STANDARDIZED ‘NO TOUCH’ DMEK TECHNIQUE

Fast and full visual rehabilitation - Efficient use of donor tissue - Anatomical restoration of the cornea - Refractive neutral
STANDARDIZED “NO TOUCH” DESCEMET MEMBRANE ENDOTHELIAL KERATOPLASTY (DMEK)
80% OF PATIENTS AT ≥0.8 (≥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)
After loading the graft, the glass injector is attached to a 5 ml syringe.

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.

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

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.

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

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

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).

Once completely unfolded, the anterior chamber is filled with air for approximately 45-60 minutes.
We describe a standardized technique for “no-touch” isolated Descemet membrane transplant, i.e., 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/mm² 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


