New surgical maneuver to position the graft in a descemet stripping with automated endothelial keratoplasty surgery

Nova manobra cirúrgica para posicionar o enxerto em cirurgia de ceratoplastia endotelial com desnudamento automatizado da Descemet

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ABSTRACT

Objective: To describe a new surgical maneuver to position the graft in a Descemet Stripping with Automated Endothelial Keratoplasty (DSAEK) surgery.

Methods: Case series.

Results: This technique allows a correct repositioning of the graft in a minimally invasive way.

Conclusion: This new surgical maneuver was successful in manipulating the graft in DSAEK surgery and therefore might be effective and safe.

RESUMO

Objetivo: Descrever uma nova manobra cirúrgica para posicionar o enxerto em uma cirurgia de ceratoplastia endotelial automatizada com desnudamento da Descemet.

Métodos: Série de casos.

Resultados: A técnica permitiu o correto reposicionamento do enxerto de forma minimamente invasiva.

Conclusão: Esta nova manobra cirúrgica foi bem-sucedida para manipular o enxerto na cirurgia ceratoplastia endotelial automatizada com desnudamento da Descemet e, portanto, pode ser eficaz e segura.

INTRODUCTION

Descemet Stripping with Automated Endothelial Keratoplasty (DSAEK) surgery consists of transplanting donor endothelium and Descemet's membrane along with a small amount of posterior stromal thickness. In endothelial transplants, the minimum manipulation of the graft is of vital importance in order to lose the least number of endothelial cells.[1] Although in DSAEK the deployment of the graft may be simpler than in Descemet membrane's endothelial keratoplasty (DMEK), it may sometimes be necessary to correctly center the graft after injection, and as it is a thicker tissue with less mobility, it can be complicated. Keeping in mind that graft centration directly influences visual rehabilitation and graft function in DSAEK,[2] we describe a new surgical maneuver that has been useful to us to reposition the graft in a minimally invasive way.

METHODS

This study has been approved by the hospital clinic ethics committee (HCB/2019/0461) and was carried out according to the principles and basic ethical regulations originated in the Declaration of Helsinki (https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/) approved by the World Medical Association. All the patients included in the study signed an informed consent for the use of their data for scientific purposes.

We have performed this surgical maneuver in 20 cases of DSAEK at a clinic hospital in Barcelona, Spain, to center the graft. With the DSAEK graft already in place, the 4cm corneal incision sutured, and the anterior chamber partially filled with air. Using the same 10/0 nylon curved needle that we have used for suture, ethilon CS140-6 (Ethicon, Johnson & Johnson, Cincinnati, OH), we performed the desired centering of the graft (Figure 1). The needle was inserted perpendicularly into the corneal periphery to where the graft was to be moved. Through the receiving cornea, we reached the stromal face of the graft with the tip of the needle and push it to achieve displacement (Figure 2). At no time the endothelial side of the graft was manipulated.

RESULTS

In all cases, the graft was displaced for proper centering without associated complications.

DISCUSSION

A descentrated graft can cause reduction in visual acuity, dysphotopsia, glare, corneal aberration, and persistent corneal edema where host stroma is not covered by endothelium.[3-6] Even a significant decentration can generate a contact between the graft and the iris or the angle, increasing the risk of immunogenic rejection.[7]

Other methods such as forceps have been described for graft manipulation, but a contact between iris or forceps and graft endothelial surface will incur loss of endothelial cells. Gadhvi et al.[2] described a technique using a straight 10/0 prolene suture needle. In our case, we used the same needle that we have used to suture the corneal wound to manipulate the graft, being a maneuver available to anyone.

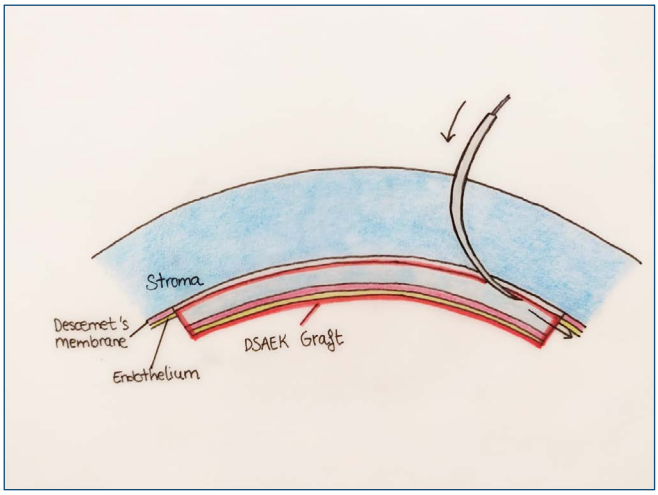

Figure 1. Needle graft centering scheme.

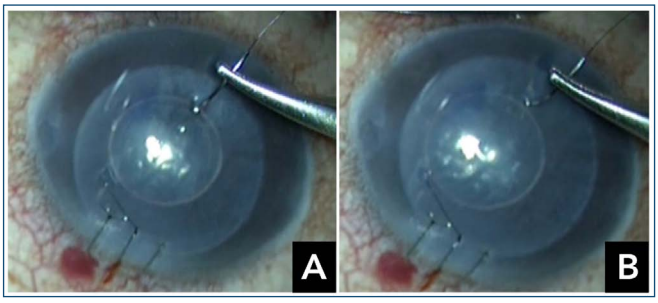

Figure 2. A: insertion of the needle perpendicular to the cornea; B: mobilization of the graft with the movement of the needle.

CONCLUSION

This surgical maneuver was successful to reposition the Descemet Stripping with Automated Endothelial Keratoplasty graft in a minimally invasive way. It provides an easily available alternative for any surgeon to manipulate the graft.

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