

November 27-29, 2012

Sofitel Philippine Plaza Hotel

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2012-2013



AMERICAN ACADEMY
OF OPHTHALMOLOGY



Asia Cornea Foundation

The 3rd Biennial Scientific Meeting

asia cornea society

Expanding the Realm of the Possible



ABSTRACTS

FREE PAPER SESSIONS

Free Paper Oral Presentations 1 28 November 2012, Wednesday 4:00-5:36pm

Chair: ZuGuo Liu, *China*

Co-Chair: Anand Parthasarathy, *India*

Co-Chair: Ivo John Dualan, *Philippines*

4:00 - 4:08 pm

OP-1

Besifloxacin Ophthalmic Suspension, 0.6% Compared with Moxifloxacin Ophthalmic Solution 0.5% in Bacterial Conjunctivitis

Harvey S. UY

St. Luke's Medical Center, Philippines

4:08 - 4:16 pm

OP-2

OCT-guided Femtosecond Laser Corneal Surgery for Corneal Rings and Corneal Inlays Using a Built-in OCT System

Minoru TOMITA

Shinagawa LASIK Center, Japan

4:16 - 4:24 pm

OP-3

Intraoperative Optical Coherence Tomography (iOCT) Improves Surgical Performance in DMEK and DALK

Claus CURSIEFEN

Department of Ophthalmology, University of Cologne, Germany

4:24 - 4:32 pm

OP-4

Split Cornea Transplantation by Combining DMEK and DALK Saves Corneal Donor Tissue

Claus CURSIEFEN

Department of Ophthalmology, University of Cologne, Germany

4:32 - 4:40 pm

OP-5

Femtosecond Enabled Keratoplasty

Harsha NAGARAJA, Thungappa KUGAR, Rohit SHETTY

Narayana Nethralaya, India

4:40 - 4:48 pm

OP-6

Sutureless Femtosecond Assisted Anterior Lamellar Keratoplasty

Thungappa KUGAR, Harsha NAGARAJA, Rohit SHETTY

Narayana Nethralaya, India

4:48 - 4:56 pm

OP-7

Modified Double Bubble Technique that Enhances the Predictability and Safety in Deep Anterior Lamellar Keratoplasty (DALK)

Lasitha Saroj JAYASINGHE, Champa BANAGALA, Charith FONSEKA

National Eye Hospital, Sri Lanka

4:56 - 5:04 pm

OP-8

Relationship Between Central Corneal Graft Thickness and Visual Acuity Outcomes in Descemet's Stripping Automated Endothelial Keratoplasty

Andrea ANG, Alisha B. GHANDI, Kristiana NEFF, Edward J. HOLLAND

Cincinnati Eye Institute, USA

5:04 - 5:12pm

OP-9

Influence of Donor and Surgical Parameters on DMEK Tissue Preparation, Adherence and Endothelial Cell Loss

Marianne O. PRICE, Francis W. PRICE, Jr.

Cornea Research Foundation of America, USA

5:12 - 5:20 pm

OP-10

Clinical Experience and Results of Descemet-stripping Endothelial Keratoplasty (DSEK) with Insertion of Donor Button using Cystitome

Prateek GUJAR, Purendra BHASIN

Ratan Iyoti Netralaya, India

5:20 - 5:28 pm

OP-11

Overall Complications of Descemet's Stripping Endothelial Keratoplasty: An Analysis of 550 Consecutive Cases

Samar K. BASAK

Disha Eye Hospitals, India

5:28 - 5:36 pm

OP-12

OBL (Opaque Bubble Layer) Incidence, Risk Factors And Clinical Relevance

Chun-hsiu LIU, Chi-Chin SUN, David HK MA

Department of Ophthalmology, Chang Gung Memorial Hospital, Taiwan

Free Paper Oral Presentations 2 29 November 2012, Thursday 10:30-11:58am

Chair: Ray TSAI, *Taiwan*

Co-Chair: Cordelia CHAN, *Singapore*

Co-Chair: Myra Vita F. OCUBILLO, *Philippines*

10:30 - 10:38 am

OP-13

Prospective Analysis of Long Term Outcome of Corneal Collagen Cross Linking

Ashwini RANGANATH, Matalia HIMANSHU, H. MARUTHI

Narayana Nethralaya Superspeciality Eye Hospital, India

10:38 - 10:46 am

OP-14

Assessing the Safety Profile of Accelerated Corneal Collagen Cross-linking

Gurjeet SINGH, Rohit SHETTY, Sharon D'SOUSA

Narayana Nethralaya, India

10:46 - 10:54 am

OP-15

Corneal Biomechanics Changes Following Collagen Cross-linking Treatment in Keratoconus in Indian Eyes: One Year Results

Murugesan VANATHI, Ravi BYPAREDDY, Anita PANDA,

Tushar AGARWAL, Tanuj DADA, Sudarshan KHOKHAR

Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute for Medical Sciences, India

10:54 - 11:02 am

OP-16

Complications of Collagen Crosslinking

Nikhil S. GOKHALE

Gokhale Eye Hospital, India

11:02 - 11:10 am

OP-17

Antimicrobial Efficacy of Riboflavin and Ultraviolet A Light Combination in Vitro for Multi Drug Resistant Pseudomonas Aeruginosa and Fusarium Solani Isolates

S. ARJUN, Jayesh VAZIRANI, Mukesh TANEJA,

Swapna REDDY

LV Prasad Eye Institute, India

11:10 - 11:18 am

OP-18

Long-term Supplementation with N-6 and N-3 Pufas Improves Moderate to Severe Keratoconjunctivitis Sicca

John D. SHEPPARD, Stephen PFLUGFELDER,

Sandeep SAMUDRE

Virginia Eye Consultants, USA

11:18 - 11:26 am

OP-19

Loteprednol 0.5% Pre-treatment of Keratitis Sicca Improves Cyclosporine Tolerability

John D. SHEPPARD, Eric DONNENFELD,

Edward J. HOLLAND, Charles SLONIM, Renee SOLOMON,

Kerry SOLOMON, Marguerite MCDONALD, Henry PERRY, Stephen S. LANE, Sandeep SAMUDRE, Stephen PFLUGFELDER

Virginia Eye Consultants, USA

11:26 - 11:34 am

OP-20

Using Tissue-cultured Cord Lining Epithelial Cells in Treatment of Persistent Corneal Epithelial Defect: An Early Result

Ngan Dinh NGUYEN¹, Chau Hoang Thi MINH¹,

Thang Phan TOAN²

¹Department of Cornea and External Diseases, Vietnam National Institute of Ophthalmology, Vietnam; ²Department of Surgery, Yong Loo Lin School of Medicine, NUS, Singapore

11:34 - 11:42 am

OP-21

Clinical Profile and Surgical Outcome of Infiltrative Ocular Surface Squamous Neoplasia (OSSN)

Rama RAJAGOPAL, Bharti Ahuja, J. BISWAS, Geetha IYER,

Olma Veena NORONHA, Bipasha MUKHERJEE

Medical Research Foundation, Sankara Nethralaya, India

11:42 - 11:50 am

OP-22

Ocular Surface Reconstruction Using Ex-vivo Cultivation and Transplantation of Limbal Stem Cells and Conjunctival Equivalent in the Management of Ocular Surface Disease

Jessica Marie R. ABANO, Mark Pierre DIMAMAY,

Filipinas F. NATIVIDAD

St. Luke's International Eye Institute, Philippines

11:50-11:58 am

OP-23

Comparison of Cord Blood Serum and Amniotic Membrane Transplantation in Acute Chemical Injury

Namrata Sharma, Shiv Shankar Lathi, T. Velpandian, Rasik B. Vajpayee

Rajendra Prasad Centre for Ophthalmic Sciences, India

FREE PAPER POSTERS

28 November 2012, Wednesday - 29 November 2012, Thursday
Visayas Room

Authors will be available questions beside their posters during the morning coffee breaks

• 28 November 2012, Wednesday, 9:40 - 9:55 am

• 29 November 2012, Thursday, 10:10 - 10:25 am

Collagen Cross-Linking

PP-1

Microwave Thermoplasty Combined with Accelerated Cross Linking (ACXL) - New Therapeutic Procedure in Keratoconus

Gurjeet SINGH, Rohit SHETTY, Kareeshma WADIA

Narayana Nethralaya, India

PP-2

Short-Term Results of Corneal Collagen Crosslinking among Filipinos with Keratoconus

Ma. Dominga B. PADILLA, Charisse de Guzman SANCHEZ

University of the Philippine-Philippine General Hospital, Philippines

PP-3

6 Months Result of Accelerated Collagen Crosslinking for Treatment of Keratoconus or Keratoectasia, Including Morphological Changes

Minoru TOMITA, Yusuke YAMAMOTO, Mariko MITA

Shinagawa LASIK Center, Japan

PP-4

Keratoconus in Paediatric Patients- Clinical Features and Outcomes of Collagen Crosslinking

Anand PARTHASARATHY

Vasan Eye Care Hospital, India

Keratoconus and Other Ectatic Disorders

PP-5

Combined Intracameral Perfluoropropane (C3F8) Tamponade and Compression Sutures for the Management of Acute Corneal Hydrops

Thungappa KUGAR, Harsha NAGARAJA, Sharon D'SOUZA

Narayana Nethralaya, India

PP-6

Collagen Implantable Collamer Lens (pTICL) to Correct Ametropia in Eyes with Keratoconus

Anand PARTHASARATHY, Arvind VENKATRAMAN

Vasan Eye Care Hospital, India

PP-7

A Nomogram for Managing Keratoconus in Asia

Anand PARTHASARATHY

Vasan Eye Care Hospital, India

Contact Lens

PP-8

MSD Lens Fitted on a Post Lasik Corneal Ectasia

Carmen Abesamis DICHOSO

Philippine College of Optometrists, Philippines

PP-9 - WITHDRAWN

Myopia Control with Orthokeratology Contact Lenses in Spain (MCOS): Factors Associated with Myopia Progression

Jacinto SANTODOMINGO-RUBIDO¹,

Cesar VILLA-COLLAR², **Bernard GILMARTIN³**,

Ramon GUTIERREZ-ORTEGA

¹Menicon Co., Ltd, ²Universidad Europea de Madrid, ³Aston University, Clinica Oftalmologica Novovision, Spain

PP-10

Safety and Efficacy of Topical Besifloxacin 0.6% and Therapeutic Bandage Contact Lens for Elective Ocular Surgery

John D. SHEPPARD, **Walter WHITLEY**

Virginia Eye Consultants, USA

PP-11

Evaluation of Novel Multipurpose Contact Lens Care solutions Effect on Membrane-associated Mucin Expressions in the Rat

Cornea

Masaki IMAYASU¹, **Kissaou T. TCHEDRE²**,

H. Dwight CAVANAGH³

¹R&D Center, Menicon Co., Ltd, ²Kasugai, Japan, ³Dallas, USA

Dystrophies and Degenerations

PP-12

Clinical Profile of Congenital Hereditary Endothelial Dystrophy (CHED) Among Indian Population

Namrata SHARMA, **Babulal KUMAWAT**, **J.S. TITYAL**,

Rajesh SINHA, **Radhika TANDON**

Dr. Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, India

PP-13

Bilateral Corneal Opacity in a Patient with Acromesomelic Dysplasia

George Emmanuel S. COMIA

Philippine General Hospital, Philippines

PP-14

Differences of Corneal Endothelial Abnormality Between Central and Intermediate Zone in Fuch's Corneal Dystrophy

Hisataka FUJIMOTO, **Takeshi SOMA**, **Yoshinori OIE**,

Shizuka KOH, **Motokazu TSUJIKAWA**, **Naoyuki MAEDA**,

Kohji NISHIDA

Department of Ophthalmology, Osaka University Medical School, Japan

PP-15

Femtosecond Laser Assisted Cataract Surgery Improves the Prognosis for Primary Cataract Extraction in Fuchs Dystrophy

John D. SHEPPARD

Virginia Eye Consultants, USA

PP-16

Loteprednol 0.5% Prior to Pterygium Surgery Effectively Increases Conjunctival Glucocorticoid Receptor Internalization

John D. SHEPPARD, **Sandeep SAMUDRE**, **Frank LATTANZIO**,

Patricia WILLIAMS

Virginia Eye Consultant, USA

PP-17

Comparison of the Results of Pterygium Resection Combined with Conjunctival Autograft versus Amniotic Membrane Transplantation, after Sealing the Gap Between Tenon's capsule and Conjunctiva using Fibrin Glue

Prateek GUJAR

Ratan Jyoti Netralaya, India

Eye Banking

PP-18

Legislation and Donation: Comparing the Hospital Eye Donation Programme and HOTA - The Singapore Eye Bank Experience

Jia Qin ZHANG

Singapore National Eye Centre, Singapore

PP-19

The Use of On-Site Rapid Qualitative Hepatitis B Test to Pre-Screen Cornea Donors Prior to Harvesting

Leo D.P. CUBILLAN, **Roberto C. MANUNTAG**

Sta. Lucia International Eye Bank of Manila, Philippines

PP-20

The Endothelial Cell Density and Donor Age of Corneas Distributed by the Sta. Lucia International Eye Bank of Manila

Leo D. P. CUBILLAN, **Ma. Dominga B. PADILLA**

Sta. Lucia International Eye Bank of Manila, Philippines

PP-21

The Cornea Rating System of the Sta. Lucia International Eye Bank of Manila

Leo D. P. CUBILLAN, **Ma. Dominga B. PADILLA**,

Roland HARE

Sta. Lucia International Eye Bank of Manila, Philippines

PP-22

Corneal Donation and Utilization in Vietnam During 4 years 2007 - 2011

Pham Ngoc DONG, **Nguyen Huu HOANG**, **Hoang Thi Minh CHAU**

Eye Bank - Vietnam National Institute of Ophthalmology, Vietnam

PP-23

Hospital Cornea Retrieval Program: A Noble Concept in Eye Banking in India

Samar K. BASAK, **Bani BISWAS**, **Soham BASAK**

Disha Eye Hospitals, India

PP-24

Standardized Coding and Labeling for Ocular Tissue

W John ARMITAGE, **Paul ASHFORD¹**, **Pat DISTLER²**

CTS Bristol Eye Bank, University of Bristol¹, UK, 2ICCBBA, USA²

Imaging

PP-25
Ocular Surface Interferometer-a Newer Tool in Armamentarium of Tear Film Evaluation - Our Initial Experience
Ashbin RANGANATH, Rohit SHETTY, Sharon D'SOUZA, Kareesma WADIA
Narayana Nethralaya Superspeciality Eye Hospital, India

PP-26
Corneal Graft-Host Junction Study With As-OCT
Murugesan VANATHI, Manzoor Ul MEHDI, Sourabh SHARMA, Rakhi KUSUMESH
Dr. R P Centre for Ophthalmic Sciences, All India Institute for Medical Sciences, India

PP-27
Corneal Topography Changes Following Horizontal Muscle Strabismus Surgery
Norlelawati ZAINOL¹, Faridah Hanom ANNUAR²
¹Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia, ²Faculty of Medicine, Universiti Kebangsaan Malaysia, Malaysia

PP-28
Role of Confocal Microscopy in the Diagnosis of Pythium Keratitis
Orapin ANUTARAPONGPAN, Onsiri THANATHANEE, Olan SUWAN-APICHON
Khon Kaen University, Thailand

PP-29
Wide Field Analysis of Cornea Endothelial Remodeling after DSAEK Using a Contract Scanning Slit Specular Microscope
Hiroko NAKAGAWA, Tsutomu INATOMI, Shigeru KINOSHITA
Kyoto Prefectural University of Medicine, Japan

Immunology

PP-30
Tectonic Corneal Patch Graft in the Management of Severe Necrotizing Scleritis in Wegener's Granulomatosis
Armida L. SULLER, Mark RIVERA, Jessica Marie R. ABAÑO
University of Santo Tomas Hospital, Philippines

PP-31
A Randomized, Multicenter, Masked Evaluation of 0.5% Loteprednol Etabonate Versus 1.0% Prednisolone Acetate for the Treatment of Inflammation Following Cataract Surgery
Edward J. HOLLAND¹, Mahshad DARVISH¹, Stephen S. LANE²
¹Cincinnati Eye Institute, University of Cincinnati, USA, ²Associated Eye Care, USA

PP-32
Loteprednol Ophthalmic Suspension 0.2% Treatment of Seasonal Allergic Conjunctivitis is Equivalent to Olopatadine Hydrochloride Ophthalmic Solution 0.1% and Preferred by Patients
John D. SHEPPARD, Sandeep SAMUDRE, Walter WHITLEY
Virginia Eye Consultants, USA

PP-33
Galectin-9-mediated Protection from Allo-specific T Cells as a Mechanism of Immune Privilege of Corneal Allografts
Machiko SHIMMURA, MingCong WANG, Hiroko TANIGUCHI, Hisaya AKIBA, Hideo YAGITA, Junko HORI
Department of Ophthalmology, Nippon Medical School, Japan

PP-34
Allergy Modulation Arising from High-dose Intraperitoneal Sensitization is a Treg-dependent Mechanism in Murine Allergic Conjunctivitis
Hyun Soo LEE
Department of Ophthalmology, St. Mary's Hospital, Korea

Infection

PP-35
Preseptal Cellulitis- A Warning Sign of Brain Abscess?
Azlina MOKHTAR¹, Norlelawati ZAINOL¹, Umi KALTHUM², Zairah Zainal ABIDIN³, Zaliha Zakiah ASNIR³, Rusnah HUSSIN³
¹Medical Faculty and Health Sciences, Universiti Sains Islam Malaysia, ²Department of Ophthalmology, Universiti Kebangsaan Malaysia, Kuala Lumpur, ³Hospital Ampang, Malaysia

PP-36
The Anti-microbial Efficacy of Multipurpose Contact Lens Solutions on Standard Strains of Common Ocular Pathogens
Eleonore B. IGUBAN, Juan Pablo R. NANAGAS, Roslyn F. DE MESA-RODRIGUEZ
Department of Ophthalmology and Visual Sciences University of the Philippines-Philippine General Hospital, Philippines

PP-37
The Role of Type III Secretion System and Lens Material on the Adhesion of Pseudomonas Aeruginosa to Contact Lenses
Elizabeth P. SHEN, Fung-Rong HU
Buddhist Tzu Chi General Hospital, Taiwan

PP-38
Retrospective Safety Surveillance Study of the Use of Besifloxacin Ophthalmic Suspension, 0.6% in Lasik and Cataract Surgery
Jai G. PAREKH
Brar-Parekh Eye Associates, NJ/The New York Eye, USA

PP-39
Tectonic Corneal Patch Graft for the Treatment of Fungal Scleritis after Pterygium Surgery with Mitomycin C
James Rommet LUZ, Jessica Marie R. ABAÑO
University of Santo Tomas Hospital, Philippines

PP-40
Treatment of Pseudomonas or Methicillin Resistant Staph Keratitis with Topical Gentamicin and Besifloxacin Plus Subconjunctival Gentamicin
John D. SHEPPARD, Walter WHITLEY
Virginia Eye Consultants, USA

PP-41
Antifungal Activity of Voriconazole on Local Isolates: An In Vitro Study
Karina Q. DE SAGUN-BELLA, Archimedes D. AGAHAN, Leo D.P. CUBILLAN, Noel S. CARINO
University of the Philippines - Philippine General Hospital, Philippines

PP-42
Fungal Keratitis Caused By Dreschlera Spp. Treated with Voriconazole: A Case Report
Margarita I. ECHAVEZ, Archimedes D. AGAHAN, Noel S. CARINO
University of the Philippine-Philippine General Hospital, Philippines

PP-43

Contamination Risk of 100% Autologous Serum Eye Drops in Management of Ocular Surface Diseases

Onsiri THANATHANEE¹, Warachaya PHANPHRUK¹, Orapin ANUTARAPONGPAN¹, Amornrat ROMPHRUK², Olan SUWAN-APICHON¹

¹Department of Ophthalmology, Faculty of Medicine, Khon Kaen University, ²Blood Transfusion Center, Faculty of Medicine, Khon Kaen University, Thailand

PP-44

Non-tuberculous Mycobacterium Infection Presenting as Infectious Crystalline Keratopathy After Phacoemulsification

Paul Samuel Villafuerte DEL MUNDO, Ruben Lim Bon SIONG

St. Luke's Medical Center International Eye Institute, Philippines

PP-45

Temporary Keratoprosthesis for Vitrectomy in Combined Corneal and/or Posterior Segment Infections

Rama RAJAGOPAL, A. SUMATHI, Pramod S. BHENDE, Bhaskar SRINIVASAN

Medical Research Foundation, India

PP-46

A Rare Case of Severe Arthrographis Kalrae Keratomycosis - A Case Report

Rhuen Chiu CHOW, Soh Yee CHONG, Keat Ween KHAU, Yushaniza YAAKOB

Department of Ophthalmology, Seri Manjung Hospital, Seri Manjung, Perak, Malaysia

PP-47

Analysis of Predisposing Factors and Clinical Outcomes of Moraxella Keratitis

S. ARJUN, Mukesh TANEJA, Guru PRASAD

LV Prasad Eye Institute, India

PP-48

A Report On A Rare Case Of Fungal Keratitis:

Cylindrocarpus Spp.

Sharlene I. NOGUERA¹, Ruben Lim Bon SIONG¹, Roslyn DM. RODRIGUEZ²

¹University of the Philippines, Philippine General Hospital Department of Ophthalmology and Visual Sciences, ²Institute of Ophthalmology, National Institutes of Health, University of the Philippines Manila, Philippines

PP-49

Spectrum of oil palm-related infective keratitis in Manjung, Perak

Chow Rhuen CHIOU, Tan Chew YONG, Khaw Keat WEEN, Yushaniza Bt YAAKOB

Hospital Seri Manjung, Malaysia

PP-50

Effect of 0.5% Ganciclovir Instillation on Graft Survival in Cases of Post-keratoplasty Cytomegalovirus Endotheliitis

Tsutomu INATOMI, Nonko KOIZUMI, Yuji YAMAMOTO, Hiroko NAKAGAWA, Shigeru KINOSHITA

Kyoto Prefectural University of Medicine, Japan

Keratoplasty – Lamellar

PP-51

DSAEK Surgery Using the Endoglide - Coiling and Uncoiling the Endothelium

Gurjeet SINGH, Himanshu MATALIA, H. MARUTHI

Narayana Nethralaya, India

PP-52

New Continuous Air Pumping Technique to Improve Clinical Outcomes of Descemet-stripping Automated Endothelial Keratoplasty in Asian Patients with Previous Ahmed Glaucoma Valve Implantation

Chang-Min LIANG, Ming-Cheng TAI

Department of Ophthalmology, Tri-Service General Hospital, National Defense Medical Center, Taiwan

Keratoplasty - Penetrating

PP-53

Clinico-pathological Correlation of Patients Undergoing Keratoplasty for Suspected Hsv Keratitis in Tertiary Care Centre

Anant SHARMA, Swati TOMAR, P.K. MATHUR, Veena SAXENA

National Institute of Medical Sciences Medical College And Hospital Nims University Jaipur India

PP-54

Prevalence and Risk Factors for the Development of Glaucoma after Penetrating Keratoplasty in a Tertiary Hospital

Ma. Margarita Lat LUNA, Aldo-Mar CARIAGA

University of the Philippines Manila - Philippine General Hospital, Philippines

Keratoprosthesis

PP-55

Indications and Results of the Boston Type I Keratoprosthesis Surgery in the Philippines

Ma. Dominga B. PADILLA, Margarita I. ECHAVEZ, Sharlene I. NOGUERA

Dept. of Ophthalmology and Visual Sciences, University of the Philippines-Philippine General Hospital and St. Luke's Medical Center, Philippines

Ocular Surface Disease

PP-56

Randomized Controlled Trial of the Effects of Sodium Hyaluronate on Wavefront Aberrations in Dry Eye Patients

Chantaka SUPIYAPHUN, Kaewalin LEKHANONT

Department of Ophthalmology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Thailand

PP-57

Persistent Corneal Epithelial Defects After Pars Plana Vitrectomy

Hsi Fu CHEN, Chi Chin SUN, Ling YEUNG

Department of Ophthalmology, Chang Gung Memorial Hospital, Taiwan

PP-58

Correlations Between Tear Cytokines, Chemokines

Kyu-yeon HWANG, Kyung-sun NA, Choun-ki JOO

Department of Ophthalmology and Visual Science, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea

PP-59

Corneal Scar Secondary to Cicatricial Ectropion in Two Cases of Lamellar Ichthyosis

Maureen M. RESONABLE, Marie Antonette E. PASCUAL

Ospital ng Maynila Medical center, Philippines

PP-60

Ocular Surface Evaluation in Allogenic Hematopoietic Stem Cell Transplantation Patients

Murugesan VANATHI¹, Seema KASHYAP², Rehan KHAN¹, Tullika SETH³, Pravas MISHRA³, M. MAHAPATRA³

Cornea Services, ¹Dr. R P Centre for Ophthalmic Sciences, ²Ocular Pathology, Dr. R P Centre for Ophthalmic Sciences, ³Department of Hematology, All India Institute of Medical Sciences, India

PP-61

Dry Eye After Clear Cornea Phacoemulsification
Peter Mark G. CHAO, Ruben Lim Bon SIONG

University of the Philippine-Philippine General Hospital, Philippines

PP-62

The Effects of Tear Supplementation on Bulbar Conjunctiva in Patients with Graves Ophthalmopathy: An In vivo Confocal Microscopic Study

Wei-li CHEN, Yi-Hsuan WEI, Fung-Rong HU

Department of Ophthalmology, National Taiwan University Hospital, Taiwan

PP-63

Use of Autologous Serum Eye Drop Combined with Silicone Hydrogen Lenses for the Treatment of Persistent Epithelial Defects

