APACRS 2
Joint Plenary Session with ASCRS & ESCRS

10 June 2006, Saturday, 1000-1300 Hrs
Ballroom 1-2, Level 2

A201
MICRO-COAXIAL PHACO — MINIMIZE INCISION SIZE WITHOUT COMPROMISE

Graham Barrett, Australia

Purpose: Reducing the incision size required for cataract surgery is desirable in order to reduce astigmatism and wound security. Biaxial (Bimanual) Micro Incision Cataract Surgical (MICS) techniques can be performed through two sub 2.0 mm incisions. Unfortunately these Micro incisions tend to leak during surgery and are more difficult to seal at the end of the procedure. The aim was to develop a MICS technique without the inherent compromises of Biaxial phacoemulsification.
Setting: The infusion capacity of different cannulas was measured in the laboratory. A clinical trial in a tertiary teaching hospital was carried out to compare the wound integrity of different incisions.
Methods: A new phaco needle was developed that allows equivalent infusion to standard coaxial phaco. When used with a smaller diameter infusion sleeve it was feasible to perform phacoemulsification via a 2.0 mm incision.
Results: Corneal incisions however were found not to be as secure as scleral incisions and smaller incisions in the range of 2.0 mm are more secure. MicroCoaxial phaco with the modified phaco needle was able to provide equivalent infusion to standard coaxial phaco. The technique was found to be suitable for routine and complex cataract surgery.
Conclusion: MicroCoaxial phaco with a modified phaco needle and sleeve provides superior fluidics to the biaxial approach and the smaller incision is more secure than larger corneal incisions required for standard coaxial phaco.

A202
THE PLACE FOR FEMTOSECOND LASER TECHNOLOGY IN LASIK

Chan Wing Kwong, Singapore

A203
MICRO COAXIAL PHACO WITH OZIL

Takayuki Akahoshi, Japan

Purpose: To remove the cataract through a sub-2 mm incision and implant a 6.0 mm optic IOL through the same incision.
Methods: The Nano Sleeve was developed to attain sub-2 mm coaxial phaco surgery. To get sufficient irrigation into the anterior chamber, some modifications to the existing irrigation system were made. Several types of U/S tips were made for the OZil (Torsional handpiece) and tested to find out the most efficient one. Counter Traction Implant technique was used to implant a 6.0 mm optic single piece AcrySof.
Results: Coaxial phacoemulsification through a 1.8 mm incision was possible. By the new Akahoshi style U/S tip, even a dense cataract was removed efficiently with the OZil handpiece. More than 5000 AcrySof were implanted by the Counter Traction Implant technique without any complications. The final incision size was between 1.9 and 2.1 mm according to the IOL power.
Conclusion: Sub-2 mm coaxial phaco surgery with a 6.0 mm optic AcrySof implantation should be a new standard of cataract surgery. The OZil which can remove the cataract with the minimum U/S energy is indispensable to attain this surgery most efficiently and safely.

A204
TORIC ICL IN ASIAN EYES

John Chang, Hong Kong

Introduction: This study reports the accuracy of the implantation of the STAAR Toric ICL.
Method: Fifteen toric ICL's were implanted into 10 patients with a mean age of 32.0 $\pm$ 7.9 years ranging from 23 to 44 years. There were 9 females and 1 male. The mean preoperative sphere was -14.0 $\pm$ 2.86 D (range -6.75 to -17.25 D) and the mean cylinder correction was 3.38 $\pm$ 0.89 D (range 1.75 to 5 D). Mean follow-up time at the last visit was 5.0 $\pm$ 2.5 months (range 1 to 8.2 months).
Result: The mean postoperative sphere and cylinder correction were -0.10 $\pm$ 0.51 D and 0.67 $\pm$ 0.56 D respectively. All eyes achieved 20/30 or better uncorrected (UCVA) and best corrected visual acuity (BCVA). 20/25 or better UCVA and BCVA was achieved in 93% of eyes. None lost any lines of BCVA.
Conclusion: The early results of our eyes show that the toric ICL can achieve good accuracy and safety. No complications have occurred in any eyes thus far.

A205
THE USE OF BIMANUAL MICROINCISION PHACOEMULSIFICATION FOR DIFFICULT AND CHALLENGING CASES

Howard Fine, USA

Purpose: The demonstration of the unique fluidic advantages of the separation of infusion from aspiration that bimanual microincision phacoemulsification offers in difficult and challenging cases.

