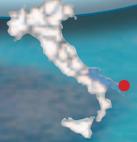




FINAL PROGRAM  
and ABSTRACT BOOK

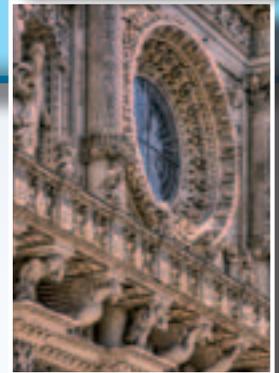


Lecce, Italy  
25-27 June 2015

Congress venue: Hilton Garden Inn

# XIV SICSSO CONGRESS

The International Congress of the Italian  
Society Stem Cells and Ocular Surface



## ENDOTHELIAL KERATOPLASTY: DSAEK or DMEK?

[www.sicssso.org/congresso2015](http://www.sicssso.org/congresso2015)



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*LOCAL ORGANIZER*  
**Dr. Antonio Mocellin**



We decided to give the XIV SICSSO Congress edition a title, which is “Endothelial Keratoplasty: DSAEK or DMEK?”. As for the past editions, SICSSO will recognize two colleagues who distinguished themselves in the study of corneal and ocular surface diseases: we will have the honour to award Dr. Gerrit Melles and Dr. Mark Terry with 2015 SICSSO Medal Lecture.

Besides the keynote lectures presented by some of the main opinion leaders of our field, presentation and discussion of clinical cases won't be missing. The aim is to give the opportunity to Speakers and audience to share therapeutic and diagnostic issues of our daily working life and discuss their possible solutions. With this in mind, the SICSSO traditional session with **live evaluation of the patient** is a must, and it will be scheduled on Saturday, 27 June: Speakers will examine patients with particular diagnostic situations or treatments through a slit lamp connected to a camera, and will try to identify the nature and possible solutions of the problems.

We are also very pleased to confirm and renew the cooperation established with the London Moorfields Eye Hospital, one of the major and prestigious hospital for the eye care in Europe, which has awarded SICSSO with a 1 or 2 week observership to be offered to a young ophthalmologist (provided he is under 40): SICSSO will give this opportunity to the winner of the best paper of the “Innovations” sessions, together with a grant of 1.000 euros to support travel and stay expenses.

Looking forward to welcoming you in Lecce,

*S.I.C.S.S.O. Board*

Anche quest'anno abbiamo voluto dare un tema alla XIV edizione del congresso internazionale della SICSSO, intitolandola “Endothelial Keratoplasty: DSAEK or DMEK?”. Come ogni anno, la SICSSO premierà due personaggi che si sono distinti a livello mondiale in ambito corneale e di superficie oculare: avremo quindi l'onore di assegnare le Medal Lecture 2015 al Dr Gerrit Melles e al Dr Mark Terry. Accanto alle letture magistrali assegnate ad alcuni tra i principali opinion leader del nostro settore, non mancheranno le presentazioni e la discussione di casi clinici riguardanti problematiche diagnostiche e/o terapeutiche particolari: l'obiettivo è di coinvolgere il pubblico in sala offrendo proposte di risoluzione a problematiche comuni nella pratica quotidiana di un oculista. In questa logica abbiamo voluto prevedere anche quest'anno la **visita in diretta di pazienti** con casi clinici dalla diagnosi o trattamento particolari, rinnovando una proposta unica e tradizionale della SICSSO: sabato mattina i vari membri della faculty visiteranno il paziente utilizzando una lampada a fessura dotata di telecamera e potranno interrogare direttamente il paziente per poi esprimere le proprie ipotesi diagnostico-terapeutiche e confrontarle anche con l'opinione dell'audience.

Siamo molto contenti di confermare e rinnovare la collaborazione con il Moorfields Eye Hospital di Londra, il rinomato ospedale per gli occhi tra i più grandi di Europa, che ha messo a disposizione della SICSSO una observership di 1 o 2 settimane: offriremo quest'opportunità, supportata da un contributo per spese di viaggio e soggiorno, al vincitore della miglior presentazione delle sessioni “Innovations”, purché abbia meno di 40 anni.

Vi aspettiamo a Lecce,

*S.I.C.S.S.O. Board*

## GENERAL INFO

### Organizing Secretariat

AIM Group International - AIM Congress srl  
Via G. Ripamonti, 129 - 20141 Milan, Italy  
Ph.: +39 02 56601.1 - Fax: +39 02 56609045  
E-mail: [sicso2015@aimgroup.eu](mailto:sicso2015@aimgroup.eu)

### Opening times

Thursday, 25 June 12.30-19.00  
Friday, 26 June 07.45-19.00  
Saturday, 27 June 08.00-13.30

### Congress venue and location

Hilton Garden Inn Lecce  
Via Cosimo De Giorgi, 62 - 73100 Lecce

### Badges

All participants must wear their personal badge to have access to the congress:

**Faculty - red** **Delegates - transparent** **Company staff - blue**

### Food&beverage

Lunches and coffee breaks are not included in the congress fee. A bar will be available in the lobby of the hotel. Lunch ticket on 26 June can be bought at the Registration Desk according to availability (Euro 25,00).

**Certificate of attendance** will be handed out to all registered participants on request at the end of the congress.

### Insurance

Delegates are advised to take out travel insurance to cover medical expenses, accidents, loss etc. The Organizers will not accept any liability for damage, theft or loss of any Participant's property in any circumstances.

### Photos

Participants are informed that an official congress photographer will take pictures during the congress and the social events. Those images will be used only for purposes linked to the event promotion.

### Official language

The official language of the congress is Italian. Simultaneous translation English-Italian will be provided in the Auditorium (Carlo V Room).

## PARTICIPATION FEES (VAT 22% included)

Ophtalmologist/Oculisti	Euro 366,00
Orthopist/Ortottisti	Euro 61,00
PhD Student/Specializzandi	Euro 100,00
Students/Studenti	Euro 61,00
Congress lunch	Euro 25,00
Wet lab	Euro 150,00

## SICSSO PARTY

The SICSSO party will take place on Friday 26 June.

*Join us for a nice informal gathering, among friends wishing to share the pleasure for nice music and good local cuisine!*

**Participation cost € 50,00 (VAT included)**



## CONGRESS WET LABS - SALA SAN MARTINO



The organization of Wet Labs has always registered a great success in the past editions of the SICSSO congress: that is why we are again offering young surgeons the opportunity to train using corneal tissues made available from eye banks.

Wet labs have a duration of 1 hour; 9-10 participants are allowed per session, as this is the availability of microscopes. Teacher's surgery will be shown through a camera set on his microscope.

**Participation cost (to be added to the congress registration):  
€ 150,00 VAT included**

### PROGRAM

#### Thursday 25<sup>th</sup> June

DSAEK - Teacher: W. B. Lee - Language: English (hrs 17.00 - 18.00)

DMEK - Teacher: M. Terry - Language: English (hrs 18.15 - 19.15)

#### Friday 26<sup>th</sup> June

DMEK - Teacher: V. Maurino - Language: Italian (hrs 08.30 - 09.30)

DALK - Teacher: J. S. Metha - Language: English (hrs 17.00 - 18.00)

DALK - Teacher: G. Marchini - Language: Italian (hrs 18.15 - 19.15)

## SPONSORIZED WET LABS ON INVITATION

Thursday 25<sup>th</sup> June (hrs 15.45-17.00)



WET LAB ORGANIZZATO DA IVIS TECHNOLOGIES

15.45-16.00 CCR+CXL - Relation on the technique  
*V. Sarnicola (Grosseto-Salerno, Italy)*

16.00-16.15 The iVis Suite - a Platform for corneal therapeutic surgery  
*G. D'Ippolito (Taranto, Italy)*

16.15-16.30 A Crosslinking procedure designed for thin corneas  
*N. Rosa (Salerno, Italy)*

16.30-17.00 Keratoconus Regularization and Corneal Crosslinking Wet Lab  
*V. Sarnicola (Grosseto-Salerno, Italy) - G. Mulè (Treviso, Italy)*



Friday 26<sup>th</sup> June (hrs 13.00-14.30)



WET LAB ORGANIZZATO DA SOOFT ITALIA

INNESTO DI MEMBRANA AMNIOTICA ED URGENZE CORNEALI (FERITE CORNEALI)  
*L. Mastropasqua (Chieti, Italy) - M. Nubile (Chieti, Italy)*



**Mark A. Terry, M.D.**

Dr. Terry has been the Director of Corneal Services at the Devers Eye Institute in Portland, Oregon since 1990. He is currently a Professor of Clinical Ophthalmology at the Oregon Health Sciences University as well. He earned his undergraduate degree at Yale, his medical degree at St. Louis University, and his residency in Ophthalmology in San Francisco. He completed his Corneal Fellowship in 1985 at the University of Oklahoma and since that time has limited his referral practice to the subspecialty of Cornea, Anterior Segment and Refractive Surgery. He has been the Medical Director of the Lions Eye Bank of Oregon since 1990 and is also the Scientific Director of the Lions VisionGift Research Laboratory. Dr. Terry has lectured extensively nationally and internationally and widely published his research work in the areas of corneal transplantation, corneal physiology, refractive surgery, and dry eye. He began in March of 2000 the first U.S. clinical series of Deep Lamellar Endothelial Keratoplasty (DLEK), a technique of endothelial keratoplasty (EK) which replaces the endothelium without surface corneal incisions or sutures. He currently performs variations of endothelial keratoplasty known as DSAEK and DMEK. His prospective study of endothelial keratoplasty is now the largest and longest running prospective series in the world and he has been actively training surgeons in endothelial keratoplasty for over 12 years. He is the founder and leader of the international Endothelial Keratoplasty Group (EKG), which continues a multi-site, international investigation of this new approach to corneal transplantation.



