Purpose: To report the complication profile of HIV patients undergoing cataract surgery in a tertiary referral hospital in Singapore.

Methods: A retrospective review of HIV patients who underwent cataract surgery from 2000-2011 in Tan Tock Seng Hospital was performed. Cataract surgeries on different eyes of the same patient were counted as separate cases. Data regarding patient demographics, preoperative HIV management, CD4 count and visual acuity, type of cataract surgery performed, post-operative course and complications, if any, were collected. Prolonged postoperative inflammation was taken as persistent anterior chamber activity lasting for more than 1 month after the operation date. This data was then analyzed to determine surgical outcomes.

Results: 46 eyes from 28 patients were identified, with 25 patients undergoing cataract surgery in HIV patients. Preoperatively, 41.3% had no ophthalmic manifestations of HIV/AIDS. 17 eyes had quiescent cytomegalovirus retinitis (CMVR) of which 4 were still on maintenance therapy at time of surgery; 5 eyes had quiescent immune reactivation uveitis (IRU); 3 eyes had corneal scarring secondary to limbal stem cell deficiency (n=2) and previous corneal abscess (n=1); 2 eyes had previous gonococcal conjunctivitis. 54.3% had nuclear sclerotic cataracts, 34.8% had posterior subcapsular cataracts and 10.9% had intumescent cataracts. 41 eyes (89.1%) underwent phacoemulsification, while 10.9% underwent extracapsular cataract extraction. 63% of surgeries followed an uneventful perioperative course. Intraoperatively 1 eye had a posterior capsule rupture with postoperative raised intraocular pressure. 1 eye developed new CMVR (CD4=92/mm3) postoperatively, while 1 eye had reactivation of previous CMVR (CD4=92/mm3); 1 eye experienced reactivation of IRU. 2 eyes with new or previous CMVR developed rhegmatogenous retinal detachments (RD) within 3 months postoperatively. 3 eyes had prolonged postoperative inflammation which settled with topical steroids. There were no cases of endophthalmitis or cystoid macular edema. Postoperative improvement of at least 2 Snellen lines was achieved in 80.4% of eyes. Visual acuity remained at baseline in 5 eyes due to previous zone 1 CMVR in all eyes.

Conclusions: Cataract surgery in HIV patients is safe with outcomes similar to the general population, but their ocular and general health should be optimized prior to cataract surgery. Patient with prior CMVR may be at risk of reactivation or RD.

Commercial Relationships: Grace Chew, None; Stephen C. Teoh, None

Purpose: To report the complication profile of HIV patients undergoing cataract surgery in a tertiary referral hospital in Singapore.

Methods: A retrospective review of HIV patients who underwent cataract surgery from 2000-2011 in Tan Tock Seng Hospital was performed. Cataract surgeries on different eyes of the same patient were counted as separate cases. Data regarding patient demographics, preoperative HIV management, CD4 count and visual acuity, type of cataract surgery performed, post-operative course and complications, if any, were collected. Prolonged postoperative inflammation was taken as persistent anterior chamber activity lasting for more than 1 month after the operation date. This data was then analyzed to determine surgical outcomes.

Results: 46 eyes from 28 patients were identified, with 25 patients undergoing cataract surgery in HIV patients. Preoperatively, 41.3% had no ophthalmic manifestations of HIV/AIDS. 17 eyes had quiescent cytomegalovirus retinitis (CMVR) of which 4 were still on maintenance therapy at time of surgery; 5 eyes had quiescent immune reactivation uveitis (IRU); 3 eyes had corneal scarring secondary to limbal stem cell deficiency (n=2) and previous corneal abscess (n=1); 2 eyes had previous gonococcal conjunctivitis. 54.3% had nuclear sclerotic cataracts, 34.8% had posterior subcapsular cataracts and 10.9% had intumescent cataracts. 41 eyes (89.1%) underwent phacoemulsification, while 10.9% underwent extracapsular cataract extraction. 63% of surgeries followed an uneventful perioperative course. Intraoperatively 1 eye had a posterior capsule rupture with postoperative raised intraocular pressure. 1 eye developed new CMVR (CD4=92/mm3) postoperatively, while 1 eye had reactivation of previous CMVR (CD4=92/mm3); 1 eye experienced reactivation of IRU. 2 eyes with new or previous CMVR developed rhegmatogenous retinal detachments (RD) within 3 months postoperatively. 3 eyes had prolonged postoperative inflammation which settled with topical steroids. There were no cases of endophthalmitis or cystoid macular edema. Postoperative improvement of at least 2 Snellen lines was achieved in 80.4% of eyes. Visual acuity remained at baseline in 5 eyes due to previous zone 1 CMVR in all eyes.

Conclusions: Cataract surgery in HIV patients is safe with outcomes similar to the general population, but their ocular and general health should be optimized prior to cataract surgery. Patient with prior CMVR may be at risk of reactivation or RD.

Commercial Relationships: Grace Chew, None; Stephen C. Teoh, None

Program Number: 2795 Poster Board Number: A0380

Visual and cognitive improvement following cataract surgery in dementia patients

Jonathan H. Lass1, Julie Belkin1, Thomas Steinemann1, Tatiana Majer4, Alan Lerner1, Sara Debanne1, Grover Gilmore4, 1Ophthalmology and Visual Sciences, Case Western Reserve Univ, Cleveland, OH; 1Neurology, Case Western Reserve University, Cleveland, OH; 1Epidemiology and Biostatistics, Case Western Reserve University, Cleveland, OH; 1School of Applied Social Sciences, Case Western Reserve University, Cleveland, OH.

Purpose: Alzheimer’s disease (AD) and cataracts are both aging-related diseases, co-occurring commonly in the same individual. However, health care providers are reluctant to proceed with cataract surgery when visually indicated because of concerns regarding complications. A systematic analysis of visual and cognitive results in patients undergoing cataract surgery is warranted. The purpose of this study is to evaluate the impact of cataract surgery on the vision, cognition and quality of life of dementia patients.

