

NIIOS Newsletter

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REFERRALS TO MELLES CORNEA CLINIC ROTTERDAM

For referrals to Melles Cornea Clinic Rotterdam, please use the referral form enclosed, or download it from www.nijos.com.

Please fax the referral form to +31 10 297 4440 and one of our international secretaries will make further arrangements.

To contact us by e-mail, please contact us at info@corneaclinic.nl.

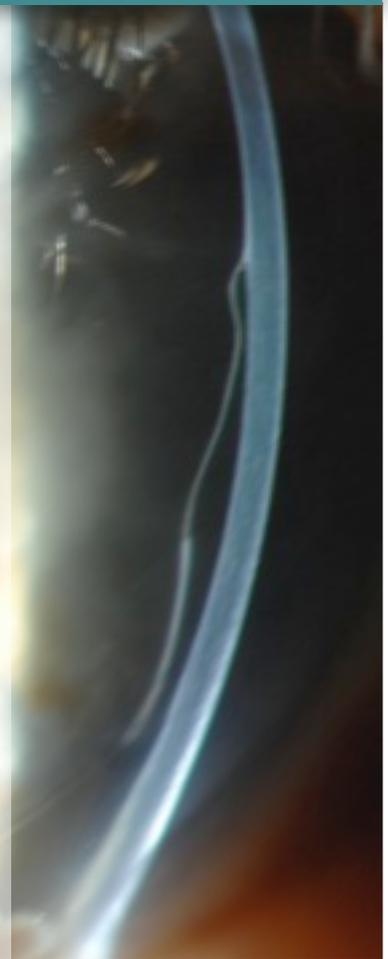
Plot thickens

Rotterdam mystery still not solved

Since 1998, NIIOS has introduced various concepts for endothelial keratoplasty for management of corneal endothelial disorders. A first concept was initially popularized as 'deep lamellar endothelial keratoplasty' (DLEK). A second concept in which an unsutured posterior graft is positioned onto the recipient posterior stroma after a descemetorhexis, is now worldwide adapted as 'Descemet stripping (automated) endothelial keratoplasty' (DSEK/DSEK). Further refinement of the technique resulted in a third concept that allows for selective transplantation of a donor Descemet membrane, now referred to as 'Descemet membrane endothelial keratoplasty' (DMEK).

However, in recent years, clinical observation at NIIOS suggested that the entire concept of performing a 'keratoplasty' to manage corneal endothelial disease may have to be reconsidered. The objective of all keratoplasty procedures today - either penetrating or endothelial keratoplasty techniques - is to surgically replace diseased host tissue by healthy donor tissue, in the best anatomical fashion. However, eyes that showed graft detachment after DMEK for Fuchs endothelial dystrophy, consistently showed 'spontaneous corneal clearance'. Despite the presence of a malpositioned and therefore non-functional graft, the transplanted corneas obtained complete transparency with pachymetry values returning to normal.

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Biomicroscopy of a cornea three months after DMEK. Although the Descemet graft is only attached in the upper quadrant, and clearly detached from the pupil downwards, the cornea shows recovery of transparency over the detached area.

Two-day advanced keratoplasty wetlab courses in Rotterdam

Deep anterior lamellar keratoplasty (DALK)
Descemet membrane endothelial keratoplasty (DMEK)

Each course is scheduled on a Tuesday/Wednesday. On Tuesdays, the course participants join live surgery sessions; on Wednesday, various techniques are practised during educational wetlab sessions and patient demonstrations.

Further information and applications: dekort@nijos.com

- ☞ DALK/DMEK course: April 9/10, 2013
- ☞ DALK/DMEK course: May 28/29, 2013
- ☞ DALK/DMEK course: October 1/2, 2013
- ☞ DALK/DMEK course: November 5/6, 2013



Cornea & Research fellows 2012/2013



Left-to-right: Jack Parker, USA; Lamis Baydoun, Germany; Javier Cabrerizo, Spain; Marina Rodriguez Calvo de Mora, Spain.