**Gerrit R.J. Melles, MD, PhD**

In 1997, after completing medical school and specializing in ophthalmology, Dr. Melles started focusing on the treatment of corneal diseases. In 2000 he founded the Netherlands Institute for Innovative Ocular Surgery (NIIOS) with several associated organizations, among which Melles Cornea Clinic Rotterdam and Amnitrans EyeBank Rotterdam. At NIIOS, in joint effort with a dedicated team, Dr. Melles developed and continuously evaluates diverse techniques for both tissue preparation and corneal transplantation, such as: DALK (Deep Anterior Lamellar Keratoplasty), DLEK (Deep Lamellar Endothelial Keratoplasty), DSEK / DSAEK (Descemet Stripping (Automated) Endothelial Keratoplasty), DMEK (Descemet Membrane Endothelial Keratoplasty), DMET (Descemet Membrane Endothelial Transfer) and Bowman Layer Implantation. His objective is to treat corneal disorders with techniques that are minimally invasive. In addition he developed several instruments and medical devices to facilitate the surgical procedures. Furthermore he is actively involved in the development of ophthalmic staining solutions, such as VisionBlue®, MembraneBlue®, ILM-Blue® and MembraneBlue Dual®. On all these fields Dr. Melles has authored a broad range of scientific publications in high-ranking peer-reviewed scientific journals. Under his supervision more than 650 patients have had surgery with the DMEK technique that he developed. The American Academy of Ophthalmology awarded him its Achievement Award in 2005 and 2009. Other honours and awards Dr. Melles received for his contributions to the treatment of corneal disorders by advanced lamellar keratoplasty are for example: 5<sup>th</sup> Optic lecture of the Royal College of Ophthalmologists, Liverpool, United Kingdom (2013), 13<sup>th</sup> Montgomery lecture of the Irish College of Ophthalmologists, Dublin, Ireland (2013), Ridley-Lecture at 25<sup>th</sup> DOC congress, Nürnberg, Germany (2012), Membership of Honor, El Instituto Barraquer, Barcelona, Spain (2010), Dr. Eduard Konrad Zirm award, Rohovkový Kongres, Prague, Czech Republic (2009), Charles W. Tillett, M.D. lecture, Johns Hopkins University, Baltimore, USA (2008), Mediglia d'Oro (golden medal) at 7<sup>th</sup> SITRAC congress, Milan, Italy (2008). Dr. Melles has a great interest in classical music and is an amateur composer. To share his passion for music with others he founded the Melles Classical Music Foundation (MCMF) with the MCMF orchestra. Aim of the foundation is to organize two to three performances a year of mostly self-composed symphonic music and to give talented young musicians the opportunity to perform in a concert setting.

**14.00-14.45 INNOVATIONS CROSS-LINKING**

**PRESIDENT:** A. Mularoni (Bologna, Italy)

**MODERATORS:** A. Magli (Salerno, Italy), E. Motolese (Siena, Italy)

- 14.00-14.07 Collagen cross linking: epi-off vs epi-on**  
*L. Spadea (Rome, Italy)*
- 14.07-14.14 Cross linking using iontophoresis in pediatric cases: two years follow up**  
*L. Buzzonetti, G. Petrocelli (Rome, Italy)*
- 14.14-14.21 Transepithelial corneal collagen cross-linking by iontophoresis for progressive keratoconus in children and adolescents: two years outcomes**  
*L. Lapenna, F. Montrone (Bari, Italy)*
- 14.21-14.28 Combined femtosecond laser assisted intracorneal rings (ICR) implantation and cross linking for keratoconus management: safety, visual outcome and cornea**  
*O. Ibrahim, M. Abdalla, A. Elmassry (Egypt)*
- 14.28-14.35 Combined flapless refractive lenticule extraction (SMILE) and intrastromal cross-linking in mild keratoconus. Refractive and bio-mechanical outcomes**  
*M. Abdalla (Egypt)*
- 14.35-14.45 Discussion**

**14.45-15.45 G.O.I. (YOUNG ITALIAN OPHTHALMOLOGIST)**

**PRESIDENT:** V. Sarnicola (Grosseto-Salerno, Italy)

**MODERATORS:** A. Mocellin (Lecce, Italy), A. Montericchio (Trapani, Italy)

**LEARNING FROM MISTAKES AND COMPLICATIONS IN CORNEAL SURGERY**

- 14.45-14.55 Management of scrolling and unrolling in DMEK**  
*F. Sabatino (UK)*

- 14.55-15.05 DALK for keratoconus: blunt cannula versus Anwar technique**  
*E. Sarnicola (Siena, Italy)*
- 15.05-15.15 Corneal scarring in ocular pemphigoid: PTK?**  
*S. Zagari (Catania, Italy)*
- 15.15-15.25 Challenging treatment of Fusarium keratitis after PRK**  
*M. Forlini (Modena, Italy)*
- 15.25-15.35 DALK: new opening of the bubble**  
*C. Sarnicola (Ferrara, Italy)*
- 15.35-15.45 Discussion**

**15.45-16.45 TOMOGRAPHY COURSE**

**PRESIDENT:** G. Alessio (Bari, Italy)

- 15.45-15.53 Topography: keratoconus cases will explain the value of tomographic index**   
*S. Serrao (Rome, Italy)*
- 15.53-16.01 Tomography: changing of anterior and posterior corneal surface**   
*M.G. La Tegola (Bari, Italy)*
- 16.01-16.07 Pachimetry in patient with keratoconus**  
*L. Spadea (Rome, Italy)*
- 16.07-16.15 Periferic ectasia: tomographic study**   
*A. Mularoni (Bologna, Italy)*
- 16.15-16.23 Keratoconus vs Pellucid marginal degeneration: why it matters**  
*M. Belin (USA)*
- 16.23-16.29 Difficult of diagnosis of corneal ectasia in systemic diseases**  
*L. Buzzonetti (Rome, Italy)*
- 16.29-16.45 Discussion**

## 16.45-17.45 CROSS-LINKING: STATE OF THE ART

PRESIDENT: A. Mularoni (Bologna, Italy)

MODERATORS: S. Serrao (Rome, Italy), N. Rosa (Salerno, Italy)

### NEW CROSSLINKING TECHNIQUES

16.45-16.50 **Corneal collagen CXL using iontophoresis**  
*L. Mastropasqua (Chieti, Italy)*

16.50-16.55 **Accelerated corneal collagen CXL**  
*A. Caporossi (Rome, Italy)*

16.55-17.00 **Customized corneal collagen CXL**  
*G. Alessio (Bari, Italy)*

17.00-17.05 **Intracorneal ring and CXL for keratoconus**  
*P. Dougherty (USA)*

17.05-17.10 **Topo-linked PRK and CXL**  
*C. Lovisolo (Milan, Italy)*

### CLINICAL CASES DISCUSSION with TELEVOTER SYSTEM



17.10-17.15 **Case 1**  
*C. Mazzotta (Siena, Italy)*

17.15-17.20 **Case 2**  
*M. Nubile (Chieti, Italy)*

17.20-17.25 **Case 3**  
*A. Balestrazzi (Siena, Italy)*

17.25-17.33 **Management of complications**  
*S. Rossi (Rome, Italy)*

17.33-17.45 **Discussion**

## 17.45-19.30 KERATOPLASTY

PRESIDENT: M. Nubile (Chieti, Italy)

MODERATORS: C. Forlini (Ravenna, Italy), F. Menicacci (Siena, Italy)

17.45-17.55 **History of corneal transplant**  
*A. Grzybowski (Poland)*

17.55-18.05 **Corneal spherical aberration and biometry for DSAEK and FACO combined surgery**  
*G. Alessio (Bari, Italy)*

18.05-18.15 **Surgical correction of post-DALK ametropia**  
*A. Pocobelli (Rome, Italy)*

18.15-18.23 **Microbiological evaluation of a novel gauze formulation for the hygiene of the periocular area**  
*E. Gherardi (Pisa, Italy)*

18.23-18.31 **Mushroom keratoplasty with femtolasers**  
*C. Cagini, G. Torroni (Perugia, Italy)*

18.31-18.39 **Femtolasers in keratoplasties**  
*C. Monterosso (Mestre, Italy)*

18.39-18.47 **Long term results of femtosecond laser assisted mushroom configuration DALK or PKP for advanced keratoconus**  
*V. Maurino, S. Fung, F. Aiello (UK)*

18.47-18.55 **Limbal-Conjunctival autograft in primary and recurrent pterygium**  
*F. Passani (Carrara, Italy)*

18.55-19.03 **PRK and contact lenses**  
*A. Montericcio (Trapani, Italy)*

19.03-19.11 **Four years of keratoplasty in pediatric cases: indications and outcomes**  
*L. Buzzonetti (Rome, Italy)*

19.11-19.19 **Decentrated DSAEK graft, but clear cornea**  
*L. Mosca (Rome, Italy)*

19.19-19.30 **Discussion**

08.15-09.40 INNOVATIONS DRY EYE

PRESIDENT: R. Mencucci (Firenze, Italy)

MODERATOR: V. Orfeo (Naples, Italy)

08.15-08.22 Efficacy and safety of a new device for eyelid hygiene in patients with meibomian gland dysfunction and blepharitis\*

*D. Giammaria (Pesaro, Italy)*

08.22-08.29 The effect of liposomal suspension for the treatment of dry eye syndrome\*

*L. Ottobelli, P. Fogagnolo, M. Digiuni, L. Tranchina, A. Dipinto, S. De Cillà, L. Rossetti (Milan, Italy)*

08.29-08.36 Vitamin A deficiency: case series

*P. Rubino (Parma, Italy)*

08.36-08.43 Confocal scanning laser microscopy in dry eye syndrome patients treated with topical cyclosporine A 0,05%

*C. Cagini, G. Torroni, F. Fiore, B. Iaccheri, M. Lupidi, A. Cerquaglia (Perugia, Italy)*

08.43-08.50 Post cataract surgery dry eye syndrome prevention

*A. Franchini, L. Finocchio, I. Franchini (Florence, Italy)*

08.50-08.57 Cross-linked hyaluronic acid tears advantages

*G. Salvalaio, H. Elbadawy, A. Ruzza, A. Fasolo, S. Ferrari, D. Ponzin (Mestre, Italy)*

08.57-09.07 Clinical applications of topical nerve growth factor (NGF) in ocular diseases

*P. Rama (Milan, Italy)*

09.07-09.17 Dry eye: pathogenesis and therapy

*P. Aragona (Messina, Italy)*

09.17-09.40 Discussion

09.40-10.40 KERATOCONUS

PRESIDENT : V. Sarnicola (Grosseto-Salerno, Italy)

PANELS: M. Belin (USA), W.B. Lee (USA)

09.40-09.50 Summary of the 1<sup>st</sup> global consensus keratoconus and ectatic disease  
*J.A. Gomes (Brazil)*

09.50-10.00 Keratoconus: the difference between screening & diagnosing and its clinical implications

*M. Belin (USA)*

CLINICAL CASES PRESENTATION WITH PANEL DISCUSSION and TELEVOTER SYSTEM



PRESENTER: A. Mularoni (Bologna, Italy)

10.00-10.10 Case 1

*C. Lovisolo (Milan, Italy)*

10.10-10.20 Case 2

*V. Sarnicola (Grosseto-Salerno, Italy)*

10.20-10.30 Case 3

*R. Barraquer (Spain)*

10.30-10.40 Discussion

10.40-11.00 BREAK

11.00-12.00 EK: DSAEK or DMEK?