Methods: Study participants are recruited from the neurology and ophthalmology clinics of University Hospitals Case and Metro Health Medical Centers. Outcomes in two groups are compared: immediate surgery following recruitment vs. delayed (or refused) surgery. Vision and cognitive status are evaluated at the time of recruitment and re-evaluated 6 months after recruitment (non-surgery) or 6 months after surgery (surgery). Recruitment of participants is ongoing with 42 participants currently in the protocol. The current analysis includes 28 participants who have completed the protocol (20 in the surgery group, 8 in the non-surgery group).

Results: Mean changes in surgery vs. non-surgery show an improvement in vision measures in patients after surgery: logMAR OD 0.329 and -0.072, respectively; logMAR OS -0.238 and -0.026, respectively. Measures of perceptual speed such as digit cancellation (mean change in surgery group = -1.462; non-surgery group = -2.400) and cognitive status (Mini-Mental State Examination [surgery group mean change = 0.625; non-surgery group mean change = -2.125]) also have yielded better performance following surgery.

Conclusions: This ongoing study is demonstrating that cataract surgery can improve both the vision and cognitive status of patients diagnosed with dementia.

Commercial Relationships: Jonathan H. Lass, None; Julie Belkin, None; Thomas Steinemann, None; Tatiana Majer, None; Alan Lerner, None; Sara Debanne, None; Grover Gilmore, None

Support: 1R01AG030114

Clinical Trial: NCT00921297
Results: Twenty-five eyes of 17 cases ranging from 40 to 88 years old with retinitis pigmentosa were examined in detail. All patients showed the posterior subcapsular cataracts as well as characteristic ASC. Some combined with nuclear lens opacity. The ASC appeared to be gray and white opacity in irregular shapes, located in center of the pupil area of anterior subcapsule rather than in periphery. Nine patients showed ASC in one eye, but eight of the fellow eyes had undergone cataract surgery previously. Eight patients showed bilateral ASCs differing in opacity degrees. Fundus of all the cases presented typical RP manifestations of waxy pallor of the optic disk, attenuation of retinal vessels and pigmented deposits resembling bone spicules.

Conclusions: Complicated anterior subcapsular cataract appeared in quite a considerable portion of patients suffering from retinitis pigmentosa on the way of retinal degeneration, which made a remarkable impairment of the residual visual acuity. And this manifestation may be an indication for the diagnosis of retinitis pigmentosa. Cataract surgery is a pretty good choice for these patients, and interference with ASC formation might be one novel treatment strategy for such patients prospectively.

Commercial Relationships: Min Hou, None; Mingxing Wu, None; Yuhua Liu, None; Bing Cheng, None; Danying Zheng, None; Yizhi Liu, None

Support: National Natural Science Foundation of China, 81270982

Program Number: 2797 Poster Board Number: A0382
Presentation Time: 8:30 AM–10:15 AM
Cataract Surgery for Keratoconus: Timing and Outcomes
David Truong, Robert Bowman. Ophthalmology, UT Southwestern Medical Center, Dallas, TX.

Purpose: To evaluate the timing and outcomes of cataract surgery in patients with keratoconus.

Methods: Retrospective interventional case series. Records of patients diagnosed with keratoconus who underwent cataract surgery were reviewed. Eyes were stratified by timing of cataract surgery in relation to corneal transplantation. Preoperative and postoperative best corrected visual acuity (BCVA) at 1 month and 1 year, and manifest refractive spherical equivalent (MRSE) were compared.

Results: 2011-2013. 31 eyes with keratoconus undergoing cataract surgery were identified. 14 eyes underwent cataract surgery only. 10 underwent cataract surgery following corneal transplantation. 6 eyes underwent combined cataract surgery and corneal transplantation. 1 eye underwent corneal transplantation following cataract surgery. Preoperative BCVA was best in the eye undergoing corneal transplantation following cataract surgery and worst in eyes undergoing combined surgery. Postoperative BCVA and MRSE was best in eyes undergoing cataract surgery following corneal transplantation and worst in eyes undergoing combined surgery. The worst visual outcomes were non-refractive in nature.

Conclusions: The timing of cataract surgery in relation to corneal transplantation may affect the results achieved.

Commercial Relationships: David Truong, None; Robert Bowman, None
Purpose: To report a pediatric case of bilateral Brown-McLean syndrome after cataract surgery.
Methods: Case report. A 12-year-old patient presented for routine ophthalmic examination after congenital cataract surgery performed at 2 months of age.
Results: The patient was diagnosed with bilateral Brown-McLean syndrome by slit lamp examination. No treatment was required because the patient was asymptomatic and had a clear central cornea.
Conclusions: This is the first described case of Brown-McLean syndrome in a pediatric patient. This case represents the importance of clinical examination in the pediatric age group after cataract surgery because of the risk of patients developing peripheral edema.
Commercial Relationships: Jaime D. Martinez, None; Abdo K. Tourkmani-Masri, None; Anat Galor, None; Francisco Beltran, None