NIOS scientific articles 2012/2013

- ♦ Yeh RY, Quilendrin R, Musa FU, Liarakos VS, Dapena I, Melles GRJ. Predictive value of optical coherence tomography in graft attachment after Descemet membrane endothelial keratoplasty. *Ophthalmology* 2013;120:240-5.
- ♦ Liarakos VS, Dapena I, Ham L, van Dijk K, Melles GRJ. Intraocular graft unfolding techniques in Descemet membrane endothelial keratoplasty (DMEK). *JAMA Ophthalmol* 2013;131:29-35.
- ♦ Quilendrin R, Höhn H, Tse WHW, Chi H, Dapena I, Ham L, Oellerich S, Melles GRJ. Do we overestimate the endothelial cell 'loss' after Descemet membrane endothelial keratoplasty? *Curr Eye Res.* 2013;38:260-5.
- ♦ van Dijk K, Ham L, Tse WHW, Liarakos VS, Quilendrin R, Yeh RY, Melles GRJ. Near complete visual recovery and refractive stability in modern corneal transplantation: Descemet membrane endothelial keratoplasty (DMEK). *Cont Lens Anterior Eye* 2013;36:13-21.
- ♦ Quilendrin R, Yeh RY, Dapena I, Ham L, Dirisamer M, van Nickerk J, Melles GRJ. Large-diameter Descemet membrane endothelial keratoplasty in buphthalmic eyes. *Cornea*. Accepted.
- ♦ Salouti R, Masoumpour M, Nowroozzadeh MH, Zamani M, Ghoreyschi M, Melles GRJ. Changes in corneal endothelial cell profile measurements after Deep anterior lamellar keratoplasty (DALK) for keratoconus. *Cornea*. Accepted.
- ♦ Dirisamer M, Parker J, Naveiras M, Liarakos VS, Ham L, van Dijk K, Melles GRJ. Identifying causes for poor visual outcome after DSEK/ DSAEK following secondary DMEK in the same eye. *Acta Ophthalmol.* 2013;91:131-9.
- ♦ Parker J, Parker JS, Melles GRJ. Descemet membrane endothelial keratoplasty (DMEK): A review. *US Ophthalmic Review*. Accepted.
- ♦ Groeneveld-van Beek EA, Lie JT, van der Wees J, Bruinsma B, Melles GRJ. Standardized 'no-touch' donor tissue preparation for DALK and DMEK: Harvesting undamaged anterior and posterior transplants from the same donor cornea. *Acta Ophthalmol.* 2013;91:145-50.
- ♦ Bruinsma M, Lie JT, Groeneveld-van Beek EA, Liarakos VS, van der Wees J, Melles GRJ. Are polymegethism, pleomorphism, and 'poor swelling' valid discard parameters in immediate post-mortem evaluation of human donor corneal endothelium. *Cornea* 2013;32:285-9.
- ♦ Musa FU, Cabrerizo J, Quilendrin R, Dapena I, Ham L, Melles GRJ. Outcome of phacoemulsification after Descemet membrane endothelial keratoplasty (DMEK). *J Cataract Refr Surg.* Accepted.
- ♦ Dapena I, Tong CM, Tse WHW, Chi H, Parker J, Ham L, Melles GRJ. Endothelial cell density after Descemet membrane endothelial keratoplasty: 1-5 year follow-up. *Am J Ophthalmol* 2012;154:762-3.
- ♦ Tong CM, Melles GRJ. Where would endothelial keratoplasty be going: from DSAEK to DMEK to DMET? *Can J Ophthalmol* 2012;47:197-200.
- ♦ Parker J, Melles GRJ. Graft detachment after Descemet membrane endothelial keratoplasty. *Cataract Refract Surg Today* 2012;April:38-9.
- ♦ Dapena I, Yeh RY, Quilendrin R, Melles GRJ. A surgical step to facilitate phacoemulsification after Descemet membrane endothelial keratoplasty (DMEK). *J Cataract Refr Surg* 2012;38:1106-7.
- ♦ Dirisamer M, Yeh RY, van Dijk K, Ham L, Dapena I, Melles GRJ. Recipient endothelium may relate to corneal clearance in Descemet membrane endothelial transfer (DMET). *Am J Ophthalmol* 2012;154:290-6.
- ♦ Dieleman M, Wefers Bettink-Remeijer M, Jansen J, et al. High incidence of adverse reactions to locoregional anaesthesia containing hyaluronidase after uneventful ophthalmic surgery. *Acta Ophthalmol* 2012;90:e245-6.
- ♦ Parker J, Dirisamer M, Naveiras M, Tse WHW, van Dijk K, Frank LE, Ham L, Melles GRJ. Outcome of Descemet membrane endothelial keratoplasty in phakic eyes. *J Cataract Refr Surg* 2012;38:871-7.
- ♦ Naveiras M, Dirisamer M, Parker J, Ham L, van Dijk K, Dapena I, Melles GRJ. Causes of glaucoma after Descemet membrane endothelial keratoplasty (DMEK). *Am J Ophthalmol* 2012;153:958-66.
- ♦ Dirisamer M, van Dijk K, Dapena I, Ham L, Oganeyan O, Frank LE, Melles GRJ. Prevention and management of graft detachment in Descemet membrane endothelial keratoplasty. *Arch Ophthalmol* 2012;130:280-91.
- ♦ van Luijk CM, Bruinsma M, van der Wees J, Lie JT, Ham L, Melles GRJ. Combined chlorhexidine and PVP-I decontamination of human donor eyes prior to corneal preservation. *Cell and Tissue Banking* 2012;13:333-9.
- ♦ Dirisamer M, Ham L, Dapena I, van Dijk K, Melles GRJ. Descemet membrane endothelial transfer (DMET): 'Free floating' donor Descemet implantation as a potential alternative to 'keratoplasty'. *Cornea* 2012;31:194-7.