Yan-Ming CHEN¹, Huan-Chen HSU¹, Chiou-Huey WANG¹, Wei-Li CHEN², Fung-Rong HU²

¹Department of Ophthalmology, E-Da Hospital/ I-Shou University,

²Department of Ophthalmology, National Taiwan University Hospital, Taiwan

Refractive Surgery

PP-64

Psoriatic Intraepithelial Keratitis after Laser In Situ Keratomileusis Treatment

Joanna M. RODRIGUEZ-CHAN, Jose L. RODRIGUEZ-PRATS, Hector MORBELLI, Jorge L. ALIO

PP-65

The Orthoptic Characteristics in Patients after Refractive Surgery

Li-ju Lynn LAI, Wei-Hsiu HSU

Chang Gang Memorial Hospital, Taiwan

PP-66

Early Clinical Results of Simultaneous Lasik and Accelerated Collagen Crosslinking for High Myopia in High Volume Study

Minoru TOMITA, Yusuke YAMAMOTO, Mariko MITA

Shinagwa LASIK Center, Japan

Stem Cell Transplantation

PP-67

Enhancement on Limbal Epithelial Cell Proliferation In Vitro by a Rock Inhibitor, Y27632

Chi Chin SUN, Hsiao-Ting CHIU, Yi-Fang LIN, Kuo-Ying LEE, Jong-Hwei Su PANG

Department of Ophthalmology, Chang Gung Memorial Hospital, Keelung, Taiwan

PP-68

Ex Vivo Expansion and Transplantation of Limbal Stem Cell and Conjunctival Equivalent in the Management of Recurrent Pterygium Associated with Limbal Stem Cell Deficiency

Karen Joyce G. CASTRO, Irwin CUA,

Jessica Marie R. ABANO

St. Luke's International Eye Institute, Philippines

PP-69

Regeneration of the Corneal Epithelium with Conjunctival Epithelial Equivalents Generated with Cells Precursors

Expanded in Serum and Feeder Cell-free Medium
So Hyang CHUNG¹, Choun-Ki JOO¹, J. Mario WOLOSIN²

¹Department of Ophthalmology and Visual Science, College of Medicine, The Catholic University of Korea, Korea,

²Department of Ophthalmology and Black Family Stem Cell Institute, Mount Sinai School of Medicine, USA

PP-70

Development of Cell Transport System by Airplane for Clinical Trial Using Cultured Human Oral Mucosal Epithelial Cell Sheets

Yoshinori OIE, Ryuhei HAYASHI, Hiroshi TAKAYANAGI, Susumu HARA, Takayuki NOZAKI, Shizu TAKEDA,

Takeshi SOMA, Motokazu TSUJIKAWA, Kohji NISHIDA

Department of Ophthalmology, Osaka University Medical School, Japan

Trauma

PP-71

Excellent Visual Outcome Following Prolonged Pencil- Lead Ocular Injury

Azlina MOKHTAR¹, Norlelawati ZAINOL¹, Umi KALTHUM², Zalfah Zakiah ASNIR³, Rusnah HUSSIN³

¹Medical Faculty and Health Sciences, Universiti Sains Isla, ²Department of Ophthalmology, Universiti Kebangsaan Malaysia, ³Hospital Ampang, Malaysia

PP-72

Microkeratome Assisted Corneal Tattooing: A Novel Technique
Prateek GUJAR

Ratan Jyoti Netralaya, India

PP-73

Comparison of Tensile Strength of Fibrin Glue, 2-octyl Cyanoacrylate, Liquid Ocular Bandage and Conventional Nylon 10-0 Sutures in Corneal Laceration Repair in an Animal Model
Sweet Jorlene T. LERIT¹, Jessica Marie R. ABANO²

¹East Avenue Medical Center, ²University of Santo Tomas Hospital, Philippines

Wound Healing

PP-74

Effect of Fluoroquinolones in Corneal Fibroblast-to-Myofibroblast Differentiation

Shu-wen CHANG, Tsan-Chi CHEN

Far Eastern Memorial Hospital, Taiwan

FREE PAPER VIDEO PRESENTATIONS

VP-1

Sutureless Peripheral Lamellar Keratoplasty- Cosmetic Surgery for Limbal Dermoid

Ashwini RANGANATH, Matalia HIMANSHU, H. MARUTHI

Narayana Nethralaya Superspeciality Eye Hospital, India

VP-2

Mushroom-shaped Keratoplasty - Manual Technique

Gurjeet SINGH, Yathish SHIVANNA, Thungappa KUGAR, Rohit SHETTY, Kareesha WADIA

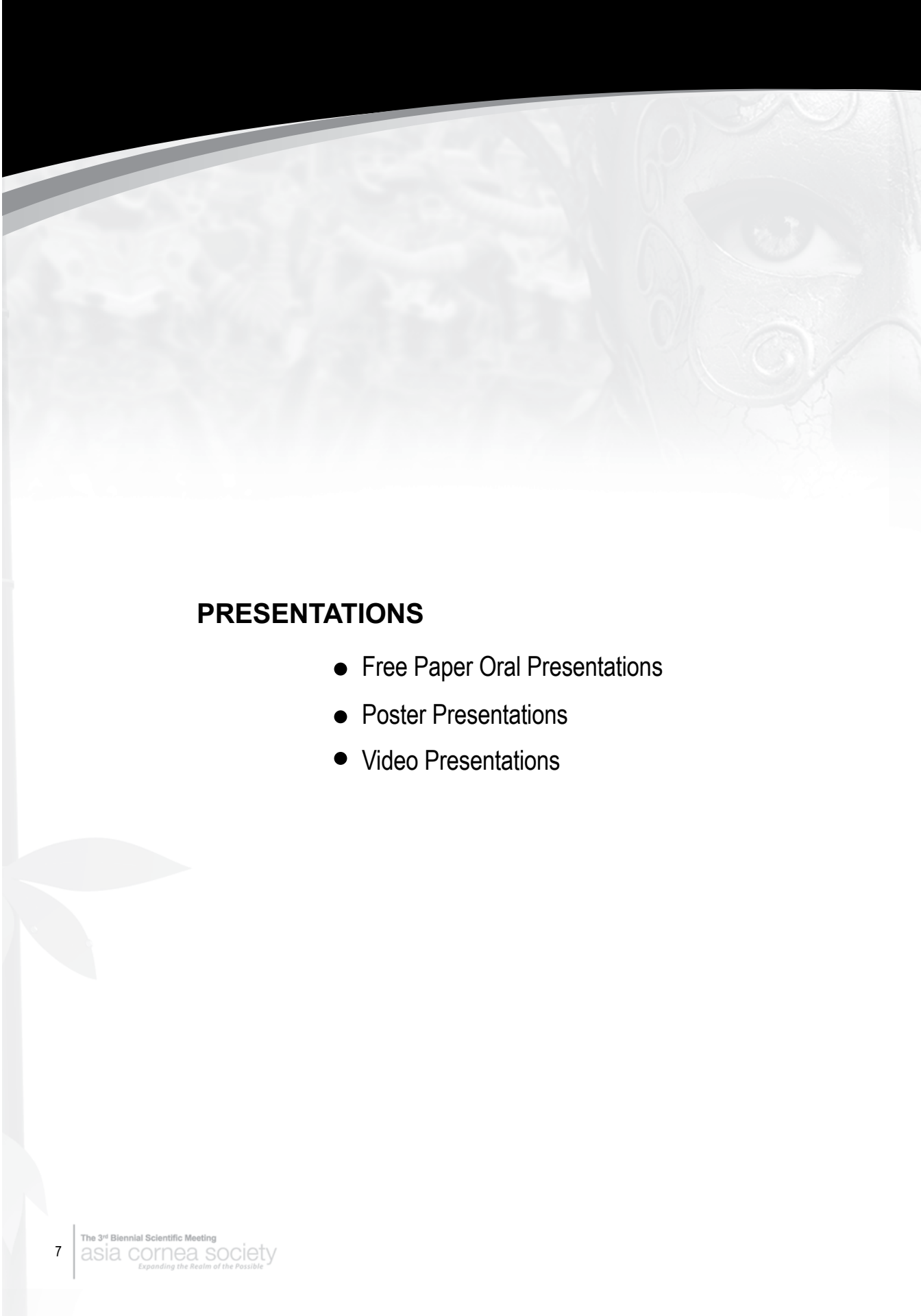
Narayana Nethralaya, India

VP-3

Endothelial Lamellar Exchange in an Aphakic Aniridic Vitrectomized Eye with a Failed Penetrating Keratoplasty

Charith FONSEKA, Lasitha Saroj JAYASINGHE

National Eye Hospital, Sri Lanka



PRESENTATIONS

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OP-1

Besifloxacin Ophthalmic Suspension, 0.6% Compared with Moxifloxacin Ophthalmic Solution 0.5% in Bacterial Conjunctivitis

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Purpose/Objective: To evaluate the safety and efficacy of besifloxacin ophthalmic suspension, 0.6% compared to moxifloxacin ophthalmic solution, 0.5% in the treatment of bacterial conjunctivitis.

Methods: Multicenter, double-masked, parallel group non-inferiority study. Patients aged 1 year were randomized to either besifloxacin or moxifloxacin administered TID for 5 days and participated in 3 study visits. The primary end points were bacterial eradication and clinical resolution of the baseline bacterial infection in patients with culture-confirmed bacterial conjunctivitis. Secondary endpoints included individual clinical outcomes (ocular discharge and bulbar conjunctival injection) and microbial and clinical outcomes for overall bacterial species and individual species. Safety assessments included adverse events (AEs), changes in visual acuity (VA), and biomicroscopy and ophthalmoscopy findings.

Results: A total of 1161 patients (533 with culture-confirmed bacterial conjunctivitis) were randomized at 84 centers in the US and Asia (India and the Philippines). Besifloxacin was non-inferior to moxifloxacin (95% CI). At day 5, 93.3% vs. 91.1% of eyes of culture-positive eyes treated with besifloxacin and moxifloxacin, respectively, had eradication of baseline bacterial infection ($P=0.422$) while 58.3% vs. 59.4%, respectively, had clinical resolution ($P=0.860$). At day 8, 87.3% vs. 84.7% of culture-positive eyes, respectively, had eradication of baseline bacterial infection ($P=0.454$), while 84.5% vs. 84.0%, respectively had clinical resolution ($P=0.906$). Microbial eradication and clinical resolution by baseline infection with either Gram-positive or Gram-negative organisms or most prevalent species did not differ from the overall results. The cumulative frequency of ocular AE was similar between treatment groups (12% vs. 14%, $P=0.224$); however, eye irritation occurred more often in moxifloxacin-treated eyes (0.3% for besifloxacin vs. 1.4% for moxifloxacin; $P=0.0201$). No patients had a worsening of VA (>2 Snellen lines) at Day 5. Ophthalmoscopy and biomicroscopy findings were unremarkable.

Conclusion: Besifloxacin ophthalmic suspension 0.6% was clinically equivalent to moxifloxacin in the treatment of bacterial conjunctivitis.

Key Words: bacterial conjunctivitis, besifloxacin, microbiology, moxifloxacin

OP-2

OCT-guided Femtosecond Laser Corneal Surgery for Corneal Rings and Corneal Inlays Using a Built-in OCT System

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Purpose/Objective: To evaluate the safety and efficacy of an Optical Coherence Tomography (OCT) guided femtosecond laser in corneal surgery.

Methods: Two eyes of 2 patients underwent corneal ring implantation and 200 eyes of 200 patients underwent post-LASIK corneal inlay implantation. After applanating a suction ring on the cornea, the corneal image was visualized using the built-in OCT system. Using this preoperative image, the following were verified; 1) The endothelial cell layer for ring patients and 2) The location of the previous LASIK flap relative to the new pocket to be created for post-LASIK corneal inlay patients. Post procedure, the corneal image was visualized again.

Results: 1) For ring patients, the endothelial cell layer was visualized with the preoperative OCT image and a safe distance between the endothelial cell layer and the corneal pocket for the ring(s) was confirmed. 2) For patients who underwent post-LASIK corneal inlay implantation, the original LASIK flap was visualized with the preoperative OCT image to confirm a safe distance between the original flap and the pocket. Postoperative OCT images were the same as predicted preoperatively for both patient groups. Both types of pockets for corneal rings and inlays were created safely and without any complications.

Conclusion: Using the added function of OCT, surgeons are able to visualize and confirm safe surgical parameters prior to creating corneal ring pockets and/or corneal inlay pockets. Using OCT, surgeons are able to increase the safety and accuracy of corneal surgery.

Key Words: Ziemer, Femtosecond Laser, OCT

OP-3

Intraoperative Optical Coherence Tomography (iOCT) Improves Surgical Performance in DMEK and DALK

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Purpose: This case series evaluates the use of intraoperative OCT (iOCT) to increase safety and efficacy of lamellar corneal transplant surgery in DMEK and in DALK.

Methods: Case series. Intraoperative OCT (iOCT, OptoMedical Technologies GmbH, Luebeck, Germany in cooperation with Moeller-Wedel, Wedel, Germany) was used in 20 patients undergoing DMEK and in 8 patients undergoing DALK/ PKP.

Evaluation parameters in DMEK included iOCT-visualization of Descemet's membrane rolling behaviour inside the eye, and attachment to posterior stroma after insertion and air insufflation. Evaluation parameters in DALK included iOCT-visualization of trephination depth, needle location, big-bubble effect and thickness of remaining stromal tissue.

Results: During DMEK and DALK, all relevant surgical steps could be visualized in all patients. Rolling behaviour of Descemet's membrane could be assessed reliably. Fluid in the interface in DMEK and DALK could be visualized and air insufflation time is optimized based on this visualization.

Discussion: Use of intraoperative OCT is helpful to verify trephination

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depth and remaining stromal tissue thickness in DALK surgery. OCT is helpful in DMEK to locate and orientate DMEK grafts within the recipient's anterior chamber and to aid the surgeon in verifying complete graft attachment at the end of the procedure and to reduce complete air filling time. iOCT can become a useful adjunct in lamellar corneal transplant surgery to improve safety and efficacy.

OP-4 **Split Cornea Transplantation by Combining DMEK and DALK Saves Corneal Donor Tissue** **Claus CURSIEFEN**

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Purpose: To evaluate the feasibility of split cornea transplantation for 2 recipients by combining deep anterior lamellar keratoplasty (DALK) and Descemet membrane endothelial keratoplasty (DMEK).

Design: Interventional case series.

Methods: Fifty consecutive eyes with anterior stromal disease suitable for DALK and 50 eyes with endothelial disease suitable for DMEK were scheduled for split cornea transplantation combining both procedures within 72 hours. Main outcome measures included success of using a single donor cornea for 2 recipients, best spectacle-corrected visual acuity (BSCVA), and complication rates within 6 months' follow-up.

Results: A single donor cornea could be used for 2 recipients in 47 cases (94%). In 3 eyes (6%), the DALK procedure had to be converted to penetrating keratoplasty (PK) requiring a full-thickness corneal graft. Thereby, 47 donor corneas (47%) could be saved. Six months after surgery, mean BSCVA was 20/36 in the 47 eyes that underwent successful DALK, 20/50 in the 3 eyes that underwent conversion from DALK to PK, and 20/29 in the 50 eyes that underwent DMEK. Postoperative complications after DALK included Descemet folds in 5 eyes (11%) and epitheliopathy in 3 eyes (6%). After DMEK, partial graft detachment occurred in 26 eyes (52%) and was managed successfully with intracameral air reinjection. All corneas remained clear up to 6 months after surgery. No intraocular infections occurred.

Conclusion: Split use of donor corneal tissue for combined DALK and DMEK procedures in 2 recipients within 3 subsequent days is a feasible approach to reduce donor shortage in corneal transplantation in the future.

OP-5 **Femtosecond Enabled Keratoplasty** **Harsha NAGARAJA, Thungappa KUGAR, Rohit SHETTY** *Narayana Nethralaya, India*

Purpose/Objective: To evaluate the efficacy of femtosecond laser as a cutting tool in femtosecond enabled keratoplasty (FEK) and to evaluate the effectiveness of eight sutures.

Methods: Prospective, consecutive case series. 35 eyes of 35 patients

that underwent FEK were included in the study. Pre and post-operative UCVA, BCVA, slit-lamp examination, fundus examination, AS-OCT and Pentacam were done in all patients. Donor as well as recipient button cutting was done using Allegro Wavelight® FS200 machine. Patients were followed up at day 1, 1 week, 1, 3, 6 and 9 months postop.

Results: Mean follow up 9.76 - 2.09 months. 12 sutures were applied in 14 cases and 8 sutures in 21 cases. Post-operatively mean UCVA (in LogMAR) and mean BCVA was 0.58, 0.6, 0.65 and 0.32, 0.34, 0.35 at 1, 3 and 6 months respectively. Mean spherical equivalent was 2.23D, 1.97D and 2.01D at 1, 3 and 6 months. There was no statistically significant difference in astigmatism and spherical equivalent between 8 and 12 sutures.

Conclusion: Early stabilization of UCVA and BCVA by 3 months while SE and astigmatism stabilized by 1 month post op. Lesser sutures (8) has similar effect on vision and astigmatism as compared with 12 sutures.

Key Words: femtosecond enabled keratoplasty, sutures

OP-6 **Sutureless Femtosecond Assisted Anterior Lamellar Keratoplasty** **Thungappa KUGAR, Harsha NAGARAJA, Rohit SHETTY** *Narayana Nethralaya, India*

Purpose/Objective: To evaluate the efficacy of sutureless femtosecond assisted anterior lamellar keratoplasty (FALK) for various anterior stromal corneal pathologies.

Methods: Prospective consecutive case series. 5 eyes of 5 patients who presented to us with anterior stromal corneal opacities due to various pathologies underwent ALK. 3 patients had scar secondary to healed keratitis, 1 patient had Reis Bucklers dystrophy, and 1 patient had macular dystrophy. The stromal involvement was less than 220 microns in all cases as measured by anterior segment optical coherence tomography (ASOCT) and Biotigen OCT. All patients underwent sutureless FALK. Intraoperative biotigen was done for all cases. Patients were followed up at 1 week, 1 month, 3 months and 6 months. Uncorrected and best corrected visual acuity, ASOCT and biotigen scans were done at each visit.

Results: All patients had preoperative BCVA <6/60. Post operatively UCVA > 6/60, BCVA 6/12. Postoperative ASOCT and biotigen showed uniform thickness of the graft with good apposition of graft and stromal bed and edges and no interface irregularity. No intraoperative or postoperative complications were noted.

Conclusion: FALK is a simple, effective and reliable procedure for treatment of anterior stromal pathologies requiring corneal transplantation.

Key Words: FALK, Anterior Stromal Corneal Pathologies

OP-7

Modified Double Bubble Technique that Enhances the Predictability and Safety in Deep Anterior Lamellar Keratoplasty (DALK)

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Purpose/Objective: To describe the results of modified double bubble technique that facilitate Descemet membrane exposure in deep anterior lamellar keratoplasty

Methods: In 62 patients with Keratoconus and 5 patients with anterior stromal scars, DALK was performed by modified double bubble technique. A partial thickness trephination is performed. An anterior chamber paracentesis is performed through sclera. Air bubble is injected to anterior chamber. By observing the reflection created on the surface of the air corneal trephination is deepened with NO 11 blade, a 27 G needle can be inserted deep into the stroma without puncturing Descemet membrane while observing for decemate wrinkles. Air injected into stroma to create big bubble. Anterior stromal layer is excised. Visco elastics are spreaded over corneal surface .Stromal incision over big bubble - "Brave Slash" is made to decompress big bubble. Viscoelastics is injected to stroma – decemat interface. The remaining stroma is excised. Donor lamellar corneal button sutured over recipient Descemet.

Results: The big bubble is achieved in 58 eyes. There were four micro-perforations among these eyes. The big bubble was not achieved in nine eyes. Pre-Descemet manual dissection was performed in these eyes. Three eyes had micro-perforations. One eye was converted to PKP. Conclusion: Modified double bubble technique improves predictability and safety. As the technique is not dependent on expensive technology it could be useful in low resource setting.

Key Words: Double bubble, big bubble, DALK

OP-8

Relationship Between Central Corneal Graft Thickness and Visual Acuity Outcomes in Descemet's Stripping Automated Endothelial Keratoplasty

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Purpose/Objective: To evaluate the relationship between best-corrected visual acuity (BCVA) and postoperative central graft thickness after Descemet's stripping automated endothelial keratoplasty (DSAEK).

Methods: A retrospective review of 67 eyes in 53 patients undergoing routine DSAEK. Patients had serial central graft thickness measurements with anterior segment optical coherence tomography. The median central graft thickness was used to divide the eyes into 2 groups and BCVA between the groups were compared.

Results: The median postoperative graft thickness was 120 μ m, which was used to divide the eyes into 2 groups: thin DSAEK (range: 60-110 μ m; mean: 100 μ m) and thick DSAEK (range: 120-180 μ m; mean: 140 μ m). No statistically significant difference in age, sex, or BCVA existed between the 2 groups. Follow-up was a minimum of 6 months postoperatively with a mean of 22.5 months. Thin DSAEK patients had better postoperative BCVA (mean log MAR =0.09) than thick DSAEK patients (mean log MAR of 0.17) ($P < 0.008$). Of thin DSAEK eyes, 82% had BCVA 20/25 and 30% of eyes had BCVA of 20/20. In contrast, 44% of thick DSAEK eyes achieved BCVA 20/25 and 24% of thick DSAEK eyes had BCVA of 20/20.

Conclusion: Thin donor tissue in DSAEK leads to better BSCVA than thick tissue in DSAEK. This suggests a possible advantage of performing DSAEK with thin pre-cut corneal tissue.

Key Words: endothelial keratoplasty, DSAEK, central corneal graft thickness

OP-9

Influence of Donor and Surgical Parameters on DMEK Tissue Preparation, Adherence and Endothelial Cell Loss

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Purpose/Objective: Descemet membrane endothelial keratoplasty (DMEK) consists of bare endothelium and Descemet membrane and provides significantly better vision and less risk of immunologic rejection than earlier keratoplasty techniques, such as Descemet stripping automated endothelial keratoplasty (DSAEK) penetrating keratoplasty. The purpose of this study was to identify donor cornea and surgical technique parameters which significantly influence DMEK tissue preparation success, the air re-injection rate, and early endothelial cell loss.

Methods: A series of 350 consecutive DMEK procedures was reviewed. Primary outcome measures included tissue preparation success, air re-injection rate, and endothelial cell loss at one month. The influence of the following donor parameters was assessed: age (range 39 to 75 years), endothelial cell density (range 2451 to 3546 cells/mm²), death to preparation time (range 2 to 8 days), preparation to use time (range 0 to 2 days), and storage medium (Optisol or Life4C). Surgical parameters included the surgeon who prepared the DMEK graft (experienced vs. novice), and the graft insertion instrument (two different intraocular lens inserters). Associations were assessed by univariate and multivariate analysis.

Results: The rate of successful tissue preparation was >99% and did not vary significantly with any donor parameters. Both experienced and novice surgeons had minimal tissue loss using a submerged peeling method. The rate of air re-injection, employed to treat partial graft detachment, varied significantly with the insertion instrument. With one inserter, the plunger completely sealed the barrel as it advanced, creating a closed system, and no viscoelastic was utilized. The other inserter required use of

viscoelastic to seal the system against back pressure. The air re-injection rate was substantially lower with the inserter that did not require viscoelastic (14% vs. 37%, $P=0.012$). At one month, the median endothelial cell loss was 27%; it did not vary significantly with any of the donor or surgical parameters. The donor tissue could be prepared up to 2 days before surgery and stored in corneal storage medium without significantly affecting graft adherence or endothelial cell density.

Conclusion: DMEK techniques have significantly improved. The current rate of tissue loss, air re-injection and endothelial cell loss is within the range reported with DSAEK. Use of an insertion instrument that did not require viscoelastic to seal against back pressure provided excellent control and significantly reduced the rate of air re-injection with DMEK. Preparing the donor tissue several days ahead and storing it in corneal storage medium improved efficiency without adverse effects.

Key Words: Descemet membrane endothelial keratoplasty, Descemet stripping automated endothelial keratoplasty, lamellar keratoplasty, endothelial dysfunction

OP-10

Clinical Experience and Results of Descemet-stripping Endothelial Keratoplasty (DSEK) with Insertion of Donor Button using Cystitome

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Purpose/Objective: To report our clinical experience and evaluate the outcome in descemet-stripping endothelial keratoplasty (DSEK) done by inserting the donor corneal button with the help of cystitome.

Methods: A prospective study including 13 eyes of 13 patients who underwent DSEK by a single surgeon. The surgical technique involved manual dissection and inserting the donor button with the help of cystitome through a 6mm incision. Best corrected visual acuity (BCVA), refractive status and endothelial cell count were evaluated preoperatively and at 6months after surgery.

Results: Data was available on 100% ($n=13$) eyes at 6 months. Mean age was 53.2 years (range, 10-69 years). Preoperative BCVA was 6/60 or worse in all patients. Postoperatively 61.5% ($n=8$) achieved a BCVA of 6/18 at 6 months. Mean preoperative cylinder was 1.583 $\pm$ 0.748 (range, 0.50-3D) and postoperative was 1.625 $\pm$ 0.458 (range, 1-2.50D). Mean endothelial cell count in the clear grafts at 6 months was 1805 $\pm$ 223 cells/mm. Complications included 1 donor tissue dislocation and 1 graft failure in the case of Congenital hereditary endothelial dystrophy.

Conclusion: DSEK with insertion of donor button with the help of cystitome is an easy technique which provided reasonable visual outcomes in our small case series.

