment with either ketorolac tromethamine 0.5% or rimexolone 1% starting the day after routine cataract extraction. Treatment was masked to both patient and investigator. Each patient had uneventful small incision phacoemulsification with placement of a foldable posterior chamber intraocular lens. Patients used 1 of the 2

antiinflammatory agents 4 times each day starting 24 hours after surgery. No antiinflammatory medications were used preoperatively, intraoperatively, or for 24 hours postoperatively. Signs and symptoms of inflammation, intraocular pressure (IOP), and Kowa cell and flare measurements were evaluated 1, 4, 7, and 30 days postoperatively. RESULTS: There was no statistically significant difference in any measurement of postoperative inflammation between the 2 groups. There was no difference in objective or subjective cell and flare measurements. In addition, there was no difference in IOP measurements between groups. CONCLUSIONS: Ketorolac tromethamine 0.5% was as effective as rimexolone 1% in reducing inflammation after cataract surgery. These results suggest that ketorolac tromethamine 0.5% is a safe and effective antiinflammatory alternative to steroids after cataract extraction.

Spirn, M. J., G. B. Hubbard, et al. (2006). "Ophthalmomyiasis associated with Fuchs heterochromic iridocyclitis." Retina **26**(8): 973-974.

Stifter, E., R. Menapace, et al. (2009). "Effect of primary posterior continuous curvilinear capsulorhexis with and without posterior optic buttonholing on postoperative anterior chamber flare." J Cataract Refract Surg **35**(3): 480-484.

PURPOSE: To evaluate the effect of primary posterior continuous curvilinear capsulorhexis (PCCC) with and without posterior optic buttonholing (POBH) on the anterior chamber reaction after small-incision cataract surgery. SETTING: Department of Ophthalmology, Medical University of Vienna, Vienna, Austria. METHODS: Consecutive patients with age-related cataract having cataract surgery in both eyes under topical anesthesia were prospectively enrolled in a randomized clinical trial. In randomized order, cataract surgery with combined primary PCCC and POBH was performed in 1 eye; in the other eye, cataract surgery was performed with primary PCCC and in-the-bag implantation of an intraocular lens. Intraocular flare was measured with an FC-1000 laser flare-cell meter preoperatively and postoperatively at 1, 4 to 6, and 24 hours, 1 week, and 1 month. RESULTS: Thirty patients (60 eyes) were evaluated. The peak of intraocular flare was 1 hour postoperatively in all study eyes. In both groups, the response steadily decreased thereafter. Anterior chamber flare was statistically significantly higher in eyes with primary PCCC without POBH than in eyes with combined primary PCCC-POBH at all postoperative testing points ($P < .001$), including at 1 month ($P = .01$). CONCLUSIONS: Cataract surgery with combined primary PCCC-POBH led to significantly lower postoperative anterior chamber reaction than conventional in-the-bag implantation during a 4-week follow-up. The tight capsule-optic diaphragm effectively prevented the ophthalmic viscosurgical device captured behind the optic from entering the anterior chamber postoperatively.

Stifter, E., R. Menapace, et al. (2007). "Objective assessment of intraocular flare after cataract surgery with combined primary posterior capsulorhexis and posterior optic buttonholing in adults." Br J Ophthalmol **91**(11): 1481-1484.

AIM: Combining primary posterior capsulorhexis (PPC) and posterior optic

buttonholing (POBH) in cataract surgery is an innovative approach to prevent after-cataract formation effectively and to increase postoperative stability of the intraocular lens (IOL). The present study was designed to compare the postoperative intraocular flare after cataract surgery with combined PPC and POBH to conventional in-the-bag implantation of the IOL. **METHODS:** Fifty consecutive age-related cataract patients with cataract surgery under topical anaesthesia in both eyes were enrolled prospectively into a prospective, randomised clinical trial. In randomised order, cataract surgery with combined PPC and POBH was performed in one eye; in the other eye cataract surgery was performed conventionally with in-the-bag IOL implantation keeping the posterior lens capsule intact. Intraocular flare was measured 1, 2, 4, 6, 12 and 24 h postoperatively, as well as 1 week and 1 month postoperatively, using a KOWA FC-1000 laser flare cell meter. **RESULTS:** The peak of intraocular flare was observed in POBH eyes and eyes with in-the-bag IOL implantation 1 h postoperatively. In both groups, the response was steadily decreasing thereafter. During measurements at day 1, small though statistically significant higher flare measurements were observed in eyes with in-the-bag IOL implantation ($p < 0.05$). At 1 week and 1 month postoperatively, intraocular flare measurements were comparable again ($p > 0.05$). **CONCLUSION:** Cataract surgery with combined PPC/POBH showed slightly lower postoperative anterior chamber reaction compared to conventional in-the-bag implantation during 4-week follow-up, indicating that POBH might trigger somewhat less inflammatory response. This could be explained by the posterior capsule sandwiching between the optic and the anterior capsule, preventing direct contact-mediated myofibroblastic trans-differentiation of anterior lens epithelial cells with consecutive cytokine depletion.