Risk factors for Intraoperative Floppy Iris Syndrome in Women
Komal Joshi1, Stephanie Muylaert2,3, Timothy Chou4.
1Ophthalmology, State University of New York Stony Brook, Stony Brook, NY; 2New York Eye and Ear Infirmary, New York, NY.
Purpose: To indentify risk factors for Intraoperative Floppy Iris Syndrome (IFIS) in women.
Methods: Case-control study of women undergoing cataract surgery by routine phacoemulsification technique by one surgeon from 2009-2013. Data extraction included demographic information, systemic conditions, medication usage, tobacco usage, clinical exam and intraoperative findings. Statistical analysis was performed using the Fisher’s exact test.
Results: All 35 cases of IFIS that were identified in women who underwent routine cataract surgery during the above time period were included. Thirty-five controls were randomly selected from the surgical case log from the same time frame. The average age of patients with IFIS was 71.6 years and 69.5 years for the control group. Of the 35 IFIS cases, 20% had severe IFIS (iris billowing or floppiness, iris prolapse, and miosis), 34.3% had moderate IFIS (iris billowing with miosis or prolapse) and 45.7% had mild IFIS (billowing without miosis or prolapse). Hypertension was present in 54.2% of IFIS patients, compared to 69.2% of controls (p= 0.62). Tobacco use was noted in 31.4% of IFIS patients, whereas only 20% of controls used tobacco (p=0.41). Two patients in the IFIS group were on alpha-1 antagonist (5.7%) and none in the control group (p=0.49). Finally, 22.9% of IFIS patients had a prior laser peripheral iridotomy (LPI), compared to only 2.9% of controls (p=0.028). There were 2 patients with no systemic conditions or medication usage that had severe IFIS.
Conclusions: IFIS can occur in female patients during routine cataract surgery. History of prior LPI is a possible risk factor for IFIS in women. While there were a higher percentage of tobacco and alpha-1 antagonist users in the IFIS group, these differences were not statistically significant. Hypertension was not found to be a statistically significant risk factor in this study.
Commercial Relationships: Komal Joshi, None; Stephanie Muylaert, None; Timothy Chou, None

Safety and Efficacy of Concomitant Prophylactic Sclerostomy with Cataract Surgery in Eyes with Nanophthalmos
Sharmila Rajendrababu, George V. Puthuran, Naresh Babu. glaucoma, ARAVINDEYE HOSPITAL, Madurai, India.
Purpose: Cataract surgery in nanophthalmos is often associated with a high frequency of potentially blinding complications such as suprachoroidalhaemorrhage, uveal effusions and aqueous misdirections.
Methods: We conducted an unmasked randomized controlled trial of 60 eyes of 60 patients in eyes with nanophthalmos, visually significant cataract, and patent laser iridotomies. Eyes were randomly assigned to either cataract surgery alone or cataract surgery with concomitant prophylactic sclerostomy. The method for cataract removal was left to the discretion of the procedural surgeon after the randomization group was assigned. The frequency of having any intraoperative or postoperative complication likechoroidal effusion, aqueous misdirection,retinal detachment was the primary study outcome, while secondary outcomes included visual acuity, IOP, and postoperative retina-choroidal thickness.
Results: 31 eyes were randomized to cataract surgery alone and 29 eyes were randomized to concurrent sclerostomy. In the entire study...
group, the mean age was 54.5 years, the mean axial length was 18.34 mm and, the mean lens thickness was 4.38 mm. Sixty percent of eyes underwent phacoemulsification, 35% underwent small incision cataract surgery and 5% underwent ECCE. Overall, sixteen of 60 eyes (52%) developed complications, including 12/31 (38.7%) eyes in the cataract alone group and 4/29 (13.8%) in the cataract with concurrent sclerostomy group (p < .001). Four of 12 eyes (33%) in the cataract surgery only group developed postoperative choroidal effusions as compared to 0/29 eyes in the concurrent sclerostomy group (p < .001). No significant group differences were observed with regards to change in visual acuity, IOP reduction, and in decrease of retino-choroidal thickness (p = 0.54).

Conclusions: Surgery in Nanophthalmic eyes are often associated with disastrous complications like uveal effusions, expulsive haemorhage, retinal detachment and angle closure or malignant glaucoma. Timely diagnosis and use of prophylactic measures preoperatively and prophylactic sclerostomy intraoperatively may minimize the risk of potential complications like uveal effusions in nanophthalmic eyes.

Commercial Relationships: Sharmila Rajendrababu, None; George V. Puthuran, aravind eye hospital (E); Naresh Babu, aravind eye hospital (E)

Program Number: 2803 Poster Board Number: A0388
Presentation Time: 8:30 AM – 10:15 AM

Visual Outcome of Cataract Surgery in Patients With Chronic Uveitis With or Without Intraocular Lens

Elliott Kim1, David S. Chu1,2, Ashwinee Ragam1. 1Rutgers University, Newark, NJ, 2Metropolitan Eye Research and Surgery Institute, Palisades Park, NJ.

Purpose: To determine the value of Intraocular lens placement in patients with chronic uveitis who need to undergo cataract extraction for visual rehabilitation.

Methods: Through billing database for patients who had undergone complex cataract surgery from August 2001 to November 2013, we identified subjects who had active chronic inflammation due to noninfectious uveitis in the eye at the time of surgery. Subjects were divided into 2 groups; those who had posterior chamber intraocular lens (PCIOL) implant at the time of surgery (P) and those left aphakic intentionally (A). Statistically analysis of their visual outcome and degree of inflammation were performed and complicating factors were recorded.

Results: 331 charts were reviewed, and 27 subjects met study criteria and were reviewed in detail. 13 subjects were right eyes. Age ranged from 4 to 69, a mean age of 36 (SD = 21.25). 7 subjects were male. 9 patients had concurrent dexamethasone implant, 1 had concurrent corneal transplant, and 2 had concurrent pars plana vitrectomy. All had chronic noninfectious uveitis; 8 had sarcoidosis. 6 had juvenile idiopathic arthritis and 4 had Vogt-Koyanagi-Harada syndrome. 13 subjects belonged to group A and 14 to group P, of whom 2 underwent PCIOL removal sometime later. Among P, average logMAR best corrected pre-op visual acuity (VA) was 1.9 (SD = 0.9) and post-op VA was 1.4 (SD = 1.3), and the difference was not statistically significant (p = 0.18). Average anterior chamber cell reaction (ACC) pre-op was 0.2 (SD = 0.3) and average ACC post-op was 0.2 (SD = 0.4), with p = 0.75. Average anterior chamber flare (ACF) pre-op was 04 (SD = 0.5) and average ACF post-op was 0.5 (SD = 0.9), p = 0.44. Among A, average pre-op VA was 1.7 (SD = 1.2) and post-op VA was 0.6 (SD = 0.6), this difference was statistically significant (p = 0.00066). Average ACC pre-op was +0.3 (SD = 0.4) and average ACC post-op was 0 (SD = 0), p = 0.006. Average ACF pre-op was 0.5 (SD = 0.7) and average ACF post-op was 0.2 (SD = 0.4), p = 0.17. Average duration of follow-up was roughly the same between two groups.