Key Words: DSEK, Cystitome

OP-11

Overall Complications of Descemet's Stripping Endothelial Keratoplasty: An Analysis of 550 Consecutive Cases

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Purpose/Objective: Descemet's stripping endothelial keratoplasty (DSEK) is now the choice of surgery in corneal endothelial dysfunctions as an alternative to penetrating keratoplasty (PKP). Though many surgeons are using automated microkeratome for the preparation of the donor endothelial graft (DSAEK), still many surgeons of the developing countries are still using manual dissector for the preparation of the donor tissue mounted on an artificial anterior chamber because of the cost issue in relation to microkeratome. Most of the surgeons use the term DSEK and DSAEK interchangeably. The purpose of this study is to analyze the complications in Descemet's stripping endothelial keratoplasty (DSEK) in large series of consecutive 550 cases by single surgeon in a tertiary eye hospital in eastern India.

Methods: 550 eyes of 456 patients with endothelial dysfunctions scheduled for DSEK, were analyzed retrospectively. All the surgeries were performed by single surgeon. In all cases donor dissection was performed manually in an artificial anterior chamber, and Taco insertion and unfolding technique was used. Indications, operative problems, postoperative complications and their managements; and the outcomes of management were reviewed retrospectively. The follow-up period was between 3 months to 6 years (mean follow-up 22.7 months).

Results: Main indication was pseudophakic corneal edema and/or bullous keratopathy in 376 (68.3%) eyes. 128 (23.2%) cases had moderate to severe Fuchs' dystrophy with cataract, and in those cases, DSEK was combined with cataract surgery. The operative complications were with donor dissection in 16 (2.9%) cases and in 21 (3.8%) eyes during recipient procedure. In 8 (1.5%) eyes, donor lenticule was replaced with a new one during surgery. In early postoperative period, 24 (4.4%) eyes had donor dislocation and 18 (3.3%) eyes had air-induced pupillary block; and they were managed immediately. 3 cases had primary graft failure and in 1 case had postoperative bacterial endophthalmitis requiring evisceration. In late postoperative period, 69 (12.5%) eyes had secondary glaucoma and 23 (4.2%) eyes had late secondary graft failure. Endothelial rejection occurred in 9 (1.6%) cases. Most of the complications were managed successfully except in three cases. Total graft failure in this series was 41 (7.5%) and in 27 (68.8%) cases re-DSEK was performed successfully.

Conclusion: Both operative and postoperative complications do occur in Descemet's stripping endothelial keratoplasty. Most of these complications can be managed by medical or by appropriate surgical means. Some of the complications can be avoided and reduced with experience and time.

Key Words: DSEK, Manual Dissection, Complications, Large series

OP-12

OBL (Opaque Bubble Layer) Incidence, Risk Factors And Clinical Relevance

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Purpose/Objective: To investigate the incidence, risk factors, and the impact on visual outcomes of an opaque bubble layer (OBL) produced by the IntraLase femtosecond laser (60kHz, IntraLase, Corp) during LASIK surgery.

Methods: Twenty-three patients (40 eyes) who had undergone femtosecond laser-assisted LASIK surgery were enrolled in this study. The surgical procedures were videotaped and the patterns and size of OBL were analyzed. The preoperative and postoperative information including demographic data, visual acuity, contrast sensitivity, refractive status, keratometry, and intraoperative data such as flap size, flap thickness, and ducking times were also documented.

Results: Twenty-one (52.5%) eyes developed an opaque bubble layer. The patterns of OBL were hard in 40% and diffuse in 12.5% of eyes. The area covered by OBL was $28.6\% \pm 10.1\%$ in hard type, and $7.4\% \pm 5.6\%$ in diffuse type ($p=0.002$). The preoperative central corneal thickness was significantly thicker in eyes that developed an OBL ($p=0.045$). The visual outcomes one month postoperatively were comparable between two groups except that the eyes with OBL showed slightly decreased in contrast sensitivity under scotopic condition.

Conclusion: Our study showed that thicker corneas tended to develop an opaque bubble layer during femtosecond laser-assisted LASIK surgery. An OBL did not affect postoperative visual acuity except for mild decrease in scotopic contrast sensitivity.

Key Words: Opaque Bubble Layer, femtosecond laser, LASIK, IntraLase

OP-13

Prospective Analysis of Long Term Outcome of Corneal Collagen Cross Linking

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Purpose/Objective: To study the long term outcome of corneal collagen cross linking with riboflavin.

Methods: 42 eyes of 31 patients who underwent corneal collagen cross linking with riboflavin (C3R) with minimum follow up of 1 year and upto maximum follow up of 3 years were studied for best corrected visual acuity (BCVA), manifest cylinder (refraction), pentacam for flat and steep keratometry (K1 and K2 respectively), thinnest pachymetry in the region of cone and maximum posterior elevation at the thinnest point.

Results: Mean BCVA was 0.46 ± 0.68 , 0.67 ± 0.21 , 0.65 ± 0.16 , 0.73 ± 0.18 ; mean manifest cylinder was 5 ± 2.59 , 3.97 ± 2.10 , 4.20 ± 2.27 , 2.92 ± 0.92 ; mean K1 was 47.91 ± 4.13 , 47.86 ± 3.51 , 48.41 ± 3.81 , 48.13 ± 3.68 ; mean

K2 was 52.99 ± 4.84 , 52.36 ± 4.50 , 52.7 ± 64.43 , 52.67 ± 4.58 ; mean thinnest pachymetry in the region of cone was 446.95 ± 31.30 , 439.56 ± 33.57 , 436.84 ± 26.80 , 443.56 ± 33.26 ; mean maximum posterior elevation at the thinnest point was 52.31 ± 32.45 , 43.66 ± 27.60 , 53.73 ± 31.34 , 61.44 ± 21.60 as measured pre operatively, at 12, 24 and 36 months respectively. All these values revealed no statistically significant change as calculated using paired t test. The pentacam K1 and K2 values remained stable in all patients till 24 months post C3R. At 24 to 36 months follow up, 15 eyes showed flattening of K1 on pentacam ranging from 0.8D to 4D (average $1.80 \pm 0.952D$) and 17 eyes showed flattening of K2 ranging from 0.8D to 6.6 D (average $1.92 \pm 1.36D$). No patients showed steepening of keratometry or increase in posterior elevation.

Conclusion: C3R is an effective procedure for stabilizing progressive keratoconus. C3R results in flattening of keratometry after 24 to 36 months in significant number of cases. Vision and pachymetry remain stable after C3R.

Key Words: keratoconus, collagen cross linking

OP-14

Assessing the Safety Profile of Accelerated Corneal Collagen Cross-linking

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Purpose/Objective: Corneal Collagen Cross-linking using riboflavin and UV-A irradiation (CXL) has become a norm to arrest keratoconus progression. The standard CXL involves 30 minutes exposure to UV-A ($3mW/cm^2$). Newer accelerated corneal collagen cross-linking (ACXL) using the Avedro Inc. KXL system reduces this exposure time to 3 minutes.

Methods: Patients with keratoconus undergoing ACXL were included in prospective interventional cases series. The procedure included 20 minutes of soak time with 0.1% Riboflavin followed by UV-A exposure of $30mW/cm^2$ for 3 minutes. The safety parameters studied included; visual acuity, effect on corneal endothelium on secular microscopy, stromal scarring studied on Pentacam densitometry (Oculus Inc.). Biomechanical changes were studied using Ocular Response Analyzer (ORA), and CorVis ST, (Oculus Inc.). The parameters studied here were corneal hysteresis (CH) on ORA and deformation amplitude on CorVis ST. Patients with follow up for 3 months was included.

Results: ACXL was done on 30 eyes of 27 patients. There was no statistically significant change in visual acuity or in Endothelial cell count [Preop: $2698.9 \pm 273.4/mm^2$, 3 months: $2672.8 \pm 355.8/mm^2$]. Corneal biomechanics studied on ORA and CorvisST remained stable. The densitometry was initially high but reduced to preoperative value at 1 month similar to conventional CXL. No intra or postoperative complications were noted.

Conclusion: We conclude that ACXL can be a safe procedure for keratoconus treatment but a larger sample size and longer follow up would help evaluate the long term effects and efficacy.

Key Words: accelerated, cross-linking, safety

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OP-15

Corneal Biomechanics Changes Following Collagen Cross-linking Treatment in Keratoconus in Indian Eyes: One Year Results

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Purpose/Objective: To evaluate the corneal biomechanical changes following collagen cross-linking treatment with riboflavin/UV-A (CXL) using ocular response analyzer (ORA) in progressive keratoconus in Indian eyes.

Methods: Prospective observational single center study of corneal hysteresis (CH) and corneal resistance factor (CRF) measured using ORA (Reichert Ophthalmic Instruments) before and at 6 & 12 months after CXL. Uncorrected visual acuity (UCVA), best spectacle corrected visual acuity (BSCVA), spherical equivalent (SE), refractive cylinder, maximum keratometry (Kmax), average keratometry (avg K) using Scheimpflug imaging (Pentacam), central corneal thickness (CCT) and Goldmann IOP (IOP GAT) were measured. The values were compared using the paired Student t test.

Results: Our study comprised of 35 keratoconus eyes of 27 patients of mean age 20.74±7.48 years. Mean pre-CXL CH and CRF was 7.20±0.867mmHg and 6.175±1.253 mmHg respectively; post-CXL values at 12 months were 8.093±1.00mmHg and 7.1±1.377 mmHg respectively. There were significant changes in CH (change = 1.00 at 6 months; p=0.016 and 0.89 at 12months; p=0.015) and CRF (change = 0.675 at 6 months; p=0.048 and 0.092 at 12 months; p=0.009) parameters at 6 and 12 months following CXL. There was significant change in UCVA (p = 0.050 at 6 months and 0.035 at 12 months), BSCVA (p = 0.000 at 6 and 12 months), SE (p = 0.000 at 6 and 12 months), refractive cylinder (p = 0.010 at 6 months and p=0.05 at 12 months), kmax (p=0.000 at 6 and 12 months), avg K (p = 0.002 at 6 months and p=0.010 at 12 months) at 6 and 12 months post-CXL. No correlation was found between the changes in CH and CRF with changes in UCVA, BSCVA and Kmax.

Conclusion: Our study found statistically significant changes in corneal biomechanical properties in keratoconic eyes following CXL at 6 and 12 months postoperative period. Hence CXL has a definite role to play in corneal biomechanics, however long term stability is to be studied.

Key Words: keratoconus, collagen crosslinking, corneal biomechanics, corneal hysteresis

OP-16

Complications of Collagen Crosslinking

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Purpose/Objective: Corneal collagen crosslinking using riboflavin and UVA light is an effective means of stabilizing the cornea in keratoconus as

shown by the 6-year results. With the increasing number of patients treated and unsafe variations of the CXL technique, several side-effects have been reported.

Methods: Review of literature and authors case report publications on corneal melting and endothelial damage after crosslinking will be presented.

Results: Stromal haze, keratocyte loss and drop in vision are reversible after effects of the procedure. However rare vision threatening complications such as scarring, infections, corneal melting and perforation and endothelial burns have also been reported. Progression of ectasia has also been reported in some eyes indicating treatment failure.

Conclusion: Though crosslinking is a very safe, it can rarely have vision threatening complications. Strictly adhering to recommended guidelines for case selection, technique and post-operative care are essential.

Key Words: Crosslinking, Collagen, Complications

OP-17

Antimicrobial Efficacy of Riboflavin and Ultraviolet A Light Combination in Vitro for Multi Drug Resistant *Pseudomonas Aeruginosa* and *Fusarium*

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Purpose/Objective: To evaluate the in vitro effect of increasing doses of riboflavin and ultraviolet a light (UVA) combination on a strain of multi drug resistant *Pseudomonas aeruginosa* (PA), as well as an isolate of *Fusarium solani*.

Methods: A quality controlled ATCC-27853 PA strain sensitive to most antibiotics and a multi-drug resistant PA (MDR-PA) were inoculated onto Mueller Hinton agar plates. One pair of plates was used as control. A second pair of plates was exposed to UVA (365 nm) for a period of 30 minutes. The third pair of plates was exposed to a single drop of riboflavin (0.1%). The fourth pair of plates was exposed to riboflavin followed by UVA for a period of 30 minutes. The fifth and sixth pair of plates was exposed to two and three 30-minute exposures respectively of a combination of riboflavin and UVA, with an interval of 4 hours between exposures. All plates were incubated at 37°C, and digital images were analysed to determine any area of growth inhibition using image analysis software. A strain of *Fusarium solani* was inoculated onto Mueller Hinton agar plates. One plate was used as control. The second plate was subjected to a combination of riboflavin and UVA for 30 minutes. The third plate was subjected to three exposures, with an interval of 24 hours between each 30-minute exposure. All plates were placed in a biochemical oxygen demand incubator and evaluated everyday.

Results: The control plates containing both the strains of PA showed confluent growth at 18 hours. The plates subjected to either UVA alone or riboflavin alone also showed confluent growth of PA with no visible

inhibition zone. The plate seeded with drug sensitive PA and exposed to a combination of riboflavin and UVA showed a clear zone in the centre corresponding to the area of exposure. The area of this zone was measured to be 53.91 mm². The plate seeded with MDR-PA and treated with single exposure of riboflavin and UVA for 30 minutes showed a faint, barely discernible zone of clearing in the centre, the area of which was measured to be 52.66 mm². The plates seeded with MDR-PA and subjected to two and three exposures of riboflavin and UVA for 30 minutes each displayed well demarcated zones of clearing measuring 61.67 mm² and 99.25 mm² respectively. All culture plates displayed confluent growth of fungus on the third day.

Conclusion: There is a definite dose dependent antimicrobial effect of riboflavin and UVA combination on drug sensitive as well as multi drug resistant *Pseudomonas aeruginosa*. No such effect could be detected against *Fusarium solani*. Further clinical studies are indicated to explore optimum treatment protocols, toxicity profile and in vivo efficacy of this treatment in keratitis due to drug resistant organisms.

Key Words: *Pseudomonas aeruginosa*, *Fusarium solani*, riboflavin, ultraviolet radiation

OP-18

Long-term Supplementation with N-6 and N-3 Pufas Improves Moderate to Severe KCS

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Purpose/Objective: Supplementation with gamma-linolenic acid (GLA) and omega-3 (n-3) polyunsaturated fatty acids (PUFAs) has been found to decrease production of disease relevant inflammatory mediators that are implicated in the pathogenesis of chronic dry eye. This study evaluated the effect of a supplement containing both GLA and n-3 PUFAs on signs and symptoms of moderate to severe keratoconjunctivitis sicca (KCS) in post-menopausal patients.

Methods: This multicenter, double-masked, placebo-controlled clinical trial enrolled 38 patients with KCS and tear dysfunction who were randomized to take supplemental GLA n-3 PUFAs or placebo for 6 months. Disease parameters, including ocular surface disease index (OSDI), Schirmer's test, tear breakup time (TBUT), conjunctival fluorescein and lissamine green staining, and topographic corneal smoothness indices, were assessed at baseline, 4, 12 and 24 weeks. Intensity of dendritic cell CD11c integrin and HLA-DR expression was measured in conjunctival impression cytologies.

Results: The OSDI score improved with supplementation, and was significantly lower than placebo (21±4 vs. 34±5) after 24 weeks (p=0.05, n=19/group). The SAI was significantly lower in supplement-treated subjects (0.37 ±0.03, n=15) than placebo (0.51±0.03, n=16) at 24 weeks (p=0.005). Placebo treatment also significantly increased HLA-DR intensity by 36±9% and CD11c by 34±7% when compared to supplement treatment (n=19/group, p<0.001, 24 weeks). Neither treatment had any effect on tear production, TBUT or corneal or conjunctival staining.

Conclusion: Supplemental GLA and n-3 PUFAs for 6 months improved ocular irritation symptoms, maintained corneal surface smoothness and inhibited conjunctival dendritic cell maturation in patients with post-menopausal KCS. This trial was registered at ClinicalTrials.gov with identifier # NCT00883649

Key Words: Keratitis Sicca, Essential Fatty Acid Supplementation, Ocular Surface Disease Index, Impression Cytology, Inflammatory Markers

OP-19

Loteprednol 0.5% Pre-treatment of Keratitis Sicca Improves Cyclosporine Tolerability

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Purpose/Objective: This prospective, randomized, masked, placebo controlled, multi-center comparative trial evaluated the effects of loteprednol etabonate 0.5% suspension (LE) treatment prior to initiation of topical cyclosporine (tCSA) emulsion for patients with mild to moderate chronic dry eye disease (CDED).

Methods: 118 patients aged 27-80 years with CDED were enrolled in a multicenter, randomized, controlled, masked, prospective clinical trial. Patients received either LE or artificial tears (AT) QID for 2 weeks prior to initiation of tCSA, after which tCSA was added BID to either LE or AT BID for an additional 6 weeks. Evaluation included visual acuity, Ocular Surface Disease Index (OSDI), global self assessment, fluorescein and lissamine green staining, slit lamp examination, Schirmer's tear test, and IOP. Data was analyzed by ANOVA or student's T test.

Results: LE pre-treatment significantly reduced tCSA stinging (p<0.05). Both groups showed significantly improved OSDI scores at 14, 30 and 60 days. LE showed significantly more OSDI improvement than AT. Both pre-treatment strategies improved global self assessment scores, Schirmers, fluorescein staining, lissamine staining, and supplementary AT use. LE showed superior improvement in Schirmers, fluorescein staining and lissamine staining. IOP did not increase in either group.

Conclusion: LE induction prior to tCSA treatment improves symptoms and clinical signs of CDED more than tCSA therapy alone. LE also reduces the stinging side effect of tCSA drops. LE induction could increase the overall number of patients who can benefit from long term tCSA maintenance therapy.

Key Words: Dry Eye, Loteprednol, Cyclosporine, Tolerability

FREE PAPER ORAL PRESENTATIONS

OP-20

Using Tissue-cultured Cord Lining Epithelial Cells in Treatment of Persistent Corneal Epithelial Defect: An Early Result

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Purpose/Objective: To describe the outcome of using tissue-cultured human cord lining epithelial cells for persistent corneal epithelial defect (PED)

Methods: A prospective interventional case series in Vietnam National Institute of Ophthalmology

Results: Our study was carried out in 16 eyes of PED (16 patients) from January 2011 to January 2012 in Department of Cornea and External diseases, Vietnam National Institute of Ophthalmology. All of these eyes were suffered from long time corneal ulcer (4 - 16 weeks, average 8.8 - 3.2 weeks), and the average time of PED is 4.3 - 1.5 weeks (2 - 8 weeks). Fifteen of 16 eyes were healed with the cells transplantation and 14 eyes of them were healed within 2 weeks postoperatively. There are normal corneal scars and normal corneal epithelial cell (by impression cytology detection) on transplantation site in all 15 successful cases with 6 - 19 months follow-up.

Conclusion: Conclusion: tissue-cultured human cord lining epithelial cells transplantation is a quite effective treatment for persistent corneal epithelial defect.

Key Words: persistent corneal epithelial defect, cord lining epithelial cell

OP-21

Clinical Profile and Surgical Outcome of Infiltrative Ocular Surface Squamous Neoplasia (OSSN)

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Purpose/Objective: OSSN can rarely infiltrate sclera, globe and / or orbit. Clinical spectrum of infiltrative OSSN is variable. We reviewed predisposing factors, clinical presentation, radio imaging findings, surgical options and histopathological findings in patients presenting with infiltrative OSSN.

Methods: Medical case records of 17 eyes of 17 patients who presented with infiltrative OSSN between May 1995 to February 2012 in a tertiary care centre in India were retrospectively reviewed.

Results: Mean age of presentation was 52 years (6-75 years). Predisposing factors included Xeroderma pigmentosa in 2 eyes (11.7%) and HIV in 2 eyes (11.7%). A total of 9 eyes (52.94%) underwent exenteration and 4 eyes (23.53%) underwent enucleation for orbital or

intraocular involvement. 1 patient was advised exenteration and refused surgery. All patients in this group had clinical and /or radiological evidence of infiltration of the globe. The same was confirmed on histopathology in 13 eyes(76.47%).One patient presented with Mucoepidermoid variant of squamous cell carcinoma. 9 eyes (64.28%) in this group had prior excision. In the remaining 3 eyes, in 2 patients, there was localized scleral infiltration and patients underwent excision biopsy with scleral patch graft under frozen section control. There was no recurrence over a follow up of 4 months and 2 years respectively. 1 patient underwent myectomy with scleral patch graft for localized infiltration of the medial rectus tendon and sclera with no recurrence over 1 year.

Conclusion: Infiltrative OSSN is a challenging entity. Our study highlights the beneficial role of early detection and meticulous surgery especially in early infiltrative OSSN. This procedure could well be globe saving in this group of patients. However, in patients with advanced disease, one is left with exenteration/enucleation as a last resort.

Key Words: OSSN, Infiltration, Scleral patch graft

OP-22

Ocular Surface Reconstruction Using Ex-vivo Cultivation and Transplantation of Limbal Stem Cells and Conjunctival Equivalent in the Management of Ocular Surface Disease

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Purpose/Objective: To describe the clinical outcome of ocular surface reconstruction using ex-vivo expansion and transplantation of limbal stem cells and conjunctival equivalent in the management of ocular surface diseases.

Methods: This is a prospective, non-comparative, interventional case series.

Results: Nine eyes of nine patients with ocular surface disease were included in our study. Seven patients had total limbal stem cell deficiency (LSCD) from chemical injury, 1 had partial LSCD from multiple surgeries and 1 had ocular surface neoplasia. Of the nine patients, 6 had cultured limbal epithelial transplant, 1 had transplantation of conjunctival equivalent and 2 had combined procedures. Follow-up period ranged from 1-6 years. Post-operatively, 7 (78%) patients had stable ocular surface with no recurrence of epithelial defect and conjunctival inflammation while 2 had persistent conjunctival inflammation and recurrent epithelial defect. One patient had post-operative infection managed successfully with oral and topical antibiotics. Three patients underwent subsequent corneal transplant. Three patients had visual improvement after the procedure, another 3 after subsequent corneal transplant while 3 maintained their pre-operative visual acuity.

Conclusion: Mid-term results of ocular surface reconstruction using ex-vivo expansion and transplantation of limbal stem cells and conjunctival equivalent are very promising with 78% of patients achieving stable ocular surface.

Key Words: Ocular surface reconstruction, Limbal stem cell deficiency, Conjunctival equivalent, Ex-vivo expansion

OP -23

Comparison of Cord Blood Serum and Amniotic Membrane Transplantation in Acute Chemical Injury

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Purpose/Objective: To compare efficacy of cord blood serum therapy (CS) with amniotic membrane transplantation (AMT) in cases of acute ocular chemical burns.

Methods: 51 eyes with acute ocular chemical burns grade III, IV, V were divided into 3 groups i.e. conservative treatment (CT) (n=20), umbilical cord serum (CS) (n=15), amniotic membrane transplantation (AMT) (n=16). Main outcome measures were healing of epithelial defect, extent of limbal stem cell deficiency, corneal clarity, corneal vascularisation, tear film status and complications.

Results: At the end of three months mean epithelial defect diameter was 0.05 .11, 0.0, 0.0 mm in CT group, CS group and AMT groups respectively. By third month complete healing was noted in AMT and CS groups. Limbal stem cell deficiency in clock hour involvement was 3.3 1.3, 1.03 1.2, 1.4 1.4 mm in CT, CS and AMT groups respectively. CS group and AMT groups were significantly better than CT group at the end of 3 months (p between CT and CS=0.0), (p between CT and AMT=0.0), (p between CS and AMT=0.34). 12 out of 15 patients had grade 4 corneal clarity in CS group as compared to 11 out of 16 in AMT group and 7 out of 20 in CT group (p between CT and CS=0.05, p between CT and AMT=0.08, p between CS and AMT= 0.9). Tear film break up time showed significant improvement in CS group as compared to others (p between CT and CS=0.0, between CT and AMT=0.06, between CS and AMT= 0.02). No significant difference was seen between the groups with regards to BCVA, symblepharon (p=0.93) and corneal vascularisation (p= 0.09)

Conclusion: Umbilical cord serum therapy as an adjuvant to standard medical therapy is more effective in restoration of ocular surface after acute chemical injuries than adjuvant amniotic membrane transplantation.

Key Words: amniotic membrane transplantation, acute chemical injuries cord serum, chemical injury

combined with accelerated cross linking (ACXL) as a new therapeutic procedure in keratoconus

Methods: 50 eyes of keratoconus with central cones were included in the prospective study. They underwent pre-operative evaluation and biomechanical studies. Microwave thermoplasty (Keraflex, Avedro) was performed in all eyes. After marking the visual axis of the patient, a vacuum suction ring was docked in place centred on the visual axis. A reticule was used to confirm the centration. The thermal energy applicator was then engaged and energy delivered. The cornea was irrigated and bandage contact lens placed. Biomechanical response of the cornea was observed on day 1 and subsequently accelerated cross linking was done using standard protocol. Change in mean Keratometry (K) at 3 months was the main outcome measure.

Results: Mean preoperative K was 52.31 D. There was an initial drop in K values to 36.97 D on postoperative day 1, which showed a rebound to 40.98 D in the 1st 48 hours, at which point cross linking was performed. The post operative mean K at 1 month was 48.8, which stabilized to 48.03 D at 3 months. Mean preoperatively UCVA LogMAR improved from 1.077 $\pm$ 0.373 to 0.614 $\pm$.266 (P< .001) 1 month and further to 0.565 $\pm$.236 (P < .001) at 3months. 3 eyes (6%) had early post operative anterior chamber inflammation, which was managed conservatively.