Methods: Video of surgical footage will be used to show the benefits of bimanual microincision phacoemulsification.
Results: The fluidic advantages of bimanual microincision phacoemulsification make possible the management of certain difficult and challenging cases that may be much more difficult, or even impossible, with the use of coaxial phacoemulsification.
Conclusions: Bimanual microincision phacoemulsification will reach full utilization when there are IOLs that can be inserted through 1.1 mm incisions; however, until then, it is clear that this technique offers unique advantages in difficult and challenging cases.

A206
INTRAOPERATIVE FLOPPY IRIS SYNDROME

Alan Crandall, USA

Abstract: The syndrome involves a triad of findings. First, the iris is floppy and tends to billow with the normal flow in the anterior chamber. Second, the iris tends to prolapse into the phaco and side port incisions. Of most concern is the tendency for progressive pupil constriction during surgery.
Purpose: Different strategies are available for the operative management of Intraoperative floppy syndrome to reduce the problem of posterior capsule tears.
Method: The iris itself can be effectively handled by a variety of methods. The use of iris hooks to hold the iris is effective especially in the diamond configuration as described by Oetting. Other mechanical devices such as the Morcher iris diaphragm, the Graether pupil expander (Eagle Vision), or the Perfect Pupil are also helpful. However, in most cases the iris can be maintained by the use of Healon V (AMO). The Healon will remain in the chamber with the low flow parameters as described by Osher and can be re-added to the anterior chamber if the iris comes down as described by Koch.
Result: The combination of the syndrome findings can lead to difficult surgery and in the original communication they had 12.5% capsule rupture rate.

A207
WHAT IS THE RELATIONSHIP BETWEEN THE CLEAR CORNEAL CATARACT INCISION AND POSTOPERATIVE ENDOPHTHALMITIS?

Samuel Masket, USA

Purpose: To consider what aspects of corneal incisions increase the chance for post-surgical intraocular infection.
Methods:
1. Evaluation of the value for conjunctival covering of cataract incisions.
2. Assessment of incisional architecture with respect to differences between sclerocorneal tunnels and clear corneal tunnel incisions.

Results and Conclusions: Clear corneal incisions may be associated with greater rates for infection varying with incision construction and means for prophylaxis.

A208
CYSTOID MACULAR EDEMA REVISITED

Stephen Obstbaum, USA

Cystoid Macular Edema (CME) is a manifestation of a variety of conditions characterized by leakage by the perifoveal capillaries and retinal thickening that results in reduced visual acuity and may also adversely affect contrast sensitivity function. There are three large etiological categories associated with the development of CME: (1) Vitreomacular traction, (2) Retinal vascular conditions (3) Ocular inflammation. It is the latter two categories that constitute the subject of this presentation. Even cataract surgery, performed by bimanual microincision surgery or by a small incision coaxial technique decompress the eye and for a short period intraoperatively there is an imbalance between the intravascular and interstitial tissue compartments in the eye. In predisposed eyes this may produce CME. The recent findings of an increased incidence of endophthalmitis with unsutured, clear corneal incisions brings into question the actual timing of wound stability that might promote intraocular vascular equilibrium. In addition, cataract surgery with IOL implantation is associated with Blood Ocular Barrier Breakdown, which is associated with the generation of inflammatory mediators, most prominently, those associated with the products of arachidonic acid metabolism. The use of topical steroidal and non-steroidal drugs have positively influenced the outcomes of eyes with predisposing conditions and have benefited patients not having apparent preoperative co-morbidities. Prophylactic use of these agents should be adopted for patients having cataract /IOL surgery. The benefits and risks of using periocular and intravitreal steroids to treat CME will also be mentioned. Finally, in patients with cataract and glaucoma in whom medical therapy is to be resumed after surgery we will make some comments with respect to the use of PG analogues.

A209
CORNEAL REFRACTIVE SURGERY — LATEST DEVELOPMENTS

Ioannis Pallikaris, Greece

Corneal refractive surgery is one of the most rapid evolving fields in ophthalmology.

The presentation will summarize all recent developments in the field including novel surgical approaches, recently introduced

femtosecond assisted flap creation, wavefront technology, new laser platforms for the correction of refractive errors and the new concepts in approaching accommodation, presbyopia correction and ocular biomechanics.

Emphasis will be given in the evolution of those modalities as well as the related indications and complications.

A210

RISK MANAGEMENT IN REFRACTIVE LENS EXCHANGE WITH REFERENCE TO RETINAL DETACHMENT

Emanuel Rosen, UK

Purpose: Meta-analysis of past 11 years peer reviewed publications on rhegmatogenous retinal detachment (RRD) in myopic eyes after refractive lens exchange and or cataract extraction and IOL implantation.