PRESIDENT: V. Maurino (UK)

PANELS: S. Mian (USA), M. Terry (USA)

11.00-11.10 I prefer DSAEK

*A. Shortt (UK)*

11.10-11.20 I prefer DMEK

*J. Güell (Spain)*

11.20-11.30 What is DMET?

*G. Melles (The Netherlands)*

11.30-11.37 Discussion

\* under consideration for the Best Paper Award 2015

CLINICAL CASE PRESENTER with PANEL DISCUSSION and TELEVOTER SYSTEM



- 11.37-11.44 **Case 1**  
*V. Maurino (UK)*
- 11.44-11.51 **Case 2**  
*M. Terry (USA)*
- 11.51-12.00 **Case 3**  
*S. Mian (USA)*

12.00-13.00 **MEDAL LECTURES**

MODERATORS: J. Güell (Spain), V. Sarnicola (Grosseto-Salerno, Italy)

Mark A. Terry



Gerrit R.J. Melles



- 13.00-14.00 **SALA CARLO V: LUNCH SYMPOSIUM** organizzato da Alfa Intes e Bausch+Lomb (su invito)
-  **UP TO DATE SULL'USO DEI FANS IN OFTALMOLOGIA**  
**Usò dei Fans nelle patologie su base infiammatoria dell'occhio**  
*A. Russo (Brescia, Italy)*
- Innovazione nel controllo della infiammazione post-chirurgica, il ruolo dei FANS di nuova generazione**  
*F. Solignani (La Spezia, Italy)*

- 13.00 - 14.30 **SALA BAROCCO: LUNCH SYMPOSIUM** organizzato da Allergan (su invito)
-  **LA DISFUNZIONE LACRIMALE IN DIVERSE TIPOLOGIE DI PAZIENTI, DEI CASI PRATICI**  
*Coordinatori: R. Mencucci (Firenze, Italy), E.R. Antoniazzi (Pavia, Italy)*

14.30-15.30 **DALK NEW INDICATIONS**

- PRESIDENT:** M. Terry (USA)  
**MODERATOR:** V. Maurino (UK)
- 14.30-14.40 **DALK: all the ruptures can be fixed**  
*V. Sarnicola (Grosseto-Salerno, Italy)*
- 14.40-14.50 **DALK in extreme ectasia: the battle of the bulge**  
*J.S. Metha (Singapore)*
- 14.50-15.00 **DALK in penetrating wounds**  
*G. Della Monaca (Grosseto, Italy)*
- 15.00-15.10 **DALK in infections**  
*G. Marchini (Verona, Italy)*
- 15.10-15.20 **DALK in ocular surface diseases**  
*W.B. Lee (USA)*
- 15.20-15.30 **Discussion**

15.30-17.00 **LET'S REPAIR THE OCULAR SURFACE**

- PRESIDENT:** G. Marchini (Verona, Italy)  
**MODERATORS:** M. Nubile (Chieti, Italy), V. Sarnicola (Grosseto-Salerno, Italy)
- NON-HEALING OCULAR SURFACE DISEASES: WHAT ARE WE FREQUENTLY FACING?**
- 15.30-15.40 **Understanding and treating persistent epithelial defect**  
*J.A. Gomes (Brasil)*
- 15.40-15.50 **Neurotrophic keratopathy**  
*A. Lambiase (Rome, Italy)*
- 15.50-16.00 **Limbal stem cell deficiency**  
*W.B. Lee (USA)*
- 16.00-16.10 **New pharmacological options**  
*L. Mastropasqua (Chieti, Italy)*
- 16.10-16.20 **Ocular surface surgical repair**  
*J.S. Metha (Singapore)*
- 16.20-16.30 **Discussion**

CLINICAL CASE PRESENTATION with PANEL DISCUSSION and  
TELEVOTER SYSTEM



- 16.30-16.40 **Case 1**  
*E. Polito (Siena, Italy)*
- 16.40-16.50 **Case 2**  
*R. Colabelli (Rome, Italy)*
- 16.50-17.00 **Case 3**  
*E. Pedrotti (Verona, Italy)*

17.00-18.30 **SALA SAN BIAGIO: SIMPOSIO organizzato da  
DMG Italia**



**SUPERFICIE OCULARE E INTEGRITÀ  
NEUROEPITELIALE**

**L'importanza dell'innervazione della superficie oculare  
nella patogenesi del dry eye**

*P. Aragona (Messina, Italy)*

**Guarigione delle ferite corneali nella pratica clinica**

*R. Mencucci (Florence, Italy)*

17.00-18.30 **LECTURES**

**PRESIDENT:** V. Maurino (UK)

**MODERATORS:** B. Billi (Rome, Italy), E. Polito (Siena, Italy)

- 17.00-17.10 **Biomechanical insult and response of the corneal cells**  
*G. Pellegrini (Modena, Italy)*
- 17.10-17.20 **Expanding role of permanent keratoprosthesis**  
*S. Mian (USA)*
- 17.20-17.30 **Indications for keratoprosthesis**  
*V. Petitti (Rome, Italy)*
- 17.30-17.40 **Postoperative corneal status after vitreoretinal surgery in  
patients previously subjected to corneal refractive surgery**  
*G.M. Tosi (Siena, Italy)*
- 17.40-17.50 **3D meibography for diagnosis of dry eye**  
*C. Joo (South Korea)*

- 17.50-18.00 **Outcomes of ex-vivo expanded limbal stem cell allografts**  
*A. Shortt (UK)*
- 18.00-18.10 **Ocular manifestations of Graft-versus-host disease**  
*S. Mian (USA)*
- 18.10-18.20 **Antibiotic resistance in medicine and in ophthalmology**  
*A. Grzybowski (Poland)*
- 18.20-18.30 **Discussion**

18.30-19.30 **INNOVATIONS OCULAR SURFACES**

**PRESIDENT:** A. Montericchio (Trapani, Italy)

**MODERATOR:** F. Montrone (Bari, Italy)

- 18.30-18.37 **Pterygium surgery and scleral contact lens**  
*A. Montericchio (Trapani, Italy)*
- 18.37-18.44 **Long-term outcomes of ex-vivo stem cell allograft  
transplantation (EXVSCALT) for ocular surface failure**  
*D. Lake, M. Modell, E. Sykakis, N. Jordan, S. Hamada,  
P. Georgoudis (UK)*
- 18.44-18.51 **Epithelial transition after cultured stem cell grafts: imaging  
by in vivo confocal microscopy**  
*M. Passilongo, E. Pedrotti, E. Bruni, S. Ficial, G. Marchini  
(Verona, Italy)*
- 18.51-18.58 **Epithelization patterns in eyes transplanted with  
limbal stem cells gratis**  
*E. Pedrotti, M. Passilongo, E. Bruni, S. Ficial, G. Marchini  
(Verona, Italy)*
- 18.58-19.05 **Limbal stem cell transplant in alkali corneal burn with  
mycotic superinfection: a good idea?**  
*F. Franco, A. Miele, E. Favuzza, R. Mencucci (Florence, Italy)*
- 19.05-19.12 **Corneal neurotisation in patients with trigeminal palsy**  
*P. Fogagnolo, L. Tranchina, A. Dipinto, E. Vallenzasca, S. Decillà,  
F. Biglioli, F. Allevi, L. Rossetti (Milan, Italy)*
- 19.12-19.19 **Dry eye: advantages of nanotechnology solutions**  
*C. Gagliano, R. Amato, A. Messina, D. Rocca (Catania, Italy)*
- 19.19-19.30 **Discussion**

**08.30-09.30 INFECTIONS**

**PRESIDENT:** A. Montericchio (Trapani, Italy)

**PANELS:** A. Grzybowski (Poland), J.S. Metha (Singapore), S. Mian (USA), P. Rama (Milan, Italy)

**08.30-08.40 Introduction**

*R. Mencucci (Florence, Italy)*

**CASE PRESENTATION with PANEL DISCUSSION and TELEVOTER SYSTEM**



**08.40-08.50 Case 1**

*L. Mosca (Rome, Italy)*

**08.50-09.00 Case 2**

*D. Mucciolo (Florence, Italy)*

**09.00-09.10 Case 3**

*E. Favuzza (Florence, Italy)*

**09.10-09.20 Case 4**

*M. Vannucchi (Florence, Italy)*

**09.30-11.40 LIVE PATIENTS EVALUATION**

**PRESIDENT:** M. Belin (USA)

**MODERATORS:** V. Maurino (UK), R. Mencucci (Florence, Italy)

**PANELS:** J.A. Gomes (Brazil), W.B. Lee (USA), P. Rama (Milan, Italy), M. Terry (USA),

**09.30-09.40 Inflammatory mediators of danger signaling as innovative therapeutic targets**

*A. Chiarugi, R. Mencucci (Florence, Italy)*

**09.40-10.00 Case 1**

*A. Mocellin (Lecce, Italy)*

**10.00-10.10 Results of the ACOS/Avedro multi-center, randomized phase III US-FDA clinical trial on accelerated corneal cross-linking for keratoconus and corneal ectasia**

