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/DSAEK). 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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NETHERLANDS INSTITUTE FOR INNOVATIVE OCULAR SURGERY

Cornea & Research fellows 2012/2013

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

NIiOS scientific articles 2012/2013


Quilodrino R, Yeh KY, Dapena I, Ham L, Dirisamer M, van Nickerk J, Melles GRJ. Large-diameter Descemet membrane endothelial keratoplasty in buphthalmic eyes. Cornea. Accepted.


Parker J, Parker JS, Melles GRJ. Descemet membrane endothelial keratoplasty (DMEK): A review. US Ophthalmic Review. Accepted.


Dapena I, Yeh KY, van Dijk K, Ham L, Dapena I, Melles GRJ. Recipient endothelium may relate to corneal clearance in Descemet membrane endothelial keratoplasty (DMET) and graft mediated endothelial stimulation (GMES).

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 closure 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.

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 (GAMES).


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

Underneath the overwhelming Spanish sun in Alicante, two NIiOS-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 Guzela, Jaime Javaloy, Rafael Barraquer and Angel Ramon Gutierrez 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’.
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.

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 Oganes Oganesyan. 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 Oganesyan 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”.

Dr Melles and Dr Oganesyan with some of the Russian DMEK patients
A patient tells his tale...

The American Dream 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 foginness 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 the eye itself by replacing only the diseased tissue while leaving the healthy tissue intact.”

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. 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.

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@niios.com.