Results: The literature shows that RRD in myopic eyes after lens extraction varies from 0% to 8% over time with a mean rate of 2.1%. This compares with an annual rate of 1.17% for all eyes after KPE lens extraction and an annual rate of 0.118% for all eyes without surgery. Additional personal data from a series of over 500 eyes is also included. A comparison with RRD rates after posterior chamber phakic IOL implantation will be made that suggests similarities between the two series with a mean RRD rate for RLE/Cataract of 2.1% and 2% for phakic IOL implantation. The outcome of RRD repair is also discussed revealing a 90% success rate coupled with an overall loss of 2 lines of BCVA.

Discussion: Lens extraction per se increases the risk for RRD. Younger patients <50 years old have a significantly higher rate of RRD whereas older patients >70 years have a reduced rate when compared with the mean. Posterior vitreous detachment and tractional retinal tears seem to be the underlying pathophysiology.

A211

FIRST EXPERIENCES WITH PENETRATING KERATOPLASTY USING THE FEMTEC FEMTOSECOND LASER

Gerd Auffarth, Germany

Background: We used the Femtec Femtosecond Laser (20/10 Perfect vVision Inc., Heidelberg, Germany) to perform 5 penetrating keratoplasty in September 2005.

Patients and Methods: Five patients aged 50 to 84 years were treated with the Femtec Femtosecond Laser for penetrating keratoplasty (PKP). Indications for PKP: Granular corneal dystrophy, Fuchs endothelial dystrophy, Familiar endothelial dystrophy, Keratoconus and corneal scars after herpetic keratitis.

Results: All surgeries were uneventful. Corneal donor as well as recipient were treated with the Femtec Laser. Cutting diameter were 7.8 mm for recipient and 8.0 mm for donor tissue. The cutting process starts circular approx. 1000 μm inside the anterior chamber going up via endothelium, stroma towards the epithelium. A double running Hoffmann suture was applied. The postoperative course was also uneventful.

Conclusions: The femtosecond laser technology enabls us to perform accurate cutting for PKP.

A212

THE CORRECT CENTRATION OF CORNEAL REFRACTIVE PROCEDURES

Thomas Neuhann, Germany

Centration is an issue of vital importance in keratorefractive surgery. Consequently, different proposals have been made over the years, each one vehemently supported by respectable proponents. This lecture will evaluate the optics behind such procedures, the particular conditions of the eye as a non-concentric multiple-optic-surfaces-system and, derived hereof, the rationale for centration of keratorefractive procedures around the optical axis of the anterior corneal surface, being the closest defineable point to the visual axis of the eye. It will also be presented, why the line of sight, i.e. the center of the entrance pupil, is wrong for such centration.

APACRS 3
Plenary — Cataract

10 June 2006, Saturday, 1400-1530 Hrs
Ballroom 1-2, Level 2

A213

EVOLUTION OF CATARACT SURGERY FROM 1917-2006

Joaquin Barraquer, Spain

The evolution of cataract surgery will be presented beginning with an intracapsular cataract extraction performed by Prof. Ignacio Barraquer in 1917, using his erysiphake and obtaining an excellent result.

The resistance of the zonule was the most important difficulty. This is shown in DVD (experimental and surgical case). With enzymatic zonulolysis (Joaquín Barraquer 1958) this problem was solved (experimental and surgical case). Later, with the appearance of the phacoemulsification procedure (invented by Kelman) it has been possible to remove the cataract through a 2 mm corneal incision with excellent results. After cataract sonophaco extraction, a foldable IOL is placed in the bag of the lens (in the posterior chamber). The results are very good.

In cases of Rieger anomaly, we can perform the same procedure and "reconstruct" the iris with insertion of artificial iris segments. In many cases with phacoemulsification extracapsular

cataract extraction, etc. posterior capsule opacification may occur from 6 months to 2 years post-op. With Yag laser we can perform a capsulotomy with minimal or no complications and the vision is again restored.

Finally, we will show a new procedure still in experimental stage (Phaco-Ersatz 2001). The cataract is aspired though a small opening in the periphery of the anterior capsule. The capsule is well cleaned and a polymer gel with index refraction 1.4 is injected reforming the crystalline lens in the original bag. The zonule should be able to restore accommodation for far and near vision. There are a lot of problems that we hope will be solved in the future. These experiments are performed at the Barraquer Institute by Joaquín Barraquer, Rafael I. Barraquer and Ralph Michael, and at the Bascom Palmer Eye Institute by Jean Marie Parel and co-workers.