*E. Manche (USA)*

**10.10-10.30 Case 2**

*D. Cassano (Brindisi, Italy)*

**10.30-10.40 Ocular surface reconstruction: literature overview**  
*D. Scorsetti (Argentina)*

**10.40-11.00 Case 3**

*V. Montaruli (Barletta, Italy)*

**11.00-11.10 Quality of vision after DALK vs PKP**  
*J. Güell (Spain)*

**11.10-11.30 Case 4**

*F. Montrone (Bari, Italy)*

**11.30-11.40 Intracorneal ring segments for keratoconus: How to make sense of their implantation**  
*R. Barraquer (Spain)*

**11.40-13.00 INNOVATIONS EK**

**PRESIDENT:** M. Nubile (Chieti, Italy)

**11.40-11.47 Analysis in vivo after DSAEK: correlation between visual acuity, corneal aberrations and confocal microscopy features \***  
*G. Gabbriellini, F. Fanucci, L. Martini (Pisa, Italy)*

**11.47-11.54 DSAEK early graft dislocation in silicon oil vitrectomized eye**  
*O. Caporossi, E. Favuzza, A. Miele, R. Mencucci (Florence, Italy)*

**11.54-12.01 Preparation of large grafts for endothelial keratoplasty \***  
*V. Romano, A. Tey, J. Chen, S. Ahmad, M. Batterbury, C. Willoughby, S. Kaye (UK)*

**12.01-12.08 Long term follow up of DMEK with or without SF6 taponade**  
*J. Güell (Spain)*

**12.08-12.15 Outcomes of eye bank stripped DMEK surgery**  
*S. Mian (USA)*

**12.15-12.22 DMEK learning curve: single experienced surgeon first 30 cases analysis**  
*V. Maurino, F. Sabatino, F. Matarazzo (UK)*

**12.22-12.29 Femtosecond laser assisted cataract surgery: post operative effect on the corneal endothelium and time of surgical phases \***  
*L. Barbarano, A. Baldascino, D. Ciardo, A. Villano, A. Caporossi (Rome, Italy)*

- 12.29-12.36 **Corneal neovascularization: treatments**  
*F. Romano (Caserta, Italy)*
- 12.36-12.43 **Eye banking and new frontiers of EK**  
*G. Salvalaio, A. Ruzza, A. Fasolo, D. Camposampiero, S. Ferrari, D. Ponzin (Venice, Italy)*
- 12.43-12.50 **New surgical instruments for DMEK: personal technique**  
*A. Caporossi (Rome, Italy)*
- 12.50-13.00 **Discussion**

### 13.00-13.15 BEST PAPER AWARD

#### Award Commission

**PRESIDENT:** V. Maurino (UK)

**FACULTY:** V. Sarnicola (Grosseto-Salerno, Italy), G.M. Tosi (Siena, Italy)

#### *Best Paper S.I.C.S.S.O. 2015*

It will be assigned to a **young ophthalmologist** (provided he is under 40 and presenter or co-author of a submitted selected abstract). SICSSO is glad to offer the opportunity to the winner of the best presentation of the "Innovations" sessions, 1 or 2 week **observership** at the renowned **Moorfields Eye Hospital** in London, the largest eye center in Europe. The selected abstract presenter will have the chance to observe clinical activities and/or other activities as applicable (cornea and anterior segment surgery) for educational purpose in the Moorfields Eye Hospital: **1.000 euros** will be awarded to support related expenses.

*Presentations under consideration  
for the Best Paper Award SICSSO 2015 are marked  
with an asterisk \* in the program*

*\* under consideration for the Best Paper Award 2015*

## NURSE/ORTHOPTIS SESSION – SALA BAROCCO

Friday 26 June (hrs 15.30-17.00)

### SIMPOSIO PER INFERMIERI/ORTOTTISTI IN OFTAMOLOGIA

*Direttore Dr. Antonio Mocellin*



- 15.30-15.50 **Ruolo e responsabilità dello strumentista in sala operatoria**  
*M. C. Costa (Lecce, Italy)*
- 15.50-16.10 **Flusso dei ferri chirurgici e tracciabilità**  
*G. Gatto (Lecce, Italy)*
- 16.10-16.30 **Maglie sterilizzazione, test verifica strumenti cavi**  
*G. Rocchi (Grosseto, Italy)*
- 16.30-16.50 **Trapianti di cornea, la figura dello strumentista**  
*V. Scognamiglio (Grosseto, Italy)*
- 16.50-17.00 **Discussione**

**COMBINED FLAPLESS REFRACTIVE LENTICULE EXTRACTION [SMILE] AND INTRASTROMAL CROSS-LINKING IN MILD KERATOCONUS. REFRACTIVE AND BIO-MECHANICAL OUTCOMES**

M. Abdalla <sup>2,3</sup>, O. Ibrahim <sup>1,2</sup>, A. Elmassry <sup>1,2</sup>, A. Zahran <sup>3</sup>

<sup>1</sup> Alexandria University, Alexandria, EGYPT, <sup>2</sup> Roaya Vision Center, Alexandria, EGYPT, <sup>3</sup> International Femto Lasik Center, Cairo, EGYPT

Prospective case series of 39 eyes of 20 patients. Inclusion criteria were topographic diagnosis of forme fruste KC, stable refraction and topographic findings for at least 1 year, BCVA >0.7, central corneal thickness >460µ, patient age >21 years, follow up at 1 day, 1 week, 1, 3, 6, 9, 12 months. Study parameters were UCVA, BCVA, manifest refraction, topographic, clinical evaluation, IOP and biomechanical stability of the cornea are assessed.

Methods SMILE was performed all cases had a 100µ cap and 300µ residual stromal bed followed by intra-pocket injection of isotonic riboflavin 3 times with a 5 minute interval then 5 min 18 mW/cm<sup>2</sup> UV cross-linking. Bio-mechanical stability was assessed using the Corvis ST Oculus, measuring and correlating IOP and deformation amplitude.

Results and Conclusion mean patient age was 29.4±5.63. Mean preoperative UCVA 0.13±0.08 and 0.82±0.13 postoperative. Mean preoperative refraction was -3.97±1.87 D sphere (range -6.0 to -1.25) and -2.85 D cylinder (range -0.75 to -4.25), mean postoperative SER was -0.14±0.73 D (range -1.25 to +1.5) mean astigmatism was -0.18±0.45 D. 72% within ±0.5 and 89% within ±1.0 D. 3 eyes lost 1 line of BCVA, 1 eye lost 2 lines and 1 eye due to haze. All patients presented intrastromal haze that improved during the follow-up. Mean deformation amplitude was 1.38 mm ±0.29 pre-op. to 1.19 mm ±0.29 postop while pre and post operative IOP showed no significance. This might be a safe predictable and stable treatment option in patients where conventional laser refractive surgery is contraindicated. Further follow-up and larger samples are needed.

**FEMTOSECOND LASER ASSISTED CATARACT SURGERY: POSTOPERATIVE EFFECT ON THE CORNEAL ENDOTHELIUM AND TIME OF SURGICAL PHASES**

A. Baldascino, L. Barbano, D. Ciardo, A. Villano, A. Caporossi  
Catholic University of Sacred Heart, Rome, ITALY

Purpose:

To evaluate the time of surgical phases in femtosecond cataract surgery performed by a single surgeon in 50 consecutive cases and the effect on the corneal endothelium compared to phacoemulsification.

Methods:

LenSx femtosecond laser (Alcon Laboratories, Inc., Fort Worth, TX) has been used to perform anterior capsulotomy, lens fragmentation and corneal incisions, in 50 consecutive cases with topical anesthesia. The time of surgical phases was recorded by a digital chronometer: laser procedure, corneal incision opening, anterior capsulotomy opening, phacoemulsification, cortex aspiration. Central endothelial cell density were measured preoperatively and postoperatively.

Result:

Mean laser procedure time was 128 seconds (range 69-182 sec.); mean corneal incisions opening time was 48 sec (range 26-79 sec); mean anterior capsulotomy opening time was 5 sec (range 1-15 sec); mean phacoemulsification time was 157 sec (range 89-259 sec); mean cortex aspiration time was 89 sec (range 51-184 sec). Mean cell count in femtosecond laser assisted cataract was better than phacoemulsification in the immediate postoperative. We found no significant differences between the two surgical techniques after 3 months postoperatively.

Conclusion:

Laser assisted surgery seems to be a very reproducible procedure; although in hard cataracts phacoemulsification could need a longer time. Furthermore reduces trauma of the cornea and it reduces the loss of endothelial cells in comparison to conventional phacoemulsification.

**CROSS LINKING USING IONTOPHORESIS IN PEDIATRIC CASES: 2 YEARS FOLLOW UP**

L. Buzzonetti, G. Petrocelli

Ophthalmology Department, Bambino Gesù IRCCS Children's Hospital, Rome, ITALY

Purpose:

To report the results 2 years after transepithelial corneal cross-linking by iontophoresis of riboflavin performed in paediatric patients affected by keratoconus.

Methods:

Fourteen eyes of 14 paediatric patients (mean age 13.24 SD years; range, 10 to 18 years) were treated. The riboflavin solution was administered by iontophoresis for 5 minutes, then UVA irradiation (10mW/cm<sup>2</sup>) was performed for 9 minutes. Corrected Distance Visual Acuity (CDVA), spherical equivalent, refractive

astigmatism, simulated K, corneal coma, spherical aberration and high order aberrations for 5.0mm pupil and thinnest point were measured preoperatively and 3, 6, 12, 15 and 24 months postoperatively. The endothelial cell density was evaluated. The paired Student t test was used.

