Air-assisted donor preparation for DMEK

Venzano al.1 have described a technique of Descemet membrane air-bubble separation. We also use an air-assisted (reverse big bubble)2 technique to prepare Descemet membrane for Descemet membrane endothelial keratoplasty. In our method, a corneoscleral button is placed endothelial side up on a Barron donor punch and fixed by grasping the outer scleral edge with a 0.12 forceps. A 27-gauge bevel-up needle attached to a 2 mL syringe filled with air is inserted just outside Schwalbe line. The needle is advanced to the central cornea. Air is gently injected to make a big bubble, detaching Descemet membrane from the posterior stroma. Injecting into the endothelial side-up corneoscleral button allows us better visualization and makes the procedure more feasible, less instrument dependent, and less traumatic.

Venzano et al.1 reported a high success rate of Descemet membrane detachment with their method. This high rate of success might be related to the older age (mean = 78 years) of donors. In our experience, we found that air-assisted Descemet membrane dissection is more difficult in young patients (younger than 40 years) and attempts to make a complete detachment may lead to Descemet membrane rupture.

In our first 10 cases, with a mean age of 32 years, an incomplete detachment (smaller than 8.0 mm diameter) occurred in 2 cases and Descemet membrane rupture occurred in 1 case. We now prefer older donors with higher endothelial cell counts for this technique.

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REFERENCES

REPLY:
Statistical analysis correlating the age of the donors and the success rate of Descemet membrane air-bubble separation was not feasible in our study because of the limited size of the sample and possibly because other variables, such as the storage time, may affect the status of the tissue and its susceptibility to an easy separation. We adopted the Anwar big-bubble technique, a method widely tested in clinical use, which allows an increasingly high percentage of success, thanks also to a range of custom-made instruments.

With the Descemet membrane air-bubble separation technique, it is an advantage to have the endothelium stained with trypan blue. This enables the surgeon to keep the needle immediately above the Descemet membrane and to obtain an easy separation in a high percentage of cases.

In our study, we had 2 failures in 1 of 2 corneas from 2 older donors; in all the other donors, the bubble was achieved, suggesting that the success rate depends more on the correct application of the technique than on the tissue characteristics. Obviously, for this technique there is a learning curve.

During DALK, in case of failure of the Anwar big-bubble technique, manual separation can be successfully carried out, but if the bubble is obtained, the surgery will be more easily and quickly completed, probably with less surgical insult to the endothelium.

In case of failure of Descemet membrane air-bubble separation, it is possible to proceed with a SCUBA (submerged cornea using backgrounds away) technique or with the method described by Zarei-Ghanavat et al.1 This can be considered an additional advantage of the air-bubble separation technique. We agree in underlining the effectiveness of Descemet membrane endothelial keratoplasty (DMEK), as reported by several authors,2,3 and its superiority over other types of corneal lamellar graft techniques in speed and completeness of functional recovery. We are delighted that the research on how to obtain the Descemet roll is lively. The common goal is to reduce the failure rate to almost zero, avoiding the waste of precious tissue and allowing application of DMEK as a first choice for the treatment of endothelial disorders.

—Davide Venzano, MD, Carlo E. Traverso, MD

REFERENCES

Refractive surprise after piggyback intraocular lens implantation

The cataract surgical problem edited by Masket1 concerns residual ametropia and negative