Conclusion: Microwave Thermoplasty combined with cross linking may be an effective alternative procedure to existing modalities of treatment for keratoconus

Key Words: accelerated cross linking (ACXL), Microwave Thermoplasty, Keratoconus, therapeutic

PP-2

Short-Term Results of Corneal Collagen Crosslinking among Filipinos with Keratoconus

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Purpose/Objective: To report the topographic, pachymetric, refractive and visual outcome of Corneal Collagen Crosslinking (CXL) by a single surgeon among patients with Keratoconus in the Philippines.

Methods: A prospective, non-randomized, single-surgeon study of twelve eyes with moderate to advanced keratoconus were included in the study. All eyes underwent CXL by exposing the eye to UV light (calibrated to emit 3.0 mW/cm² surface irradiance) from a solid-state device (UV-X Corneal Crosslinking™ IROC, Zurich, Switzerland) after a 30 minute application of riboflavin eye drops on a de-epithelialized cornea (Dresden protocol). Baseline uncorrected visual acuity (UCVA), best spherical corrected visual acuity (BSCVA), sphere refraction (SR), cylinder refraction (CR), spherical equivalent (SE), mean corneal curvature (CC), minimal corneal thickness (MCT) were compared with post- procedural values at 1, 3, 6 and 12 months.

FREE PAPER POSTER PRESENTATIONS

Collagen Cross-Linking

PP-1

Microwave Thermoplasty Combined with Accelerated Cross Linking (ACXL) - New Therapeutic Procedure in Keratoconus

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Purpose/Objective: To evaluate outcomes of Microwave Thermoplasty

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Results: Nine of the 12 eyes completed the 12-month follow-up. Mean CC decreased on from 51.37 ± 6.66 to 50.8 ± 5.85 D at the 2nd month. Mean MCT decreased from 471.42 ± 53.0 microns to 433.1 ± 43.97 microns. There was no statistically significant change in Mean SR, CR and SE between pre-CXL and post CXL, going from -6.39 ± 7.21 D, -4.64 ± 1.21 D, and -10.49 ± 10.47 D pre-CXL to -6.39 ± 8.0 D, -4.64 ± 2.89 D and -8.73 ± 7.99 D respectively. Although not statistically significant, there was marked improvement in mean UCVA among patients over the 12 month period, while BSCVA was unchanged with logmar unit values of 0.69 ± 0.43 and 0.36 ± 0.22 pre-CXL that changed to 0.56 ± 0.53 and 0.36 ± 0.37 post CXL for UCVA and BSCVA respectively.

Conclusion: CXL causes statistically significant flattening of the mean CC, as well as reduction in the MCT over 12 months. Although statistically insignificant, marked improvement (subjective and objective) in the UCVA among patients who completed the 12-month follow-up was noted despite persistence of significant refractive error.

Key Words: crosslinking, keratoconus, Filipinos collagen

PP-3 6 Months Result of Accelerated Collagen Crosslinking for Treatment of Keratoconus or Keratoectasia, Including Morphological Changes

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Purpose/Objective: Collagen Crosslinking (CXL) has gained recognition for the treatment of keratoconus and keratoectasia in the past few decades and the conventional CXL requires a 1 hour treatment per eye. Accelerated CXL is the latest version and provides significant time saving benefits to both patients and surgeons. In this study, we evaluate the new Accelerated CXL system (KXL System: Avedo Inc.).

Methods: Prospective IRB approved evaluation of Accelerated CXL. Accelerated CXL using the KXL System was performed on 21 eyes of 11 keratoconus patients and 31 eyes of 23 keratoectasia patients. After the epithelial debridement with assistance of 20% alcohol, 8 minute riboflavin pre-soak was applied to the corneal bed followed by 3 minutes of UVA light (30mW/cm^2). Postoperative visual acuity, keratometric readings, OCT image, corneal topography, and morphological change by confocal microscopy were evaluated.

Results: The postoperative changes after Accelerated CXL were similar to those observed after conventional CXL. These changes included; keratometric reading, demarcation line using OCT and morphologic changes observed using by confocal microscopy.

Conclusion: KXL demonstrated similar results as Conventional CXL. With its significantly reduced treatment time, Accelerated CXL provides a significant benefit for both patients and surgeons. Further long term follow-up studies are needed to confirm this result.

Key Words: Accelerated Collagen Crosslinking, Keratoconus, CXL, Ectasia, Keratoectasia

PP-4

Keratoconus in Paediatric Patients- Clinical Features and Outcomes of Collagen Crosslinking

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Purpose: To analyze the visual and keratometric parameters of patients with keratoconus younger than 16 years and analyze the outcomes of collagen crosslinking (CXL) in patients with keratoconus

Methods: Fourteen patients (28 eyes) with clinical and topographic features of Keratoconus were included the analysis. The uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), keratometric indices of maximum and minimum K, average K, anterior float, posterior float, anterior/posterior float index, thinnest pachymetry, and pachymetric index were analyzed. These were then compared with a control group of pediatric patient with no ocular pathology. These indices were also analyzed post operatively in patient who underwent CXL.

Results: The average K1 was 52.86 D (range 45.2-71 D), K2 was 50.2 D (range 44.2-65.9 D); the average and range of the A/P ratio, pachymetry, pachymetric index and anterior chamber depth were 1.25 (1.21 to 1.33), 442.8 microns (359-523), 1.27 (1.17- 1.44). In the 5 patients who underwent collagen crosslinking the average reduction in astigmatism was 1.8 D (0.4- 3.1D). One patient also underwent INTACS.

Conclusion: Keratoconus in pediatric patients tends to be unilateral and more severe at presentation. The keratometric indices help to guide the clinical diagnoses of keratoconus. CXL prevents progression of the keratoconus with a reduction of the ectasia. Young corneas respond earlier to the stimulus of UV light on the collagen fibers with no variation of the standard treatment protocol for CXL. This study confirms that keratoconus in pediatric age has a different and dramatically faster progression than in adult eyes, despite the high elasticity of young corneas. We all know how frequently and violently graft rejection occurs in these young patients. Therefore, a minimally invasive therapy that delays and doesn't preclude corneal transplantation at a later stage is as precious as gold. The author, who can rely on a wide personal experience in one of the most important centers for pediatric ophthalmology in Europe, also noted that no adaptation or variation of the standard treatment protocol is necessary. This is precious and reassuring advice for all those who want to try this procedure in young patients.

Keratoconus and Other Ectatic Disorders

PP-5

Combined Intracameral Perfluoropropane (C3F8) Tamponade and Compression Sutures for the Management of Acute Corneal Hydrops

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Purpose/Objective: To assess the efficacy and safety of intracameral perfluoropropane (C3F8) and compression sutures in patients with acute corneal hydrops.

Methods: Twenty four eyes twenty three patients with acute hydrops having stromal clefts underwent C3F8 (14%) intracameral injection with compression sutures using 10-0 nylon (interrupted, full thickness). Time for resolution of corneal edema and best-corrected visual acuity were assessed.

Results: Of twenty-three patients, 13 were males and 10 were females with an average age of 17.750 - 9.3 years. The presenting visual acuity ranged from counting finger 1 meter to 6/60. The corneal edema resolved in 7.37 - 3.29 days with C3F8 and compression sutures. No complications were noted. The final best-corrected visual acuity improved in all patients by an average of 2 or more lines in Snellen's acuity chart.

Conclusion: Combined use of intracameral C3F8 gas and compression sutures in corneal hydrops with stromal clefts is a safe and effective modality of treatment.

Key Words: intracameral C3F8, acute corneal hydrops

PP-6 Collagen Implantable Collamer Lens (pTICL) to Correct Ametropia in Eyes with Keratoconus

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Purpose: To assess the predictability of collagen implantable collamer lens (pTICL) implantation to correct ametropia in eyes with keratoconus.

Methods: Uncorrected (UCVA) and corrected (BCVA) visual acuities and postoperative complications were evaluated till 6 months. Linear Regression analysis for SE correction and Wilcoxon Sign Rank test was used to evaluate the improvement in UCVA along with the Safety and Efficacy Index.

Results: Preoperatively, the mean spherical equivalent in the 18 eyes (16 patients) was -12.89 diopters (D) +/- SD 6.01 SD range -5.0 to -18.75D and the mean cylinder 4.75 SD1.49, range -1.75 to -6.00 D. UCVA was 20/40 or better in 16/18(88.8) % of eyes (p=0.03).At 6 months, 83.3 % (15/18) eyes were within +/-0.50 D of attempted correction. For the astigmatic components 77.7% of were within +/- 1.0 D (p=0.02). The efficacy index was 1.06 and the safety index, 1.18.

Conclusions: Results confirm that pTICL is a predictable and effective procedure in keratoconus

PP-7 A Nomogram for Managing Keratoconus in Asia

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Vasan Eye Care Hospital, India

Objective: To suggest a nomogram for managing Keratoconus- "Parthasarathy Paradigm".

Methods: A case sheet review of 805 patients of Keratoconus was done. The uncorrected visual acuity (UCVA), best corrected visual

acuity (BCVA), keratometric indices of maximum and minimum K, average K, anterior float, posterior float, anterior/posterior float index, thinnest pachymetry, and pachymetric index were analysed at presentation for the classification of Keratoconus. The treatment was done according to the suggested nomogram to achieve optimal visual outcomes.

Results: The Nomogram provided guidelines for the treatment of patients with Keratoconus which can be customised according to the presentation of the patient. Conservative and Surgical Management both are suggested to achieve stabilization and improvement in Vision.

Conclusions: The nomogram can be followed to adapt treatments to patients with all stages of Keratoconus and provides the general ophthalmologist and corneal specialists the way forward for these patients.

Contact Lens

PP-8 MSD Lens Fitted on a Post Lasik Corneal Ectasia

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Purpose/Objective: To be able to present scleral contact lens as a viable option for post lasik corneal ectasia.

Methods: RA a 47 year old male with -15.00 myopia on both eyes underwent laser assisted in situ keratomileusis (LASIK) in the Middle East in 1997. Prior to LASIK, he was wearing soft hydrogel contact lens for more than ten years and was achieving a vision of 20/50 on both eyes. He developed corneal ectasia on both eyes three months after the LASIK procedure. Gas permeable contact lenses were fitted in June 2008 and vision was not satisfactory. He underwent penetrating keratoplasty with surgical removal of cataract on the left eye in 2010.

Results: MSD scleral lens was fitted on both eyes which gave him satisfactory vision and comfortable fit. RA was very happy with the scleral lenses and is able to perform activities of daily living.

Conclusion: MSD scleral lens was fitted and gave a satisfactory vision and comfortable fit

Key Words: scleral contact lens, corneal ectasia, post lasik

PP-9 - WITHDRAWN Myopia Control with Orthokeratology Contact Lenses in Spain (MCOS): Factors Associated with Myopia Progression

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Purpose/Objective: To examine which baseline measurements constitute

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predictive factors for axial length growth over 2-years in children wearing orthokeratology contact lenses (OK) and single-vision spectacles (SV).

Methods: Sixty-one children (ages 6-12 years) with myopia between -0.75 to -4.00D and astigmatism 1.00DC were prospectively assigned to wear either OK (n=31) or SV (n=30) for 2-years. The primary outcome measure (dependent variable) was axial length change at 2-years relative to baseline. Other measurements (independent variables) were age, age of myopia onset, gender, myopia progression over the two years prior to the beginning of the study and baseline myopia, axial length, anterior chamber depth, corneal power and shape (p-value) and iris and pupil diameters as well as parental refraction. The contribution of all independent variables to the 2-year change in axial length was assessed using univariate and multivariate regression analysis.

Results: With univariate analysis, younger age, earlier myopia onset, male gender, shorter anterior chamber depth and greater corneal power were each separately associated with greater axial elongation in the OK group, whereas male gender was the only factor associated with axial elongation in the SV group (all $p < 0.05$). With multivariate analysis, younger age, shallower anterior chamber depth and longer axial lengths were associated with larger increases in axial length in the OK group, whereas earlier myopia onset, shorter axial lengths and larger iris diameters were associated with larger increases in axial length in the SV group (both $p < 0.05$).

Conclusion: Variation in baseline demographics and refractive and biometric parameters as well as parental refraction is associated with differences in axial elongation between OK and SV wearers.

Key Words: myopia control, orthokeratology, myopigenic factors, myopia progression

PP-10

Safety and Efficacy of Topical Besifloxacin 0.6% and Therapeutic Bandage Contact Lens for Elective Ocular Surgery

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Purpose: A 3-year retrospective analysis of 2769 eyes in 1802 patients aged 17-89 years undergoing elective procedures by one surgeon at 3 surgical centers evaluated the use of peri-operative Besifloxacin 0.06% in Durasite vehicle (Besivance, Bausch & Lomb, Rochester, NY) as well as post-operative therapeutic bandage soft contact lens (THBL). Besivance, the first fluorochloroquinolone, was approved in 2009 for conjunctivitis therapy, and has never been used systemically in humans or animals.

Methods: Surgery included 1791 cataract extractions with IOL (CEIOL), 325 penetrating keratoplasty (PKP), 310 Descemet's stripping endothelial keratoplasty (DSEK), 102 lamellar keratectomy (LAMK), 159 pterygium excision with autograft (PEA), 25 ocular surface neoplasia excision and cryotherapy (OSNEC), and 57 PRK procedures. 886 CEIOL, 14 PKP, 24 DSEK, 5 lamellar keratectomy, 24 pterygium, 3 neoplasia and 11 PRK

procedures (967 patients) represented the second eye of the same patient. Besifloxacin was administered BID for 1 day pre-operatively, the day of surgery, and for 2 weeks post-operatively. Patients were analyzed for 3 months post-operatively. A THBL was applied in the OR at the conclusion of surgery for CEIOL patients with Premium IOLs (390), basement membrane dystrophy (25), or inadvertent intra-operative epithelial defects (48). A THBL was applied to all patients undergoing PKP, DSEK, LAMK, PEA, OSNEC and PRK, for a total of 1441 THBL eyes. The THBL was removed at Day 1 post-operatively for all CEIOL and DSEK patients, but at week 2 for all others.

Results: There were no cases of corneal ulceration or endophthalmitis. 32 patients (1%) experienced delayed epithelialization: 7 PKP, 1 DSEK, 15 LAMK, 4 PEA, 0 PRK and 5 OSNEC. There was no evidence of toxicity, hypersensitivity or medication allergy. Some patients noted difficulty applying the thicker drops, which were given after prior administration of post-operative topical NSAIDs and steroids. Patients tolerated the drops well, and family members appreciated the condensed BID treatment regimen. Pharmacokinetic data strongly supports the use of Besifloxacin in Durasite at 12 hour intervals.

Conclusion: Besifloxacin surgical prophylaxis represents an off-label use. Nevertheless, there are valid rationales for employing post-operative topical antibiotics, particularly in patients with epithelial defects. Besifloxacin with concomitant THBL is well-tolerated and associated with minimal complications and side-effects without evidence of intolerance or toxicity.

Key Words: Therapeutic Bandage Contact Lens, Besifloxacin, Ocular Surface Surgery, Intraocular, Cataract

PP-11

Evaluation of Novel Multipurpose Contact Lens Care solutions Effect on Membrane-associated Mucin Expressions in the Rat Cornea

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Purpose/Objective: The purpose of this study is to determine whether commercially available new multipurpose contact lens care solutions (MPSs) have any effect on membrane-associated mucins (MUC1 and MUC16) expressions in the cornea using SV40 transformed human corneal epithelial cells (HCET) and rat cornea. Membrane-associated mucins are one of the major components of the ocular surface that play a vital role in the maintenance of the ocular surface integrity.

Methods: HCET cells were treated with different concentrations of MPS-F (1ppm PHMB, no boric acid), MPS-G (1.3ppm PHMB, 1ppm PQ-1, boric acid), MPS-H (1.6 ppm, Alexidine, 3ppm PQ-1, boric acid), MPS-I (1ppm PHMB, boric acid), and MPS-J (5ppm ALDOX, 10ppm PQ-1, boric acid): 100% treatment for 30 minutes and 10% treatment for 24 hours. Membrane-associated mucins (MUC1 and MUC16) expressions were subsequently analyzed by Western blot. Wistar rats were also subjected to MPSs (1 drop in the right eye every 10 minutes for 1 hour). The left eye was

used as control (1 drop of PBS every 10 min for 1 hour). Cornea lysates were subsequently prepared and used for Western blot analysis.

Results: Western blot results showed that MPSs containing boric acid down-regulate membrane-associated mucins in the cornea while MPSs without boric acid had no effect on membrane-associated mucins.

Conclusion: Boric acid, used in MPSs as a buffer agent, concentration should be chosen carefully to avoid MPS-related ocular surface damage. Ocular surface damage simultaneously promotes microbial pathogens and potentially increases clinical rates of infection.

Key Words: MPS, contact lens, mucin, rat

Dystrophies and Degenerations

PP-12

Clinical Profile of Congenital Hereditary Endothelial Dystrophy (CHED) Among Indian Population

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Purpose/Objective: To evaluate clinical profile of congenital hereditary endothelial dystrophy (CHED) among Indian population

Methods: 20 patients of CHED were evaluated clinically and examined on slit-lamp, ASOCT (anterior segment optical coherence optical tomography), specular microscopy, confocal scan, ultrasound pachymetry and applanation tonometry. Data obtained from the various examination parameters were correlated clinically.

Results: Mean age of symptoms onset 0.2 - 0.7 yrs (range: 0 -3 yrs), mean disease duration before presentation 10.9 - 7.52 yr (range: 3-30 yrs), Mean central corneal thickness (CCT) 677.56 - 221.7 mm (range: 256-979 mm) and mean IOP 14.5 - 2.9 mm Hg (range: 8-22 mm Hg) were seen in our patients population. Iron line at the junction of inferior 1/3rd and middle 1/3rd cornea was evident in 33.3% patients. Other features were equal sex ratio, positive family history of CHED (33%), history of consanguinity in parents (19%), more affected siblings with consanguineous marriages in parents (67%), history of glaucoma (23.8%), , nystegmus (38.1%), spheroidal degeneration (33.3%), squint (19%) and thickened Descemet's membrane on ASOCT (4 eyes). Photophobia was found significantly associated with spheroidal degeneration (57.1% of spheroidal degeneration patients, $p=0.027$, fisher exact test) and squint (75% of squint patients, $p=0.013$, fisher exact test). Confocal microscopy could detect spheroidal degeneration in 11 eyes but endothelial details were not visible.

Conclusion: CHED appears early in life but patients present late to clinician probably due slowly progressive nature of the disease. Iron line on inferior cornea was found as a new association with CHED. Siblings were found affected more in patients with history of consanguinity in parents. ASOCT may aid in diagnosis of CHED.

Key Words: congenital hereditary endothelial dystrophy, iron line, consanguinity, anterior segment optical coherence optical, tomography

PP-13

Bilateral Corneal Opacity in a Patient with Acromesomelic Dysplasia

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Purpose/Objective: To describe an extremely rare case of acromesomelic dysplasia with bilateral corneal opacity in a 6-year-old female.

Methods: This is a case report.

Results: A 6-year-old female was referred for bilateral corneal opacity. Best corrected visual acuity for both eyes was 6/12. Ocular findings included normal corneal thickness with intact epithelium and diffuse mid to posterior stromal haze. The rest of the eye findings were within normal limits. Corneal topography showed symmetrical bow tie astigmatism of - 3.38D for the right eye and symmetrical bow tie astigmatism of - 3.00D for the left eye.

Conclusion: Treatment of the ocular findings in acromesomelic dysplasia includes corrective lenses for errors of refraction and polarized lenses for glare. Keratoplasty may be contemplated in cases with total corneal opacification. Follow-up is necessary to assess the progression of the disease and decide appropriate management of symptoms.

Key Words: acromesomelic, acromesomelic dysplasia

PP-14

Differences of Corneal Endothelial Abnormality Between Central and Intermediate Zone in Fuch's Corneal Dystrophy

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Purpose/Objective: Fuchs corneal dystrophy is a progressive corneal endothelial dystrophy that causes irreversible endothelial change and bullous keratopathy. To investigate the regional differences of the abnormality, we examined the corneal endothelium at multiple sites including the peripheral region.

Methods: Eleven eyes of four patients (three women and three man; 30-80 years old) with Fuchs corneal dystrophy were studied at Osaka University Hospital. We used a newly developed non-contact specular microscope (NIDEK CEM-530) to examine the intermediate zone 3-mm peripheral from the corneal center in addition to the center and the periphery 0.75 mm from the center. We measured the size of the degenerative area with guttata and the cellular density in the residual intact area.

Results: The abnormal areas in the central zone (center and 0.75 mm from the center) represented $59.6 \pm 33.2\%$ of the total area, and those in the 3-mm peripheral zone represented $21.7 \pm 31.0\%$ of the total area. The

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abnormal areas in the 3-mm peripheral zone of ten of eleven eyes were significantly ($p < 0.05$) larger than those in center. The cellular densities in the residual intact area did not differ significantly between the two zones.

Conclusion: In Fuchs corneal dystrophy, the corneal endothelial cells degenerate more rapidly in the central than the intermediate zone. This finding might offer new information to facilitate an understanding of the disease mechanisms.

Key Words: corneal endothelium, peripheral, Fuchs corneal dystrophy, specular microscope

PP-15

Femtosecond Laser Assisted Cataract Surgery Improves the Prognosis for Primary Cataract Extraction in Fuchs Dystrophy

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Purpose/Objective: Femtosecond laser assisted cataract surgery (FLACS) enables unparalleled control of incision parameters as well as nuclear sectioning programmed to reduce the total amount of phacoemulsification energy required. We reviewed the initial 30 day results following uncomplicated phacoemulsification with IOL implantation surgery (PEIOL) in 20 patients with Fuchs Endothelial Dystrophy (FED), then 20 additional consecutive patients with FED undergoing FLACS.

Methods: Patients with mild FED and visually significant cataracts underwent primary PEIOL without Descemet's Stripping Endothelial Keratoplasty (DSEK) if pre-operative conditions were met: Maximum Pachymetry < 620 microns, No Documented Recent Pachymetry Increase, No Descemet's Folds, Minimal Cell Count $500/\text{mm}^2$, Expectations Reasonable for $< 20/30$ Acuity, and patient agreed to a prolonged recovery time. A Target -0.75 spherical equivalents was used. Cumulative dispersed energy (CDE) was recorded for each case.

Results: For PEIOL alone, mean CDE was 15.4, Central Pachymetry $614 \frac{1}{4}$ pre-op and $645 \frac{1}{4}$ 30 day post-op, a Mean Increase of 5%. The endothelial Count was 1248 pre-op and 820 30 day post-op, for a Mean Loss of 35%. For PEIOL with FLACS, mean CDE was $8.1 - 48\%$ ($p = 0.001$), Central Pachymetry $620 \frac{1}{4}$ pre-op and $643 \frac{1}{4}$ 30 day post-op, a mean increase of 4% ($p = 0.45$). The endothelial Count was 1132 pre-op and 983 30 day post-op, for a Mean Loss of 13% ($p = 0.02$). All patients experienced 1 - 5 lines of visual acuity improvement, with no differences between groups.

Conclusion: Day 30 results indicate the potential for an improved short and long term prognosis for FED patients undergoing primary PEIOL with FLACS. This strategy, compared to PEIOL alone, should provide a faster surgery and faster recovery, allowing earlier intervention, and delaying subsequent DSEK if necessary. Disadvantages of combined DSEK and PEIOL include an unstable IOL during the DSEK portion of combined surgery, and a potentially higher complication rate. Primary PEIOL with FLACS patients were generally satisfied with their results and surgery.

Key Words: Femtosecond Laser Assisted Cataract Surgery, Fuchs Dystrophy, Corneal Edema, Descemet's Stripping Endothelial, Keratoplasty

PP-16

Loteprednol 0.5% Prior to Pterygium Surgery Effectively Increases Conjunctival Glucocorticoid Receptor Internalization

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Purpose/Objective: Pterygia are fibrovascular, inflammatory and actinic conjunctival degenerations contiguous with the cornea. Pterygia encroachment into the visual axis induces significant astigmatism, irritation and decreased visual acuity. Pterygia are commonly treated surgically but have a recurrence rate as high as 40%. Treatment with corticosteroids is hypothesized to delay pterygium progression. This study assesses the efficacy of 0.5% loteprednol etabonate (LE) by comparing glucocorticoid receptor (GCR) migration with clinical outcomes after steroid therapy.

Methods: Seven patients with mild to severe pterygium were treated with topical LE four times daily for two weeks prior to surgical excision. Pterygium biopsies were studied from steroid treated pterygia, treated normal conjunctiva (biopsied from the same eyes as steroid treated pterygia donors, but from a different, quiet donor site), and untreated nave conjunctiva from three untreated volunteers. Samples were homogenized in RIPA Buffer and supernatant collected for protein and Western blot analysis. GCR activation was measured as a function of GCR migration from the cytosol into the nucleus. Clinical evaluation was performed by the treating physician.

Results: Untreated nave conjunctiva GCR protein concentration was $1.2 \pm 0.4 \frac{1}{4}\text{g}/\frac{1}{4}\text{l}$ ($n=3$). Treated normal conjunctiva GCR protein concentration was $1.6 \pm 0.5 \frac{1}{4}\text{g}/\frac{1}{4}\text{l}$ ($n=7$). Corneal pterygium GCR protein concentration was elevated to $3.0 \pm 0.9 \frac{1}{4}\text{g}/\frac{1}{4}\text{l}$ ($n=7$). GCR migration in treated pterygia was $48 \pm 9\%$ greater than in nave conjunctiva ($p < 0.001$). In normal conjunctiva, steroid treatment increased GCR migration by $18 \pm 7\%$ ($p < 0.05$). Clinically, the treated patients responded well and were without recurrence at six months.