Conclusions: Among patients with chronic noninfectious uveitis at the time of cataract surgery, patients appear to have better visual outcome if left aphakic. Furthermore, ACC was better controlled in patients in aphakic group.

Commercial Relationships: Elliott Kim, None; David S. Chu, Abbvie (F), Alcon (R), Allergan (F), Bausch and Lomb (R), Genentech (F), Novartis (F), Santen (F), Xoma (F); Ashwinee Ragam, None

Program Number: 2804 Poster Board Number: A0389
Presentation Time: 8:30 AM – 10:15 AM

Use of mini-capsulorhexis in the Phaco-Erassz technique for cataract surgery in a rabbit model

Esdras A. Arrieta1, Mariela C. Aguilar1, Alejandro Arboleda1,2, Mukesha Tanega1,3, Pravin Vaddavalli1, Jukka Moilanen4,5, Fabricze Mamins6-7, Vicor Hernandez1-2, Jason Watling1, Jean-Marie A. Pare1-7. 1Ophthalmic Biophysics Center, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL; 2Department of Biomedical Engineering, University of Miami College of Engineering, Coral Gables, FL; 3LV Prasad Eye Institute, Hyderabad, India; 4Helsinki University Central Hospital, Helsinki, Finland; 5Vision Cooperative Research Centre, Brien Holden Vision Institute, UNSW, Sydney, NSW, Australia.

Purpose: To assess safety and feasibility of phacoemulsification and refilling the capsular bag with a clear polymer through a mini-capsulorhexis (MCR), followed by crosslinking the polymer in a rabbit model.

Methods: 104 eyes of 86 NZW rabbits under general anesthesia were operated by four surgeons (3 in training) over an 18 month period using 4 types of polymers; a double paracentesis was performed, the anterior chamber refilled with viscoelastic, a manual MCR was performed, phacoemulsification with a 0.7mm tip, the rhexis was closed with a miniature capsulorhexis valve (MCV) (Fig 1) and subsequent injection of the polymer was performed using a curved blunt 0.55mm cannula. The clear cornea incision was closed with a single 10-0 nylon and the polymer was crosslinked. Clinical biomicroscopy, tonometry, gonioscopy and funduscopy were performed post-op in all animals at different time points and clinical data was collected.

Results: Manual MCR ranged 1.19±0.38mm. The most common complications during surgery was MCR tearing in 26 eyes (25%), anterior capsule tearing in 8 eyes (7.69%), posterior capsule tearing in 9 eyes (8.65%) and leaking polymer during injection was observed in 22 eyes (21.15%). Postoperative clinical features observed were fibrosis around the MCR, posterior synechiae and posterior capsule opacification. In the more recent procedures refraction changes were assessed with an intraoperative autorefractometer adapted to the surgical microscope (OPMI, Fig 2).

Conclusions: Phacoemulsification through a mini-capsulorhexis is feasible and a safe technique (Fig 1). Learning curve is short. The most common complication was rhexis tearing that might be avoidable using a femto-second laser. All polymers tested were easy to inject, safe and biocompatible. Further studies are underway to assess the accuracy of intraoperative autorefractometer controlled lens refilling.
Minicapsulorrhexis Valve (MCV)

Intraoperative autorefractometer mounted onto the surgical microscope

Commercial Relationships: Esdras A. Arrieta, None; Mariela C. Aguilar, None; Alejandro Arboleda, None; Mukesh Taneja, None; Pravin Vaddavalli, None; Jukka Moilanen, None; Fabrice Manns, BHVI-UM Patent Application (P); Victor Hernandez, None; Jason Watling, None; Jean-Marie A. Parel, BHVI-UM Patent Application (P)

Support: NIH R01EY014225 & P30EY14801, Australian Federal Government CRC Scheme through the Vision Cooperative Research Centre, Florida Lions Eye Bank, Drs. KR Olsen and ME Hildebrandt, Research to Prevent Blindness, Henri and Flore Lesieur Foundation (JMP).
Cataract surgery and Straylight in patients with Retinitis Pigmentosa

Thomas J. Van Den Berg, Maartje C. van Bree, Ingeborg van den Born

Purpose: The importance of straylight derives from the fact that it reduces retinal sensitivity. This may be particularly relevant in conditions with retinal dysfunction, such as Retinitis Pigmentosa (RP). Moreover, in RP often early in life PSC cataract develops. The question of this study is whether straylight substantially contributes to visual disability in RP patients, potentially aggravated due to the combination of retinal degradation and increased straylight from cataract formation. In addition, straylight was used to predict possible benefit of (early) cataract surgery.

Methods: Eighteen RP patients (age 51±16, 25 eyes) scheduled for cataract extraction (CE) on the basis of classical criteria (including visual acuity, not including straylight) participated. Before and after CE, best corrected visual acuity (BCVA) in logMAR, contrast sensitivity (CS) in log(CS), temporal contrast sensitivity (TCS) in log(TCS), and straylight (log of the straylight parameter s, log[s]) were tested. TCS, or flicker sensitivity, was tested with a new test, using the C-Quant hardware (ARVO 2011 #1884; JBO 2011;16:085004). TCS measurement was performed to assess foveal function isolated from the eye’s optical quality.