These findings indicate that the endothelium has the capacity for massive migration, in order to repopulate the denuded recipient posterior stroma (after initial descemetorhexis). Interestingly, spontaneous clearance does not seem to occur in eyes operated on for bullous keratopathy. If so, endothelial migration or regeneration depends on the indication for surgery. And if that is true, it would strongly suggest that the host endothelium is involved. This would in turn also correspond with the endothelial healing patterns observed (from the corneal periphery toward the center), and it would better explain the endothelial cell densities observed.

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Specular microscopy image of a newly formed endothelial layer after DMET



If the host endothelium is capable of restoring corneal clarity in Fuchs endothelial dystrophy, this would allow for different surgical approaches, now tentatively referred to as Descemet membrane endothelial transferral (DMET) and graft mediated endothelial stimulation (GMES).

Dirisamer M, Yeh RY, van Dijk K, Ham L, Dapena I, Melles GRJ. Recipient endothelium may relate to corneal clearance in Descemet membrane endothelial transfer (DMET). *Am J Ophthalmol* 2012;154:290-6.



Isabel Dapena and Lisanne Ham successfully defended theses on DMEK
Two NIOS staff members receive PhD degree cum laude in Spain

Underneath the overwhelming Spanish sun in Alicante, two NIOS-stars, Isabel Dapena and Lisanne Ham, were shining brighter during their thesis defence, with Gerrit Melles and Jorge Alió y Sanz as promoters. In front of committee, chaired by Gernot Duncker, and with Miguel Angel Teus Guezala, Jaime Javaloy, Rafael Barraquer and Angel Ramón Gutiérrez Ortega as members, Lisanne Ham presented her work on "DMEK: donor tissue preparation and clinical outcomes" (16 peer reviewed articles), and Isabel Dapena on "DMEK: surgical technique, results and complications" (15 peer reviewed articles, two book chapters)". Both Isabel and Lisanne received their PhD 'cum laude'.





Martin Dirisamer in front of his award winning poster



Fayyaz Musa in front of his award winning poster

DMEK and DMET receive a large podium at the 2012 American Association of Ophthalmology NIIOS fellows score at 2012 AAO meeting

At the 2012 AAO meeting, four former NIIOS fellows gave their lectures or presented their posters on Descemet membrane endothelial keratoplasty (DMEK) and Descemet membrane endothelial transfer (DMET). The latter technique may be a new

treatment option in Fuchs endothelial dystrophy. Instead of positioning a graft against the posterior corneal surface, after a central descemetorhexis, (slightly modified) donor tissue is merely injected into the recipient anterior chamber. Then, 'spontaneous' clearance of the transplanted cornea is awaited. As such, the entire concept of a 'keratoplasty' as we know it today could disappear, since it is no longer the aim of the intervention to surgically replace diseased tissue by donor tissue.

Two of the three NIIOS posters received a best poster award.



Dr Vasilis Liarakos during his lecture at the AAO



Twilight impression of Chicago, hosting the AAO in 2012



Dr Melles and Dr Oganessian with some of the Russian DMEK patients

In Europe, DMEK slowly becomes preferred over DSAEK Large DMEK series in Moscow

At the ROF-meeting in Moscow, the question of making the switch from DSAEK to DMEK proved a main topic. But the true highlight of the meeting was a huge series of DMEK patients operated on by Dr Oganessian. Because of the language barrier, most patients expressed themselves with 'thumbs up', that seemed a typical Russian gesture meaning 'my visual acuity is 20/20'. And when Dr Oganessian suggested to make a group picture in front of the Kremlin, the thumbs were raised again. Although his sweater may suggest otherwise, the buildings in the background are not located in "Chicago".