A214
IOL POWER CALCULATIONS AFTER KERATOREFRACTIVE SURGERY

Warren Hill, USA

Synopsis: Consistent accuracy for IOL power calculations following the commonly employed forms of keratorefractive surgery continues to be problematic. This presentation will provide a comprehensive, state-of-the-art review of what is required for improved accuracy in IOL power calculations following RK, PRK and LASIK.

Objective: Attendees will have a better understanding of the two underlying issues that continue to limit IOL power calculation accuracy following the major forms of keratorefractive surgery and how these issues can be overcome in clinical practice.

A215
OPTIMAL COMBINATION FOR EMERGING MICRO-COAXIAL PROCEDURES

Abhay Vasavada, India

Purpose: To report a technique of phacoemulsification that involves performing the entire procedure through a small incision with conventional coaxial phacoemulsification hand-piece.

Methods: The Micro-coaxial Phacoemulsification (MCP) is performed using new sleeves known as ultra/nano sleeves that allow coaxial MCP through a small incision of 2.2 or 2.0 mm. The various combinations of technique, technology and ocular viscosurgical devices (OVDs) that are necessary to optimize the outcome shall be discussed.

Results: The entire phacoemulsification and IOL implantation was performed through the small incision. Intraoperative anterior chamber stability was good, tissue mutilation was minimal, and postoperative induced astigmatism was insignificant. The surgeon could perform phacoemulsification without modifying his surgical technique therefore the learning curve is eliminated. This technique also enables the implantation of preferred IOLs without compromising the small incision. This technique avails the advantages of a small incision without compromising the irrigation, compatible intraocular lenses (IOLs) and architecture.

Conclusion: The various combinations of technique, technology and ocular viscosurgical devices (OVDs) have optimized the outcome of phacoemulsification. The emerging technique of Micro-coaxial Phacoemulsification (MCP) offers an excellent alternative technique to the bimanual approach.

A216
COAXIAL, BIMANUAL OR BIAXIAL?

Philippe Sourdille, France

The current controversy on cataract surgery technique carries some confusion, since every operation is, at least partially, bimanual. The rationale for a change should consider the improvements to be proposed: less movements inside the anterior chamber, less intraocular pressure spikes, less ultrasonic power, less damage to the zonular system. Ultimately we have to significantly lower the risk of blood ocular barriers ruptures, a source of potential complications.

We propose a biaxial approach, with less in and outs of instruments, no windscreen wiper like movements, no rotation of the nucleus, and no stretching of the zonule. A specific instrumentation is used, to facilitate nucleus fracture and nucleus fragments removal, in a very stable environment. The technique is globally less invasive, with very low flare counts, and less modifications of central retina thickness.

A217
SPHERICAL ABERRATION IN YOUNG SUBJECTS WITH HIGH VISUAL ACUITY

Pablo Artal, Spain

Purpose: To evaluate the average value of the spherical aberration (SA) presents in a group of young subjects with exceptional natural visual acuity (VA). This is a follow-up of our recent research where we reported that most subjects with natural “supervision” had normal amounts of ocular aberrations (Artal et al., Invest. Ophthalmol. Vis. Sci. 2005;46:E-Abstract 3615).

Methods: We selected a group of 46 young subjects having excellent visual acuity (better than 20/15). Subjects were nearly emmetropic (defocus range between -1D to 1D and astigmatism smaller than 0.5 D). The average age of the subjects was 25.3 years old (SD = 4 years). A custom procedure was used to estimate VA under carefully controlled experimental conditions at best

focus and with the small remaining astigmatism corrected. High contrast letter acuity was measured by using a forced choice procedure. For each eye, we measured the wave-front aberrations for different pupil diameters using our own research prototype wave-front sensor. Accommodation was controlled during the experiment, only including those subjects with SA data obtained in an unaccommodated state.

Results: We selected a group of subjects with a high contrast VA under the best conditions uniformly distributed from 20/15 to 20/10. In each eye, SA was extracted from the wave-front data for different pupil diameters. Spherical aberration was not correlated with visual acuity. SA was in magnitude small in all subjects with values both positive and negative. The average SA for a 5-mm pupil was slightly positive (0.036 microns) with a standard deviation of 0.055 microns. For a 4-mm pupil diameter the average SA was 0.016 microns (SD = 0.027 microns). In agreement with the known increases of SA with normal aging (Artal et al., JOSAA, 2002), we obtained a correlation of SA with age. The average SA (5-mm pupil) in the subgroup of subjects younger that 25 years old was 0.02 microns (SD = 0.052).

Conclusions: Young subjects with an excellent naturally spatial vision present small values of SA that are not correlated with their visual acuity. The average SA in these subjects is not statistically significantly different from zero. These results may support an ideal target of zero SA in different refractive surgery procedures to produce the best quality of vision.