Results: Average pre CE log(s) value was 1.72, corresponding to a factor 6 straylight increase as compared to a healthy, young eye. Functionally significant improvement defined as >0.2 log, was only found for log(s). Only log(s) improvement was related to pre CE values (p=0.001), with a mean improvement of 0.27 log (p=0.001) and a preop break-even point for improvement at log(s)=1.46. logMAR improved on average by 0.12 (p=0.001), without predictability (p=0.85). LogMAR and log(TCS) were correlated (pre CE r=0.57, p<0.01; post CE r=0.47, p<0.05). Pre and post CE log(TCS) values were similar (p=0.14).

Conclusions: Straylight effects of cataract may substantially aggravate visual disability in RP patients, whereas BCVA may (not yet) be affected. Loss of BCVA may reflect foveal function rather than cataract. Preop straylight level is predictive for the improvement upon surgery. For proper CE referral straylight must be assessed.

Commercial Relationships: Thomas J. Van Den Berg, Oculus (P); Maartje C. van Bree, None; Ingeborg van den Born, None

Clinical Trial: NL29785.078.09

Mature Cataract Surgery Outcomes Stratified by Surgeon Experience

Ankur Gupta, Sandra M. Johnson, Joshua Nunn, Eric Areiter

Purpose: To determine whether surgeon experience level is associated with differences in surgical outcome and complication rates in patients undergoing mature cataract extraction.

Methods: We performed a retrospective case review of mature cataract extractions performed at the University of Virginia between April 2008 and June 2013. Inclusion criteria were preoperative best corrected visual acuity (BCVA) worse than 20/200 and consistent cataract changes. Subjects were grouped according to surgeon training level. Primary endpoints were improvement in BCVA and incidence of surgical complications. We also collected data on pre-existing ocular comorbidities and risk factors for vitreous loss.

Results: 466 patients met inclusion criteria, of which 343 completed a minimum of 45 days of postoperative follow up. 42% of patients had one or more pre-existing ocular comorbidity or risk factor for vitreous loss. 89.8% of patients saw a postoperative improvement of visual acuity.
Commercial Relationships: Ankur Gupta, None; Sandra M. Johnson, None; Joshua Nunn, None; Eric Areiter, None

Program Number: 2808 Poster Board Number: A0393
Presentation Time: 8:30 AM–10:15 AM
Resident Postoperative Cataract Surgery Outcomes in Patients Receiving Toric Intraocular Lenses
Christopher Hamamdjian, Bret Hughes, John Ramocki, John Suchomel. Ophthalmology, Kresge Eye Institute, Detroit, MI.

Purpose: To study the change in refraction in patients who received a Toric posterior chamber intraocular lens during cataract surgery.

Methods: This was a retrospective chart review of patients undergoing cataract surgery using a Toric lens implant performed by residents at the John D. Dingell VA Medical Center in Detroit, Michigan. The pre- and postoperative refractions were recorded. Statistical comparisons were made using the paired t-Test.

Results: The mean preoperative cylinder was 2.02 ± 2.07 D (range, 1.25-5.75 D) and the postoperative mean cylinder improved significantly to 0.82 D ± 0.55 (range, 0.00-2.00). Hence, an improvement in astigmatism was shown after cataract surgery with Toric lens implantation (p=0.005).

Conclusions: Cataract surgery using a Toric intraocular lens implant corrects for high degrees of regular corneal astigmatism when performed by residents. It is recommended to use Toric lenses in patients with corneal astigmatism undergoing cataract extraction.

Commercial Relationships: Christopher Hamamdjian, None; Bret Hughes, None; John Ramocki, None; John Suchomel, None

Program Number: 2809 Poster Board Number: A0394
Presentation Time: 8:30 AM–10:15 AM
Outcomes of resident performed mature cataract surgery: A 1 year study

Purpose: To report on outcomes and adverse events associated with resident-performed phacoemulsification in patients with mature cataracts.

Methods: Resident-performed phacoemulsification in patients with mature cataracts were identified between 2008-2012 at Rutgers New Jersey Medical School. A retrospective review was performed for preoperative history, intraoperative surgical technique, and postoperative course including: visual acuity (logMAR), IOP, and medications among others. Visual acuity (VA) exclusions: cases deemed to have poor visual potential from optic nerve or retinal pathology.

Results: Forty cases were identified of which, 11 were identified as having poor visual potential. VA data is presented for the remaining 29 cases. Twenty-five of twenty-nine patients were followed for 1 month or greater and 13/29 were followed for at least 1 year. Mean preoperative VA was 1.9 ± 0.3 logMAR units (Snellen equivalent = 20/1589) improving to 0.9 ± 0.5 logMAR units (20/159) on postoperative day one and 0.3 ± 0.3 (20/40) at final follow-up (p < 0.001; pre-op VA vs. Final VA). Nineteen of twenty-nine (66%) patients achieved a postoperative best corrected VA of 20/40 or better. Mean preoperative IOP was 16.3 ± 6.0 mmHg, which increased to 18.7 ± 8.4 on post-op day one (p=0.11). Mean IOP decreased to 13.9 ± 5.0 at post-op week one, and remained stable at a mean of 15.5-16.4 from post-op month one until the 12-month time point. No statistically significant reduction in IOP was noted at any time point. Postoperative day one IOP spikes, defined as an IOP greater than 30 mmHg or a 10mmHg increase from the preoperative measurement, occurred in 7/40 (18%) of cases. Intraoperatively, iris hooks were utilized in 4/40 (10%) cases, Kuglen hooks in 5/40 (12.5%) cases, and a Malayan ring was used in 2/40 (5%) of cases. Intraoperative adverse events included vitreous loss with anterior vitrectomy (2/40; 5%) and posterior capsular rupture (2/40, 5%). There were no cases of lens drop into the vitreous. In addition to the previously noted IOP changes, postoperative complications included pseudophakic macular edema in 3/40 (7.5%), pseudophakic bullous keratopathy in 1/40 (2.5%) and a macular hole in 1/40 (2.5%).