Results:

Two years after the procedure CDVA significantly improved ( $P < 0.05$ ). Spherical equivalent and refractive astigmatism as well as topographic and aberrometric data did not show significant changes. Also the mean thinnest point and the endothelial cell density unchanged. The OCT showed a not homogeneous but deep hyperreflective band with a fading effect extending through the anterior 180 $\mu$  of the cornea. No side effects were recorded.

Conclusion:

Transepithelial collagen cross-linking performed using iontophoresis, differently by other transepithelial techniques, seems to stop keratoconus progression over 2 years. However longest follow up and greatest samples of patients need to confirm these results.

#### NEW SURGICAL INSTRUMENTS FOR DMEK: PERSONAL TECNIQUE

A. Caporossi,

Unità Operativa Complessa di Oculistica, Dipartimento di Scienze Chirurgiche per le patologie della testa e del collo, Università Cattolica del Sacro Cuore Roma

Lamellar keratoplasty has had a major boost in recent years: on the one hand the deep lamellar anterior keratoplasty, in its variant "Big Bubble", and on the other hand the posterior lamellar keratoplasty, in the two variants DSAEK and DMEK. In the first, the DSAEK, there has been a real explosion for the ease of the technique and the

steadiness of results; in DMEK not only the preparation of the flap but also its fragility and delicacy have slowed the spread.

As always, the experience has allowed an evolution of the method and a substantial improvement of the technique.

The time and the adjustment phase of the flap still represent a unpredictable variant and, to try to obviate this and looking for a more defined standardization of the technique, I have drawn some instruments which facilitate this step with the help of the "Janach".

Two of these tools are irrigants instruments, which allow cutting and recovery of the Descemet-endothelium, and the third tool that facilitates the correct placement of the flap once inserted in the anterior chamber.

#### DSAEK EARLY GRAFT DISLOCATION IN SILICON OIL VITRECTOMIZED EYE

A. Caporossi, E. Favuzza, A. Miele, R. Mencucci

AOUC Careggi, Firenze, ITALY

Purpose:

We report a case of early DSAEK graft dislocation in a pseudophakic eye underwent several vitreoretinal surgeries, years before.

Methods:

A 78 year old man who had undergone previous pars plana vitrectomy and silicone oil for recurrent retina detachment (4 times).

The patient reported a rapid sight loss, with a pachimetry of 789 micron.

It was difficult to evaluate the anterior chamber before dsaek due to cornea haziness, there were no signs of residual silicon oil emulsion in anterior chamber. However in supine position, during the surgery, we noticed scattered silicon oil emulsion in anterior chamber. We tried to remove it by irrigation/aspiration, ending the surgery without complication. After 3 days the graft was detached. We rebubbled it after few days, making a careful removal of residual oil till it was possible. After 2 months from dsaek the graft is still attached.

Result:

After rebubbling and carefully silicon emulsion removal, the DSAEK graft was still attached and a rapid clearing of the cornea was obtained.

Conclusion:

Its mandatory to check the presence of fine silicon oil microemulsion in a vitrectomized eye before DSAEK and try to clean the anterior chamber as best as one can.

#### CORNEAL NEUROTISATION IN PATIENTS WITH TRIGEMINAL PALSY

P. Fogagnolo<sup>1</sup>, L. Tranchina<sup>1</sup>, A. Dipinto<sup>1</sup>, E. Vallenzasca<sup>1</sup>, S. De Cilla<sup>1,2</sup>, F. Biglioli<sup>3</sup>, F. Allevi<sup>3</sup>, L. Rossetti<sup>1</sup>

<sup>1</sup> Eye Clinic, Department of Medicine, Surgery and odontology, Ospedale San Paolo, University of Milan, Milan, ITALY, <sup>2</sup> Unit of Ophthalmology, Ospedale Maggiore della Carità, Novara, ITALY, <sup>3</sup> Maxillo-Facial Clinic, Department of Medicine, Surgery and Odontology, Ospedale San Paolo, University of Milan, Milan, ITALY

Purpose:

To present preliminary results of corneal neurotisation, a new surgical technique to manage trigeminal damage.

**Methods:**

10 patients with unilateral trigeminal damage and complete corneal anaesthesia were treated with the study technique. This is a combined maxillo-facial and ophthalmic surgery: through coronal incision, the contralateral supraorbital nerve was identified and main branches dissected right on the undersurface of the frontal skin. Nerves were tunneled over nasal bridge to reach a 10-mm-unilateral superior eyelid incision. Using Wright needle, distal nerves branches were retrieved in the superior conjunctival fornix. By means of conjunctivotomies, the nerves were tunneled and each distal branch was passed finally distributed and fixed by suture stitches at the four perilimbar points.

Patients were seen weekly during the first month, and monthly for one year. At each visit, slit-lamp evaluation of the anterior segment and Cochet-Bonnet esthesiometry in the four corneal quadrants were performed.

**Results:**

No major surgical complications occurred. Surgery was uneventful in all cases except one, on whom isolated branches of the supraorbital nerve were very thin and short.

During the first 4 postoperative months, anaesthesia was present in all cases; thereafter, sensitivity progressively recovered in 70% of patients. Maximal sensitivity was obtained after 6-9 months, and at 1 year it was normal in 40% of cases, who also developed spontaneous blinking.

**Conclusion:**

This technique may be effective in restoring corneal sensitivity and therefore ocular surface homeostasis in patients with trigeminal palsy.

**POST CATARACT SURGERY DRY EYE SYNDROME PREVENTION**

A. Franchini, L. Finocchio, I. Franchini

Clinica Oculistica - Università degli Studi di Firenze, Firenze, ITALIA

Tutta la chirurgia bulbare ma in particolar modo la chirurgia della cataratta può condizionare la produzione e la stabilità del film lacrimale, in alcuni casi aggravando una preesistente sindrome dell'occhio secco, in altri manifestandosi come sindromi neoinstate che in genere hanno una durata transitoria (2-3 mesi). Cinque anni fa abbiamo sottoposto a un gruppo di 1042 pazienti affetti da cataratta prima e dopo l'intervento un questionario ed analizzando le risposte abbiamo verificato che quasi un paziente su 5 è affetto da questa sindrome.

La sindrome da occhio secco postchirurgica può essere legata a varie cause: iposensibilità corneale dovuta alla denervazione causata dalle incisioni, utilizzo

di farmaci sia per uso sistemico che topico, malposizioni palpebrali, fattori strettamente connessi alla tecnica chirurgica utilizzata.

Molto importante pertanto appare la profilassi caratterizzata dalla preparazione della superficie oculare all'intervento e dalla pianificazione della chirurgia onde indurre il minor trauma possibile con conseguente contenimento della flogosi postoperatoria.

La terapia per i pazienti affetti da questa fastidiosa sindrome deve mirare da una parte ad un approccio sostitutivo la dove necessario e poi mirare ad una riduzione della infiammazione cercando allo stesso tempo di accelerare i processi di riparazione cellulare.

Cercando di combinare queste esigenze possono essere utili farmaci antinfiammatori sia steroidei che non per via topica che accanto ad un potente effetto antiinfiammatorio ed ad un alta penetrabilità in camera anteriore, garantiscano una riduzione della percentuale di rischio di aumento della tensione endoculare. Utile anche l'utilizzo di nuove formulazioni di lacrime artificiali capaci di garantire sia stabilità del film lacrimale che di incrementare la proliferazione e la migrazione delle cellule epiteliali così da riparare la superficie corneale e riempire le anomalie della incisione.

I risultati ottenuti sottoponendo un nuovo questionario ad un gruppo di pazienti in cui era stato seguito un preciso protocollo pre-intra e post operatorio atto a ridurre l'insorgenza di questa sindrome ha dimostrato un decremento dell'80% di nuovi casi.

**LIMBAL STEM CELL TRANSPLANT IN ALKALI CORNEAL BURN WITH MYCOTIC SUPERINFECTION: A GOOD IDEA?**

F. Franco , A. Miele , E. Favuzza , R. Mencucci

AOU Careggi, Clinica Oculistica, Firenze, ITALY

**Purpose:**

To describe the clinical course and discuss the treatment options in a case of alkali corneal burn with mycotic superinfection.

**Methods:**

A 42 years old patient underwent to slit lamp examination, visual acuity measurement, OCT Visante, anterior segment photography, amniotic membrane transplant, microbiological culture and evaluation by an infectiologist.

**Results:**

A corneal burn was observed all over the corneal surface in ODx, topical and systemic therapy were administered. An amniotic membrane transplant was

performed and then removed after two days because of lack of compliance. Later was detected an abscess and administered topical and systemic antifungal therapy. Conclusion:

The antifungal therapy resulted in healing of the infection. However, the wide extent of the caustication, the limbal cell loss and the complete corneal burn could lead to a limbal stem cell transplant.

#### **ANALYSIS IN VIVO AFTER DSAEK: CORRELATION BETWEEN VISUAL ACUITY, CORNEAL ABERRATIONS AND CONFOCAL MICROSCOPY FEATURES**

G. Gabbriellini, F. Fanucci, L. Martini  
U.O. Oculistica Universitaria, Pisa, ITALY

##### **Purpose:**

Often the excellent anatomic result does not correspond to a satisfactory visual recovery. The purpose of the study was to assess what factors could restrict the visual recovery and be predictive of poor functional outcome.

##### **Methods:**

This study included 20 eyes of 13 patients (M:F=2:18).

20 eyes were subjected to post-operative checks, 1 week, 1 month and 3 months after surgery. Selected patients were subjected to examination with the slit lamp, BCVA, optical pachymetry, confocal microscopy, Scheimpflug Camera, OCT of the anterior segment.

##### **Results:**

We find a significant improvement in BCVA at 1 week and 3 months and also between 1 month and 3 months. The central corneal thickness analysis shows a statistically significant reduction between the first week and 1 month, and stability between 1 month and 3 months. Among aberrometric values only anterior asymmetry and posterior Rms/a change statistically significantly. OCT examination of the anterior segment shows an interface depth unchanged.