Conclusion: GCR migration activity increased significantly following treatment with LE. The receptor migration was most pronounced in active pterygium tissue with less effect on normal treated and untreated conjunctiva. These findings suggest that perioperative treatment with topical LE may result in favorable clinical outcomes in pterygium removal.

Key Words: Pterygium Surgery, Glucocorticoid Receptor, Loteprednol Etabonate, Conjunctival Inflammation

PP-17

Comparison of the Results of Pterygium Resection Combined with Conjunctival Autograft versus Amniotic Membrane Transplantation, after Sealing the Gap Between Tenon's capsule and Conjunctiva using Fibrin Glue

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Purpose/Objective: To compare the results of pterygium resection combined with conjunctival autograft versus pterygium resection combined with amniotic membrane transplantation, after sealing the gap between Tenon's capsule and Conjunctiva using fibrin glue.

Methods: A total of 63 cases (64 eyes) were randomly assigned to receive pterygium resection combined with conjunctival autograft (n=33) or pterygium resection combined with amniotic membrane transplantation (n=31). After pterygium resection, the gap between tenon's capsule and conjunctiva was sealed using fibrin glue. Conjunctival and corneal recurrence was noted at 12 months post-operatively.

Results: In the conjunctival autograft group 1 eye had corneal recurrence and 1 eye had conjunctival recurrence. In the amniotic membrane transplant group 2 eyes had corneal recurrence and 5 eyes had conjunctival recurrence.

Conclusion: Patients receiving pterygium surgery combined with conjunctival autograft had lower recurrence rates as compared to pterygium resection combined with amniotic membrane transplantation. Sealing the gap with fibrin glue does not seem to provide an effective mechanical barrier to prevent pterygium recurrence.

Key Words: Pterygium, Conjunctival autograft, Amniotic membrane transplant

Eye Banking

PP-18

Legislation and Donation: Comparing the Hospital Eye Donation Programme and HOTA - The Singapore Eye Bank Experience

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Purpose/Objective: To compare the number of corneas recovered under the Hospital Eye Donation Programme (HEDP) and the Human Organ Transplant Act (HOTA).

Methods: A review of eye bank records from 2004 to 2011 was conducted to compare the number of corneas recovered under the Hospital Eye Donation Programme which is governed by the Medical (Therapy, Education and Research) Act and those recovered under the Human Organ Transplant Act. HEDP is a voluntary programme where consent is taken prior to recovery of corneas whereas HOTA is an opt-out, implied consent system. The Singapore Eye Bank (SEB) was founded in 1991 and prior to 1995 sourced the majority of its corneas from international eye banks. Local corneas during this period were exclusively from multi-organ donations. In 1996, SEB initiated a Hospital Eye Donation Programme with Singapore General Hospital. It was a collaborative effort to counsel bereaved relatives of potential hospital donors about eye donation and seek consent for donation. The programme was successful and a similar arrangement was made in TTSH in 2002, and in CGH in 2010. The amended HOTA came into effect in 2004, allowing the heart, liver, kidneys and corneas to be recovered from Singaporeans and Permanent Residents aged 21 years and above who died in hospital and who have not opted-out during their lifetime

Results: From August 2004 until October 2011, the Hospital Eye Donation Programme and HOTA contributed 896 corneas to the local pool. HEDP accounted for 620 corneas (69%) and HOTA provided 276 corneas (31%).

Conclusion: HOTA has played a significant role in boosting the Singapore Eye Bank's local cornea numbers but our three Hospital Eye Donation Programmes remain a more significant factor accounting for our success in procuring local corneas for Singaporeans.

PP-19

The Use of On-Site Rapid Qualitative Hepatitis B Test to Pre-Screen Cornea Donors Prior to Harvesting

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Purpose: To evaluate the utility of the iCARE Hepatitis B Screening Test (JAL Innovations, Singapore, Singapore) for pre-screening corneal donors before harvesting as a cost-reducing innovation in eye banking operation

Methods: A retrospective review of records of the Sta. Lucia International Eye Bank of Manila (SLIEB) from August 2007 up to July 2009 (before using the on-site rapid screening test) and from August 2010 to July 2012 (after using the screening method) was done to determine the number of hepatitis B positive donor's serum of the corneas evaluated at the SLIEB.

Results: From August 2007 to July 2009 (before using the on-site rapid screening test), a total of 3141 corneas were harvested and the serum of all the donors were subjected to the standard hepatitis B screening. Of these, 269 (8.6%) were positive for hepatitis B and thus were evaluated to be not suitable for transplantation. From August 2010 up to July 2012, (after using the rapid hepatitis B screening test prior to harvesting), a total of 3734 corneas were harvested. Of these, only 82 (2.2%) were positive to hepatitis B and thus were subsequently evaluated to be not suitable for transplantation. These data showed a 74.4% reduction in the number of hepatitis B positive corneas that were processed when the on-site pre-screening method was done.

Conclusion: The use of the on-site rapid hepatitis B pre-screening prior to cornea harvesting is useful in reducing the number hepatitis B positive corneas that were processed by the eye bank. This translated to the reduction in operating costs of the SLIEB.

Key Words: eye banking, cornea, hepatitis B

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PP-20

The Endothelial Cell Density and Donor Age of Corneas Distributed by the Sta. Lucia International Eye Bank of Manila

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Purpose: This study aims to describe the characteristics of corneal tissues distributed by the Sta. Lucia International Eye Bank of Manila (SLIEB)

Methods: Donor and cornea evaluation data of corneas distributed by the SLIEB from January 2007 to December 2011 were reviewed. The donor age, endothelial cell count and death to preservation time were analyzed.

Results: A total of 4,475 corneas were distributed by the SLIEB during the period of January 2007 to December 2011. The mean donor age is 27.3 years old (range, 5 - 80 yrs old), 1.03% are in the age range of 1-10 years old, 13.66% are in the age range of 11-20 years old, 39.92% are in the age range 21-30, 30.02% are in the age range of 31-40 years, 11.59% are aged 41-50 and 4.76% are aged 51 and above. The mean endothelial cell count is 2,910.54 (range, 0 - 3,320 cells/mm²) 22.98% of the corneas have an endothelial cell density of >3000 cell/mm², 58.18% have cell density from 2500-2999 cells/mm², while 10.56% have endothelial cell density of <2500 cells/mm². The mean death-preservation time is 6 hours (range, 1.1 - 11.5 hours).

Conclusion: The corneas distributed by the SLIEB are from relatively young donors with high endothelial cell counts.

Key Words: eye banking, cornea, endothelial cell count, donor age

PP-21

The Cornea Rating System of the Sta Lucia International Eye Bank of Manila

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Purpose: To describe the current cornea rating system of the Sta. Lucia International Eye Bank of Manila (SLIEB).

Results: Corneas distributed by the SLIEB are evaluated using a rating system based mainly on the following criteria: epithelial exposure and sloughing, descement's membrane folds and endothelial cell density. Grade A+, A, A- and B corneas are optical grade corneas. Grade A+ corneas are corneas with no edema, no exposure and no sloughing. They have no descement's membranes folds and with endothelial cell density of >3000 cells/mm². Grade A corneas have less than 15% epithelial exposure and sloughing, with few, light peripheral descement's membrane folds and have an endothelial cell density of >2500 cells/mm². Grade A- corneas have 15-60% epithelial exposure and sloughing with few, light central descement's membrane folds and have an endothelial density of >2500 cells/mm². All grade A corneas are good for both penetrating keratoplasty (PKP) and descement stripping endothelial keratoplasty (DSEK). Grade B corneas have 15-60% exposure and sloughing, with few, moderate central

descement's membrane folds and endothelial cell density of >2500/mm². These are good for anterior lamellar transplantation and for emergency PKP if grade A corneas are not available. Grade C corneas are corneas with greater than 60% exposure and sloughing, with several moderate central descement's membrane folds and with endothelial cell density of <2500 cells/mm². These are used for tectonic transplantation. Grade D corneas are not suitable for transplantation; therefore they may be used for training and research. Grade E corneas are corneas greater than 14 days old in the Optisol preservative media and are used for research.

Conclusion: The current corneal rating system of the SLIEB is based several criteria, mainly on epithelial exposure and sloughing, descement's membrane folds and endothelial cell density. The corneas are grouped according to the clinical and research utility of the tissue.

Key Words: eye banking, cornea, corneal rating

PP-22

Corneal Donation and Utilization in Vietnam During 4 years 2007 -2011

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Purpose/Objective: To evaluate situation of corneal donation and utilization in Vietnam during 4 years from April 2007 to June 2011.

Methods: Prospective study based on donor's documents of eye bank, VNIO. The indicators are recorded and analyzed individually including social characteristic of donor (age, gender, place of living, religions, blood test); corneal quality (transparency, endothelium cell) and corneal utilization (purpose of transplantation, reason for not transplant)

Results: During 4 years, there are 116 donors with 64 male and 52 female. The average age is 67 (youngest is 6; oldest 107). A donor from countryside and city is 108 and 8 respectively. Most of retrieval (108) done in the donor's house, the left (8) were done in funeral home and in hospital. Among 229 retrieval corneas, 204 (89%) is used for transplant of which 47 (23%) corneas for therapeutic graft; 157 (77%) corneas for optical one. Endothelium cell count is done on 92 corneas of which 80 (86%) corneas having more than 2000 cell/mm². Twenty five corneas is not used for transplant because these donors suffering from infected diseases (or unsure) such as HIV, hepatitis B.

Conclusion: Domestic donated cornea has good quality and is an important source for transplant. Most of corneas are from countryside and retrieval done at donor's house. Promotion should be done to have more donors in city, hospital to get better corneas in both term of quality and quantity.

Key Words: cornea donation, eye bank

PP-23

Hospital Cornea Retrieval Program: A Noble Concept in Eye Banking in India

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Purpose/Objective: Hospital cornea retrieval program (HCRP) is a new concept in Indian eye banking in addition to traditional voluntary donation. It helps in harvesting more number of donor corneas and at the same time we can have best quality tissue with maximum utilization for corneal blind. The purpose of this study is to share the improvement in eye banking through hospital cornea retrieval program in India.

Methods: Retrospective review of an eye bank data from a tertiary eye hospital's eye bank over last 7 years. The HCRP model is with the State government through a PPP model. Collection; donor age; tissue quality; utilization data via HCRP were compared with voluntary donation.

Results: Since starting of HCRP in 2005, total collection increased by 612% from 156 in 2004 to 1112 in 2011 ($p < 0.0001$) and utilization percentage increased from 30 in 2004 to 80.5% in 2011 ($p < 0.005$). In last 7 years, donor age 60 years in HCRP was 31.8% Vs 11.3% in voluntary ($p < 0.01$). Quality of tissue was significantly higher in HCRP collection ($p < 0.01$).

Conclusion: HCRP plays a crucial role in eye banking in India. It helps both in quantitative and qualitative cornea collection with maximum utilization of tissue.

Key Words: HCRP, Voluntary donation, Utilization, Quality tissue

PP-24

Standardized Coding and Labeling for Ocular Tissue

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Purpose: Traceability is a key requirement for ocular tissues. Traceability is enhanced when documentation of the collection, processing, and distribution of ocular tissues can be performed using bar codes. However, for bar codes to be useful, they must be globally standardized so that disparate computer systems can interpret essential information in the same way. ISBT 128, an existing system designed to support traceability of substances of human origin, has been used for blood, cellular therapy products, and tissues around the world. The ISBT 128 system supports globally unique identification for each donation as well as standardized product coding. Adapting it to ocular tissue required the development of standardized ocular terminology.

Methods: Building a global system for labeling and coding of tissue products follows an organized process. First, terms describing products must be selected and defined through a global consensus process. Then, reference tables mapping the terminology to computer codes must be developed. Computer codes from the reference tables must then be

formatted into standardized data structures allowing disparate computer systems to interpret the data. Finally, these data structures are incorporated into bar codes (or other electronic delivery mechanisms) and utilized on labels. Using an existing standard, such as ISBT 128, for encoding of information not only provides for quicker implementation, it also allows many substances of human origin to utilize the same system.

Representatives from Association of Eye Banks of Asia; European Eye Bank Association; Eye Bank Association of America; Eye Bank Association of Australia and New Zealand; Eye Bank Association of India; Pan American Association of Eye Banks; and ICCBBA, as well as other technical experts, met by teleconference over a period of a year to select and define appropriate terminology. The draft of the terminology was submitted to eye bank societies and the public for comment, revisions were made, and terminology was finalized by the group.

Results: An international system for standardized coding and labeling of ocular tissue now exists. The terminology developed by this consensus process may be used within the ISBT 128 system to label ocular products with standardized bar codes enabling the electronic capture of critical data in the collection, processing and distribution of products.

Conclusions: The Boards of the above organizations confirmed their support for the international use of ISBT 128 in the coding of ocular tissue and encourage Eye Banks to:

- Adopt this standard terminology for use in communications and in the labeling of ocular tissue grafts;
- Implement ISBT 128 globally unique donation identification for ocular tissue grafts;
- Move towards full implementation of ISBT 128 nomenclature, coding, and labeling in accordance with guidance published by the eye bank technical advisory group.

Following this process, ISBT 128 computer codes were assigned to various products and may now be used to label ocular tissues.

Imaging

PP-25

Ocular Surface Interferometer-a Newer Tool in Armamentarium of Tear Film Evaluation - Our Initial Experience

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Purpose/Objective: To assess use of ocular surface interferometer (Lipiview) to study tear film in normal and evaporative dry eye meibomian gland dysfunction (MGD) patients and to assess use of thermal pulsation system (Lipiflow) in management of MGD patients.

Methods: Observation group had 50 normal subjects and 50 patients with evaporative dry eye due to meibomian gland dysfunction (MGD) who underwent tear film assessment using Lipiview. Treatment group had

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25 patients with MGD who underwent Lipiflow therapy and lipiview were repeated post procedure for them. Tear film quality was measured in interferometric colour units (ICU) in all patients using Lipiview.

Results: Average ICU of normal subjects and MGD patients in observation group was: maximum 100.20; 80.78, minimum 52.45; 42, average 75.75; 58.05 respectively. Difference between both groups was statistically significant (maximum 0.004, minimum 0.011, average 0.0003). Average ICU scores in treatment group showed increase of scores pre and post lipiflow procedure (maximum increased from 76.88 to 86.66, minimum 47.33 to 54.22, average 60.11 to 69.88) respectively.

Conclusion: Lipiview is an effective tool to quantify the severity of tear film instability in MGD patients. Lipiflow seems to be a good option for chronic MGD management. However, long term follow up is required.

Key Words: ocular surface interferometer, dry eye, lipiflow thermal pulsation therapy, meibomian gland dysfunction

PP-26

Corneal Graft-Host Junction Study With AS-OCT

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Purpose/Objective: To evaluate the corneal graft-host junction wound profile in postkeratoplasty eyes using anterior segment optical coherence tomography

Methods: Prospective observational study of corneal graft-host junction of 33 eyes of 30 patients of optical penetrating keratoplasty with postoperative period > 3 months, were recruited into the study. Data recorded included demographic details, surgery indication and details. Complete ocular examination including BCVA, slit lamp biomicroscopy, corneal topography (Pentacam) and anterior segment OCT (Visante OCT) were done.

Results: 264 graft- host junctions imaged from 33 eyes (mean age 35 $\pm$ 19) were analysed. Indications for PK were adherent leucoma (39%), congenital dystrophies (21%), pseudophakic bullous keratopathy (12%), corneal scars (18%) and keratoconus (9%). The type of posterior wound profile of corneal graft-host junction were gape (2.6 %), host step (12.1 %), graft step (6.0 %), protrusion of hill configuration (14.0 %), and tag configuration (3.7%) and well apposed (61.3 %). Analysis of number of subtypes in each eye showed that 4 eyes had one subtype, 11 eyes, 2 subtypes, 18 eyes, 3 subtypes or more of posterior graft-host junction profiles. Linear regression analysis used to predict change in central astigmatism with increase in number of subtypes of graft host junction showed that per unit change in number of subtypes leads to increase in central astigmatism by 0.827 D ($p = 0.495$).

Conclusion: Corneal graft-host junction profile analysis revealed varying subtypes being present in the same eye, with statically non-significant increase in central corneal astigmatism with increase in the number of subtypes present.

Key Words: wound profile, astigmatism, penetrating keratoplasty, AS-OCT, corneal graft-host junction

PP-27

Corneal Topography Changes Following Horizontal Muscle Strabismus Surgery

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Purpose/Objective: Strabismus is an ocular misalignment, whether caused by abnormalities in binocular vision or by anomalies of neuromuscular control of ocular motility. Strabismus correction surgery had been performed for years to improve function, appearance and well being. It involves adjustment of the cornea surface tension by weakening or strengthening a muscle and therefore changes the refractive state of the operated eye. The purpose of this study was to determine whether strabismus correction surgery significantly influences cornea curvature and to evaluate the possibility of corneal curvature changes in associations of different types of procedure performed.

Methods: Seventeen eyes from 12 patients that undergo strabismus correction surgery involving horizontal muscle had serial corneal topography and objective refraction measurement prior to operation, 6 weeks and 12 weeks post operation. The results were analysed statistically with SPSS.

Results: Early corneal topography changes were observed but the effect disappeared after 12 weeks. Similar result proved on the spherical equivalent. However, there was no significant change in surgical induced cylinder measurement preoperatively and postoperatively.

Conclusion: In conclusion, the refractive changes measured by corneal topography and objective refraction following horizontal muscle strabismus correction surgery are transient.

Key Words: strabismus, squint, horizontal muscle surgery

PP-28

Role of Confocal Microscopy in the Diagnosis of Pythium Keratitis

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Purpose/Objective: To investigate the role of confocal microscopy for diagnosis of pythium keratitis.

Methods: Six patients with clinically suspected Pythium keratitis were investigated with Nidek confoscan 4 confocal microscopes.

Results: In vivo confocal microscopy of six eyes (six patients) revealed highly reflective, thick branching filaments with non-parallel cell walls which are surrounded by bright inflammatory cells. Occasionally, branching filaments are formed at angle of 90 degree. All patients were approved for Pythium insidiosum infection by PCR or cultures.

Conclusion: In vivo confocal microscopy may be a useful diagnostic tool for early diagnosis of pythium keratitis.

Key Words: Pythium insidiosum, keratitis, confocal microscopy

PP-29

Wide Field Analysis of Corneal Endothelial Remodeling after DSAEK Using a Contact Scanning Slit Specular Microscope

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Purpose/Objective: To investigate post-DSAEK remodeling of corneal endothelial cells by wide-field contact specular microscopy.

Methods: In 10 eyes treated by DSAEK, endothelial cell density (ECD), coefficient of variation (CV) and frequency of hexagonal cell (6A) of DSAEK graft at the central and temporal peripheral region were analyzed; mean follow-up: 9.2 months.

Results: Throughout the follow-up period, ECD in the center was higher than that in peripheral region. ECD loss from 1 month to 1 year at the central and peripheral regions was 13.4% and 26.7%, respectively. CV showed no significant change, but 6A increased in both regions.

Conclusion: Corneal endothelial cells were lost in the peripheral region and remodeling gradually extended to the center.

Key Words: corneal endothelial cell density, DSAEK, wide-field, contact specular microscopy

Immunology

PP-30

Tectonic Corneal Patch Graft in the Management of Severe Necrotizing Scleritis in Wegener's Granulomatosis

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Purpose/Objective: Wegener's granulomatosis is a relatively rare systemic disease of unknown etiology. Management of necrotizing scleritis, the most common ocular manifestation of this disease, is challenging. The purpose of our study is to report the surgical management of severe recalcitrant necrotizing scleritis using a tectonic corneal patch graft in a patient with this disorder.

Methods: This is an interventional case report

Results: A 23-year old female consulted because a 1 year history of chronic eye redness associated with pain. On ophthalmologic examination of the affected right eye, vision was 20/20, conjunctiva was hyperemic with areas of necrosis and there was a 5.2 x 4.6 millimeter scleral ulceration with uveal prolapse. There was a minimal anterior chamber cell and the posterior segment was essentially normal. Pertinent laboratory exam revealed positive cytoplasmic anti-nuclear antibody (c-ANCA). She was referred to

rheumatology service and was started on intravenous cyclophosphamide. The patient then underwent tectonic corneal patch graft. In brief, the surgical technique included removal of the necrotic scleral and conjunctival tissue and patching of the defect using a full thickness donor cornea. The conjunctiva was undermined and closed primarily. After a few weeks, the graft started to melt again despite aggressive systemic immunotherapy. After 2 months, the patient underwent re-grafting using similar technique. This time, additional amniotic membrane transplant was performed. Thereafter, graft remained stable and the eye quiet. At 1 year post-operatively, the graft remained intact and stable with no sign or recurrence of melt and no signs of inflammation.

Conclusion: Tectonic corneal patch graft combined with amniotic membrane transplant and aggressive systemic immunotherapy was able to restore globe integrity and control inflammation in our patient.

Key Words: Tectonic corneal patch graft, Wegener's Granulomatosis, Necrotizing scleritis, c-ANCA

PP-31

A Randomized, Multicenter, Masked Evaluation of 0.5% Loteprednol Etabonate Versus 1.0% Prednisolone Acetate for the Treatment of Inflammation Following Cataract Surgery

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Purpose/Objective: To evaluate the efficacy of 0.5% loteprednol etabonate (LE) versus 1% prednisolone acetate (PA) for control of post-operative inflammation in patients undergoing routine cataract surgery.

Methods: A randomized, investigator-masked, multi-center, prospective study was conducted in 88 subjects undergoing routine cataract surgery. Subjects were at least 18 years of age and scheduled for routine cataract surgery. Subjects were considered ineligible if they had pre-existing medical conditions that the investigator felt would put the patient at risk or confound the study due to a requirement to use additional medications during the study timeline. Subjects were randomized to receive either LE or PA in addition to 0.09% bromfenac and 0.6% besifloxacin following surgery. Assessments for visual acuity, intraocular pressure (IOP), and anterior chamber cell and flare intensity were conducted over three weeks following the subject - cataract surgery.

Results: The primary endpoint was the level of anterior chamber cell and flare intensity in subjects treated with LE or PA. Equivalency was achieved between the two treatment groups with no significant difference observed throughout the three week follow-up period. There was less fluctuation in IOP assessments for subjects treated with LE than with PA, particularly on days 1 and 3 following surgery.

Conclusion: The results of this study indicate that equivalent control of post-surgical inflammation may be obtained through treatment with LE or PA following routine cataract surgery. Additionally, treatment with LE may result in less fluctuation in IOP.

Key Words: Post-op inflammation, Steroids, loteprednol, cataract surgery

POSTER PRESENTATIONS

PP-32

Loteprednol Ophthalmic Suspension 0.2% Treatment of Seasonal Allergic Conjunctivitis is Equivalent to Olopatadine Hydrochloride Ophthalmic Solution 0.1% and Preferred by Patients

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Purpose/Objective: An estimated 80 million Americans suffer from ocular allergies. Complaints can persist for a few days or an entire lifetime. Therapies include environmental control and topical treatment with steroids or ocular anti-inflammatory agents. The purpose of this study is to compare the efficacy of loteprednol etabonate 0.2%, an ester corticosteroid, and olopatadine 0.1%, anti-histamine, in the treatment of allergic conjunctivitis.

Methods: 60 patients with a diagnosis or history of ocular allergies, allergic conjunctivitis, ocular itching or conjunctival chemosis were enrolled in this 35 day cross-over protocol. At baseline, eligible patients were randomized, then given either loteprednol (Cohort A) or olopatadine (Cohort B) bid for 14 days, followed by a 7 day washout of the first medication. At day 21, the second medication was dispensed and treatment continued until day 35. Both patient and clinical observer were masked. Patient global self assessment and a 12 item Ocular Surface Disease Index Å® (OSDI) were recorded at baseline, and day 14, 21 and 35. Other parameters included visual acuity, biomicroscopy, fluorescein corneal staining, applanation IOP and tear production with Schirmer's test.

Results: At day 14, OSDI improved by 55% with loteprednol and 26% after olopatadine treatment ($p < 0.05$). At the end of the study period (day 35), no significant differences were reported between the cohorts with global self assessment, drug tolerability, corneal staining or biomicroscopy. IOP and tear production remained constant at 14.0-0.4 mmHg and 20.0-1.7mm (OD and OS combined) respectively. Visual acuity improved from 20/33 to 20/25 in cohort B. 33 patients preferred loteprednol, while 27 patients preferred olopatadine ($p < 0.05$).

Conclusion: Both drugs demonstrated excellent safety and efficacy as bid treatments for allergic conjunctivitis. There were no differences in IOP and tear production. Loteprednol was more efficacious than olopatadine in reducing OSDI, and was chosen as the preferred medication by more patients than olopatadine.

Key Words: Ocular Allergy, Allergic Conjunctivitis, Loteprednol etabonate, Olopatadine

PP-33

Galectin-9-mediated Protection from Allo-specific T Cells as a Mechanism of Immune Privilege of Corneal Allografts

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Purpose/Objective: T cell immunoglobulin and mucin domain (Tim)-3 is a regulatory molecule of T cell function. Galectin (Gal)-9 is a Tim-3 ligand.

The purpose of this study is to determine the role of Tim-3/Gal-9 pathway in immune privilege of corneal allografts.

