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SUTURE OF A DESCemet'S MEMBRANE PERFORATION DURING DALK "BIG BUBBLE" TECHNIQUE

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INTRODUCTION

Penetrating keratoplasty (PKP) is a popular procedure for treating corneal opacities, but in 2002, Anwar et al. introduced a promising selective keratoplasty technique, the big bubble deep anterior lamellar keratoplasty (BB-DALK).¹ The BB-DALK facilitates the exposure of the Descemet's membrane, shortens the duration of lamellar procedures, improves graft survival, and delivers comparable visual outcomes to PKP.² However, one of the possible intraoperative complications of the technique is perforation of the Descemet's membrane (DMP), which may require converting to a PKP.³

PURPOSE

To describe a case of DMP during a BB-DALK attempt, where the suture of the Descemet's membrane was successfully performed and allowed the conversion to a manual DALK technique rather than a PKP.

CASE PRESENTATION

A 34-year-old male patient was referred to the cornea service for visual rehabilitation. His best-corrected visual acuity (BCVA) was below 20/600 in the affected eye. The slit-lamp examination showed a vascularized posterior stromal leucoma (fig. 1) with relative hypoesthesia compared to the unaffected fellow eye. One week prior to surgery, the patient was started on prophylactic Acyclovir (400mg). The patient underwent a BB-DALK under local anaesthesia that was successfully converted to the manual layer-by-layer technique after a peripheral macro perforation and suture (10-0 mononylon) of the DM using a modified stromal patch technique.² The anterior chamber was then filled (80%) with an air bubble to facilitate the attachment of the recipient DM to the donor stroma and prevent the formation of a double chamber.

At the first postoperative visit, the patient presented with an uncorrected visual acuity (UCVA) of hand movements, 16 10-0 mononylon interrupted corneal sutures without Seidel, one deep stromal suture at the site of the perforation. After complete epithelialization of the graft, prednisolone acetate (1%) eye drops were prescribed six times a day and tapered slowly after 30 days.

At the 4th postoperative month, sequential corneal topography-guided suture removal was initiated.

After eight months of follow-up, slit lamp examination showed a clear graft and 5 remaining corneal sutures. The anterior segment OCT revealed regular anterior and posterior surfaces with a central thickness of 545 µm. The remaining recipient stroma was thinner than 50 µm and did not present any roughness or irregularities. At this point, the BCVA was 20/25 (-2,25/-1,50D@20°).

DISCUSSION

Corneal opacities secondary to traumas are a frequent cause of vision impairment in young male patients and a common indication for corneal transplants⁸. Until recently, PKP used to be the procedure of choice, but long-term comparisons have

shown that DALK techniques outperform PKP in several aspects. For instance, DALK provides a longer graft survival rate (93.9% versus 72.0% for PKP)⁶ with similar results regarding visual rehabilitation^{2, 6} and improved outcomes in the advent of a re-transplantation (78.3% graft survival in 10 years).⁷ In this young patient with a deep vascularized stromal leucoma we opted to proceed with a BB-DALK technique rather than a PKP in order to reduce the odds of multiple PKPs in his future. Deep corneal scars are known to increase the risk of DMP, which is a common complication during DALK (18.7%).³ When a macro perforation occurs, such as the one presented herein, the use of a stromal patch is an option that results in endothelial changes similar to the ones found in uncomplicated DALKs.² In the case presented, we successfully used the patient's remaining stroma to patch the DMP avoiding a conversion to PKP, thus maintaining all the advantages of a lamellar procedure, such as an extended graft survival.^{4, 6}

CONCLUSION

In cases where DALK is complicated by a peripheral perforation of the Descemet's membrane, conversion to a layer-by-layer technique associated with the suture of the patient's own recipient stroma can avoid conversion to a PKP. This strategy is efficient in maintaining all the short- and long-term advantages of lamellar techniques.

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