Conclusions: Resident-performed phacoemulsification of mature cataracts results in good VA in the majority of patients with an adverse event profile similar to surgery on immature cataracts.

Visual Acuity and IOP vs Time

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>1 day</th>
<th>1 week</th>
<th>1 month</th>
<th>3 months</th>
<th>4-6 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogMAR VA</td>
<td>1.93</td>
<td>0.86e</td>
<td>0.66*</td>
<td>0.58*</td>
<td>0.55*</td>
<td>0.60*</td>
<td>0.40*</td>
</tr>
<tr>
<td>IOP (mmHg)</td>
<td>16.3</td>
<td>18.7</td>
<td>13.9</td>
<td>15.6</td>
<td>15.5</td>
<td>16.4</td>
<td>15.6</td>
</tr>
</tbody>
</table>

*Statistically significant as compared to baseline

Commercial Relationships: Jonathan Huz, None; Neil Kalbag, None; Albert S. Khouri, None

Program Number: 2810 Poster Board Number: A0395
Presentation Time: 8:30 AM–10:15 AM
Practice Patterns With Regards to Management of Inadequate Capsular Support for Intracapsular or Sulcus Intraocular Lens Placement During Cataract Surgery
Rebecca Sorenson, Steven H. Tucker, Ingrid U. Scott, George C. Papachristou. Ophthalmology, Penn State Milton S. Hershey Medical Center, Hershey, PA.

Purpose: To investigate the practice patterns with regards to management of inadequate capsular support for intracapsular or sulcus intraocular lens (IOL) placement during cataract surgery.

Methods: An online survey was conducted using multiple-choice and Likert-style questions regarding surgical experience, fellowship, comfort with placement of anterior chamber IOL (ACIOL) and scleral (or otherwise) fixated posterior chamber IOLs (SF PCIOLs), and IOL choice in the setting of inadequate capsular support in several clinical scenarios. The survey link was emailed to the program coordinators of all 113 ACGME-accredited ophthalmology residency programs, with a request to forward our email to all faculty who perform cataract surgery and to reply with the number of faculty to whom the link was sent.

Results: Of the confirmed 117 recipients, 63 completed the survey (response rate=54.7%). Respondents were, on average, 16.5 years out of residency (range, 1-41 years). Sixty-five percent (n=41) completed fellowship, most in cornea (n=23, 56%) and glaucoma

©2014, Copyright by the Association for Research in Vision and Ophthalmology, Inc., all rights reserved. Go to iovs.org to access the version of record. For permission to reproduce any abstract, contact the ARVO Office at pubs@arvo.org.
All felt comfortable placing ACIOLs, while 63% (n=34) felt comfortable placing SF PCIOLs independently. Of those not comfortable placing SF PCIOLs, 95% (n=19) reported access to surgeons who perform SF PCIOL placement in their institution or community. In the setting of inadequate capsular support, 59.3% (n=32) would place a primary ACIOL, 27.8% (n=15) would place a primary SF PCIOL, and 5.6% (n=3) would leave the patient aphakic for secondary SF PCIOL placement. Primary reasons indicated for IOL choice include less long-term complications (n=20, 37.0%) and avoidance of a second surgery (n=19, 35.2%). Surgeons not comfortable placing SF PCIOLs were most likely to choose primary ACIOLs (n=15, 75%). Surgeons comfortable with placing SF PCIOLs were also most likely to choose primary ACIOLs (n=17, 50%), followed by primary (n=13, 38.2%) and secondary (n=1, 3.0%) SF PCIOLs.

Conclusions: Cataract surgeons with access to SF PCIOL placement at academic centers show a preference towards ACIOLs in the setting of inadequate capsular support during cataract surgery. Older patient age and anticoagulation shifted surgeon preference towards ACIOLs, while younger patient age, presence of corneal guttata, history of glaucoma, and dropped nuclear fragments shifted preference towards SF PCIOLs.

Commercial Relationships: Rebecca Sorenson, None; Steven H. Tucker, None; Ingrid U. Scott, None; George C. Papachristou, None

Program Number: 2811 Poster Board Number: A0396
Presentation Time: 8:30 AM–10:15 AM

Cataract Surgery Quality of Care: An Evaluation of International Cataract Surgery Clinical Practice Guidelines
Connie Wu, Annie Wu, Benjamin Young, Dominic Wu, Paul B. Greenberg, Warren Alpert Medical School at Brown University, Providence, RI

Purpose: This study aims to evaluate and compare the quality of the clinical practice guidelines published by the American Academy of Ophthalmology (AAO) and the Royal College of Ophthalmologists (RCO) for the management of cataracts in adult patients.

Methods: Four evaluators independently appraised both clinical practice guidelines using the Appraisal of Guidelines for Research and Evaluation (AGREE II) instrument, which covers six domains (Scope and Purpose, Stakeholder Involvement, Rigor of Development, Clarity of Presentation, Applicability, and Editorial Independence) and includes an Overall Assessment summarizing guideline quality across all domains, using a seven-point scale with a score of seven indicating 100% adherence.

Results: Scores for the six AGREE II domains ranged from 32% to 56% with an overall rating of three out of seven for the AAO practice guideline, and ranged from 23% to 85% with an overall rating of five out of seven for the RCO practice guideline. The AAO guideline scored lower than the RCO guideline in five domains (Scope and Purpose, Stakeholder Involvement, Rigor of Development, Clarity of Presentation, Applicability) and higher in one domain (Editorial Independence). The inter-rater reliability for the AAO and RCO guidelines were 0.78 and 0.80 respectively, as determined by an average measures intraclass correlation coefficient.