Methods: We performed corneal allograft transplantation using C57BL/6 (B6) donors and BALB/c recipients. An alloantigen specific anterior chamber associated immune deviation (ACAID) model in mice was also used. These mice were administrated with anti-Tim-3 monoclonal antibodies (mAb), anti-Gal-9 mAb, or control rat IgG intraperitoneally. Graft survival and induction of ACAID were assessed. We also examined destruction of corneal endothelial cells (CECs) by allo-reactive T cells in vitro. Corneas from B6 eyes pre-treated with anti-Gal-9 mAb or control rat IgG were incubated with T cells. T cells were purified from the spleen of BALB/c mice that were presensitized by subcutaneous immunization with allo (B6) splenocytes or with third-party (C3H/He) splenocytes, or from the spleen of naive BALB/c, B6 or C3H/He mice. Dead CECs were counted and compared.

Results: Allograft survival in the recipients treated with anti-Tim-3 mAb or anti-Gal-9 mAb were significantly shorter than that in control recipients. Gal-9 is constitutively expressed on the corneal epithelium, endothelium and iris-ciliary body in normal mouse eyes and eyes bearing surviving allografts, and Tim-3 was expressed on CD8 T cells infiltrating the allografts. Blockade of Tim-3 or Gal-9 did not abolish ACAID. The number of dead CECs in anti-Gal-9 mAb-treated corneas was significantly larger than that in control IgG-treated corneas after incubation with allo-reactive T cells. In contrast, no significant differences were observed between anti-Gal-9 mAb and control IgG-treated corneas with other T cells.

Conclusion: Constitutive expression of Gal-9 plays an immunosuppressive role in corneal allografts. Gal-9 expressed on CECs protects them from destruction by allo-reactive T cells.

Key Words: Tim-3, Gal-9, immune privilege, keratoplasty

PP-34

Allergy Modulation Arising from High-dose Intraperitoneal Sensitization is a Treg-dependent Mechanism in Murine Allergic Conjunctivitis

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Purpose/Objective: Hi-dose intraperitoneal Ag sensitization is a highly reproducible method to induce allergy modulation. Its utility in further elucidating immunologic tolerance mechanisms in allergy is therefore of significant clinical interest. However, the role of CD4 CD25 FoxP3 T regulatory cells (Treg) in this process is unknown. To examine the potential role of Treg in allergy modulation arising from hi-dose intraperitoneal sensitization.

Methods: C57BL/6 mice were sensitized once via intraperitoneal low-dose (100ug) versus hi-dose (1000ug) ovalbumin (OVA), in aluminum hydroxide (1mg). Other mice received systemic anti-CD25 Ab (PC61) to ablate Treg during hi-dose sensitization. In another experiment, Treg from hi-dose sensitized mice were adoptively transferred into low-dose sensitized mice. All mice were challenged once/daily with OVA eye-drops and evaluated for allergic conjunctivitis (AC) clinical signs. Serum was evaluated for IgE, lymph nodes were assessed for cytokines (IL-4, -5, -13, -10, IFN-g, and TGF-b), and conjunctivae were collected to enumerate eosinophil recruitment.

Results: Contrasting with low-dose, sensitization with hi-dose OVA led to allergy modulation, evidenced by inhibited AC clinical signs, sera OVA-specific IgE, Th2 cytokines, and eosinophil recruitment. Relative to low-dose, T cells from hi-dose sensitization showed increased TGF- β levels, but not IFN- γ or IL-10. Treg from hi-dose, but not low-dose sensitization, augmented suppression *in vitro*, and adoptively transferred allergy modulation. Furthermore, Treg ablation during hi-dose allergen sensitization revoked allergy modulation.

Conclusion: Hi-dose allergen sensitization modulates allergy in AC, which occurs in a Treg-dependent manner. This model may henceforth prove valuable for further examination into the biology of Treg and tolerance in allergy.

Key Words: allergic conjunctivitis, T regulatory cells, tolerance

Infection

PP-35

Preseptal Cellulitis- A Warning Sign of Brain Abscess?

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Purpose/Objective: To report a case of brain abscess following a history of recent preseptal cellulitis, which lead to death.

Methods: Case report

Results: A 25 year old Malay gentleman, with no known medical illness was brought unconscious to emergency department with signs of generalized tonic clonic seizure. Examination revealed Glasgow Comma Scale of 3/15, necessitating intubation. Radiological imagings showed large left frontal lobe abscess with surrounding cerebral oedema and hydrocephalus. He had a history of recent admission for right eye preseptal cellulitis, which was successfully treated with two weeks course of antibiotic.

Incision and drainage was done, with good response, and no organism was seen on microbiology. There was no sign to suggest orbital cellulitis on the affected eye at presentation to the emergency department, and ophthalmologist confirmed clinical resolution of previous preseptal cellulitis. The patient's conditions rapidly deteriorate despite supportive therapy. He developed cardiac arrest 12 hours after presentation, and was pronounced dead after multiple attempts of failed resuscitation. Unfortunately, post-mortem was not performed at family's request. The cause of brain abscess was not determined.

Conclusion: Radiological imaging of brain and paranasal sinus is important even in young and healthy individual who presents with severe preseptal cellulitis, to rule out life-threatening infection.

Key Words: radiological imaging, preseptal cellulitis, abscess

PP-36

The Anti-microbial Efficacy of Multipurpose Contact Lens Solutions on Standard Strains of Common Ocular Pathogens

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Purpose/Objective: This study aims to compare the anti-microbial efficacy of locally available multi-purpose contact lens solutions on standard strains of contact lens-related ocular pathogens. It also seeks to establish the recommended duration of exposure to multi-purpose contact lens solutions in order to achieve maximal anti-microbial effect.

Methods : This study, a single-blind controlled experiment, evaluated five locally available multi-purpose solutions in terms of their anti-microbial efficacy towards common contact lens-related ocular pathogens, namely *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Escherichia coli*, *Fusarium solani* and *Candida albicans*, using the stand alone criteria for determination of contact lens disinfection efficacy. Microbial viability counts were then obtained at serial durations namely after 1 hour, 3 hours, 6 hours, and 12 hours of exposure.

Results: Results of this study showed that the multi-purpose contact lens solutions containing Polyquaternium-1 and Myristamidopropyl dimethylamine (MPS C) and polyhexanide (MPS B and D) were able to reduce the bacterial concentrations by 3 log and fungal concentrations by 1 log, thus enabling them to fulfill the stand-alone criteria for disinfecting solutions as mandated by ISO/CD 14729. This anti-microbial efficacy was most evident at 6 hours of exposure of challenge organisms to the multi-purpose contact lens solutions. Moreover, the multipurpose contact lens solution containing Polyquaternium-1 and Myristamidopropyl dimethylamine was found to be having the broadest spectrum of effectivity against gram negative and gram positive bacteria, as well as *Candida albicans*. All multipurpose contact lens solutions tested in this study were found to have poor microbial activity against *Fusarium solani*, which is known for its high virulence and pathogenicity.

Conclusion: Multi-purpose contact lens solutions truly show a wide range of variability in terms of their antimicrobial activity. A contact lens solution that has a better and broad spectrum antimicrobial efficacy compared to its counterparts in the local market could provide higher chance of attaining ocular safety among non-compliant contact lens users. Greater efforts to educate patients on proper lens care regimens are needed to prevent contact lens-related microbial keratitis from common ocular pathogens.

Keywords: contact lens, infectious keratitis, microbial keratitis, multipurpose contact lens solutions, silicon hydrogels

POSTER PRESENTATIONS

PP-37

The Role of Type III Secretion System and Lens Material on the Adhesion of *Pseudomonas Aeruginosa* to Contact Lenses

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Purpose/Objective: To determine the distribution of invasive and cytotoxic genotypes among ocular isolates of *P. aeruginosa* and investigate the influence of the Type III secretion system (T3SS) on adhesion to conventional, cosmetic, and silicone hydrogel contact lenses (CL).

Methods: Clinical isolates from 2001-2010 were analyzed by multiplex PCR for *exoS*, *exoU*, and *exoT* genes. Bacterial adhesion to etafilcon, nelfilcon (gray colored), balafilcon, and galyfilcon CL with or without artificial tear fluid (ATF) incubation were compared. Surface characteristics were determined with scanning electron microscopy (SEM).

Results: Among 87 total isolates, 64 strains were from microbial keratitis cases. Contact lens-related microbial keratitis (CLMK) isolates were mostly of cytotoxic genotype (expressing *exoU*) ($P=0.002$). No significant difference was found in the bacterial adhesion to all types of CL between the genotypes under T3SS inducing conditions. A trend for least bacterial adhesion of galyfilcon compared to the other CL was noted for both genotypes. Needle complex *pscC* mutants adhered less to all materials compared to wild type ($P<0.05$) indicating a role of the T3SS in contact lens adhesion. ATF incubated CL had significantly more bacterial adhesion ($P<0.05$). SEM showed most of the bacteria adhering on CL surfaces.

Conclusion: CLMK isolates were mostly of cytotoxic genotype. Different genotypes did not significantly differ in its adhesion to various CL. The T3SS and other adhesins are involved in bacterial-contact lens adhesion through complex interactions. Contact lens material may also play an important role in the adherence of both genotypes of *P. aeruginosa*.

Key Words: *Pseudomonas aeruginosa*, Type 3 secretion system, bacterial contact lens adhesion

PP-38

Retrospective Safety Surveillance Study of the Use of Besifloxacin Ophthalmic Suspension, 0.6% in Lasik and Cataract Surgery

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Objective: To evaluate the safety of besifloxacin ophthalmic suspension 0.6% as a prophylactic agent against infections in cataract and LASIK patients.

Methods: Two multicenter, retrospective chart reviews were conducted—one of routine primary cataract surgery cases, one of LASIK cases—where besifloxacin or moxifloxacin ophthalmic solution 0.5% were prescribed as prophylactic medication. Surgeons provided retrospective case information on surgical outcomes and logged adverse events related to the

antibacterial used. The primary safety endpoint was the incidence of adverse drug reactions (ADRs).

Results: A total of 746 post cataract cases (746 eyes, 493 besifloxacin, 253 moxifloxacin) and 801 LASIK cases (801 eyes: 534 besifloxacin, 267 moxifloxacin) were obtained from 9 surgical centers. In both studies dosing frequency was higher in the moxifloxacin group. There were no reports of ADRs related to the antibacterial in either treatment group in either study. There were no differences between the treatment groups in surgical outcomes in either study. In the post cataract study, there were no differences between the besifloxacin and moxifloxacin treatment groups in rates of abnormal corneal findings (3.0% vs. 0.8%, $P=0.9366$) or in the distribution of final visual acuity ($P=0.2987$). Likewise, in the LASIK study, there were no differences between the besifloxacin and moxifloxacin treatment groups in the rate of unexpected corneal findings (2.1% vs. 1.5%, $P=0.949$) or in the distribution of final visual acuity ($P=0.793$).

Conclusions: Besifloxacin was not associated with any unique safety concerns when used in patients undergoing uncomplicated cataract surgery or in patients undergoing LASIK.

Key Words: besifloxacin ophthalmic, cataract surgery, LASIK, prophylactic, infection

PP-39

Tectonic Corneal Patch Graft for the Treatment of Fungal Scleritis after Pterygium Surgery with Mitomycin C

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Purpose/Objective: To describe the clinical outcome of tectonic corneal patch grafting for the management of severe fungal scleritis after pterygium surgery with mitomycin C.

Methods: Retrospective, non-comparative, interventional case reports Results: Case 1 is that of 65 year old male who consulted because of severe eye pain accompanied by redness and eye discharge 1 month after pterygium excision. Pertinent findings on the affected right eye were vision of counting fingers at 1 foot, hyperemic conjunctivae with a 4.5x 5 mm necrotic sclera with yellowish discharge, anterior chamber cells with hypopyon. KOH revealed fungal elements and culture revealed *alternaria* species. Case 2 is that of a 70 year old male who presented with a scleral melt accompanied by eye discharge and pain. His vision on the affected right eye was counting fingers at 2 feet and he had a 5 x 5 mm scleral ulceration with uveal prolapse and hypopyon. KOH revealed fungal element but culture did not grow any organism. The posterior segment was not visualized. Both patients underwent tectonic corneal patch graft with amniotic membrane transplant. Both cases had successful outcome with eradication of infection and maintenance of globe integrity.

Conclusion: Tectonic corneal patch graft is a viable technique is the management of infectious fungal scleritis after pterygium surgery with mitomycin C.

Key Words: Infectious scleritis, tectonic patch graft, *alternaria* sp

PP-40

Treatment of Pseudomonas or Methicillin Resistant Staph Keratitis with Topical Gentamicin and Besifloxacin Plus Subconjunctival Gentamicin

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Purpose/Objective: Increasing proportions of significant ocular infections due to resistant organisms present challenges to clinicians and raise the probability of permanent visual loss. Foremost concerns regard pseudomonas in contact lens wearers, and methicillin staphylococcus aureus (MRSA) and methicillin resistant staphylococcus epidermidis (MRSE). Both hospital and community based MRSA and MRSE strains can cause keratitis, with potentially blinding consequences. Utilizing resistance profiles from local hospital clinical pathology data base, gentamicin was chosen as a viable companion to besifloxacin fluoroquinolone (FQ) therapy for acute bacterial keratitis. This retrospective analysis reviews 212 cases of presumed bacterial keratitis, microbial isolation rates, bacterial sensitivity patterns, and treatment response to topical besifloxacin, topical gentamicin and sub-conjunctival gentamicin.

Methods: Every patient record with a diagnosis of acute bacterial keratitis cultured over a period of 36 months was reviewed. Patients with at least 2 months of clinical follow up were included. Treatment with 12 mg sub-conjunctival gentamicin, topical gentamicin q2 hours alternating with topical besifloxacin q2 hours immediately initiated. Clinical cure was achieved when full epithelialization occurred and stromal inflammation subsided with infiltrate maturation.

Results: 212 eyes were analyzed over 36 months, with 123 positive cultures (58%). Isolates included gram positives 81 (66%) which included 27 MRSA (22%), 14 MRSE (11.4%), and 42 gram negatives (34%), which included 22 (17.9%) pseudomonas. Therapeutic success was achieved in 198 (93%) eyes. Treatment failures included an eventual diagnosis of herpetic keratitis in 9 (4%) patients, and acanthamoeba keratitis in 4 (1.9%) patients. Gentamicin resistance was found in only 5 (6%) of gram positives and 3 (7%) of gram negatives. FQ resistance to Ciprofloxacin was detected in 34 (42%) of gram positives and 13 (31%) of gram negatives.

Conclusion: The combination of gentamicin and besifloxacin provided excellent efficacy, tolerability and safety against acute presumed bacterial keratitis. Representative MIC data implies that besifloxacin testing would reveal superior sensitivity against both gram negative and gram positive organisms compared to Ciprofloxacin.

Key Words: Pseudomonas Keratitis, Methicillin Resistant Staphylococci, Besifloxacin, Gentamicin

PP-41

Antifungal Activity of Voriconazole on Local Isolates: An In Vitro Study

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Purpose/Objective: This study aimed to determine in vitro activity of Voriconazole and to compare with that of Amphotericin B, Fluconazole, Itraconazole, Ketoconazole, and Caspofungin against local clinical isolates Candida Albicans, Candida sp., Aspergillus Tereus, Aspergillus Niger, and Fusarium Cylindrocarpone.

Methods: Review of the Institute of Ophthalmology Microbiology records were done and were the basis for the local isolates. MICs were determined using Sensititre Microtitre Colorimetry method following guidelines of the Clinical and Laboratory Standards Institute for broth microdilution testing of yeasts and filamentous fungi. Two ways ANOVA, Duncan Test, and Pearson Chi Square test were used to analyze the data.

Results: All isolates tested were sensitive to Voriconazole. Eighty percent of the isolates were sensitive to Amphotericin B. Twenty five percent showed resistance to Itraconazole. Yeast pathogens were all sensitive to Amphotericin B and Voriconazole. More than 50% of the yeast pathogens were resistant to Ketoconazole. Molds or filamentous fungi showed higher susceptibility to Voriconazole than Amphotericin B and the other antifungals. All of the isolates were sensitive to Voriconazole followed by 66% of the isolates being sensitive to Amphotericin B.

Conclusion: Voriconazole exhibited good in vitro activity against the isolates tested on. It has the same efficacy on Yeast pathogens as compared with the gold standard, Amphotericin B. It has superior efficacy on Filamentous fungi. There is a role for Voriconazole in the treatment of Ocular infections especially in the setting of poor antifungal drug availability.

Key Words: Voriconazole, Antifungal, Amphotericin B, Fungal Keratitis

PP-42

Fungal Keratitis Caused By Drechlera Spp. Treated with Voriconazole: A Case Report

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Purpose/Objective: To present a case of Drechlera spp. keratitis treated with topical Voriconazole.

Methods: Case report

Results: A 52-year-old diabetic male presented with a one-week history of foreign body sensation of the left eye. Patient self-medicated with

POSTER PRESENTATIONS

Neomycin, Polymyxin B and Dexamethasone eye drops. He consulted a private eye doctor and was diagnosed to have bacterial conjunctivitis and was started on Levofloxacin drops. However, patient developed a corneal opacity after 2 days and consulted our institution. He was initially seen with a visual acuity of counting fingers on the left eye, with a 3mm central corneal ulcer with feathery borders. No hypopyon was noted. The right eye had a visual acuity of 20/20 and had unremarkable findings. Corneal scraping of the ulcer was performed which showed no organisms on Gram and Giemsa stain. Cultures were positive for *Drechslera* spp. and patient was started on Natamycin drops every 15 minutes, Atropine 3x and Levofloxacin was continued every 4 hours. The ulcer increased to 4mm, the infiltrates became deeper involving mid-stroma and there was appearance of a 2-mm hypopyon. Natamycin was shifted to Voriconazole eye drops every 15 minutes. There was note of a decrease in the size of the ulcer and clearing of the infiltrates with the new treatment regimen. Final visual acuity after 29 days of treatment was 20/40 with note of a slight corneal haze in the area of the previous ulcer.

Conclusion: Voriconazole is safe and effective in the treatment of *Drechslera* keratitis. There was no perforation and there was immediate decrease in the size of the ulcer. This is the first known case of *Drechslera* keratitis treated with Voriconazole eye drops.

Key Words: fungal, *Drechslera*, Voriconazole, keratitis

PP-43

Contamination Risk of 100% Autologous Serum Eye Drops in Management of Ocular Surface Diseases

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Purpose/Objective: To evaluate the sterility and safety of 100% non-preserved autologous serum eye drops treatment in patients with ocular surface diseases.

Methods: A total of 21 patients (294 samples) with ocular surface diseases were included. Seven bottles with autologous serum were prepared for each patient and each bottle was used for only one day then discarded. Two samples from each bottle were taken; before use and at the end of 24 hours of use and then cultured in standard media. The culture plates were held for at least 6 weeks or until being reported as no growth. To monitor the safety, all patients were admitted and evaluated for occurrence of infection.

Results: In pre treatment group, 4 samples from 4 patients were positive for bacteria (1.361%) and 7 samples from 7 patients were positive for fungi (2.381%). For 24 hours after treatment group, the cultures were positive in 1 case (0.340%) for bacteria and 6 cases (2.041%) for fungi. *Aspergillus* spp is the most common organism identified from entire cultures. No clinical or microbiological evidence of infection were demonstrated in any patients during treatment and follow-up periods.

Conclusion: Although we did not find any infection of ocular surface in this study, patients with 100% autologous serum eye drops therapy should be monitored meticulously.

Key Words: Autologous serum, culture, infection

PP-44

Non-tuberculous *Mycobacterium* Infection Presenting as Infectious Crystalline Keratopathy After Phacoemulsification Paul Samuel Villafuerte DEL MUNDO, Ruben Lim Bon SIONG St. Luke's Medical Center International Eye Institute, Philippines

Purpose/Objective: To report a case of non-tuberculous mycobacterium (NTM) infection presenting as infectious crystalline keratopathy (ICK) one year post phacoemulsification.

Methods: Single case report

Results: A 56-year old male diabetic patient presented with redness, pain and blurring of vision of two months duration one year after clear cornea phacoemulsification surgery. Cornea showed branching white crystalline opacity at the anterior stroma located just inferior to the superior stab incision. Despite aggressive medical therapy, a therapeutic and diagnostic penetrating keratoplasty was done. Microbiological and DNA tests revealed multidrug resistant *Mycobacterium fortuitum*. Patient was treated with oral clarithromycin and topical moxifloxacin and his infection resolved.

Conclusion: A clinical suspicion of NTM infection should be considered in patients presenting with infectious crystalline keratopathy.

Key Words: Non-Tuberculous *Mycobacterium* infection, Phacoemulsification, Infectious Crystalline Keratopathy, Diabetes Mellitus

PP-45

Temporary Keratoprosthesis for Vitrectomy in Combined Corneal and/or Posterior Segment Infections Rama RAJAGOPAL, A. SUMATHI, Pramod S. BHENDE, Bhaskar SRINIVASAN

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Purpose/Objective: In patients with combined infective pathology involving anterior and posterior segment, visualisation to perform retinal surgery is always a concern. Open sky vitrectomy does not allow complete vitreoretinal surgical procedure. In these eyes, temporary keratoprosthesis provides excellent visualization of the posterior segment. Our study highlights the role of temporary keratoprosthesis in patients undergoing combined therapeutic keratoplasty and vitreoretinal surgeries of infective origin.

Methods: Medical records of 15 patients who underwent combined surgery were retrospectively reviewed from April 2009 to April 2012. All patients underwent Lander's temporary keratoprosthesis fixation after

corneal trephination to complete the vitreoretinal surgery followed by donor corneal graft suturing.

Results: Predisposing factors included penetrating injury in 7 eyes (46.66%), previous intraocular surgery in 7 eyes (46.66%) and SJS in 1 eye (6.6%) Indication for surgery was microbial keratitis with endophthalmitis in 13 eyes (86.66%), corneal blood staining with endophthalmitis in 1 eye (6.6%) and microbial keratitis with intraocular foreign body in 1 eye (6.6%). Landers temporary keratoprosthesis enabled us to complete surgery in all eyes with good intraoperative visualization during vitrectomy. There were no intraoperative issues in fixing the keratoprosthesis or donor button sizing. Of the 15 eyes, 5 eyes were lost to phthisis (3 eyes after primary surgery, 2 eyes after secondary surgery). 1 patient underwent evisceration for panophthalmitis. 5 eyes had failed graft - attached retina (4 eyes) and detached retina (1 eye). 2 patients were lost to follow up due to poor prognosis. In 2 eyes, visual acuity improved to 6/36 following Boston keratoprosthesis and contact lenses (1 eye each).

Conclusion: Most eyes with severe combined infections end up with evisceration or are considered inoperable due to practical difficulties in visualization of the posterior segment. However, in our series, use of temporary keratoprosthesis enabled us to complete the vitreoretinal surgery. But for the keratoprosthesis, these eyes would have been inoperable.

Key Words: Temporary Keratoprosthesis, Therapeutic Penetrating Keratoplasty, Vitreo retinal procedures

PP-46

A Rare Case of Severe Arthrographis Kalrae Keratomycosis - A Case Report

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Purpose/Objective: To describe a rare case of severe keratomycosis due to Arthrographis Kalrae.

Methods: Case report

Results: A 52-year-old gentleman presented with a left 4.0x3.8mm paracentral corneal ulcer with stromal infiltrates following contact with a foreign body while riding a motorbike. He was initially treated with hourly topical gentamicin 0.9% and cefuroxime 5%. However within five days, endothelial plaque and hypopyon formed. For this, hourly topical amphotericin B 0.15% and fluconazole 0.2%, alongside systemic oral fluconazole were added. Despite aggressive therapy, his ulcer deteriorated with enlargement of stromal infiltrates, formation of a dense stromal abscess and an anterior chamber fungal ball. He also developed secondary glaucoma, necessitating three topical anti-glaucoma agents. At one month post presentation, a small, peripheral corneal perforation occurred. Corneal glueing with bandage contact lens was performed. He also received subconjunctival amphotericin B

0.015% 0.1mL. He eventually underwent penetrating keratoplasty (PK), two months after presentation. Microbiological cultures of his corneal scraping revealed Arthrographis Kalrae. Following PK, he was maintained on topical amphotericin B 0.15%, fluconazole 0.2% and ciprofloxacin 0.3% four hourly, as well as fusidic acid ointment 2% twice daily. Suture infiltrates developed a week after surgery which resolved with intensified topical ciprofloxacin 0.3%. However, the graft failed three months post transplant. Currently this patient is on topical chloramphenicol 0.5% and dexamethasone 0.1% six hourly, fucidic acid 2% ointment twice daily, with three anti-glaucoma agents.

Conclusion: Keratomycosis secondary to Arthrographis Kalrae is rare. Management remains clinically challenging because this organism causes severe, rapidly progressive keratitis. In addition, specialized diagnostic tests are required. Only three cases have been published to date worldwide. This case represents the first reported case of keratomycosis in South East Asia. This highlights the importance of clinicians to consider such infection when faced with a difficult case of fungal keratitis.

Key Words: Arthrographis Kalrae, keratomycosis, penetrating keratoplasty

PP-47

Analysis of Predisposing Factors and Clinical Outcomes of Moraxella Keratitis

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Purpose/Objective: To analyze the clinical presentation, predisposing factors, treatment outcome of Moraxella keratitis

Methods: A retrospective analysis was carried out in culture proven cases of Moraxella Keratitis. It is a 6 years study (from January 2005 to December 2011) at the L.V. Prasad Eye Institute, Hyderabad, India.