A218
COMPARISION OF ASPHERIC IOL DESIGNS — ZERO ABERRATION VS. NEGATIVE ABBERATION

Uday Devgan, USA

Purpose: To explain the differences between zero-aberration aspheric IOLs and negative-aberration aspheric IOLs.

Method: Illustrations and animations will be shown to explain the differences between the zero-aberration aspheric IOLs and negative-aberration aspheric IOLs.

Results: Both zero-aberration aspheric IOLs and negative-aberration aspheric IOLs are appropriate for cataract surgery, with each lens providing different benefits over the other. Aspheric IOL selection should be geared towards each patient, their preoperative conditions, and their postoperative expectations.

Conclusion: Aspheric IOLs, of both the zero-aberration and negative-aberration design, are appropriate for use in cataract surgery, with each lens providing different benefits over the other.

A219
ASPHERIC INTRAOCULAR LENS EVALUATION IN CHINESE CATARACT PATIENTS

Yao Ke, China

Purpose: To evaluate the effect of an aspheric intraocular lens (IOL) [Adapt AO, Baush & Lomb] on spherical aberration, retinal imaging and functional visual performance in pseudophakic eyes.

Setting: Eye center, Affiliated Second Hospital, Medical College, Zhejiang University, China.

Methods: 50 Chinese patients presenting for cataract surgery received Adapt AO intraocular lens (IOL) in one eye were followed for 3 months postoperatively. Spherical aberrations of cornea, internal and total eye were estimated by OPD-scan. The influence of spherical aberration on retinal imaging was simulated by computing the modulation-transfer function (MTF). Contrast sensitivity with the absence or presence of glare was tested using glare contrast tester-1000.

Results: Spherical aberration of cornea was not significantly different, whereas spherical aberrations of internal and total eye were significantly decreased in pseudophakic eyes implanted with Adapt AO lens. The values of MTF and contrast sensitivity were significantly improved postoperatively, particularly at high spatial frequencies. Detail information will be presented at the meeting.

Conclusion: Adapt AO lens can significant decreases the spherical aberration, and provide excellent retinal image and functional vision performance in Chinese pseudophakic eyes.

A220
TARGETING ZERO ENDOPHTHALMITIS IN CATARACT SURGERY

Chan Tat Keong, Singapore

Infectious endophthalmitis is a devastating complication following cataract surgery. In the Endophthalmitis Vitrectomy Study, over 90% of cases were caused by gram-positive bacteria, notably coagulase-negative staphylococci, *Staphylococcus aureus* and streptococcus species. Gram-negative bacteria accounted for only 6% of infections. The incidence rate of endophthalmitis is low, being reported as 0.07-0.12%. This makes rationally designed prospective studies on specific preventive measures extremely hard and costly to perform. To date, preoperative topical povidone-iodine is the only intervention considered moderately important to clinical outcome, based on fairly substantial supporting evidence. Current strategies for prophylaxis are based on 3 main principles. Firstly, decrease the pre-existing bacterial flora on the ocular surface; secondly, minimize anterior chamber bacterial contamination during surgery. Thirdly, kill any microbes that inadvertently gain access into the eye. As these microbes usually arise from the eyelids and periocular tissues, preoperative antisepsis is of

paramount importance. Preoperative preparation includes meticulous sterile draping of the eyelids, topical povidone-iodine and/or topical antibiotics. Surgery should be performed quickly and safely, avoiding pooling of irrigating fluid around the surgical incision. Incisions, especially sutureless corneal incisions, should be watertight. Postoperative topical antibiotics if prescribed, should be administered at least four times daily and stopped abruptly after 2 weeks, in order to minimize the risk of antibiotic resistance. A large, prospective clinical trial evaluating the prophylactic roles of topical levofloxacin and intracameral cefuroxime is currently ongoing in Europe. Implications of the results of this landmark study on the practice of cataract surgery would be discussed.

APACRS 4
Plenary — Presbyopia

10 June 2006, Saturday, 1600-1750 Hrs
Ballroom 1-2, Level 2

A221
MULTIFOCAL LASIK — PSEUDO ACCOMMODATIVE CORNEA BY MULTI-STEP LASIK — 5 YEARS EXPERIENCE

Alain Telandro, France

Since 2001 we have developed a new way to combined myopic and hyperopic treatments through LASIK to create a multifocal cornea.

The main idea is to create concentric surfaces of emetropic and myopic focus on the retina. The target is a central area of emetropia and a progressive ring of myopic area peripheralcy for near vision.