Sub-epithelial haze reflectivity and interface haze reflectivity have a statistically significant reduction. Particles interface density has a statistically significant reduction in the first week and 3 months.

##### **Conclusion:**

The residual astigmatism, the sub-epithelial haze reflectivity, the interface haze reflectivity and the donor-recipient interface particles have an important role in achieving a good visual acuity. The confocal microscopy is able to identify subclinical corneal abnormalities in patients that do not have a good visual recovery.

#### **DRY EYE: ADVANTAGES OF NANO TECHNOLOGY SOLUTIONS**

C. Gagliano<sup>1, 2</sup>; R. Amato<sup>1, 2</sup>; A. Messina<sup>1</sup>; D. Rocca<sup>1</sup>

<sup>1</sup> Eye Clinic (Santa Marta Hospital) Catania University, Catania, Italy

<sup>2</sup> NEST (Neurovisual Science Technology) Catania, Italy

Under normal condition the human eye can hold very small amount of an ophthalmic solution; also, after a single blink the volume is reduced further through nasolacrimal drainage which cause the drug to be systemically absorbed across the nasal mucosa or the gastrointestinal tract. A significant systemic loss from topically applied drugs also occurs from conjunctival absorption into the local circulation. As a result, conventional therapy often is not successful because the patient is forced to frequent instillations of artificial tears.

The use of drug delivery such as liposomes, the ability to load them with antioxidant substances such as vitamins and aminoacids and the size reduction of the liposomes with nanotechnology, provides us the opportunity to improve the therapy of dry eye.

Nano-liposomes reconstitute the lipid film reducing evaporation. Spreading across the eyelid margin reduce friction with the ocular surface of the eye. In the presence of epithelial defects penetrate the corneal stroma causing an effect on the corneal nerve endings in addition to the epithelial restructuring effect.

#### **EFFICACY AND SAFETY OF A NEW DEVICE FOR EYELID HYGIENE IN PATIENTS WITH MEIBOMIAN GLAND DYSFUNCTION AND BLEPHARITIS**

D. Giammaria

AO Ospedali Riuniti Marche Nord, Pesaro, ITALY

##### **Purpose:**

To evaluate the efficacy and safety of a new jojoba oil-based device (Oftalderm Scrub, Biodue, Italy) for eyelid margins hygiene in patients with Meibomian gland dysfunction (MGD) and blepharitis.

##### **Methods:**

Nine patients with MGD (n=7) and staphylococcal blepharitis (n=2) were treated once daily for 4 weeks with Oftalderm Scrub. Patients were allowed to use their previous therapy for MGD and blepharitis. Standard Patient Evaluation of Eye Dryness (SPEED) questionnaire was used to record symptoms. Break-up time (BUT) was measured. Corneal staining, gland expression and eyelid margins aspect were evaluated and measured.

Results:

After 4 weeks, patients showed an improvement in the SPEED score ( $p=0.05$ ) and in clinical total score ( $p=0.001$ ). BUT had not changed significantly. Fifty-five percent of patients could reduce ( $n=2$ ) or stop ( $n=3$ ) their previous therapy for MGD and blepharitis and no patient had to increase it. No complication or side effects were observed.

Conclusion:

A daily use of Oftalderm Scrub has been proven safe and effective for eyelid margins hygiene in patients with MGD and staphylococcal blepharitis. More than half of patients reduced and even stopped their previous therapy for eyelid diseases.

**LONG TERM FOLLOW UP OF DMEK WITH OR WITHOUT SF6 TAONADE**

J. Güell

Autonoma University of Barcelona, Barcelona, SPAIN

Purpose:

To compare clinical outcomes using 20% sulfur hexafluoride (SF6) versus 100% air as a tamponade for graft attachment in Descemet membrane endothelial keratoplasty (DMEK).

Subjects: Pseudophakic patients with Fuchs' endothelial dystrophy (FED) or pseudophakic bullous keratopathy (PBK) that underwent DMEK using either 20% SF6 (42 eyes) or 100% air (39 eyes) tamponade between April 2010 and August 2011.

Methods:

A bimanual infusion technique was used to introduce and position the donor endothelium-Descemet membrane (EDM) graft tissue. Outcome measures were analyzed at the following timepoints: preoperatively, 3, and 6 months postoperatively, and 1, 2, and 3 years postoperatively.

Outcome measures were analyzed at the following timepoints: preoperatively, 3, and 6 months postoperatively, and at yearly intervals up to at least 3 years.

Main Outcome Measures: Corrected distance visual acuity (CDVA), manifest refraction, pachymetry, central endothelial cell counts (cECC), complications, and re-bubbling rates were evaluated and compared between the two groups.

Results:

Three years postoperatively, mean LogMar CDVA improved from  $0.48 \pm 0.45$  to  $0.04 \pm 0.23$  in Group 1 ( $P < 0.001$ ), and from  $0.67 \pm 0.45$  to  $0.09 \pm 0.13$  in Group 2 ( $P < 0.001$ ). Percentage of eyes with CDVA  $\geq 20/25$  was 85.71% (36/42 eyes) in Group 1, and 82.05% (32/39 eyes) in Group 2, which were no significantly different between groups ( $P > 0.05$ ). Mean preoperative cECC and at last follow-

up were: Group 1:  $2525 \pm 338$  cells/mm<sup>2</sup>, and  $1758 \pm 398$  cells/mm<sup>2</sup> (mean cell loss of 30% ( $\pm 11\%$ );  $p < 0.05$ ); and Group 2:  $2492 \pm 204$  cells/mm<sup>2</sup>, and  $1678 \pm 373$  cells/mm<sup>2</sup> (mean cell loss of 32% ( $\pm 13\%$ );  $p < 0.05$ ). Endothelial cell loss was similar in both groups ( $p > 0.05$ ). Intracameral air reinjection was needed in 1 case of Group 1 (2.38%), and in 5 cases of Group 2 (12.8%). The re-bubbling rate was significantly higher in Group 2 ( $p < 0.05$ ). No episodes of immunological graft rejection were documented.

Conclusions:

Although clinical outcomes and corneal endothelial cell loss were similar in both groups, tamponade with 20% SF6 yielded a significantly lower incidence of graft detachments that may warrant its routine use in DMEK. Longer-term, randomized studies are needed to fully recommend this approach.

**COMBINED FEMTOSECOND LASER ASSISTED INTRACORNEAL RINGS(ICR)IMPLANTATION AND CROSS LINKING FOR KERATOCONUS MANAGEMENT: SAFETY, VISUAL OUTCOME AND CORNEA**

O. Ibrahim<sup>1,2</sup>, M. Abdalla<sup>2</sup>, A. Elmassry<sup>1,2</sup>

<sup>1</sup> Alexandria University, Alexandria, EGYPT, <sup>2</sup> Roaya Vision Center, Alexandria, EGYPT

Purpose:

To evaluate safety, efficacy and corneal biomechanics change of combined intracorneal rings (ICR) implanted using femtosecond laser and cross linking in keratoconus patients.

Methods:

Prospective non comparative case series. Patients were treated with same setting ICR implanted by femtosecond laser and 5 minutes epi-off cross linking. UCVA, BSCVA, K reading, CH and CRF were measured in all cases before surgery and after 3, 6 months and 1 year of follow up of 1182 eyes of 713 keratoconus patients with moderate keratoconus.

Results:

Mean preoperative uncorrected visual acuity (UCVA), best spectacle corrected visual acuity (BSCVA), corneal curvature (K readings) were 0.2, 0.5 and 53 respectively. Mean corneal hysteresis (CH) and corneal resistance factor (CRF) were 6.7 and 7.1 respectively.

Conclusion:

ICR implanted using femtosecond laser and cross linking in keratoconus patients is a safe and effective procedure with long term stability and has a good impact on corneal biomechanics.

**LONG-TERM OUTCOMES OF EX-VIVO STEM CELL ALLOGRAFT TRANSPLANTATION (EXVSCALT) FOR OCULAR SURFACE FAILURE**

D. Lake<sup>1</sup>, M. Modell<sup>2</sup>, E. Sykakis<sup>1</sup>, N. Jordan<sup>1</sup>, S. Hamada<sup>1</sup>, P. Georgoudis<sup>1</sup>

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Limbal stem cell deficiency (LSCD) is due to severe corneal disease/damage to the limbal epithelial stem cell niche and loss of limbal barrier function. Such patients are poor candidates for conventional corneal transplants. Ex-vivo stem cell allograft transplantation (EXVSCALT) is an established treatment intervention to provide normal corneal epithelial phenotype cells for repairing the ocular surface. Short-term results have shown the procedure to be effective in restoring cornea phenotype epithelium. Long-term results, however, can vary considerably with some studies reporting less successful outcomes.

A case series of patients that underwent EXVSCALT at a tertiary cornea centre was conducted. Clinical data and various outcome parameters were collected from patient records. 41 patients with a median age of 44 years (range, 3-71) received a corneal graft. Mean follow-up time was 72.6±48.38 months (1-175). The number of eyes receiving a transplant was 51 (48 non-related cadaveric, 3 living-relative). The three living-relative allograft transplants were excluded. Survival rate of the 48 stem cell transplants was 84.09% (37 out of 44 eyes) at one year, 71.43% (30/42) at 2 years, 41.67% (15/36) at 5 years and 10.71% (3/28) at 10 years. Best-corrected logMAR visual acuity pre-operative was 1.6±1.81 (0.18-2.8) improving to 1.45±0.72 (0.2-2.8) at last follow-up appointment.

EXVSCALT provides medium-term ocular surface rehabilitation in selected LSCD aetiology groups while in high risk groups success rate is less. EXVSCALT provides the possibility of repeat procedure.

