American Journal of Ophthalmology Case Reports 9 (2018) 34–37

Contents lists available at ScienceDirect

American Journal of Ophthalmology Case Reports

journal homepage: www.elsevier.com/locate/ajoc

Case report

Descemet membrane endothelial keratoplasty for corneal decompensation due to iridoschisis

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ARTICLE INFO

Keywords:
Descemet membrane endothelial keratoplasty
Iridoschisis
Corneal edema
Diabetes mellitus

ABSTRACT

Purpose: To report a case of bilateral iridoschisis with cataracts and corneal decompensation in a patient who underwent cataract extraction and superficial iridectomy followed by Descemet membrane endothelial keratoplasty (DMEK).

Observations: A 58-year-old man with previously diagnosed iridoschisis, cataracts, and diabetes mellitus experienced progressive vision loss bilaterally due to corneal decompensation. Slit lamp examination revealed iridoschisis with iris fibrils contacting the corneal endothelium, stromal edema, and mild guttate changes bilaterally. Corneal findings were more severe in the right eye, including the presence of bullous keratopathy at the time of presentation. Cataract extraction with intraocular lens implantation and superficial iridectomy were performed in the right eye, followed by DMEK. These same procedures were performed subsequently in the left eye. Postoperatively, the patient had significant improvement in visual acuity and corneal edema.

Conclusions and importance: DMEK can be performed safely and successfully after staged cataract surgery with superficial iridectomy in eyes with endothelial decompensation caused by iridoschisis.

1. Introduction

Iridoschisis is characterized by iris degeneration, whereby anterior layers of the iris become atrophic and split from the posterior layers. Iris fibrils may contact the corneal endothelium and lead to endothelial dysfunction and subsequent corneal decompensation. Herein, we report our experience with a 58-year-old patient who developed secondary corneal edema due to iridoschisis. The patient underwent staged cataract extraction and superficial iridectomy followed by Descemet membrane endothelial keratoplasty (DMEK) to reverse the corneal edema and restore vision in both eyes. The Institutional Review Board at the University of Iowa determined that approval was not required for this study.

2. Case report

A 58-year-old man presented to our clinic with worsening vision in both eyes. He had been diagnosed with iridoschisis two years prior to presentation, and was treated by the referring ophthalmologist with bandage contact lenses in the more severely affected right eye to reduce symptoms from bullous keratopathy. He had a history of diabetes mellitus type I with proliferative diabetic retinopathy treated by panretinal photocoagulation 20 years prior to presentation. He had no other significant ophthalmic or systemic medical or surgical history. Initial clinical examination showed best-corrected visual acuity (BCVA) of 20/300 in the right eye and 20/50 in the left eye. Intraocular pressures measured with Tonopen tonometry were 18 and 15 mm Hg, respectively. Slit lamp examination revealed moderate stromal edema with mild guttate changes bilaterally (Fig. 1A–C). The right cornea displayed frank bullae inferiorly. Iridoschisis was noted to be prominent in the inferior quadrant of each eye with iris strands touching the corneal endothelium (Fig. 2). Neovascularization of the iris was not observed. Moderate nuclear sclerotic cataracts with brunescence were present bilaterally. Central corneal thickness (CCT) measured by ultrasound pachymetry was 658 μm in the right eye and 635 μm in the left eye.

A surgical plan was made to perform superficial iridectomy and cataract extraction with monofocal intraocular lens (IOL) implantation prior to DMEK in the right eye. The superficial iridectomy was performed using a vitrectomy handpiece (4000 cuts per minute, cut-I/A setting) to remove loose anterior iris strands, after the anterior chamber was filled with a dispersive viscoelastic and prior to performing the

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https://doi.org/10.1016/j.ajoc.2018.01.010
Received 2 March 2017; Received in revised form 3 October 2017; Accepted 3 January 2018
Available online 05 January 2018