The analyse of a natural accommodative eye through OPD scan show the same distribution. The target is to change a presbyopic eye like a hyperopic young eye in constant accommodation.
The simultaneous images created by this optical system is working with the brain filtering system which chooses spontaneously the good image.

PAC software (PAC for Pseudo Accomodative Cornea) have been created and progressively upgraded in collaboration with Nidek research and development.

The combination of OPD Scan, Final Fit through OPDcat, PAC Calculator, and EC 5000 excimer laser with his last evaluated eye tracker is the way we are using Navex system for this presbyopia treatment.

The results in term of safety, predictability, refractive target, and presbyopia compensation are significant. The patient satisfaction study confirms the good contrast sensitivity test we have realized.

The last evolution of this multifocal, multi-step, Lasik is using now the Visual Axis reference as the center of this combination of photo ablations.

A new software is using the excentration value of the pupil to automatically realize the treatment on the customized position of each eye of each patient.

A222
PSEUDO ACCOMODATIVE CORNEA WITH NIDEK NAVEX SYSTEM — THE ASIAN EXPERIENCE

Cymmer Go, Phillippines; Steve Seah, Singapore

This technique and demonstration has been undergoing in major ophthalmic centres in The Philippines and Singapore since 2005. Results will be presented in this lecture.

A223
CORRECTION OF PRESBYOPIA WITH THE CARL ZEISS MEL 80

Burjor Banaji, India

The correction of Presbyopia has long frustrated attempts at correction by surgical means as evidenced by several new and radical approaches to the problem. This paper will outline a method whereby the correction of presbyopia is attempted by a revolutionary method of manipulating spherical aberration using the Carl Zeiss MEL 80 excimer laser. Either PRK or LASIK may be used to achieve these ends. The paper expounds on the Indian experience of Presbyopic correction with LASIK using the MEL 80.

A224
MULTIFOCAL CORNEAL ABLATION IN MYOPIC PATIENTS WITH EARLY PRESBYOPIA

Wang Zheng, China

Purpose: To study the efficacy and safety of multifocal LASIK using a combination of myopic and hyperopic ablations in myopic eyes with early presbyopia.
Patients and Methods: Thirty-two myopic patients aged from 38 to 47 (mean, 42.4 years) underwent LASIK using B&L 217z excimer laser. Standard LASIK was performed on the dominant eye, while the non-dominant eye had multifocal LASIK, which was a combination of a 5.5-mm OZ myopic ablation and a 4.0-mm OZ hyperopic ablation. The preoperative mean spherical equivalent varied from -1.25 to -6.00 D. Wavefront aberrometry, corneal topography, distant and near visual acuity, depth of field, and contrast sensitivity were examined.
Results: Three months after operation, mean refraction was -0.18 $\pm$ 0.26D in the multifocal eyes and -0.14 $\pm$ 0.15D in the standard LASIK eyes (t=0.569, p=0.573). Mean distance UCVA (logMAR) was –0.010 $\pm$ 0.072 in the multifocal eyes and –0.019 $\pm$ 0.043 in the standard LASIK eyes (t=0.502, p=0.619). Mean near visual acuity at 33 cm (converted to logMAR) was 0.024 $\pm$ 0.104 in multifocal eyes and 0.119 $\pm$ 0.116 in standard LASIK eyes (t=2.658, p=0.012). Orbscan revealed that the asphericity of central cornea was maintained after multifocal LASIK. Zywave aberrometer showed

a reduction of negative spherical aberration in the multifocal eyes, in contrary to standard LASIK, after which negative spherical aberration was increased. The multifocal eyes showed a wider depth of field than that of standard LASIK eyes. Contrast sensitivity, however, was slightly reduced in the multifocal eyes.
Conclusion: Multifocal LASIK is effective and safe in preserving near visual acuity in myopic patients with early presbyopia.

A225
CORNEAL-BASED PRESBYOPIA CORRECTION — REPORT ON THE LONG-TERM INTERNATIONAL STUDY ON MULTIFOCAL ABLATION FOR HYPEROPIC PRESBYOPES

Marguerite McDonald, USA

Purpose: To discuss preliminary safety and efficacy results of the Canadian multicenter trial of multifocal LASIK treatments for the correction of hyperopic presbyopia.
Methods: Long-term clinical trial follow-up study of 61 hyperopic presbyopic eyes treated, with 12 months postoperative results in 16 eyes. Subjects preoperatively presented with a mean sphere of 1.65D (range 0.5 to 3.50D) and mean cylinder of 0.43D (range 0. 00 to 1.5D). Iris registration is a key element of the treatment process. Postoperative subjective questionnaire was administered.
Results: Twelve months postoperatively 94% of eyes (n=12) saw 20/25 or better at distance and 88% saw J3 or better at near. Additionally, 77% of patients achieved 20/25 distance and J3 near or better. Overall patient satisfaction was good and spectacle independence was achieved and maintained in most cases. There was no significant loss of contrast acuity and the mean higher order aberrations changed from positive to negative spherical aberration.
Conclusions: Long-term results of multifocal presbyopic correction for hyperopic presbyopes demonstrate stability and safety with high overall patient satisfaction.