Stock, G., C. Ahlers, et al. (2011). "Evaluation of anterior-segment inflammation and retinal thickness change following cataract surgery." *Acta Ophthalmol* **89**(4): 369-375. **PURPOSE:** To investigate the physiological retinal response to uneventful cataract surgery using conventional time-domain (TD-OCT) and current spectral-domain optical coherence tomography (SD-OCT) in combination with an assessment of the anterior chamber inflammatory reaction by laser flare/cell meter (LCFM). **METHODS:** Thirty-four patients scheduled for cataract surgery were included in this prospective pilot study. Retinal parameters were examined according to a standardized examination procedure using TD-OCT (Stratus; Carl Zeiss Meditec, Dublin, California, USA) and SD-OCT (Cirrus; Carl Zeiss Meditec) devices. The inflammatory reaction of the anterior chamber was measured by LCFM (Kowa FC-1000, Kowa Co. Ltd, Tokyo, Japan). Examinations were carried out preoperatively and at day 2, week 1 and week 4 postoperatively. **RESULTS:** A slight decrease of central retinal thickness values was identified at day 2 postoperatively followed by an increase of these parameters at week 4. LCFM showed peak values in all patients at day 2 postoperatively with a constant decrease at the following visits. No visible pathological retinal changes were seen after surgery. **CONCLUSION:** A biphasic retinal response after surgery could be shown with SD-OCT and TD-OCT technology. By using the advantages

of rasterscanning mode, SD-OCT technology is superior to TD-OCT imaging in the investigation of the physiological retinal response to cataract surgery.

Stone, D. U., D. H. Char, et al. (2006). "Metaplastic squamous epithelial downgrowth after clear corneal cataract surgery." Am J Ophthalmol **142**(4): 695-697.

PURPOSE: To report a case of metaplastic squamous epithelial downgrowth after cataract surgery. DESIGN: Interventional case report. METHODS: Clinical, laboratory, and histologic findings are presented. Our study is in compliance with institutional review board guidelines. RESULTS: A 76-year-old man developed anterior chamber inflammation five months after uncomplicated clear corneal cataract surgery. Despite antimicrobial and anti-inflammatory therapies, the inflammation persisted. An extensive examination failed to demonstrate an infectious etiology or lymphoma. Subsequently, the patient developed an incipient limbal lesion and iris mass. Immunostaining of a biopsy specimen from the iris mass indicated an epithelial-derived tumor. The prephthical and painful eye was enucleated; histopathology of the globe revealed a contiguous lesion extending from the limbal mass to the iris tumor through the surgical incision site, a finding consistent with metaplastic squamous epithelial downgrowth. Systemic evaluation was negative. CONCLUSIONS: After intraocular surgery, metaplastic epithelial downgrowth may occur as a consequence of occult ocular surface squamous neoplasia and masquerade as chronic inflammation; clinicians should be aware of this rare complication.

Struck, H. G. and A. Bariszlovich (2001). "Comparison of 0.1% dexamethasone phosphate eye gel (Dexagel) and 1% prednisolone acetate eye suspension in the treatment of post-operative inflammation after cataract surgery." Graefes Arch Clin Exp Ophthalmol **239**(10): 737-742.

