



## STANDARDIZED 'NO TOUCH' DMEK TECHNIQUE

Fast and full visual rehabilitation - Efficient use of donor tissue - Anatomical restoration of the cornea - Refractive neutral

"For advanced DMEK surgery I focus on D.O.R.C. Instruments."  
Dr. Gerrit Melles



## STANDARDIZED "NO TOUCH" DESCMET MEMBRANE ENDOTHELIAL KERATOPLASTY (DMEK) 80% OF PATIENTS AT $\geq 0.8$ ( $\geq 20/25$ ) AT 6 MONTHS

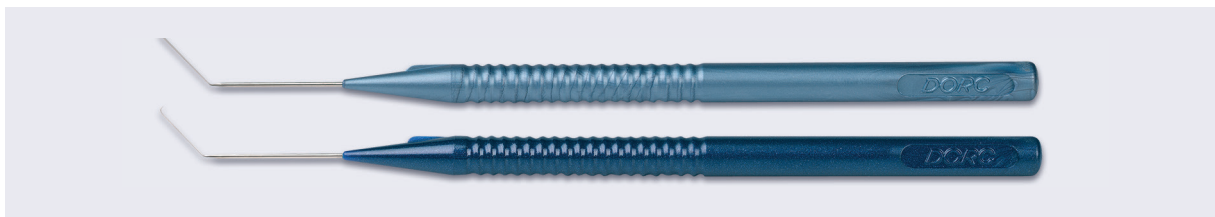
- After its introduction one decade ago by the Netherlands Institute for Innovative Ocular Surgery (NIIOS) in Rotterdam, endothelial keratoplasty has evolved toward selective replacement of the Descemet membrane, referred to as 'Descemet membrane endothelial keratoplasty' (DMEK).
- Both the surgical steps for preparation of the donor tissue, ie harvesting the donor Descemet membrane, as well as the operative procedure, have been thoroughly standardized.
- To optimize the clinical outcome, and to avoid the risk of tissue damage and perioperative complications, the procedure can be performed as a completely 'no touch' technique.
- To enable surgeons to perform standardized 'no touch' DMEK, a 'DMEK donor tissue preparation set' and a 'DMEK surgical instrument set' were designed and developed in close collaboration with Dr. Gerrit Melles. Prepared donor Descemet-rolls can be ordered from Amnitrans Eyebank Rotterdam.

## DMEK INSTRUMENTS

### 50.2200

#### DMEK Surgical Disposable Set

- Curved pipette for graft loading and anterior chamber insertion.
- Dual luer-lock connector.
- Straight glass pipette incl. balloon for graft rinsing.
- 5 ml. syringe with luer-lock (2x).
  - 1 x for graft insertion.
  - 1 x for BSS.
- 1 ml. syringe (air injection).
- 23G "Stab" knife (side ports).
- 27G Blunt cannula (BSS).
- 30G Bent cannula for air injection.
- (Box/3, sterile)



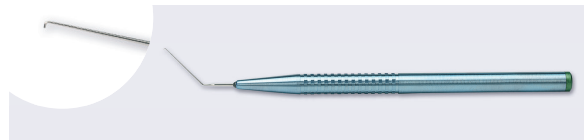
### 50.213D

Disposable Melles DMEK Scraper Set. Style 1: 45° / Style 2: 90° (Set/2, sterile)



50.2201

DMEK Sinskey Hook Up



50.2202

DMEK Sinskey Hook Down



50.2203

DMEK Graft Manipulation Forceps with extra fine tips for intraocular and extraocular unrolling of the graft



50.2210

Disposable reversed Sinskey hook with irrigation

## INSERTION OF THE DMEK GRAFT

### A and B

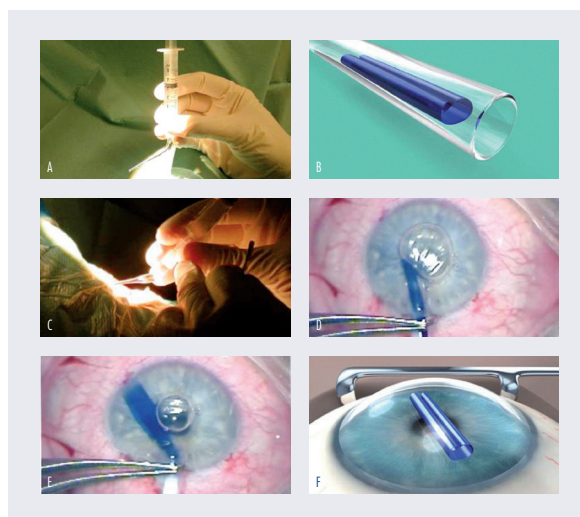
After loading the graft, the glass injector is attached to a 5 ml. syringe.