**TRANSEPIHELIAL CORNEAL COLLAGEN CROSS-LINKING BY IONTOPHORESIS FOR PROGRESSIVE KERATOCONUS IN CHILDREN AND ADOLESCENTS: TWO YEARS OUTCOMES**

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Purpose:

To study the progression rate of keratoconus and assess the clinical outcomes of Transepithelial collagen cross-linking by iontophoresis (I-CXL) of riboflavin in children and adolescents up to 2 years after treatment.

Methods:

I-CXL was performed in a series of 34 eyes of 40 patients with progressive keratoconus stage II-III of Amsler classification. Hypotonic riboflavin solution was administered for 5 minutes by iontophoresis, after which accelerated surface UVA irradiation was performed at a 5-cm distance for 9 minutes at 370 nm, 10 mW/cm<sup>2</sup>. Uncorrected visual acuity (UCVA), best spectacle-corrected visual acuity (BSCVA), refraction, central corneal thickness and K-max measurements were evaluated at baseline and at 1, 3, 6, 12 and 24 months.

Results:

BSCVA improved significantly at 3, 6, 12 and 24 months postoperatively (P < .05) All topographic parameters (including maximum keratometry) were stable during the follow-up, Minimum corneal thickness values were stable for up to 24 months postoperatively. One of the patients showed a progression of keratoconus for up to 24 months. No adverse side effects were reported. Endothelial cell counts did not change significantly (P > .05).

Conclusions:

I-CXL of riboflavin seems to be a safe and effective procedure in stabilizing the progression of this disease combined with significant improvement of BCVA in children and adolescents. Results up to 2 years postoperatively indicate the efficacy of I-CXL as a valid alternative for halting the progression of keratoconus while reducing postoperative patient pain, risk of infection, and treatment time in select patients.

**DMEK LEARNING CURVE: SINGLE EXPERIENCED SURGEON FIRST 30 CASES ANALYSIS**

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Moorfields Eye Hospital NHS Foundation Trust, London, UK

Purpose:

To report the clinical outcomes of “no-touch” DMEK and its complications during the learning curve of an experienced corneal surgeon.

Methods:

Prospective case series, single-surgeon, conducted at Moorfields Eye Hospital including 40 eyes that had undergone DMEK.

Results:

No intraoperative complications occurred.

Postoperative complications included 1) attached but upside down non-functioning graft (one graft) for which a secondary DMEK procedure had been performed; 2) 3 graft detachment for requiring secondary air bubble injection.

Conclusions:

DMEK is a feasible option to treat endothelial diseases. Donor preparation and graft insertion are relatively straightforward to learn for an experienced corneal surgeon.

**PTERYGIUM SURGERY AND SCLERAL CONTACT LENS**

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Purpose:

There are many different techniques for the surgical treatment of pterygium. The problem is the fact recurrences. The relapse rate normally exceed 20% in various surgical procedures. The transplant of the conjunctiva with the use of fibrin glue and a contact lens with Aloe significantly reduces relapse. The use of a scleral lens with Aloe, for its pharmacological characteristics of natural, in the post operative improves comfort and speeds healing.

Methods:

86 eyes of 74 patients who underwent surgery with fibrin glue were prospectively Studied, 54 of these with the application of a scleral contact lens and 30 without scleral contact lens, while 20 eyes of 16 patients who underwent surgery with sutures were evaluated retrospectively. Data included: age, gender, involved-eye, location, grade and pterygium invasion and post-operative complications. Patients were Followed for at least 1 year.

Result:

Among the 86 eyes underwent surgery with fibrin glue , 4 (4,6 %) had recurrence. The time to recurrence ranged 3-6 months. All recurrences had invasion to the limbus. No eye has undergone reoperation. Other complications include formation of granulomas in 1 case. 2 patients without the use of the scleral contact lens showed a partial detachment of the graft while patients with the scleral contact lens showed no complication of transplantation. In the suture group, 8 eyes (40 %) had recurrence.

It been assessed symptoms post operative. Of the 86 eyes with fibrin glue of which 45 (52.3 %) with scleral contact lens and 41 (47.7 %) without scleral lens. In the second group the patients with suture complained discomfort during blinking, while patients who had used the scleral contact lens not complain any disturbance.

The recurrence rate was statistically lower in the conjunctival glue compared with sutures.

Conclusion:

The use of fibrin glue as an alternative to sutures in pterygium surgery has been associated with good results and few complications. The application of scleral scleral lens significantly reduces the symptoms in the postoperative course.

**THE EFFECTS OF LIPOSOMAL SUSPENSION FOR THE TREATMENT OF DRY EYE SYNDROME**

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Purpose:

To investigate the short-term efficacy of a liposomal suspension (Lacrisek ofta mono) in the treatment of evaporative dry eye.

Methods:

15 patients with severe evaporative dry eye were included. Short-term dynamics of pre-corneal tear film before and after Lacrisek ofta mono administration were evaluated. The time-points of the study were: baseline (T0), minute 0 (T1), minute 10 (T2), minute 20 (T3), minute 60 (T4). At each time-point 3 movies and 3 sets of photographs were collected. Inter-blinking interval (IBI), break-up time (BUT), corneal exposed area and evaporation rate were assessed.

Results:

The IBI values at each time-point were: 10.32±3.07 (T0), 10.98±7.03 (T1, P=0.79), 12.90±4.94 (T2, P=0.03), 15.60±6.41 (T3, P<0.01), 15.04±3.27 (T4, P<0.01) seconds. BUT measurements at each time-point were: 3.5±2.0 (T0), 4.2±3.2 (T1), 9.3±4.0 (T2), 8.5±5.2 (T3) and 8.0±6.9 (T4) seconds (P<0.01).

At baseline, corneal exposed area was about 16%, 32%, 45% and 55% at 4, 8, 12 and 16 seconds, respectively. After Lacrisek instillation, a statistically significant reduction in corneal exposed area was shown at all observations within 1 hour: about 5% at second 0, 10% at second 4 and about 15% between second 8 and 16.

The evaporation rate was 3% per second at T0, 1.5% at T1 and 1% at T2, T3 and T4.

Conclusion:

Lacrisek ofta mono increased IBI by 50% compared to baseline with a peak at T3 and T4; this could be due to liposomes' stabilization role on the lipid layer of tear film. Lacrisek ofta mono administration guaranteed a BUT increase up to normal values at T4 and a corneal exposed area less than 15%, reducing the evaporation rate to 1%. Lacrisek ofta mono was shown to be an effective treatment of evaporative dry eye compared with T0.

**EPITHELIAL TRANSITION AFTER CULTURED STEM CELL GRAFTS: IMAGING BY IN VIVO CONFOCAL MICROSCOPY**

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**Purpose:**

Outcomes of limbal stem cells transplantation (LSCT) are usually assessed on subjective grading. The laser scanning in vivo confocal microscopy (IVCM) was demonstrated to diagnose of limbal stem cells deficiency (LSCD). IVCM offered the advantages of scanning of a much wider corneal area and the observing of deeper epithelial layers.

**Methods:**

IVCM scans were performed in patients after LSCT. At least 40 images from each area were obtained. The detection of transition of epithelial cells from the corneal to the conjunctival morphology (epithelial transition), was considered suggestive of the restoration of the limbal function and was graded as: (1) present, (2) partially present, and (3) absent.

**Results:**

13 patients with history of chemical burns leading to a diagnosis of LSCD underwent LSCT. IVCM scans were performed after 1 year. IVCM showed that 6 eyes (46.1%) exhibited corneal epithelium in central cornea and epithelial transition present in all the 4 quadrants in the peripheral cornea. 4 eyes (30.8%) obtained partial restoration of the corneal epithelium and showed an irregular mixed epithelium, made by both corneal and conjunctival cell types (partially present). In 3 eyes (23.1%) the epithelial transition was absent.

**Conclusions:**

IVCM allows a quick, low invasive, and repeatable real-time procedure to assess outcomes of LSCT and to define efficacy of treatment. Retrieval of epithelial transition is a convinced mark that the epithelial stem cells viability has been restored by the cell graft and that a renewed contact inhibition between corneal and conjunctival epithelia has been re-established.

**EPITHELIZATION PATTERNS IN EYES TRANSPLANTED WITH LIMBAL STEM CELLS GRAFTS**

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**Purpose:**

To monitor the progression of the regeneration of the corneal epithelium after cultured limbal stem cells grafts.

**Methods:**

In vivo confocal microscopy (IVCM) scans of the corneal surface were performed at 1 to 3 months interval during the 12-month post-operative follow-up period. We evaluate morphology of epithelia covering the corneal surface (corneal and conjunctival epithelia), the presence of goblet cells, stromal innervation, and inflammatory cells. Scans were taken throughout the central and paracentral cornea, and in the limbal-cornea area. At least 40 images from each area were obtained for each eye.

**Results:**

We examined 7 eyes of 7 patients by IVCM, and followed-up the presence of corneal and conjunctival epithelium over the corneal surface. We found several patterns of renewal epithelisation, e.g. islands of conjunctival tissue mixed to corneal epithelial cells or conjunctival and corneal epithelium establishing a well-defined border, with blocks of conjunctival epithelial cells mixed with corneal epithelial cells. Non-epithelial cell types were also identified. The presence of dendritic cells and cell types possible from the leukocytes lineage was identified in central cornea. Nerve analysis showed the absence of subbasal nerve in all patients. Palisades of Vogt were not detected in all patients.

**Conclusions:**

IVCM provides objective outcome measures of the corneal cells renewal pattern after LSCT. The monitoring of dendritic cells and leukocytes is strongly suggestive for alterations of the immune and inflammatory status. IVCM could be highly important during follow up to adjust anti-inflammatory therapy, one of the complication that can affect efficacy.