A prospective, multi-centre, clinical parallel group study was conducted to assess the efficacy and safety of a new 0.1% dexamethasone phosphate eye gel (Group 1, n= 117) compared to 1% prednisolone acetate eye suspension (Group 2, n=119) in a total of 236 patients (safety population), aged 39-92 years, following cataract surgery. Both drugs were given four times a day for 14 days starting 24 \pm 4 h after surgery. Criteria for evaluation were the reduction in anterior chamber flare and inflammation severity score (primary efficacy criteria) as well as different secondary efficacy and safety evaluation criteria. Laser photometry (LFM-500, Kowa), slit lamp assessment and the examination of other objective and subjective symptoms of ocular discomfort were performed between the last preoperative and 14th post-operative day. There were no statistically significant differences between the treatment groups concerning primary and secondary efficacy criteria. The mean reduction in anterior chamber flare from day 1 to day 14 post-operatively was 8.34 \pm 20.80 photons/ms with 0.1% dexamethasone eye gel and 5.72 \pm 16.70 photons/ms with 1% prednisolone eye suspension. The mean reduction of inflammation severity score was 1.8 \pm 1.3 points in Group 1 and 2.0 \pm 1.1 points in Group 2. Intra-ocular pressure did not increase after treatment with 0.1% dexamethasone phosphate eye gel. CONCLUSION: the results of the study underline the protective effect of topically applied 0.1%

dexamethasone phosphate eye gel on the blood-aqueous barrier. This drug is an effective and safe steroidal antiinflammatory agent for topical use following cataract surgery and intraocular lens implantation.

Sullu, Y., I. Oge, et al. (2000). "The results of cataract extraction and intraocular lens implantation in patients with Behcet's disease." Acta Ophthalmol Scand **78**(6): 680-683.

PURPOSE: To evaluate the results of extracapsular cataract extraction (ECCE) and intraocular lens (IOL) implantation in patients with Behcet's disease.

METHODS: Retrospective study was based on 19 uveitic eyes of 12 patients with Behcet's disease who underwent classic ECCE with IOL implantation in 5 eyes and phacoemulsification with IOL implantation in 14 eyes between 1993-1999. RESULTS: In eyes with Behcet's uveitis 0.5 or better postoperative visual acuity was found in 21% at the end of mean 34.2-4.6 (range 5 to 66) months follow-up. The most frequent postoperative complications were posterior capsule opacification in 9 (47%), posterior synechiae in 5 (26%), anterior synechiae in 3 (16%). Anterior and posterior synechiae in the phacoemulsification group were less than those in the ECCE group (respectively $p < 0.05$ and $p < 0.01$). CONCLUSIONS: In eyes with chronic Behcet's uveitis, cataract extraction and IOL implantation by phacoemulsification had fewer postoperative complication than ECCE, but most of the patients had low visual acuity due to preoperatively existing optic atrophy and/or inflammatory degeneration or edema of macula.

Tan, D. T., S. P. Chee, et al. (2001). "Randomized clinical trial of Surodex steroid drug delivery system for cataract surgery: anterior versus posterior placement of two Surodex in the eye." Ophthalmology **108**(12): 2172-2181.

OBJECTIVE: To evaluate safety and antiinflammatory efficacy of placing two Surodex (Oculex Pharmaceuticals, Inc., Sunnyvale, CA) in the eye after cataract surgery in comparison with steroid eyedrops and to compare anterior versus posterior chamber placement. DESIGN: Randomized, masked, controlled trial. PARTICIPANTS: One hundred four eyes of 104 Asian patients undergoing extracapsular cataract extraction with intraocular lens implantation were examined. Of these, 33 eyes of 33 patients served as control eyes (group A). INTERVENTION: Two Surodex pellets were inserted in the anterior chamber (AC) of 35 eyes (group B), and two Surodex pellets were inserted in the ciliary sulcus of 36 eyes (group C) at the conclusion of surgery. Control eyes received neither Surodex nor a placebo implant, but were prescribed conventional 0.1% dexamethasone eyedrops four times daily for 4 weeks. MAIN OUTCOME MEASURES: Anterior chamber flare and cells were graded clinically at the slit lamp. Anterior chamber flare was assessed objectively with the Kowa FC500 Laser Flare Meter (Kowa Co. Ltd, Tokyo, Japan). Intraocular pressure and corneal endothelial specular microscopy with morphometric cell analysis were performed for up to 1 year after surgery. RESULTS: Lower flare meter readings occurred in both Surodex groups at all postoperative visits, as compared with the dexamethasone eyedrop group, with statistical significance at days 4 ($P = 0.001$), 8 ($P = 0.001$), and 15 ($P = 0.02$). No difference in flare occurred between AC and