Results: Moraxella was isolated from 80 keratitis cases from 79 patients. The mean age of the patients 41.72 (2 years-91 years). It includes male-58 and female-27. The predisposing factors were seen in 66 cases. The main predisposing factors identified were Lagophthalmos in 14 cases, Penetrating keratoplasty -13 cases, corneal scar-7 cases, HIV-5 case. Other predisposing factors included HSV infection, aphakic bullous keratopathy, Trauma, dry eye etc. Polymicrobial infection was present in 7 cases. The organism was mainly sensitive to cefazolin and ciprofloxacin. Final visual acuity was good in patients with acute infection with small ulcer compared to the cases with larger ulcer.

Conclusion: Predisposing factors play a major role in Moraxella keratitis. The visual outcome mainly depends upon the nature of the infection, drug sensitivity of the organism and predisposing factors.

Key Words: Penetrating keratoplasty, aphakic bullous keratopathy, Moraxella keratitis, Lagophthalmos

POSTER PRESENTATIONS

PP-48

A Report On A Rare Case Of Fungal Keratitis: *Cylindrocarpon* Spp.

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Purpose/Objective: To report the first known human case of fungal keratitis caused by *Cylindrocarpon* spp. in the Philippines.

Methods: Single case report

Results: A 56/M patient presented with a one-month history of a corneal opacity after being injured in the left eye by a husk of wheat. Cornea showed a 6x6 mm round corneal opacity with brush-like borders, dense stromal infiltrates, plaque, and hypopyon. Culture from the corneal scraping revealed *Cylindrocarpon* spp. The patient was initially managed medically with topical Natamycin (Natacyn®, Natamycin ophthalmic suspension 5%, Alcon®) every hour and daily superficial keratectomy. However, on the 6th day of follow up, there was an increase in the hypopyon and epithelial defect with denser stromal infiltrates, which required a therapeutic penetrating keratoplasty. The patient was maintained on topical Natamycin, Fluoromethalone and Moxifloxacin 4 times a day. There was no fungal recurrence after two months post operatively.

Conclusion: This is the first reported case of keratitis caused by *Cylindrocarpon* spp. in the Philippines. The case highlights the importance of instituting appropriate diagnostic and therapeutic measures for fungal keratitis following injury by plant material.

Key Words: *Cylindrocarpon*, Fungal Keratitis, Therapeutic Keratoplasty, Natamycin, Topical steroids

PP-49

Spectrum of oil palm-related infective keratitis in Manjung, Perak

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Purpose/Objective: To report the clinical and laboratory findings of patients with oil palm-related infective keratitis from January 2009 to June 2012 in Hospital Seri Manjung, Perak.

Methods: Case series

Results: We found 11 patients with infective keratitis following oil palm kernel entering the eye. The mean age of the patients was 42 years old (range: 21-59) and all patients were male. Nine patients presented within one week of injury. At presentation, nine patients had visual acuity better than 6/12 whereas two had visual acuity worse than 6/60. The initial size of the stromal infiltrates ranged from 0.5 x 0.5 mm to 4.4 x 4.4 mm. Clinically, four patients showed features suggestive of fungal keratitis. Positive cultures were obtained for four patients while the other six had

no growth and one sample was contaminated. The organisms isolated were *Fusarium* spp for two patients, *Pseudomonas aeruginosa* for one, and the other, *S.pneumoniae*. Ten patients were initially treated with topical gentamicin 0.9 % and cefuroxime 5 % while one was treated with a monotherapy of topical ciprofloxacin 0.3%. During the course of treatment, five patients received additional antifungal of topical amphotericin B 0.15%, topical fluconazole 0.2% and oral fluconazole. Ten patients achieved resolution with medical therapy and had visual outcome better than 6/12. Only one patient had complication and required corneal gluing with visual outcome of worse than 6/60.

Conclusion: The causative organism in oil palm-related infective keratitis may be bacteria and/or fungi. Early presentation and treatment ensured good visual outcome in the majority of our patients.

Key Words: oil palm, infective keratitis, fungal keratitis, oil palm keratitis

PP-50

Effect of 0.5% Ganciclovir Instillation on Graft Survival in Cases of Post-keratoplasty Cytomegalovirus Endotheliitis

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Purpose/Objective: To report the efficacy of 0.5% ganciclovir instillation after keratoplasty to treat cytomegalovirus (CMV) corneal endotheliitis.

Methods: Retrospective review of the clinical manifestations of 6 eyes diagnosed CMV corneal endotheliitis; mean follow-up period: 30.3 months.

Results: All grafts remained clear (mean best-corrected visual acuity: 0.38). Mean endothelial density 1 year after keratoplasty was 2057cell/mm² in the first-graft cases and 1550cell/mm² in the re-grafted cases. Although 50% of the cases showed recurrence, all were treatable with additional systemic ganciclovir therapy.

Conclusion: Preventative ganciclovir instillation effectively improves the clinical outcome of post-keratoplasty CMV endotheliitis.

Key Words: endotheliitis, endothelial transplantation, DSAEK

Keratoplasty – Lamellar

PP-51

DSAEK Surgery Using the Endoglide - Coiling and Uncoiling the Endothelium

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Purpose/Objective: To use the endoglide in DSAEK for less intraoperative donor manipulation.

Methods: For donor tissue preparation, usual microkeratome technique for DSAEK is performed. The donor cornea, comprising both anterior

and posterior lenticles, is then placed endothelium up within the well of the preparation base of the endoglide. With EndoGlide straight loading forceps, posterior lenticule is pulled into cartridge. Donor insertion with the EndoGlide is performed through a 5 mm clear cornea temporal tunnel with the AC maintainer on low to moderate flow and with a curved EndoGlide insertion forceps through a 1.5 mm nasal paracentesis to pull the donor tissue into the AC. Once the donor tissue is fully removed from the cartridge, it will automatically start to uncurl, endothelial side down. Donor is secured by an air bubble injected beneath.

Results: DSAEK surgery done using the endoglide yields lower rate of endothelial cell loss by reducing donor tissue manipulation intraoperatively

Conclusion: Use of the endoglide in DSAEK surgery yields less endothelial loss

Key Words: DSAEK, endoglide, microkeratome, endothelial

PP-52

New Continuous Air Pumping Technique to Improve Clinical Outcomes of Descemet-stripping Automated Endothelial Keratoplasty in Asian Patients with Previous Ahmed Glaucoma Valve Implantation

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Purpose/Objective: To evaluate the clinical outcomes of Descemet-stripping automated endothelial keratoplasty (DSAEK) with the use of continuous air pumping technique in Asian eyes with previous Ahmed glaucoma valve implantation.

Methods: The records of patients with refractory glaucoma and an existing Ahmed glaucoma valve requiring corneal transplantation due to corneal decompensation that underwent DSAEK from May 2010 to December 2011 were retrospectively reviewed. The DSAEK procedure was modified in that complete air retention of the anterior chamber was maintained for 10 min using continuous air pumping at 40 mm Hg. The primary outcome measurement was graft survival, and secondary outcomes were endothelial cell counts, intraocular pressure (IOP), and cup/disc ratio.

Results: A total of 10 eyes of 10 patients (median age, 65 years) were included. Eight patients had previously undergone penetrating keratoplasty with graft failure. In all patients except one, the grafts were attached on postoperative day 1 and corneal edema resolved. The patient that experienced graft detachment underwent rebubbling on postoperative day 4 resulting in a clear cornea. There were no cases of IOP elevation or papillary block, but in one patient loss of pressure control occurred requiring repeat Ahmed valve implantation. The average thickness of donor tissue was 133 μ m at 8 months postoperatively, and the median specular endothelial cell density was 2271/mm² at 8 months postoperatively with 22% and 27% mean cell loss at 6 months and 1 year postoperatively, respectively. Three patients had a decrease in glaucoma medication requirements postoperatively. The cup/disc ratio did not significantly increase postoperatively.

Conclusion: New continuous air pumping technique in DSAEK can be performed safely and effectively in patients with prior GDDs placement who have corneal failure.

Key Words: Descemet-stripping automated endothelial keratoplasty, glaucoma, intraocular pressure

Keratoplasty - Penetrating

PP-53

Clinico-pathological Correlation of Patients Undergoing Keratoplasty for Suspected Hsv Keratitis in Tertiary Care Centre

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Purpose/Objective: To identify histopathologic features of HSV keratitis and correlate them to their clinical findings following keratoplasty for suspected HSV keratitis and to predict the graft outcome on oral Acyclovir treatment.

Methods: A clinical study of 20 patients who presented to us with clinical picture suspected of HSV keratitis that underwent keratoplasty at a teaching hospital situated in rural area of North India. Out of 20 patients 18 were primary grafts and in 2 patients repeat keratoplasty was done following graft failure due to rejection. A detailed review of the histopathology of the excised corneal button was performed to identify association between clinical data (disease activity, vascularity, graft outcome) and histopathologic data (inflammation, neovascularisation, cellular infiltration). Patients with features of HSV keratitis on histopathology were started on oral prophylactic acyclovir therapy post keratoplasty.

Results: All patients had clinically quiescent disease for at least 6 months before surgery. The visual outcome was better in 14 patients on oral acyclovir post penetrating keratoplasty in suspected HSV keratitis positive on histopathology including 2 repeat keratoplasty which were not earlier started on oral acyclovir. Histopathology of 12 cases including 2 repeat Penetrating keratoplasty revealed active corneal inflammation with epithelial irregularities along with patchy loss of Bowman's membrane, infiltration of anterior stroma by lymphocytes, leukocytes and plasma cells. Diffuse fibrosis and neovascularisation of stroma was present which was correlated clinically. No recurrence was seen in these patients on follow up of 1 year. Of the 6 patients without any histopathologic inflammation in their corneas, only 1 experienced an allograft rejection.

Conclusion: Histopathological inflammation and corneal neovascularization is a marker for HSV status and its correlation helps in judicious use of acyclovir and reduces the risk of recurrence of HSV keratitis. Oral acyclovir therapy post keratoplasty acts as an adjunct to improve the visual outcome in patients with positive histopathological changes.

Key Words: Hsv Keratitis, Acyclovir, Keratoplasty, Histopathology

PP-54

Prevalence and Risk Factors for the Development of Glaucoma after Penetrating Keratoplasty in a Tertiary Hospital

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Purpose/Objective: To determine the prevalence and risk factors for the development of glaucoma after penetrating keratoplasty (PKP) done at the Philippine General Hospital.

Methods: This is a retrospective chart review of all patients who underwent PKP at the Philippine General Hospital (PGH) between January 1, 2005 and March 31, 2012. Indications for PKP were recorded. Outcome measures were classified into either of four categories: No glaucoma, temporary glaucoma, medically controlled glaucoma, and surgical glaucoma. Ordinal logistic regression was performed using Stata Data Analysis and Statistics Software.

Results: A total of 222 cases were included in the study. The prevalence of post-PKP glaucoma was 41.44% (92 eyes). Medical glaucoma escalation developed in 21.2% (47 eyes) of the cases while 20.3% (45 eyes) developed surgical glaucoma escalation. The prevalence of ocular hypotony was 8.1% (18 eyes). Fungal keratitis (26.7%) and bacterial keratitis (22.0%) were the top 2 indications for performing PKP accounting for 49.6% (110 cases). These were followed by post-surgical bullous keratopathy (19.6%), viral keratitis (8.4%), and corneal scar (6.4%). Age was a significant risk factor for the development of glaucoma ($P = 0.005$, $RR = 1.02$). Vitrectomy ($P = 0.005$), IOL explantation ($P = 0.022$), and trans-scleral suture intraocular lens (TSS-IOL) implantation ($P = 0.022$), when performed with PKP, were significant risk factors for the development of glaucoma. Large recipient trephination size and ruptured fungal keratitis were risk factors for the development of ocular hypotony.

Conclusion: The prevalence of post-PKP glaucoma in this group of patients was 41%. Risk factors for the development of post-PKP glaucoma include increasing age and performing vitrectomy, IOL explantation, or TSS-IOL implantation together with the PKP. Large recipient trephination size and ruptured fungal ulcers were significant risk factors for the development of ocular hypotony.

Key Words: Penetrating keratoplasty, glaucoma, prevalence, risk factors

Keratoprosthesis

PP-55

Indications and Results of the Boston Type I Keratoprosthesis Surgery in the Philippines

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Purpose/Objective: To describe the indications and results of the Boston Type I Keratoprosthesis (Massachusetts Eye and Ear Infirmary) Surgery in

the Philippines and to compare these to results from recent North American and International Studies.

Methods: This is a retrospective review of a consecutive case series of Boston Type I Keratoprosthesis surgeries performed by a single surgeon from August 10, 2010 up to August 4, 2012. Data collected for each subject included preoperative characteristics of each eye including visual acuity, co-morbid conditions and indication for surgery; surgical procedures performed and post-operative outcome. Main outcome parameters were post-operative visual acuity, significant post-operative complications and keratoprosthesis retention.

Results: A total of 9 Boston type I keratoprosthesis surgeries were performed in 8 eyes in this Philippine Series. The indications for surgery were Stevens Johnsons syndrome (SJS) (4=44.4%), failed corneal transplants (4=44.4%) one of which also occurred in a SJS patient; severe limbal stem cell deficiency from trauma and previous surgeries (2=22.2%) and a repeat keratoprosthesis surgery for sterile cornea necrosis. (1=11.11%). Of the 4 SJS patients, 1 had undergone amniotic membrane and corneal transplants; one had undergone buccal mucosal grafting while one had undergone nasal turbinate grafting. While none of the eyes had a pre-operative Corrected Distance Visual Acuity (CDVA) of 20/20 to 20/200, all being finger counting or worse; 87.5%, and 66% had CDVA of 20/20 to 20/200 respectively at 3 months and 9 months postoperatively. The 2 people who have had a follow up of more than 1 year had CDVA of 20/50 and 20/30 at one year. Of the 9 implanted keratoprosthesis, 8 were retained for a mean follow up period of 8.87 months, for a retention failure rate of 1 per 6.65 eye-years or 0.150 per eye-year. Post-operative complications encountered were sterile cornea necrosis ($n=1$), retroprosthetic membrane ($n=1$), sterile vitritis ($n=2$), and fungal keratitis ($n=1$). The retroprosthetic membrane was successfully managed via yag capsulotomy while the 2 cases of sterile vitritis occurred in SJS patients and resolved with subtenons triamcinolone injection. The fungal Keratitis resulted in the removal of the Kpro in one SJS patient.

Conclusion: The Boston Type I keratoprosthesis is a viable means of management for eyes in which traditional corneal transplantation is not likely to succeed. These include eyes that have severe limbal stem cell deficiencies from trauma and/or multiple surgeries, those with repeated graft failure, and certain well - selected cases of Stevens Johnsons Syndrome. The retention rate for the Boston Type I Keratoprosthesis surgery in the Philippines appears better than that reported in some international and North American studies despite the higher number of SJS patients in the Philippine series, a condition that carries a poorer prognosis for retention. This however may be due to the shorter follow up period and small study population. A longer follow up period as well as a bigger study population are necessary to better assess the outcome of Boston type I keratoprosthesis surgery in the Philippines.

Key Words: Keratoprosthesis, cornea, transplant, Boston

Ocular Surface Disease

PP-56

Randomized Controlled Trial of the Effects of Sodium Hyaluronate on Wavefront Aberrations in Dry Eye Patients

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Purpose/Objective: To investigate the effects of hypotonic 0.18% sodium hyaluronate artificial tears on wavefront aberrations in dry eye patients.

Methods: Fifty patients who have been diagnosed with dry eye were recruited into this single-center, prospective, double-masked, randomized, controlled trial. Patients were randomized to receive one drop of preservative-free, hypotonic 0.18% sodium hyaluronate (treatment) in one eye and one drop of sterile 0.9% sodium chloride solution (control) in the other eye. Ocular aberrations evaluated by a Hartmann-Shack aberrometer and severity of dry eye symptoms graded by a questionnaire (at baseline, 1, 10, 30, 60, and 120 minutes after instillation) were the main outcome measures.

Results: After a single instillation of 1 drop of the allocated eye drops, there were no statistically significant differences between the treatment and control groups in total higher-order aberration, coma, and spherical aberrations during the whole study period ($p = 0.40, 0.57$ and 0.16 respectively). However, a statistically significant ($p = 0.04$) decrease from baseline in spherical aberrations was noted in the treatment group at 1 minute following instillation. Spherical aberrations appeared to gradually increase back to baseline values at 120 minutes after instillation. A statistically significant diminishment of dry eye symptoms compared with the placebo was reported at all time points by patients using the treatment ($p < 0.001$)

Conclusion: A single instillation of hypotonic 0.18% sodium hyaluronate eye drops is safe and effective in alleviating dry eye symptoms and results in a partial and transient improvement in spherical aberrations in dry eye patients.

Key Words: sodium hyaluronate, dry eye, wavefront aberration, treatment

PP-57

Persistent Corneal Epithelial Defects After Pars Plana Vitrectomy

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Purpose/Objective: To investigate the incidence, risk factors and clinical course of persistent corneal epithelial defects (PCED) after pars plana vitrectomy.

Methods: We retrospectively reviewed the medical records of patients underwent pars plana vitrectomy with hand-held wide-angle contact lens system from January 2008 through December 2011 at Chang Gung Memorial Hospital, Keelung, Taiwan. PCED was defined as presence of corneal epithelial defects at least two weeks after vitrectomy.

Results: Of 460 consecutive vitrectomy eyes (386 patients); there were 21 eyes of 21 patients with PCED after surgery (4.6%). The average age was 58.38 years (range, 30–86 years). Mean duration of PCED was 41.10 days (range, 16–172 days). The occurrence of PCED was significantly correlated with diabetes ($P=0.036$). The appearance of corneal epithelial defects (ED) that lasted at least 7 days after surgery was significantly associated with development of PCED ($P<0.001$). After conventional treatments such as artificial tears, extended wear soft contact lens and 20% autoserum eyedrops, 10 patients (47.6%) healed within 4 weeks. Among the 11 patients with delayed healing more than 4 weeks, 4 patients (36.4%) developed herpetic simplex keratitis and 1 patient (9.1%) was complicated by bacterial endophthalmitis.

Conclusion: Diabetes is a major factor for PCED after vitrectomy. Our study revealed a high incidence of herpetic simplex keratitis among patients with PCED after vitrectomy without healing within 4 weeks despite conventional treatments. Early and aggressive management is necessary for patients presenting corneal epithelial defects after vitrectomy in order to prevent miserable complications.

PP-58

Correlations Between Tear Cytokines, Chemokines

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Purpose/Objective: To determine cytokine and chemokine concentrations in the tears of patients with dry eye disease (DED) and analyze the possible relationships with the clinical severity of DED.

Methods: Patients were examined using the Ocular Surface Disease Index, corneal and conjunctival staining, tear breakup time, and impression cytology. They were divided into four groups according to the Dry Eye Workshop severity classification. Tears were collected from 133 patients with DED and 70 healthy controls. Concentrations of cytokines, chemokines, and soluble receptors in collected tear samples were analyzed using current technology with a Human cytokine/Chemokine kit, a Human Cytokine/Chemokine Panel, and a Human Soluble Cytokine Receptor Panel.

Results: The levels of cytokines interleukin (IL)-1b ($P < 0.05$), IL-6 ($P < 0.001$), IL-16 ($P < 0.001$), IL-33 ($P < 0.05$), G-CSF ($P < 0.001$), and transforming growth factor (TGF)-a ($P < 0.05$) were significantly higher in patients with DED, whereas those of cytokines IL-4 ($P < 0.001$), IL-12 (p40) ($P < 0.001$), IL-17A ($P < 0.05$), and interferon-c ($P < 0.001$) were significantly lower. The levels of Fractalkine (chemokine [Câ€"X3â€"C motif] ligand 1; CX3CL1), MCP-1 (chemokine [Câ€"C motif] ligand 2; CCL2), MIP-1d (chemokine [Câ€"C motif] ligand 15; CCL15), and ENA-78 (chemokine [Câ€"Xâ€"C motif] ligand 5; CXCL5) ($P < 0.001$, respectively) and soluble receptors, sIL-1RI ($P < 0.05$), soluble glycoprotein (spp) 130 ($P < 0.05$), sIL-6R ($P < 0.001$), soluble epidermal growth factor receptor ($P < 0.05$), and soluble tumor necrosis factor receptor 2 ($P < 0.001$), were higher in patients with DED. There were significant correlations between these molecules and the clinical severity of DED.

Conclusion: Fifteen molecules were elevated in the tears of patients with DED; four molecules were decreased. Although the levels of sIL-6R, sIL-6R, and sgp130 may be potential indicators of the homeostatic process, an increase in the levels of IL-6 and IL-1 b are the earliest observable changes in patients with DED. Further study on the biomarkers in the pathogenesis of DED and treatment target modalities would be needed.

Key Words: dry eye disease, cytokine, chemokine, soluble receptor

PP-59

Corneal Scar Secondary to Cicatricial Ectropion in Two Cases of Lamellar Ichthyosis

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Purpose/Objective: To present 2 cases of corneal scar secondary to cicatricial ectropion in patients with lamellar ichthyosis and its management.

Methods: This is a case report

Results: Two siblings, 5 year old and 5 month old males diagnosed with lamellar ichthyosis were seen at the outpatient department. The siblings presented with generalized scaling of the skin and with associated ophthalmologic findings of bilateral upper and lower lid ectropion, excessive lacrimation, and white central corneal opacity of the left eye (older brother) and white corneal opacity of the right eye (younger brother). Conservative management with eye lubricants and topical antibiotics were given to the patients. Surgery was not done yet due to unavailability of suitable donor site for grafting. Regular follow up with both Ophthalmology and Dermatology departments were advised.

Conclusion: Lamellar ichthyosis is a rare inherited skin disorder. Cicatricial ectropion occurs in about 33% of cases from which associated corneal opacities secondary to exposure keratitis are seen. Conservative management may be done using emollients, topical eye lubricants and antibiotics. Surgical management is employed to prevent corneal exposure and when an appropriate donor site is available.

Key Words: Lamellar ichthyosis, cicatricial ectropion, exposure keratitis, corneal scar

PP-60

Ocular Surface Evaluation in Allogeneic Hematopoietic Stem Cell Transplantation Patients

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Purpose/Objective: To evaluate the ocular surface of patients with chronic GVHD in allogeneic hematopoietic stem cell transplantation (allo-HSCT) in a tertiary care hospital setting in India.

Methods: Cross-sectional study of patients of allo-HSCT. Data recorded included demographic details, indication for allo-HSCT, details of GVHD occurrence, symptom score, ocular surface disease index (OSDI) score, comprehensive slit lamp biomicroscopy, meibomian gland disease (MGD), tear meniscus height (TMH), fluorescein tear break-up time (FT-BUT), Schirmer's test I, ocular surface staining, dry eye severity level and conjunctival impression cytology (CIC).

Results: Of 40 patients, dry eye disease was seen in 30%. Chronic oGVHD was seen in 24 eyes, with dry eye severity of level 3 in 17.5 % (n = 14 eyes), level 2 in 2.5 % (n = 2 eyes), level 1 in 10% (n = 8 eyes). Dry eye was not seen in 70 % (n = 56 eyes). OSDI was mild in 16.67%, moderate in 45.83% and severe in 20.83% oGVHD eyes; mild in 94.64%, moderate in 5.36% of non-oGVHD eyes (p < 0.001). FTBUT was < 5 seconds in 45.83% and > 5 seconds in 54.17% of eyes with oGVHD, while 96.43% eyes non oGVHD had FTBUT of > 5 seconds (p < 0.001). Schirmer's I test score was < 5 mm in 58.33% of eyes with oGVHD while 96.43% non oGVHD eyes had a score of > 5 mm (p < 0.001). Conjunctival staining score was < 3 in 25%, > 3 in 75% of oGVHD eyes, while it was < 3 in 96.43%, > 3 in 3.57% of non oGVHD eyes (p < 0.001). Corneal staining score of < 3 in 79.17 %, > 3 in 20.83% was seen in oGVHD eyes. Eyes with ocular GVHD had no corneal findings in 33.33%, grade 1 in 25%, grade 2 in 8.33%, grade 3 in 33.33%. CIC was abnormal in 60 eyes (75%) [22 eyes of oGVHD (91.7%) and 38 eyes of non oGVHD (67.9%)]. Statistical analysis of association of CIC of eyes with ocular surface parameters showed significant association of CIC with corneal findings (p = 0.021), Schirmer's 1 test (p = 0.008) and OSDI score (p = 0.007).

Conclusion: Significant ocular surface changes occur due to chronic oGVHD in patients of allo- HSCT. OSDI score, corneal involvement, and Schirmer's 1 test are indicative of ocular morbidity in post allo-HSCT eyes. CIC abnormality is also seen in eyes without oGVHD.

Key Words: GVHD, dry eye, ocular surface, conjunctival impression cytology

PP-61

Dry Eye After Clear Cornea Phacoemulsification

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Purpose/Objective: To determine the incidence of dry eye in patients after undergoing clear cornea phacoemulsification; and to investigate the changes in dry eye symptoms and tear physiology before and after clear cornea phacoemulsification.

Methods: Study design was single-center, non-randomized, longitudinal, and prospective. The study involved forty four patients (49 eyes), diagnosed with age-related cataract, who underwent corneal phacoemulsification. Subjective grading of ocular discomfort, ocular surface disease index (OSDI), fluorescein tear break-up time (FTBUT), corneal staining, conjunctival and posterior lid margin staining with lissamine green, and Schirmer test without anesthesia and with anesthesia were assessed before surgery and 1 week, 1 month, and 3 months after the surgery.

