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Advancing the treatment of corneal disease



Descemet's Membrane (DM) grafts preparations with liquid "Blister" separation method

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Title

Descemet's Membrane (DM) grafts preparations for DMEK with a liquid "Blister" separation method

Purpose

To present a "no-touch" method for separation of the DM by liquid "Blister" with single injection.

Methods

104 research and 44 transplant donor corneas were prepared (70 corneas (49%) with hx of diabetes). Corneas with the endothelial surface up placed on a Teflon punch block and stained with 0.06% Trypan Blue (TB). A 30G needle, attached to 1cc syringe with Optisol GS, was inserted horizontally as possible into the sclera approximately 2 mm outside of the limbus and moved forward. "Blister" was created when media was injected into the stroma with soft pressure the needle 1.5-2 mm past the limbus in the stroma. The "Blister" continued to expand and separated the DM until the reached the limbus evenly.

Diameter of the "Blister" was measured then drained by several drain punches. Isolated DM placed back onto the stromal bed. Viability of the corneal endothelium was evaluated by slit lamp, specular microscopy and stained with Trypan Blue and Alizarin Red S (0.5%). Stained endothelium was evaluated by dissecting microscope.

Results

DM separation was achieved in all cases. A total of 12 (8%) perforations were observed- 7 with hx of diabetes (58%). Diameter of the separated DM averaged 9.5mm. Specular microscopy was easily performed. Mean donor endothelial cells density prior to preparation was 2824 ± 131 cells/mm² and post preparation - 2893 ± 121 cells/mm². Staining confirmed viable endothelium

Conclusion

"Blister" method is reliable for DM grafts preparations. The method is safer for the endothelium due to no forceps touch and extensive tissue folding during preparation. The method allows easy specular microscopy evaluation of the prepared grafts