ciliary sulcus placement. Clinical slit-lamp assessment of anterior chamber flare and cells showed no difference between Surodex-treated eyes and dexamethasone-treated eyes. Nine of 33 eyes (27.3%) in group A required steroid augmentation, as opposed to 4 of 71 eyes (5.6%) in groups B and C. Inflammatory symptoms were reduced in the Surodex-treated eyes, with statistical significance for ocular discomfort ($P = 0.001$), photophobia ($P = 0.04$), and lacrimation ($P = 0.01$). No complications occurred with Surodex-treated eyes, and no significant difference in endothelial cell loss was noted between Surodex-treated eyes and dexamethasone-treated eyes up to 1 year after surgery. **CONCLUSIONS:** Intraocular placement of two Surodex is a safe and effective treatment method to reduce intraocular inflammation after cataract surgery and clearly is superior to eyedrops in reducing inflammatory symptoms and aqueous flare as measured with the laser flare meter. No difference in efficacy between AC placement and ciliary sulcus placement of Surodex was detected in this study.

Tanaka, T., J. Suzuki, et al. (2000). "Steroid sensitivity and postoperative course of seven patients with Behcet's disease." Ophthalmic Res **32**(1): 41-43.

Systemic administration of steroids to patients with Behcet's disease in Japan is often followed by a worsening in ocular symptoms. The sensitivity of 7 patients with Behcet's disease to steroids which were administered during and after intraocular surgery was therefore measured, and their postoperative course was reviewed. Three of the 7 showed a low steroid sensitivity, and the frequency of postoperative inflammatory episodes and the intraocular pressure were both higher for this group than for the 4 who showed high steroid sensitivity.

Teichmann, K. D. (2003). "Biocompatibility." J Cataract Refract Surg **29**(8): 1470.

Tejwani, S., S. Murthy, et al. (2006). "Cataract extraction outcomes in patients with Fuchs' heterochromic cyclitis." J Cataract Refract Surg **32**(10): 1678-1682.

PURPOSE: To analyze the visual outcomes and complication rate after cataract extraction and posterior chamber intraocular lens (PC IOL) implantation in patients with Fuchs' heterochromic cyclitis. **SETTING:** L.V. Prasad Eye Institute, Hyderabad, India. **METHODS:** This retrospective nonrandomized interventional study comprised 103 patients who were examined at the uvea clinic at L.V. Prasad Eye Institute between March 2000 and March 2004 and who were diagnosed with Fuchs' heterochromic cyclitis and cataract. They had extracapsular cataract extraction or phacoemulsification with IOL implantation. Outcomes measures were postoperative visual acuity, ocular inflammation, and complication rate. **RESULTS:** There were 57 men and 54 women in the study; the mean age was 31.36 years \pm 11.55 (SD) (range 10 to 60 years). Postoperative best corrected visual acuity (BCVA) at 5 weeks was 20/40 or greater in 91 patients (88.3%) (95% confidence interval [CI], 82.1-94.5). Eight patients (7.8%) had vitreous inflammation 5 weeks postoperatively. Five patients (4.9%) preoperatively and 3 patients (2.9%) postoperatively had elevated intraocular pressure. Clinically detected cystoid macular edema developed in 1

patient. The mean follow-up was 12.9 months in 53 patients. At the final follow-up, 49 of 53 patients (91.5%) (95% CI, 99.0-84.0) had a visual acuity of 20/40 or greater. Ten eyes (18.9%) had mild anterior chamber reaction. Decreased visual acuity (20/40 or worse) was the result of anterior chamber reaction in 4 patients, glaucoma in 3 patients, vitreous inflammation in 2 patients, and posterior capsule opacification, corneal edema, macular hole, and astigmatism in 1 patient each. CONCLUSIONS: Cataract surgery with PC IOL implantation in patients with Fuchs' heterochromic cyclitis resulted in good visual outcomes. Postoperative inflammation was mild and developed in few cases.