### C and D

The position of the double roll, which should be facing up inside the injector, is checked under the surgical microscope, and the injector is positioned into the main incision to insert the DMEK roll into the recipient anterior chamber.

### E and F

After insertion, the double roll should still be facing up. The endothelium is located at the outer surface of the DMEK graft.



## CENTERING AND UNFOLDING OF THE DMEK GRAFT

### A

A small air-bubble is positioned in between the 'double-rolls' of the DMEK-graft and by applying gently strokes with the cannula onto the outer corneal surface, the DMEK-graft is rotated.

### B

The air bubble is enlarged to further unroll the DMEK-graft, and using the cannula at the outer corneal surface, the graft is centered.

### C

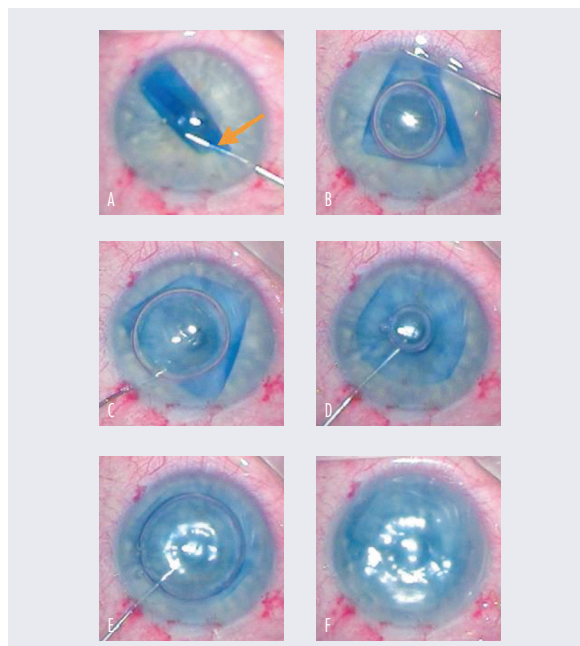
Then the air bubble is enlarged to completely unfold the DMEK-graft, and to position it onto the iris.

### D and E

After approximately ten seconds, the air bubble is aspirated and the cannula is positioned underneath the graft to inject air at the pupillary margin (air in between iris and graft).

### E and F

Once completely unfolded, the anterior chamber is filled with air for approximately 45-60 minutes.



# STANDARDIZED “NO-TOUCH” TECHNIQUE FOR DESCemet MEMBRANE ENDOTHELIAL KERATOPLASTY

Isabel Dapena, MD; Kyros Moutsouris, MD; Konstantinos Droutsas, MD, PhD; Lisanne Ham, MSc; Korine van Dijk, MSc; Gerrit R. J. Melles, MD, PhD

We describe a standardized technique for “no-touch” isolated Descemet membrane transplant, ie, Descemet membrane endothelial keratoplasty (DMEK).

All essential steps, including patient preparation and descemetorhexis as well as DMEK graft implantation, orientation, unrolling, centering, appositioning, and fixation, are described in detail. In the management of Fuchs endothelial dystrophy, the technique may provide a best-corrected visual acuity of 20/25 (0.8) or better in ¾ of cases and an endothelial cell density of about 1800 to 2000 cells/mm<sup>2</sup> at 6 months after surgery. No-touch DMEK may therefore be a safe and effective procedure for the treatment of corneal endothelial disorders, making endothelial keratoplasty accessible to most corneal surgeons without requiring major investments while providing an unprecedented visual rehabilitation rate and outcome. Arch Ophthalmol. 2011;129(1):88-94

## OTHER DMEK PUBLICATIONS

**Efficacy of Descemet membrane endothelial keratoplasty (DMEK):** Clinical outcome of 200 consecutive cases after a ‘learning curve’ of 25 cases. Martin Dirisamer, Lisanne Ham, Isabel Dapena, Kyros Moutsouris, Konstantinos Droutsas, Korine van Dijk, Laurence Frank, Silke Oellerich, and Gerrit R.J. Melles. Arch Ophthalmology 2011; in press.