Conclusions: Relative to the RCO guideline, the AAO guideline had lower adherence to the AGREE II domains. The AAO guideline can be improved by clarifying its scope and purpose, involving stakeholders in its development, and consistently applying a rating system for evidence supporting key recommendations. Both the AAO and RCO guidelines can be improved by addressing potential conflicts of interest among members of the guideline development groups.

Table 1. Mean LogMAR of VA at Baseline and compared to each time point for both groups

<table>
<thead>
<tr>
<th></th>
<th>Baseline VA</th>
<th>Day 1</th>
<th>Week 1</th>
<th>Month 1</th>
<th>Month 3</th>
<th>Month 6</th>
<th>Month 12</th>
<th>Month 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malyugin ring</td>
<td>0.96</td>
<td>0.41</td>
<td>0.64</td>
<td>0.43</td>
<td>0.29</td>
<td>0.41</td>
<td>0.47</td>
<td>0.59</td>
</tr>
<tr>
<td>Iris hooks</td>
<td>0.88</td>
<td>-0.16</td>
<td>-0.07</td>
<td>0.13</td>
<td>0.23</td>
<td>0.33</td>
<td>0.23</td>
<td>0.20</td>
</tr>
<tr>
<td>P value (t test)</td>
<td>0.39</td>
<td>0.02*</td>
<td>0.02*</td>
<td>0.18</td>
<td>0.82</td>
<td>0.75</td>
<td>0.41</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Commercial Relationships: Jacey Hanna, None; Neil Kalbag, None; Albert S. Khouri, None

Program Number: 2813 Poster Board Number: A0398
Presentation Time: 8:30 AM–10:15 AM

Impact of lens thickness on hyper mature cataract surgical complications: Preliminary results of a prospective study
Addou Regnard Manar, Franck Fajkuchen, Anh Bui, Gilles Chaine, Audrey Gioconi-Auregan, Hopital Avicenne, Bobigny, France

©2014, Copyright by the Association for Research in Vision and Ophthalmology, Inc., all rights reserved. Go to iovs.org to access the version of record. For permission to reproduce any abstract, contact the ARVO Office at pubs@arvo.org.
**Purpose:** Complications during white hyper mature cataract surgery are often unpredictable. Lens density can be assessed by pentacam, but this tool is not commonly available. Hence, a parameter correlated with surgery difficulty easier to assess would be useful. Our purpose was to assess the correlation between lens thickness (LT) and surgery complications.

**Methods:** We conducted a prospective, observational, and monocentric study. We included all patients operated on for white hyper mature cataract from January to November 2013. We selected patients with a visual acuity (VA) lower than 20/200 on the Monoyer scale. We excluded patients suspect of zonula fibers weakness due to trauma or pseudoexfoliation. Morphological features assessed were LT, axial length, depth of anterior chamber and vitreous length, measured by an ultrasound scan (OcuScan, Alcon Laboratories, Inc.). The other parameters assessed were the surgical duration, occurrence of complications during surgery, VA and corneal edema at the seventh day after surgery (analogic scale from 0 to 3).

**Results:** We included 30 eyes of 29 patients. Mean LT was 4.19 \( \pm 0.68 \) mm, with a median of 3.89 mm. The mean values of axial length, depth of anterior chamber and vitreous length were respectively 23.15 \( \pm 1.58 \) mm, 3.17 \( \pm 0.55 \) mm and 15.81 \( \pm 1.6 \) mm. The mean duration of surgery was 26.37 \( \pm 10.11 \) min. Complications during surgery occurred in 4 patients (4 capsular rupture, with one posterior lens dislocation). The Mean VA at the seventh day was 0.4 \( \pm 0.33 \) (decimal scale). One third of patients had a corneal edema at the seventh day after surgery, severe for 3 cases (rate 3 on a scale from 0 to 3). The Pearson correlation coefficient between visual acuity and LT was -0.53. Other parameters were not correlated.

**Conclusions:** LT did not seem to be a marker of a longer surgical duration. VA at the seventh day seemed to be inversely correlated to LT. Likewise, complications during surgery seemed to happen more frequently when the lens was thicker. This parameter may be related to a higher rate of complications during surgery.

**Commercial Relationships:** Addou Regnard Manar, None; Franck Fajnkuchen, None; Anh Bui, None; Gilles Chaine, None; Audrey Giocanti-Auregan, None

**Program Number:** 2814 Poster Board Number: A0399

**Presentation Time:** 8:30 AM–10:15 AM

**Endophthalmitis Prophylaxis for Cataract Surgery in State versus Private Institutions - Does it Vary?**

*Lisa Dang, Jayne S. Weiss.* Ophthalmology, Louisiana State University/Ochsner Medical Center, New Orleans, LA.

**Purpose:** There is no standard regimen for endophthalmitis prophylaxis in routine cataract surgery, though studies have shown there is a strong preference for the use of preoperative topical fluoroquinolones. Louisiana (LA) has state clinics and hospitals, which primarily serve the uninsured and indigent population. Recently, we discovered a potential difference in the practice patterns of LA ophthalmologists operating in state versus private institutions. To evaluate these differences, a survey was administered to LA ophthalmologists.

**Methods:** In November 2013, an electronic survey was sent to ophthalmologists of the Louisiana State University (LSU) Alumni Association, New Orleans Academy of Ophthalmology, LA Ophthalmology Association and LSU/Ochsner Medical Center Department of Ophthalmology. The cataract surgery survey contained eight questions pertaining to the location of performed surgeries, the use of pre- or intraoperative antibiotic prophylaxis and povidone-iodine, preferred antibiotic regimen at different locations, and rate of endophthalmitis.