Teo, L. and S. P. Chee (2010). "Retained lens fragment in the anterior segment as a cause of recurrent anterioruveitis." Int Ophthalmol **30**(1): 89-91.

A 61-year-old male developed recurrent anterior uveitis over a period of 8 months after an uncomplicated phacoemulsification and posterior chamber intraocular lens implantation surgery. This was subsequently found to be due to a retained lens fragment in the anterior segment, with complete resolution following surgical extraction of the fragment. To our knowledge, this is the first report of recurrent anterior uveitis attributable to a retained lens fragment following uncomplicated cataract surgery, and the diagnosis should be considered in a pseudophakic patient presenting with recurrent episodes of anterior uveitis.

Till, J. S. (2003). "Collamer intraocular lens implantation with active uveitis." J Cataract Refract Surg **29**(12): 2439-2443.

Two patients with active iritis developed cataracts and had successful cataract surgery with implantation of a Collamer (Staar Surgical, AG) intraocular lens (IOL). Both patients developed severe bilateral uveitis, which in 1 patient was refractory to control. Different IOL materials have been used in iritis patients with varying degrees of success. The IOLs used in these patients remained free of cellular and noncellular deposits, such as those that frequently develop on the anterior surface of IOLs in uveitis patients. Two of the 3 eyes developed a secondary membrane that was successfully treated by a neodymium:YAG laser posterior capsulotomy.

Trocme, S. D. and H. Li (2000). "Effect of heparin-surface-modified intraocular lenses on postoperative inflammation after phacoemulsification: a randomized trial in a United States patient population. Heparin-Surface-Modified Lens Study Group." Ophthalmology **107**(6): 1031-1037.

OBJECTIVE: To compare postoperative inflammation occurring with heparin-surface-modified (HSM) versus non-HSM polymethyl methacrylate intraocular lenses (IOLs) after phacoemulsification. DESIGN: Randomized, double-masked, multicenter, parallel trial. PARTICIPANTS: A total of 367 patients, consisting of routine (n = 220), glaucoma (n = 58), and diabetes (n = 89) patients, from eight US medical centers. METHODS: Patients were observed for 1 year after phacoemulsification and lens implantation (week 1, months 1, 3, 6, 12). MAIN OUTCOME MEASURES: Primary measures of postoperative inflammation defined as the presence of giant cells on the lens surface via

specular micrography and cellular deposits via slit-lamp examination. **RESULTS:** The cross-sectional analyses showed that consistently fewer routine patients with HSM lens implants had giant cells on the IOL than those with non-HSM lens implants across all follow-up visits. The statistical significance ($P < 0.05$) was observed at all visits except month 12 for routine patients. The diabetes patients also demonstrated the same giant cell difference, and the statistical significance was observed at all visits including month 12. A similar trend was also observed in the glaucoma patients, with statistical significance only at the 3-month visit. For cell deposits, significant differences in favor of the HSM lens ($P < 0.05$) were observed at 3 months among routine and diabetes patients, and at 3 and 6 months among glaucoma patients. A longitudinal data analysis using the generalized estimating equation approach indicated statistically significant treatment effect of HSM lenses in reducing inflammation in all patients except for cellular deposits in diabetes patients. In all patient groups, sight-threatening complications were not reported either more frequently or with more severity than normally expected for patients who have undergone cataract extraction and IOL implantation. **CONCLUSIONS:** The present study, the only one to have used phacoemulsification in virtually all patients (211/220 [96%] routine, 57/58 [98%] glaucoma, and 84/89 [94%] diabetes) is the largest to evaluate and compare concurrently routine, glaucoma, and diabetes patients. It is also the first US patient population study to document that heparin surface modification reduces postoperative inflammatory responses, as measured by specular micrography and slit-lamp examination, especially in the early postoperative period.

Trpin, S., T. Gracner, et al. (2006). "Phacoemulsification in isolated endogenous *Candida albicans* anterior uveitis with lens abscess in an intravenous methadone user." J Cataract Refract Surg **32**(9): 1581-1583.