Results: None of the patients enrolled qualified for the definition of dry eye disease before and after clear cornea phacoemulsification. Pre-operative FTBUT ($14.01 \text{ seconds} \pm 0.56$) significantly decreased 1 week after surgery ($3.97 \text{ seconds} \pm 0.21$; $p < 0.001$), and slowly increased by 1 month ($5.82 \text{ seconds} \pm 0.32$; $p < 0.001$) and 3 months ($8.26 \text{ seconds} \pm 0.54$; $p < 0.001$) after surgery. Pre-operative Schirmer test (without anesthesia) value ($18.78 \text{ mm} \pm 1.17$) significantly decreased at 1 week ($14.02 \text{ mm} \pm 1.52$; $p < 0.001$), and subsequently went back up by 3 months ($16.31 \text{ mm} \pm 1.34$). Pre-operative Schirmer test (with anesthesia) ($14.24 \text{ mm} \pm 0.94$) significantly decreased 1 week (11.98 ± 1.00 ; $p = 0.046$) after surgery and went back to baseline levels by 3 months.

Conclusions: Patients with no dry eye disease, who underwent clear cornea phacoemulsification didn't develop dry eye disease after the surgery. However, clear cornea phacoemulsification significantly decreased the normal tear production. A gradual return to near-normal baseline tear physiologic levels is seen by 3 months post-operatively.

Keywords: Cataract Surgery, Dry Eye, Dysfunctional Tear Syndrome, Phacoemulsification

PP-62

The Effects of Tear Supplementation on Bulbar Conjunctiva in Patients with Graves Ophthalmopathy: An In vivo Confocal Microscopic Study

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Purpose/Objective: To investigate the effects of tear supplementation on bulbar conjunctiva in patients with Graves's ophthalmopathy (GO) using in vivo confocal microscopy.

Methods: A prospective case-control study. Fifteen eyes of 15 patients with GO and 15 control subjects were recruited. Patients with GO were treated with topical artificial tears during wake time combined with ointment/ gel before sleep. Each participant underwent a full eye examination, including Ocular Surface Disease Index (OSDI), marginal reflex distance (MRD1 and MRD2), Hurler exophthalmometry, degree of lagophthalmos, Schirmer's test, tear break-up time (TBUT), and slit lamp examination with fluorescein staining. Images of both superior and temporal bulbar conjunctivas were taken by the Heidelberg Retinal Tomograph (HRT-3)/ Rostock Corneal Module. Conjunctival impression cytology was also preformed to assess the severity of conjunctival squamous metaplasia.

Results: The in vivo confocal microscopic study showed that the superficial epithelial cell density in the superior bulbar conjunctiva of the GO group was $856.9 \pm 461.7 \text{ cells/mm}^2$, which was significantly lower than that in the control group ($1581.1 \pm 556.3 \text{ cells/mm}^2$; $p = 0.002$). There is no difference in temporal superficial bulbar conjunctiva between the two groups. No significant differences in conjunctival thickness and the basal epithelial cell density were noted between the two groups. Increased Langerhans cell density and reduced goblet cell density were noted in the GO group. Impression cytology revealed higher degree of squamous metaplasia in the GO group.

Conclusion: The therapeutic effects of tear supplementation on patients with GO was better on temporal conjunctiva than upper conjunctiva. In vivo confocal microscopy can be a rapid and non-invasive tool for the quantitative evaluation of ocular surface changes in patients with GO.

Key Words: Graves' disease, dry eye, in vivo confocal microscopy, squamous metaplasia

PP-63

Use of Autologous Serum Eye Drop Combined with Silicone Hydrogen Lenses for the Treatment of Persistent Epithelial Defects

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Purpose/Objective: To evaluate the clinical effect of combination of autologous serum eye drops and a silicone-hydrogen contact lens (CLs) in the treatment of recalcitrant persistent epithelial defects (PEDs).

Methods: Eight eyes of 8 patients aged 53-78 years with recalcitrant PED conditions were treated with 20% (v/v) autologous serum eye drops in combination with silicone-hydrogen CLs (PureVision, Bausch and Lomb) and prospectively observed. In all patients, CLs were removed immediately after total reepithelialization and patients were divided into 2 groups according to continue use or non-use of topical autologous serum for 2 weeks after total reepithelialization. The recurrence of epithelial defect was also evaluated.

Results: The pathogenesis of PEDs included corneal epithelial debridement during pars plana vitrectomy for endophthalmitis ($n=2$), neurotrophic keratopathy ($n=2$) or chemical burn with partial limbal stem cell deficiency ($n=4$). All patients had been unsuccessfully treated with conventional therapy before. The PEDs healed in both 2 groups within three weeks. However, recurrence of epithelial defect was noted in group 1 without continue use of topical autologous serum for 2 weeks (2 eyes, 50%). The recurrence of epithelial defect was treated successfully again with bandage contact lens application combined with autologous serum use. No recurrence of epithelial breakdown was noted in group 2 during the 6-month follow-up. No adverse events were noted during the whole treatment periods.

Conclusion: The use of combination of a silicone-hydrogen CLs and 20% autologous serum eye drops can be successfully used in the treatment of PEDs. However, recurrent epithelial breakdown may occur sometimes. Prolonged use of autologous serum eye drops for two weeks after complete reepithelialization seems to be a safe and effective treatment strategy.

Key Words: Persistent epithelial defect, Autologous serum eye drops, Silicone hydrogen contact lens

POSTER PRESENTATIONS

Refractive Surgery

PP-64

Psoriatic Intraepithelial Keratitis after Laser In Situ Keratomileusis Treatment

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Case Summary: A 36-year-old woman with chronic psoriasis developed blurring of vision and intraepithelial infiltrates within the flap in the left eye concurrent with the appearance of acute psoriatic generalized skin lesions 14 days after bilateral laser in situ keratomileusis. After treatment with topical antibiotic and steroid agents and topical artificial tears, the intraepithelial infiltrates within the flap completely resolved. The final uncorrected distance visual acuity was 1.0 in both eyes, along with complete resolution of the dermatologic psoriatic lesions.

PP-65

The Orthoptic Characteristics in Patients after Refractive Surgery

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Purpose/Objective: Millions of people had received refractive surgery and some of them had suffered from the eye strain and dry eye syndrome after the operation. Denervation was the major cause due to decrease tear production; however, few dry eye syndromes were reported after penetrating keratoplasty surgery. In this report, we evaluated the ocular alignment and orthoptic characteristics in patients after refractive surgery.

Methods: Retrospective chart review was done on total 41 patients, who had received refractive surgery by other doctors. The ocular alignment and eyeball position were evaluated by photography (RTV, Carl Zeiss, Germany) and Hess chart. The ocular deviations were diagnosed by cover and uncover test. The dry eye profile was included Schimer test (Basic type), and tear break-up time. Binocular visual acuity was analyzed by using polarized lens in the both eyes for stereo-acuity in far vision (Polatest, Carl Zeiss, Germany) by following the guidelines from the Internationale Vereinigung für Binokulare Vollkorrektur (IVBV). The ocular alignment and phoria was corrected by prism after binocular vision balance.

Results: The mean age of these 41 patients was 35.8 (Max 60, min 21), and the Male to Female ratio was 15:26. The mean special equivalent in pre-operation was -0.51D (Max 1.0D, min -7.5D). Only Two patients were found orthopia after examination. Seventeen patients were diagnosed with exophoria, eight patients were esophoria, and four patients were heterophoria. Combined horizontal and vertical phoria was diagnosed in ten patients. The prism used for binocular correction ranged for 0prism diopter to 4.5 prism diopters (mean 1.92D).

Conclusion: Under the guidelines from MKH (Measuring and correcting Methodology after H.J.-Haase) for correction of associated phoria, the vision was corrected not only in the spherical and cylinder amount but also in binocular full-correction. Using Prismatic full-correction of any existing associated phoria, patients were found improved in stereo-acuity

and life quality. Although the dry eye profile failed to show any difference in patients with spectacles, the symptom from eye discomfort after refractive surgery improved. Patients who are willing to receive refractive surgery should have orthopedic evaluation to prevent post-operation complications.

Key Words: Refractive surgery, Phoria, Binocular visual acuity, MKH

PP-66

Early Clinical Results of Simultaneous Lasik and Accelerated Collagen Crosslinking for High Myopia in High Volume Study

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Purpose/Objective: LASIK Xtra (Accelerated Collagen Crosslinking (CXL) with LASIK using the KXL System: Avedro, Inc.) is now being performed to prevent regression and/or keratoectasia. In this high volume study, the safety was evaluated with high myopic patients.

Methods: Prospective IRB approved evaluation of LASIK Xtra.CXL is known as a treatment for keratoconus or keratoectasia which increases the corneal biomechanical stability. And LASIK Xtra is a new technique to prevent the regression or keratoectasia after LASIK. For the 532 eyes of 332 myopic patients, the accelerated CXL is performed seamlessly after Femto LASIK. Preoperative manifest refraction spherical equivalent (MRSE) was -7.30 ± 0.87 D (range: -6.00 D to -8.88 D). After Femto LASIK, 90 second riboflavin pre-soak was applied to the stromal bed and the riboflavin was rinsed away. Then the flap was returned to its original position. Using the KXL system, 30mW/cm² of ultraviolet A light was applied for 90 seconds. Uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), Keratometric reading, endothelial cell density count, morphological change by confocal microscopy and optical coherence tomography were evaluated.

Results: Mean preoperative UDVA was 0.04 in decimal, which improved to 1.35 at 3 months postoperatively ($P < 0.01$). The average preoperative CDVA was 1.43 in decimal, which also improved to 1.49 at 3 months postoperatively ($P < 0.01$). MRSE was 0.01 ± 0.42 D at 3 months. Demarcation line was identified using confocal microscopy in some cases postoperatively. No intra or postoperative complications due to CXL were observed.

Conclusion: The three month results suggest that LASIK Xtra for high myopic patients is as safe. Long term follow-up with larger sample size studies are necessary to confirm this conclusion.

Key Words: Collagen crosslinking, LASIK Xtra, Accelerated Collagen crosslinking

Stem Cell Transplantation

PP-67

Enhancement on Limbal Epithelial Cell Proliferation In Vitro by a Rock Inhibitor, Y27632

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Purpose/Objective: Transplantation of cultivated limbal progenitor cells is effective in restoring limbal stem cell deficiency. Recently, Rho kinase (ROCK) inhibitor Y27632 has been shown to improve corneal endothelial cell survival. The present study was conducted to investigate the applicability of Y27632 in promoting limbal epithelial cell proliferation in vitro.

Methods: Corneoscleral buttons from human donor eyes were serially expanded on culture dishes without or with Y27632 at various concentrations. The morphology and proliferation of limbal epithelial cells were monitored by a phase contrast microscopy and a luminescent cell-viability assay, respectively. Colony forming efficacy was detected by trypan blue staining. Proliferating cells were detected by Ki67 and p63 expression using immunofluorescent staining. Apoptotic limbal epithelial cells were analyzed by Annexin V staining. Using rat cornea wounds as a model, we investigated the effects of Y27632 on epithelial wound closure rate.

Results: The proliferation of expanded limbal epithelial cells was enhanced by Y27632 addition in a dose-dependent manner after 24 hours in culture. The colony forming efficacy of the culture was higher in the presence of Y27632 on day 7 in a dose-dependent manner. The number of p63 and Ki67-positive cells was dose-dependently increased at 3 weeks in Y27632-treated cultures. The number of Annexin V-positive apoptotic limbal epithelial cells was significantly decreased in Y27632-treated cultures at 3 weeks. The epithelial wound closure rate was faster in topical Y27632-treated group than the sham control.

Conclusion: These results demonstrated that inhibition of ROCK signaling by Y27632 promoted limbal epithelial cell proliferation, increased the number of proliferating cells and inhibited apoptosis as well as enhanced epithelial wound healing. It implies that the ROCK inhibitor may act as a new target for treating limbal stem cell deficiency.

Key Words: Limbal stem cells, Ocular surface reconstruction, Rhokinase, ROCK inhibitor

PP-68

Ex Vivo Expansion and Transplantation of Limbal Stem Cell and Conjunctival Equivalent in the Management of Recurrent Pterygium Associated with Limbal Stem Cell Deficiency

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Purpose/Objective: Management of recurrent pterygium may often be challenging, particularly in patients who have undergone multiple

surgeries with varying techniques. The purpose of our study is report a case of a recurrent pterygium associated with limbal stem cell deficiency and managed with ex-vivo expansion and transplantation of limbal stem cell and conjunctival equivalent.

Methods: This is an interventional case report

Results: This is a case of a 43-year-old male, who consulted because of recurrent fleshy mass on the right eye accompanied by blurring of vision and irritation. He underwent 9 previous pterygium excisions by 4 different surgeons with varying techniques. He claimed that 2 surgeons used "grafting" in 2 different occasions. On initial examination of the affected eye, he was able to count fingers closely. He had a recurrent pterygium which covered the entire half of the inferior cornea. The anterior chamber was quiet and the posterior pole was normal on dilated exam. He underwent excision of pterygium with intraoperative application of 0.2% mitomycin C for 4 minutes. The ocular surface was then reconstructed using conjunctival epithelial cells (conjunctival equivalent) and limbal stem cells grown on amniotic membrane. At 5 years post-operatively, there was no recurrence of pterygium, the ocular surface was stable and patient's vision was 20/40 without correction.

Conclusion: Ocular surface reconstruction using ex-vivo expansion and transplantation of limbal stem cells and conjunctival equivalent combined with intraoperative mitomycin C is a viable alternative in the management of recurrent pterygium.

Key Words: Recurrent pterygium, Limbal stem cells, Conjunctival equivalent, Ocular surface reconstruction

PP-69

Regeneration of the Corneal Epithelium with Conjunctival Epithelial Equivalents Generated with Cells Precursors Expanded in Serum and Feeder Cell-free Medium

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Purpose/Objective: To examine the behavior and phenotypic features of cultured conjunctival epithelia when transplanted into rabbit with limbal cell deficiency (LSCD).

Methods: Small pieces of normal conjunctiva were biopsied from patients undergoing cataract surgery. The epithelial cell population, obtained by protease digestion, was expanded cultured in serum-free low calcium medium, and set in air-liquid interface culture for 14 days. Resulting multi-layered epithelial sheets were grafted onto alkali-debrided rabbit ocular surfaces. Cultivated and engrafted epithelia were analyzed by electron microscopy and immunohistochemistry.

Results: At graft time, the culture epithelial sheet displayed a CK19 / MUC5AC / CK3 - / CK12- phenotype, consistent with the conjunctival lineage. Two weeks after the in vivo xeno-grafting the epithelium consisted

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of 5-6 well compacted layers expressing the precursor cell-related p63 protein, the proliferation marker Ki67, desmosomes, hemidesmosomes and its integrin ($\beta 4$), and the corneal specific cytokeratins CK3, and CK12. Conjunctival epithelium mucin (MUC5AC) was not visible.

Conclusion: Our results suggest that conjunctival epithelial sheets generated in serum- and 3T3- free culture conditions can acquire the corneal epithelial phenotype when transferred to the in vivo corneal environment.

Key Words: conjunctival epithelium, cornea, limbal cell deficiency, ransplantation

PP-70

Development of Cell Transport System by Airplane for Clinical Trial Using Cultured Human Oral Mucosal Epithelial Cell Sheets

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Purpose/Objective: To develop cell transport system by airplane for clinical trial using cultured human oral mucosal epithelial cell sheets.

Methods: We developed a cell transport container that can maintain and monitor the inside temperature and air pressure for clinical study. Human oral mucosal epithelial cells were obtained from two healthy volunteers, and cultured on temperature-responsive culture dishes. Cell sheets were transported between Osaka University and Tohoku University using the cell transport container by airplane. The cell sheets were evaluated before and 12 hours after transportation. Histological and immunohistochemical analyses were performed. Cell viability and cell purity were evaluated by flow cytometry.

Results: Temperature inside the container was kept above 32, and the change of air pressure was within 10 hPa during airplane transportation. Cell sheets were well stratified and harvested successfully after transport. The expression patterns of keratin 3/76, p63, ZO-1 and MUC16 were equivalent before and after transport. The cell viability was 72.0% before transport and 77.3% after transport. Epithelial purity was 94.6% before transport and 87.9% after transport.

Conclusion: Cultured human oral mucosal epithelial cell sheets can be safely transported with this new transport system.

Key Words: transportation, cell sheet, clinical trial

Trauma

PP-71

Excellent Visual Outcome Following Prolonged Pencil- Lead Ocular Injury

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Purpose/Objective: To report a case of traumatic cataract with good visual outcome despite severe post- operative inflammation.

Methods: Case report

Results: Pena 47- year- old Malay lady sustained mechanical pencil injury to the cornea and lens of two weeks duration. Visual acuity at presentation was 6/24. There was a pencil- lead sealed corneal perforation with scar at paracentral cornea, and shallow anterior chamber (AC). Interestingly, there was no AC activity. Peripheral anterior synchia was noted superiorly, and the anterior lens capsule was breached due to pencil- lead touch. The pencil lead was touching corneal endothelium and embedded into the cataractous lens. She underwent uneventful foreign body removal and extracapsular cataract extraction with intraocular lens implantation at the same sitting. The posterior capsule was intact. Post- operatively, patient developed severe inflammation, which lasted for three months. She was treated with intensive guttate maxitrol, with good response. Her final visual acuity was 6/6 N5.

Conclusion: A pencil- lead injury which breached the cornea and lens may present without signs of anterior chamber activity. Yet post- operatively, severe inflammation may still occur, necessitating prolonged topical steroid. Good control of inflammation allows for excellent visual outcome without long term complications.

Key Words: pencil-lead injury, inflammation and visual outcome

PP-72

Microkeratome Assisted Corneal Tattooing: A Novel Technique

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Purpose/Objective: To report a novel technique of microkeratome assisted corneal tattooing for cosmetic improvement in two patients.

Methods: Two patients having paraxial corneal scar, resulting from trauma during childhood, underwent microkeratome assisted corneal tattooing. One patient had paraxial scarring more dense in posterior cornea. Other patient had adherent leucoma. Anterior segment optical coherence tomography (OCT) was done preoperatively to document the depth of the scarring. Superior hinge flap of 160 mm thickness was made in patient with posterior corneal scar, while a 120 mm flap was made in patient with adherent leucoma. Organic dye powder was spread on the stromal bed over the scar as well as on the undersurface of the flap corresponding to the corneal scar. The flap was then repositioned.

Results: At 6 months follow up, both the patients were satisfied with the cosmetic outcome. Patient with adherent leucoma however, had residual nebular grade haze. Best corrected visual acuity remained unchanged.

Conclusions: Microkeratome assisted corneal tattooing appears to be effective and safe method. Anterior segment OCT helps in documenting depth of the scar and selecting proper flap thickness.

PP-73

Comparison of Tensile Strength of Fibrin Glue, 2-octyl Cyanoacrylate, Liquid Ocular Bandage and Conventional Nylon 10-0 Sutures in Corneal Laceration Repair in an Animal Model

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Purpose/Objective: To compare the tensile strength of fibrin glue, 2-octyl cyanoacrylate and liquid ocular bandage to conventional nylon 10-0 sutures in sealing central linear corneal lacerations.

Methods: An experimental in vitro study was performed on porcine eyes. A 27-gauge needle connected to an infusion system with balanced salt solution was inserted into the anterior chamber and bottle height was adjusted accordingly. Full-thickness central corneal lacerations were created using a 3.2 mm keratome knife for the initial incision and were enlarged by a 5.2 mm knife. The wounds were sealed with fibrin glue (Tisseel®), 2-octyl cyanoacrylate (Dermabond®), liquid ocular bandage (OcuSeal®) and nylon 10-0 with 3 sutures. Tensile strength of the wounds was measured by recording the bottle height above the level of the porcine eyes before leakage was detected and this was converted to IOP values. One-way analysis of variance (ANOVA) and post hoc t-test were used to analyze the data and a p-value of 0.05 was considered significant.

Results: Mean maximum IOP where leakage was resisted for the nylon 10-0 suture group was 52.37 ± 7.16 mm Hg. The mean maximum resisted IOP for the fibrin glue, 2-octyl cyanoacrylate and liquid ocular bandage was 46.34 ± 12.64 mm Hg, 55.13 ± 10.46 mm Hg and 56.99 ± 8.27 mm Hg, respectively. There was no significant difference between the sutures and all of the adhesives groups ($p=0.077$, $p=0.338$ and $p=0.08$) as well as between 2-octyl cyanoacrylate and liquid ocular bandage ($p=0.565$). 2-Octyl cyanoacrylate and liquid ocular bandage demonstrated higher mean IOP as compared to the fibrin group ($p = 0.024$ and $p = 0.007$).

Conclusion: Fibrin glue, 2-octyl cyanoacrylate and liquid ocular bandage were shown to be effective in sealing 5.2 mm linear corneal lacerations, with 2-octyl cyanoacrylate and liquid ocular bandage being superior to the fibrin glue in this study.

Key Words: corneal laceration, tissue adhesives, tensile strength, 2-octyl cyanoacrylate, fibrin glue, liquid ocular bandage

Wound Healing

PP-74

Effect of Fluoroquinolones in Corneal Fibroblast-to-Myofibroblast Differentiation

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Purpose/Objective: To explore whether fluoroquinolones have anti-fibrotic effect in human corneal fibroblasts (HCFs).

Methods: HCFs were incubated in ciprofloxacin (CIP)-, levofloxacin (LEV)-, or moxifloxacin (MOX)-containing medium concurrently with transforming growth factor- β 1 (TGF- β 1). HCF contractility was evaluated with a type I collagen gel contraction assay. Expression of α -smooth muscle actin (α -SMA), Smad2, phospho-Smad2-Ser467, Smad4, and Smad7 was determined by immunoblotting. Formation of (α -SMA) positive filaments and distribution of active Smad2 were observed under confocal microscopy. Expression of TGF- β 2 receptor types I (TGFR1) and II (TGFR2) was assessed with flow cytometry.

Results: MOX did not affect gel contractility or α -SMA filament formation in HCFs without TGF- β 1 stimulation, but did retard α -SMA filament formation following TGF- β 1 stimulation. MOX blocked expression of Smad2, phospho-Smad2-Ser467, and TGFR1 under TGF- β 1 incubation. Nevertheless, MOX enhanced Smad7 expression in TGF- β 1 incubated HCFs, but did not interfere with TGF- β 1 triggered Smad2 nuclear translocation or Smad4 expression. CIP and LEV had similar antifibrotic effects.

Conclusion: Fluoroquinolones inhibited TGF- β 1 induced fibroblast-to-myofibroblast differentiation via blocking TGFR1 and enhancing Smad7 expression. These results suggest a de novo mechanism by which MOX participates in corneal wound healing.

Key Words: Fluoroquinolones, Corneal fibroblasts, Anti-fibrotic effect, TGFR1

FREE PAPER VIDEO PRESENTATIONS

VP-1

Sutureless Peripheral Lamellar Keratoplasty- Cosmetic Surgery for Limbal Dermoid

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Purpose/Objective: Surgical excision of limbal dermoid with sutureless peripheral lamellar keratoplasty for better cosmetic appearance.

Methods: Peritomy was done surrounding the lesion. Using hand held trephine, partial trephination was done involving whole dermoid both on scleral and corneal side. Lamellar dissection of dermoid was done with crescent blade. After smoothening the recipient bed, donor button was

VIDEO PRESENTATIONS

prepared with same diameter as recipient bed with automated microkeratome used in Descemet's stripping automated endothelial keratoplasty (stromal tissue after cutting endothelial button for DSAEK can be used so need to waste extra tissue. Later donor was secured to recipient bed with fibrin glue. Bandage contact lens was placed (can be removed after 10 to 15 days).

Results: Cosmetically better appearance compared to other methods of dermoid management.

Conclusion: Sutureless peripheral lamellar keratoplasty can be considered as a better way of dermoid management for better cosmetic outcome.

Key Words: sutureless keratoplasty, lamellar keratoplasty, limbal dermoid

VP-2

Mushroom-shaped Keratoplasty - Manual Technique

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Purpose/Objective: We depict a penetrating keratoplasty surgery done manually, similar to that done with a femtosecond machine.

Methods: An 8.5 mm trephine is used to make the initial corneal marking on the host cornea. Within this mark, a second superficial marking of 7.5 mm is done. A crescent knife is used to make a horizontal circumferential dissection from the outer to the inner ring, creating a 360 degrees horizontal bed. Next, a 7.5 mm trephine is placed and the horizontal bed of tissue is pulled inside from the well of the trephine. Then, the button is excised and the mushroom cut can be seen in the host bed. A similar procedure is carried out on the donor. The donor button is sutured to the host bed with 12 interrupted 10-0 nylon sutures

Results: The mushroom shaped cut permits better graft host junction apposition, earlier recovery and lesser number of sutures than otherwise. This technique can be applied to any case of keratoplasty.

Conclusion: Thus, this video describes that a mushroom-shaped keratoplasty can be manually performed without the use of expensive machines like the femtosecond laser, thereby giving the advantage of mushroom shaped graft-host junction to any patients of keratoplasty, providing the same outcome

Key Words: Mushroom-shaped Keratoplasty, femtosecond laser, trephine, graft host

VP-3

Endothelial Lamellar Exchange in an Aphakic Aniridic Vitrectomized Eye with a Failed Penetrating Keratoplasty

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Purpose/Objective: This video illustrates a successful explantation of a

failed endothelial lamella and repeat transplantation of a new endothelial lamella in an aphakic aniridic vitrectomized eye with a failed penetrating keratoplasty. The failed endothelial lamella was released & pulled out through a clear corneal incision (~ 5mm). Repeat endothelial transplantation was performed using Tan Endoglide® technique.

Results: Cornea was cleared by two months (we don't have facilities to measure endothelial cell counts). The best corrected visual acuity was 6/60

Conclusion: Though technically challenging, endothelial lamellar exchange produced expected clinical outcome in this demanding clinical situation.

Key Words: DSEK, aniridia, aphakia, vitrectomized eye, failed graft