A patient tells his tale...

The American ~~cream~~ DMEK

In November 2011, Mr. Greenberg, a 60-year-old attorney in New York, underwent a Descemet membrane endothelial keratoplasty (DMEK) for Fuchs endothelial dystrophy, at the Melles Cornea Clinic.

How did you manage before the operation?

“Life before the DMEK surgery had gotten rather precarious. My wife and I love to travel and particularly enjoy Europe and the Middle East. Race car driving, downhill skiing, swimming and sailing are among my vision intensive interests providing regular breaks from my work. Then I was diagnosed with Fuchs dystrophy, and I became increasingly sensitive to hot and humid weather. During recent summers I would sometimes have to wait until tea-time before the fogginess passed. I kept a magnifying glass at hand for reading, I was tripping over curbs and missing stairs, and night driving became a big problem.”

Why did you choose a treatment at Melles Cornea Clinic in Rotterdam?

“Six years ago my ophthalmologist advised me to have a transplant. At that time New York doctors were just beginning to perform DSAEK (ed: an earlier lamellar technique developed by NIIOS). I was advised that my lamellar transplant might very well end up becoming a full thickness transplant. Therefore, I chose to wait and will be forever grateful that I did. I joined special interest groups for Fuchs on the internet, and followed up with my own web-based research, and became aware of NIIOS and the groundbreaking work of Dr. Melles. What appealed to me immediately was his priority to preserve, as much as possible, the integrity of the eye itself by replacing only the diseased tissue while leaving the healthy tissue intact.”

“While traveling to Rotterdam might seem a big step it was an easy choice once I weighted the medical and personal considerations. I appreciated Dr. Melles’ techniques have now become the gold standard of treatment throughout the world. The likelihood of DMEK providing faster recovery, better vision and less probability of rejection made this the procedure of choice for me. Who better to perform it than its pioneer? In the US, surgeons believe very early cataracts should be removed in any patient over 50. Dr. Melles told me I would probably have better vision if I kept my natural lenses. Again, his respect for not tampering, unnecessarily, with the anatomy I was born with, was much appreciated. On a personal note Dr. Melles, along with the entire NIIOS team, inspired my confidence and trust in a way I did not experience elsewhere.”

How was the surgery?

“Easier than I anticipated. The staff greeted me at the door of the operating theatre with warmth and kindness, and Dr.



Mr. Greenberg

Melles reassured me and we have been chatting throughout the entire procedure. The time passed quickly and without any pain. During the evening hours, I received a phone call from the clinic to check on me, and everything continued to progress smoothly when the eye shield was removed the next morning. After just a few days my eyesight was sharper and brighter than it had been in many years.”

How was the postoperative course and your recovery?

My eye continued to improve during the first six weeks after the surgery and appears now settled at 20/25. It was only then that I fully realized how my vision had deteriorated over the years. Colors were brighter and details astounding; threads in a towel, individual hairs on people’s heads, wood grain, etc. There is no more need to have the sun at my back when talking to people. Before surgery I lost all details of their faces in the shadows. Driving is fun again - even at night. I look forward to my second DMEK. However, it is not urgent because my “new” eye has raised the level of my total vision. My brain has adjusted about 99% to the differences between my eyes. Life is good! “

What is your general impression of Melles Cornea Clinic Rotterdam?

“My preparation and decision making process were thorough and my expectations were met. I recommend the Melles Cornea Clinic to others. Every contact I had over the phone, email and in person with office managers, technicians, fellows and Dr. Melles were considerate, helpful and respectful. The personal access and phone contact after surgery was very much appreciated.

The Melles Research Fund is most grateful for Mr. Greenberg’s generous donation to the NIIOS research program.



Laurence Frank

In the past decade, the NIIOS devoted a larger part of its resources to improvement of ophthalmic surgical techniques and prevention of complications, by monitoring the clinical outcome of all surgeries. Although successful from a clinical point of view, this approach continues to increase the overall costs of our clinic. The number of staff members assigned to the monitoring process is steadily growing with the cumulative number of patients, and complications that are avoided by technique adjustments are not eligible for reimbursement.

To cover these additional costs, the ‘Melles Research Fund’ was founded. If you are interested in supporting the NIIOS R&D program, please contact Laurence Frank at L.Frank@nijos.com



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