We report the clinical course of a 31-year-old former intravenous drug user on methadone substitution therapy who injected methadone mixed with orange juice. She developed isolated metastatic *Candida albicans* anterior uveitis, which was treated with adequate systemic and local antifungal therapy. The uveitis regressed, but despite adequate local and systemic treatment, a lens abscess developed. Phacoemulsification and endocapsular intraocular lens implantation were performed, and the patient recovered 20/20 visual acuity in the affected eye. In patients with a history of injection drug use, persisting intravenous drug or substitution therapy abuse must be considered. Quick diagnosis and adequate treatment can prevent the development of widespread *C. albicans* endophthalmitis, which has a poor visual prognosis. Early administration of antifungal and surgical therapy is crucial for achieving good functional results.

Urban, B. and A. Bakunowicz-Lazarczyk (2010). "Cataract surgery with primary intraocular lens implantation in children suffering from chronic uveitis." Klin Oczna **112**(4-6): 111-114.

PURPOSE: To evaluate the visual outcome of cataract surgery with intraocular lens (IOL) implantation in children with chronic uveitis. **MATERIAL AND METHODS:** The records of seven children (9 eyes), with chronic uveitis who had

cataract extraction with IOL implantation between 2001 and 2007, were retrospectively examined. The mean follow-up was 47.9 months, respectively. The postoperative visual outcome and complications were analyzed. RESULTS: The mean age of 2 girls and 5 boys was 17.4 years (range from 12 to 21 years). 5 patients had unilateral cataract. 6 patients underwent cataract extraction with IOL implantation, one patient underwent combined cataract surgery with IOL implantation and trabeculectomy. Median age at surgery was 17.7 years. At the final follow-up examination 8 eyes (88.9%), had improved visual acuity. The visual acuity was 20/20 in one eye, 20/40 or better in 5 eyes and 20/50 in 3 eyes. Posterior capsule opacification was observed in 5 eyes, high intraocular pressure in 2 eyes and cystoid macular edema in 1 eye. CONCLUSIONS: The outcomes of cataract extraction with IOL implantation in children's eyes with chronic uveitis may be satisfactory. Correct time of surgery, adequate long-term preoperative and postoperative anti-inflammatory therapy may promote good results.

Van Gelder, R. N. and T. K. Leveque (2009). "Cataract surgery in the setting of uveitis." Curr Opin Ophthalmol **20**(1): 42-45.

PURPOSE OF REVIEW: To describe recent evidence from the literature concerning optimal treatment of cataract in patients with concomitant uveitis. RECENT FINDINGS: Optimal treatment of cataract in the setting of uveitis requires optimal management of uveitis, including appropriate diagnostic workup and scrupulous attention to preoperative preparation, intraoperative technique, and postoperative management. Recent literature suggests high rates of recurrence of certain forms of uveitis (such as ocular toxoplasmosis) after surgery, suggesting that perioperative prophylaxis may be warranted. Placement of intraocular lenses in the setting of certain forms of uveitis, such as juvenile idiopathic arthritis-associated uveitis, remains controversial. Although excellent outcomes can be achieved with many types of intraocular lenses, several recent studies have suggested that the incidence of postoperative complications may be lower in patients receiving acrylic intraocular lenses compared with other materials. Recent long-term outcome studies in cohorts of uveitis patients undergoing cataract surgery suggest very good outcomes in the majority of patients. SUMMARY: Provided the unique challenges of cataract surgery in the setting of uveitis are recognized and appropriately addressed, excellent visual outcomes can be achieved in most patients.

Wadood, A. C., A. M. Armbrecht, et al. (2004). "Safety and efficacy of a dexamethasone anterior segment drug delivery system in patients after phacoemulsification." J Cataract Refract Surg **30**(4): 761-768.