**Standardized ‘no touch’ technique for Descemet’s membrane endothelial keratoplasty (DMEK):** Controlled donor tissue implantation, orientation, unrolling, centering, appositioning and fixation. Dapena I, Moutsouris K, Droutsas K, Ham L, van Dijk K, Melles GRJ. Arch Ophthalmol 2011;129:88-94.

**More efficient use of donor corneal tissue with Descemet membrane endothelial keratoplasty (DMEK):** Two lamellar keratoplasty procedures with one donor cornea. Lie JT, Groeneveld-van Beek EA, Ham L, van der Wees J, Melles GRJ. Br J Ophthalmol 2010;94:1265-6.

**Visus nach Descemet-Membran Endothelkeratoplastik (DMEK).** Ergebnisse der ersten 100 Eingriffe bei Fuchs’scher Endotheldystrophie. Droutsas K, Ham L, Dapena I, Geerling G, Oellerich S, Melles GRJ. Klin Monatsbl Augenheilkd 2010; 227:467-77.

**Endothelial cell density after Descemet membrane endothelial keratoplasty (DMEK).** 1-3 year follow-up. Ham L, Dapena I, van der Wees J, Melles GRJ. Am J Ophthalmol 2010;149:1016-7.

**Visual rehabilitation rate after isolated Descemet membrane transplantation:** Descemet membrane endothelial keratoplasty. Ham L, Balachandran C, Verschoor AM, van der Wees J, Melles GRJ. Arch Ophthalmol 2009;127:252-5.

**Endothelial cell density after Descemet membrane endothelial keratoplasty (DMEK):** 1- to 2-year follow-up. Ham L, van Luijk C, Dapena I, Wong TH, Birbal R, van der Wees J, Melles GRJ. Am J Ophthalmol 2009;148:521-7.

**Descemet membrane endothelial keratoplasty (DMEK) For Fuchs endothelial dystrophy: review of the first 50 consecutive cases.** Ham L, Dapena I, van Luijk C, van der Wees J, Melles GRJ. Eye 2009;23:1990-8.

**Endothelial keratoplasty: DSEK/DSAEK or DMEK - the thinner the better?** Dapena I, Ham L, Melles GRJ. Curr Opin Ophthalmol 2009;20:299-307.

**Donor tissue preparation for Descemet membrane endothelial keratoplasty (DMEK).** Lie JT, Birbal R, Ham L, van der Wees J, Melles GRJ. J Cataract Refract Surg 2008;34:1578-83.

**Descemet membrane endothelial keratoplasty (DMEK).** Melles GRJ, Ong S, Ververs B, Van der Wees J. Cornea 2006;25:987-90.

**Posterior lamellar keratoplasty: DLEK to DSEK to DMEK (editorial).** Melles GRJ. Cornea 2006;25:879-81.

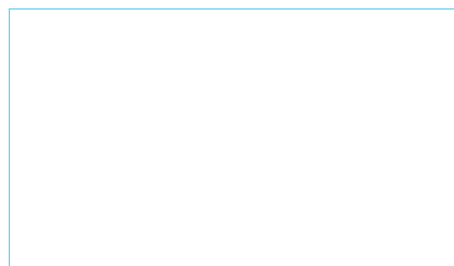
### DMEK DONOR CORNEA

Since donor tissue criteria as well as instrument specifications may vary with each surgical case, the combined supply of donor tissue and surgical instruments may provide the best guarantee for D.O.R.C. International high quality instruments, and surgery-matched donor tissue. Donor Cornea can be available from Amnitrans Eyebank Rotterdam.

For additional information please contact:  
D.O.R.C. (Dutch Ophthalmic Research Center)  
International B.V.  
Scheijdelveweg 2, 3214 VN Zuidland, The Netherlands

Phone: +31 181 45 80 80  
Fax: +31 181 45 80 90  
E-mail: sales@dorc.eu

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