A226
PRESBYLASIK — MYTH OR REALITY

Jerry Tan, Singapore

Treatment for presbyopia with LASIK has resulted in 5 different approaches. These approaches are:

1. Monovision
2. Central Steep Island (Visx)
3. Inferior Decentered Steep Island (Ruiz)
4. Central Steep Annulus (Nidek)
5. Global Optimum (Wavelight & Zeiss).

Retinal spot size analysis and computer generated image simulation will be presented for the central steep island, central steep annulus and global optimum ablation patterns. Also, the effect on ablation decentration on these various presbyLASIK ablation patterns will also be discussed.

A227
MULTIFOCAL IOL — AN UPDATE

Burkhard Dick, Germany

Technology advancements within the field of multifocal intraocular lenses (IOLs) have now led to lenses that improve the proportion of spectacle-independent eyes and simultaneously reduce the incidence of photic phenomena. Cataract surgery has become a form of refractive surgery that is changing the Life Style Vision of the recipients. Besides several other advancements in multifocal IOLs, the asphericity and full optic diffractive optic is utilized in the Tecnis multifocal IOL, the apodization is utilized in the AcrySof Restor IOL or the new zonal light distribution pattern is incorporated in the ReZoom multifocal IOL.

These significant design improvements will further improve patient satisfaction by offering increased spectacle freedom. Acceptance of multifocal IOLs is expected to increase within the field of presbyopia treatment during cataract surgery.

A228
PATIENT SATISFACTION AND RESULTS OF THE RESTOR LENS IMPLANTATION

Alan Crandall, USA

Abstract: Patient results with eyeglasses in refraction status and management of astigmatism to maximize results. Majority of patients plano to +.25 diopters with less than one diopter and astigmatism have excellent results.
Purpose: Clinically evaluate the performance of the ReStor Apodized Diffractive IOL.
Method: Patients were evaluated for distance acuity corrected and uncorrected. For near acuity: The patients were queried for overall satisfaction for percentage of use of glasses, for unwanted visual aberrations.
Results: The ReStor lens performed well. Patient satisfaction is high but amount of residual astigmatism was predictive of overall satisfaction.

A229

EFFICACY OF THE TECNIS ZM900 MULTIFOCAL INTRAOCULAR LENS

Zainah Alsagoff, Singapore

Method: Following appropriate counselling, patients were selected for cataract extraction with insertion of the Pharmacia Tecnis ZM900 multifocal IOL. Patients with significant ocular pathologies were excluded. All cases were performed by two surgeons using phacoemulsification technique. Patients were reviewed on the 1st day, 1st week, 1st month and 3rd month after surgery. Parameters assessed at the postoperative visits included unaided distance and near visual acuity (VA), distance-corrected near VA, best spectacle-corrected distance and near VA, contrast sensitivity (CS) in photopic and mesopic conditions as well as dilated aberrometry assessments. Subjective assessments were performed using a Quality of Life (QOL) questionnaire at 1 month.

Results: 31 eyes in 28 patients had the described procedure. At one month after surgery, 87% of eyes obtained unaided distance VA of 6/9 or better. 87% of eyes obtained unaided near VA of N6 or better. 97% of eyes obtained N6 or better distance-corrected near VA. Contrast sensitivity testing using Sine Wave grating methods demonstrated normal CS values in all spatial frequencies under photopic conditions and results compatible with the monofocal IOL. Dilated aberrometry showed the total higher order aberrations to be similar to monofocal IOL and that the spherical aberration component to be significantly absent. Subjective responses to the QOL questionnaire indicate that all patients had good visual and optical satisfaction with the Tecnis ZM900 IOL with majority preferring spectacle independence for near and distance.

Conclusion: The ZM900 Tecnis IOL certainly seems to be a promising Multifocal IOL.

A230

IMPLANTATION OF A RESTOR LENS IN ONE EYE AND AN ARRAY OR REZOOM IN THE OTHER — A GOOD IDEA OR NOT?

Con Moshegov, Australia

Purpose: To compare functional outcomes between patients undergoing implantation of an Alcon ReSTOR intraocular lens (IOL) in one eye and an Array or ReZOOM IOL in the other to those bilaterally implanted with the Alcon ReSTOR IOL.