PURPOSE: To compare the safety and efficacy of the Surodex dexamethasone anterior segment drug delivery system (Oculex Pharmaceuticals, Inc.) and dexamethasone 0.1% eyedrops (Maxidex) in patients with inflammation after cataract surgery. SETTING: Cataract Service, Department of Ophthalmology, Lothian University Hospitals, Edinburgh, United Kingdom. METHODS: This comparative single-masked parallel-group study comprised 1 eye of 19 patients having phacoemulsification cataract extraction and posterior chamber intraocular

lens implantation. The Surodex group had the dexamethasone drug delivery system inserted into the anterior chamber (AC) angle during surgery and was treated with saline eyedrops (Isopto Plain) for 4 weeks. The control group had no drug delivery system or a placebo inserted at surgery and were treated with dexamethasone 0.1% eyedrops for 4 weeks. A Kowa FM-500 laser flare meter was used to objectively measure AC flare, the main outcome measure. Slitlamp biomicroscopy to grade AC flare and cells, intraocular pressure measurement, and corneal endothelial specular microscopy, performed up to 60 days after surgery, were the secondary outcome measures. The Surodex group had safety follow-ups after completion of the initial study period. RESULTS: Both groups had a steady increase in laser flare meter readings postoperatively. The readings peaked at 3 days in the control group and at 7 days in the Surodex group. This was followed by a gradual decline toward baseline values up to 28 days, after which the values remained at a similar level to 60 days in both groups. There were no significant differences in flare meter readings between the groups throughout the study. There were also no significant between-group differences in subjective assessment of intraocular inflammation and in impact on corneal endothelial cell count ($P = .67$). Surodex remnants persisted up to a mean of 22.0 months \pm 2.5 (SD) postoperatively in 6 eyes (54%). Neither group had a severe adverse event. CONCLUSION: Surodex appeared to be as effective as dexamethasone 0.1% eyedrops in controlling intraocular inflammation after cataract surgery by phacoemulsification, and both methods had a similar safety profile.

Wilson, M. E., Jr. and R. H. Trivedi (2006). "Low molecular-weight heparin in the intraocular irrigating solution in pediatric cataract and intraocular lens surgery." Am J Ophthalmol **141**(3): 537-538.

Yaylali, V., D. Ozbay, et al. (2004). "Efficacy and safety of rimexolone 1% versus prednisolone acetate 1% in the control of postoperative inflammation following phacoemulsification cataract surgery." Int Ophthalmol **25**(1): 65-68.

PURPOSE: The aim of this study was to evaluate the efficacy and safety of rimexolone 1% ophthalmic suspension compared to that of 1% prednisolone acetate in the control of inflammation in eyes undergoing cataract extraction with phacoemulsification followed by posterior chamber intraocular lens implantation. METHODS: Forty-eight patients who underwent uncomplicated cataract extraction with phacoemulsification followed by posterior chamber IOL implantation constituted the study group of this prospective, randomized, double-masked investigation. Patients were randomly assigned to two treatment groups; rimexolone 1% ophthalmic suspension (27 subjects) or prednisolone acetate 1% (21 subjects). Postoperatively, patients used topical rimexolone or prednisolone drops four times a day for 15 days. Patients were examined at the first postoperative day (day 1), and days 3, 7 and 15. The major efficacy parameters assessed clinically on each visit were anterior chamber cells, anterior chamber flare and conjunctival hyperemia. Safety of the rimexolone was evaluated by IOP values and the presence of adverse effects. RESULTS:

Regarding all three efficacy parameters, rimexolone was found to be clinically and statistically equivalent to prednisolone acetate. Intraocular pressure values during the postoperative period were also similar in both groups. CONCLUSION: Rimexolone 1% ophthalmic suspension is both an effective and safe topical steroid in controlling postoperative inflammation after cataract extraction with phacoemulsification.

Zaborowski, A. G., A. G. Quinn, et al. (2008). "Cataract surgery in pediatric uveitis." J Pediatr Ophthalmol Strabismus **45**(5): 270-278.

Uveitis in children is associated with several sight-threatening ocular complications, including the formation of cataracts. The surgical management of uveitic cataracts in children is both challenging and controversial and, unlike in adult uveitic cataracts, surgery has historically been associated with poor visual outcomes. Juvenile idiopathic arthritis-associated uveitis in particular poses unique therapeutic challenges and the issue of correction of aphakia in these patients remains a contentious one. The growing use of immunotherapies and, where needed, targeted biologic agents in childhood uveitis increases our potential to implant lenses and predict outcomes. The authors review the available evidence base for the treatment of these children.

Zaborowski, A. G., A. G. Quinn, et al. (2008). "Cataract surgery with primary intraocular lens implantation in children with chronic uveitis." Arch Ophthalmol **126**(4): 583-584.