**Results:** A total of 33 valid surveys were completed. 20 surgeons operated in private facilities only, 4 in state hospitals only, and 9 in both private and state facilities. 100% (29) of surgeons operating in private facilities and 8% (1) of surgeons operating in state facilities used preoperative topical antibiotics. 100% (33) placed a drop of povidone-iodine inside of the operative eye prior to surgery. 10% (3) of surgeons operating in private facilities also used intracameral antibiotics. 100% (9) of surgeons operating in both private and public facilities used different regimens in each facility. Within this subgroup, 0% reported using preoperative antibiotics when operating in a state facility though all used preoperative antibiotics in private practice. The majority of all surgeons reported less than 1/1000 rate of infectious endophthalmitis.

**Conclusions:** The results imply that practice patterns for antibiotic prophylaxis in cataract surgery vary, but the majority of LA ophthalmologists prefer to use preoperative topical antibiotics. This differs from the regimen used by those operating in state institutions in which no preoperative antibiotics are used. The lack of preoperative antibiotic prophylaxis for cataract surgery in LA state hospitals affords us the opportunity to determine if there is an adverse effect on the rate of endophthalmitis.

**Commercial Relationships:** Lisa Dang, None; Jayne S. Weiss, None

**Program Number:** 2815 Poster Board Number: A0400

**Presentation Time:** 8:30 AM–10:15 AM

**Postoperative course of patients undergoing phacoemulsification cataract extraction with Malyugin Ring™ pupil expansion**

*Jonathan Fay1,2, Amurag Shrivastava2, Prajot Channa1, Assumpta Madu2.* Ophthalmology, Albert Einstein College of Medicine, New York, NY; ‘ophthalmology, Montefiore Medical Center, New York, NY.

**Purpose:** To determine if pupil expansion with the Malyugin Ring™ during phacoemulsification cataract extraction has an effect on intraocular pressure and vision in the immediate postoperative period.

**Methods:** This is a retrospective analysis of the postoperative course of 20 consecutive phacoemulsification procedures utilizing the Malyugin Ring™ at an academic teaching hospital in the Bronx, NY (Group I). A control group of 21 patients undergoing cataract surgery during the same time period were matched for age, gender and primary surgeon (Group II). Patients underwent standard phacoemulsification with posterior chamber intraocular lens implantation without complication. A detailed chart review was performed, and intraocular pressure (IOP) and best uncorrected visual acuity (VASC) were evaluated for the first postoperative month.

**Results:** There were no significant differences in IOP on the first postoperative day between Group I and Group II (95% CI 13.8-17.4 mm Hg and 14.7-18.5 mm Hg, respectively). Likewise, no significant differences were noted between the Groups at the one month postoperative visit (95% CI 14.7-17.4 mm Hg and 13.6-16.2 mm Hg, respectively). In Group I there was one patient with an early IOP elevation of ≥ 30 mm Hg, as compared to two patients in Group II. Compared to preoperative measurements, Group I lost 1.3 lines of vision as measured by Snellen acuity on post-op day 1, but gained 1.5 lines by post-op month 1. Group II gained 0.4 lines on post-op day 1 and gained 2.3 lines by post-op month 1. The relative change in visual acuity was not significantly different between Group I and Group II.

**Conclusions:** Pupil manipulation during cataract surgery may lead to pigment dispersion with subsequent inflammation, IOP elevation, and damage to the corneal endothelium. Our study demonstrates that the use of the Malyugin Ring™ for pupil expansion during cataract surgery is not an independent risk factor for increased postoperative
IOP, or for early IOP elevation of $\geq 30$ mm Hg. There was, however, a trend toward early lower VASC in patients requiring Malyugin Ring™ insertion, however by post-op month 1, visual outcomes in these patients were comparable to controls. The potential risks of the Malyugin Ring™ are likely outweighed by the benefits of improved surgical exposure and reduced likelihood of complications related to intraoperative floppy iris syndrome (IFIS).

**Commercial Relationships:** Jonathan Fay, None; Anurag Shrivastava, None; Prabjot Channa, None; Assumpta Madu, None

**Support:** Research to Prevent Blindness

**Program Number:** 2816 **Poster Board Number:** A0401

**Presentation Time:** 8:30 AM–10:15 AM

**Phacoemulsification Cataract Extraction Complication Rates of Second- and Third-Year Residents at a High Volume Academic Center in North Carolina with a Integrated, Intensive Surgical Curriculum**

Adam Dao, Kenneth Cohen. Ophthalmology, University of North Carolina, Chapel Hill, NC.

**Purpose:** To determine how an intensive surgical curriculum combined with a unique approach to cataract surgery timing in resident education where over half of cataract surgeries are performed by second-year residents (PGY3) affects complication rates during phacoemulsification cataract surgery. The complication measured is whether or not there was an intact posterior capsule at the end of the surgical case. In the majority of training programs across the country, the vast majority of cataract extractions are performed by third-year residents (PGY4).

**Methods:** This is a Retrospective Chart review of all patients receiving cataract surgery by a second (PGY3) or third year (PGY4) resident at the University of North Carolina over a one-year period from 12/2012 to 11/2013. During this period, 277 phacoemulsification cataract extractions were performed by residents; 163 were performed by second-year residents and 114 were performed by third-year residents. The posterior capsule tear rate was measured as a percentage of total cases by reviewing the dictated operative reports for each of the cases.

**Results:** In a residency training program where significant numbers of cataract extractions are performed by the second-year residents, there was a significant difference between complication rates of second- and third-year residents. The rate of posterior capsule rupture for second-year residents was 11.0%. The rate of posterior capsule rupture for third-year residents was 3.5%. Second-year residents have significantly more complication rates than third-year residents ($p<0.05$).

**Conclusions:** The surgical curriculum at the University of North Carolina, which includes lecture), wet-lab instruction, and surgery on patients over the entire three-year resident education period significantly reduces the complication rate of phacoemulsification cataract extraction between the second (PGY3) and the third year of ophthalmology residency (PGY4) training. The cataract education program at UNC could be used as a model for other residency programs across the country.

**Commercial Relationships:** Adam Dao, None; Kenneth Cohen, None