Method: Fifty-six patients underwent cataract or clear lens extraction and were divided into three groups. Group 1 (17 patients) and Group 2 (9 patients) had a ReSTOR IOL implanted in their dominant eye and an Array IOL or ReZOOM IOL, respectively, in their non-dominant eye. Group 3 (30 patients) had bilateral ReSTOR IOL implantation. After 6 months patients were examined and questioned about their ability to cope under certain conditions. Fisher's Exact Chi square test was employed to evaluate the differences between the three groups.

Results: Seven patients (41%) in Group 1, five patients (56 %) in Group 2 and 26 patients (87%) in Group 3 reported total independence from spectacle wear. Four patients (24%) in Group 1, three patients (33 %) in Group 2, and one patient (<1%) in Group 3 reported severe difficulties driving at night or in the rain. The highest incidence of severe halos was in Group 1. There was little difference between the groups in their ability to perform near visual tasks. The unaided visual acuities were similar between the groups.

Conclusion: The implantation of a ReSTOR IOL in one eye of a patient and an Array or a ReZOOM in the other is associated with a higher likelihood of difficulty driving at night or in the rain and seeing marked halos at night than if bilateral implantation of the ReSTOR IOL is performed. Though depth of focus and intermediate vision may be maximized the likelihood of spectacle independence is lower in the combination group than in the bilateral ReSTOR implanted group.

A231

ENHANCEMENT OF VISUAL ACUITY AND CONTRAST SENSITIVITY IN LOW MYOPIA, PRESBYOPIA AND POST-REFRACTIVE SURGERY PATIENTS THROUGH THE USE OF NEUROVISION THERAPY

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Purpose: NeuroVision's NVC™ technology is a non-invasive, patient-specific, "perceptual learning" or neural adaptation program based on visual stimulation and facilitation of neural connections at the cortical level, involving a computerized visual training regime using Gabor patches, to improve contrast sensitivity and visual acuity. We evaluated efficacy of treatment in enhancing unaided visual acuity (UAVA) and unaided contrast sensitivity function (UCSF) in low myopes, emmetropic presbyopes and post-refractive surgery patients with residual ametropia.

Methods: 113 patients with low myopia (mean cycloplegic SE of -1.18D, range 0-2.50D) underwent NVC treatment. 55 patients (Subgroup-1) have completed 6 months follow-up and 16 patients (Subgroup-2) have completed 6 and 12 months follow-up post-treatment end. 41 presbyopic patients aged 41-55 (mean 46.37 ± 0.52) with near addition ranged +1.00D to +2.00D (mean +1.40D ± 0.05D) underwent NVC treatment. 14 post-refractive surgery patients (10 post-lasik, 2 post-PRK and 2 post-RK+lasik patients) [28 eyes] with mean post-refractive surgery spherical equivalent of -1.33D (range +0.75 to -3.12D) underwent NVC treatment.

Results: Low Myopia Group: Mean Baseline LogMAR UAVA (BUAVA) was 0.41, improving to 0.13, gain of 2.8 lines. Mean baseline unaided CSF at 1.5,3,6,12,18 cpd (BCSF) was 38.44, 39.97, 23.25, 6.29, 1.90, improving at all spatial frequencies to within the normal range: 108.26, 134.65, 134.04, 58.28, 15.84. Patients

with at least 6 months post-treatment follow-up maintained 85% of the improvement after 6 months, while those with 12 months follow-up maintained 5% of the improvement after 12 months.
Presbyopia Group: Mean Near Unaided LogMAR VA improved from 0.33 to 0.17, gain of 1.6 lines. Mean Low Contrast (10%) Near Unaided LogMAR VA improved from 0.44 to 0.30, gain of 1.3 lines. Mean Near Unaided CSF at 1.5,3,6,12,18 cpd improved from 58. 00, 68.38, 40.63, 10.04, 3.30. to 81.75, 112.20, 73.85, 21.66, 6. 96, an improvement of 40.96%, 64.90%, 81.79%, 115.60% 111. 05% in sensitivity at the respective frequencies.
Post-refractive surgery group: Mean Baseline LogMAR UAVA (BUAVA) was 0.32, improving to 0.115, gain of 2.05 lines. Mean refractive error in all groups remained unchanged after treatment in all eyes.
Conclusions: Results to date suggest that NVC treatment improves UAVA and CSF in low myopes, emmetropic presbyopes and post-refractive surgery patients. This improvement appears to be retained for at least 12 months after treatment in the low myopia group, and a randomized trial for low to moderate myopia is underway.