**CLINICAL APPLICATIONS OF TOPICAL NERVE GROWTH FACTOR (NGF) IN OCULAR DISEASES**

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Nerve growth factor (NGF), the founder and most well known member of the family of neurotrophins (NTs), is a pleiotrophic factor that extends its biological activity from the central and peripheral nervous systems to the immune, endocrine and visual systems. NGF affects surface resident cells (corneal and conjunctival epithelium, fibroblasts and endothelium), immune cells, sensory

nerves, tear production, but also retinal ganglion cells, photoreceptors and optic nerve. As a consequence, NGF is involved in several ocular diseases from the anterior to the posterior ocular segment with different etiopathology. During the last decade more than 100 patients with corneal ulcer induced by fifth nerve damage, herpetic infections, chemical burns, corneal surgery, topical anaesthetic abuse and diabetes were treated with murine NGF eye drop application. NGF topical therapy induced complete ulcer healing and a recovery of the corneal sensitivity, possibly providing a long term benefit to trigeminal innervation. However increasing evidence suggest a role of NGF also in chronic inflammatory conditions, such as allergic conjunctivitis and autoimmune corneal ulcers, in promoting corneal healing, and during infective keratoconjunctivitis such as herpes virus infection.

#### **CORNEAL NEOVASCULARIZATION: TREATMENTS**

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Chronic and persistent stimuli play a crucial rule in upregulation of neoangiogenesis, resulting in pathological corneal neovascularization (CoNV). CoNV predisposes the cornea to inflammation, lipid exudation, scarring. We review contemporary medical treatments (as steroids, antivascular endothelial growth factor agents, and cyclosporine), and surgical treatments (as lasers, superficial keratectomy, and fine needle diathermy).

#### **PREPARATION OF LARGE GRAFTS FOR ENDOTHELIAL KERATOPLASTY**

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Purpose:

To describe a technique to achieve a large thin posterior lamellar graft for endothelial keratoplasty in order to increase the amount of peripheral endothelium that is transplanted.

Methods:

After thinning of the donor cornea, the anterior 350um of corneal stroma was removed with a microkeratome. A manual lamellar dissection was then

performed to remove the remaining anterior peripheral circumferential margin of donor tissue. A 9.5mm graft was then trephined from the endothelial surface, inserted into the anterior chamber and tamponaded against the recipient's bared posterior cornea with air. Cord lengths and sag heights of the transplanted tissue were measured using anterior segment OCT.

Results:

Twenty-four patients underwent this modified technique. All patients had well-attached endothelial grafts with the graft edge achieving good clearance from the peripheral iris and anterior chamber angles. Cord lengths of the graft inside the eye were reduced due to the increased radius of curvature of the posterior corneal surface. Central and peripheral graft thickness were 100-150um and 180-200um, respectively.

Conclusions:

The modified technique reduces the thickness of the peripheral cornea outside of the region removed by the automated trephine enabling larger trephine sizes to be used. A larger graft is expected to provide approximately 10-20% more transplanted endothelial cells.

#### **VITAMIN A DEFICIENCY: CASE SERIES**

P. Rubino

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To report 3 cases of Italian patients referred for dry eye sensation and red eye in both eyes associated to clinical manifestations of Vitamin A deficiency, including xerosis, keratomalacia and Bitot's spots.

Methods:

Oral Vitamin A were given to patients who presented with hypovitaminosis A.

Results:

All patients were found to have hypovitaminosis A on biochemical testing and responded dramatically to oral vitamin A supplementation, resulting in an improved final visual outcome.

Discussion:

This series demonstrates that prompt recognizing and treatment of xerophthalmia can lead to rapid recovery and avert significant visual morbidity. The prevalence of xerophthalmia is likely to increase in the developed world in patient with gastro-intestinal diseases with malabsorption and in patients who had undergone gastric bypass surgery.

**CROSS-LINKED HYALURONIC ACID TEARS ADVANTAGE**

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In this communication I will talk about the advantages of a crosslinked hyaluronic acid, compared to linear hyaluronic acid (HA), showed by a number of in vitro results that can be related to the in vivo performance of this eye surface lubricant. Typical HA-based tear supplements have been a simple solution of high molecular weight, low concentration HA. However, by covalently crosslinking HA leads to a compound more resistant to physical and chemical harms, such as temperature and the action of degradative enzymes. In fact, the crosslinking of HA preserves the molecular weight of HA, increases stability, and improves viscoelasticity properties with beneficial effects on the extension of the contact time of the HA with the ocular surface. Moreover, crosslinked HA showed an higher resistance to hyaluronidase IV, and hence a reduced risk of formation of shorter break-down products that can activate pro-inflammatory intracellular signaling effects. Crosslinked HA was found to have also different rheological behavior than solutions of linear HA. We are conducting several in vitro studies on human donor corneas, not suitable for transplantation, by the use of an experimental model of corneal epithelium regeneration based on the measure of the speed of corneal cells migration from peripheral to central cornea after scraping of the surface. The evaluation of the beneficial effects of ophthalmic solutions with crosslinked HA, compared to linear HA, on the healing ability of the corneal epithelium, can provide an evidence on the efficacy and safety of crosslinked HA in the maintenance of the homeostasis of the corneal epithelium in vivo.

**EYE BANKING AND NEW FRONTIERS OF EK**

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The primary activity of the eye banks is to retrieve, evaluate, test and distribute corneas suitable for transplantation to ophthalmic surgeon. In recent years, the revival in the surgical techniques for keratoplasty has been associated also with a new operational modality for eye banking, that has resulted in the definition of an even more direct role for the eye bank in support of the surgeon. In particular, The Veneto Eye Bank has specialized in the preparation of various

types of corneal tissues, such as pre-cut tissue for DSAEK, pre-loaded lenticules for posterior keratoplasty (for performing DSAEK and UT-DSAEK), and pre-stripped endothelial membranes, for the carrying out of DMEK surgery. In this study we report the results of the development of a device for the transport of the pre-loaded corneal lenticules for EK, the phase of the surgical validation, initial data relating to ongoing studies on the preparation of pre-loaded membranes for DMEK, potential new developments in corneal processing techniques in relation to the efficacy and safety of corneal transplantation.

**COLLAGEN CROSS LINKING: EPI-OFF VS EPI-ON**

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Corneal collagen cross-linking (CXL) with riboflavin and ultraviolet A (UVA) is a technique to strengthen corneal tissue using riboflavin as a photosensitizer and UVA to increase the formation of intra- and inter-fibrillar covalent bonds by photosensitized oxidation. Today, CXL is limited to eyes with a corneal thickness of at least 400 μm due to concerns about the cytotoxic effect on the endothelium, crystalline lens, and other intraocular tissues. This threshold has limited its performance in some eyes with advanced stages of corneal ectasia. The downside of the current pachymetric limitation is that patients with keratoconus or keratectasia often have corneas that are thinner than the 400 μm threshold. Transepithelial CXL, CXL with customized pachymetric-guided epithelial debridement preserving the epithelium in thinner corneal regions, and the concept of iatrogenic corneal swelling before CXL application have been developed as alternative techniques for thin corneas. The theoretical basis for transepithelial CXL presents 2 major challenges: corneal epithelium plays a role as barrier to UVA penetration, due to a significantly high absorption coefficient in the ultraviolet (UV) spectra, and the difficulty of penetration of a hydrophilic macromolecule such as riboflavin (molecular weight 376.37 g/mol) through corneal epithelium. Ocular iontophoresis uses movement of ions under an electric field to apply riboflavin (-) to the stroma through the epithelium, allowing the riboflavin penetration into the stroma. In our experience, the application of transepithelial CXL using riboflavin with substances added to enhance epithelial permeability and using iontophoresis did not alter the epithelial and endothelial function, showing a normal expression of Connexin-43, and keratocytes appeared to be regularly arranged and normally distributed throughout the stroma, as shown by CD-34 immunoreactivity, even in very thin keratoconic corneas.

**CONFOCAL SCANNING LASER MICROSCOPY IN DRY EYE SYNDROME PATIENTS TREATED WITH TOPICAL CYCLOSPORINE A 0,05%**

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**Purpose:**

To analyze in vivo morphology of corneal cells and nerves in dry eye syndrome associated with primary (SSI) and secondary (SSII) Sjogren's syndrome and to study changes after treatment with cyclosporine 0.05%.

**Methods:**

80 patients with diagnosed SS according to the American and European Criteria were studied. Patients included in the study were treated with topical cyclosporine 0.05% for six months. Patients underwent slit lamp examination, tear film break up time (TFBUT), fluorescein staining, lissamine green staining, Ocular Surface Disease Index (OSDI) and confocal microscopy. The time of evaluation was at baseline, and after one, three and six months. Confocal microscopy was used to investigate epithelial cellular density, keratocytes activation and sub-basal plexus morphology (number of sub-basal nerve, grade of nerve reflectivity and grade of nerve tortuosity).

**Results:**

A total of 80 patients completed the study. After six months OSDI, BUT, fluorescein and lissamine green staining showed an improvement clinically significant compared to baseline. The density of the superficial epithelial cells was  $1969,50 \pm 85,35$  cell/mm<sup>2</sup> at baseline compared to  $4881,18 \pm 175,66$  cell/mm<sup>2</sup> after six months ( $P < 0,01$ , ANOVA); the average grade of keratocytes activation was  $3,45 \pm 0,08$  at baseline and  $1,55 \pm 0,09$  at six months ( $p < 0,01$ , ANOVA); the average grade of number of sub-basal nerves was  $5,27 \pm 0,16$  at baseline and  $4,58 \pm 0,31$  at six months ( $P < 0,001$ , ANOVA); the average grade of nerve reflectivity was  $3,70 \pm 0,07$  at baseline and  $1,60 \pm 0,12$  at 6 months ( $P < 0,001$ , ANOVA); the average grade of nerve tortuosity was  $3,81 \pm 0,10$  at baseline and  $2,19 \pm 0,21$  at six months ( $p < 0.001$ , ANOVA).

**Conclusion:**

Cyclosporine therapy is effective to control symptoms and signs of dry eye syndrome. Confocal microscopy may be an important tool to evaluate morphological alterations in dry eye syndrome but also to underline the presence of inflammation during cyclosporine treatment.

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**C.B. MEDICAL**

**C.S.O.**

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**E. JANACH**

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