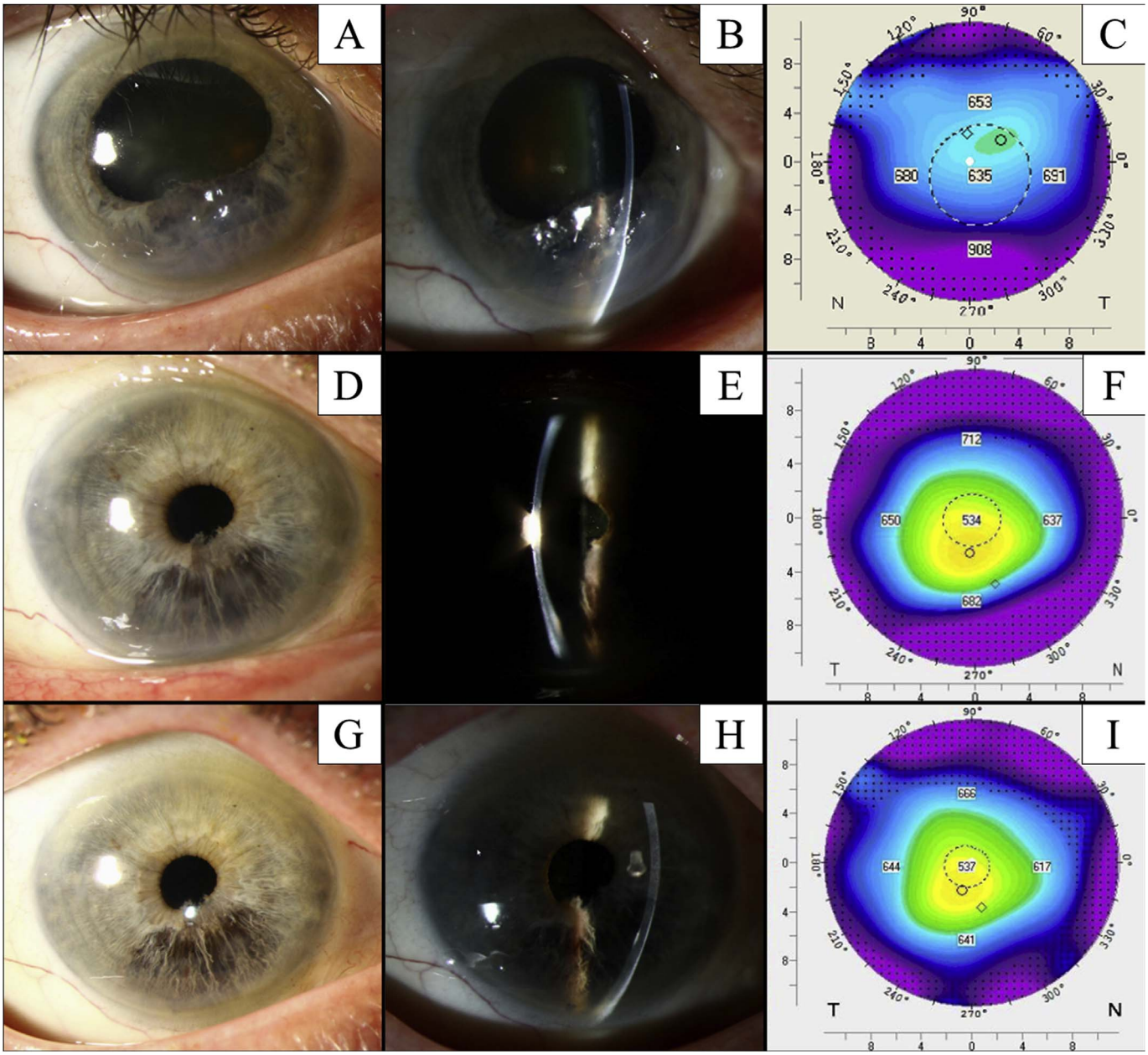

Fig. 1. Slit lamp photos and Scheimpflug corneal imaging of the right eye demonstrate corneal decompensation due to iridoschisis at the time of initial presentation (A–C), and restored corneal anatomy one month (D–F) and one year (G–I) following Descemet membrane endothelial keratoplasty (DMEK). Preoperative iris degeneration and corneal changes were most prominent in the inferior quadrant (A–C). Resolution of corneal edema and removal of free-floating iris fibrils by iridectomy, performed with cataract surgery one month prior to DMEK surgery, is visible on postoperative slit lamp examination (D-E, G-H). Normalization of corneal pachymetry (μm) was achieved by one month after DMEK (F) and corneal thickness remained stable through one year postoperatively (I).

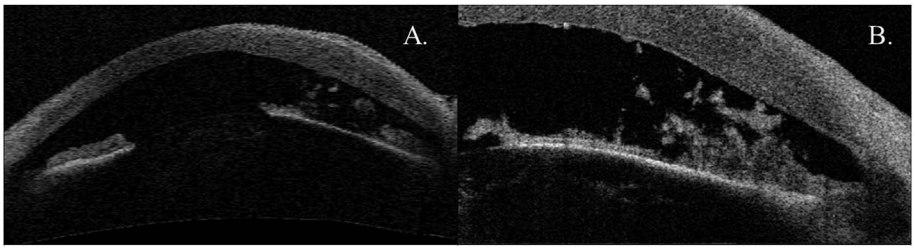

Fig. 2. Anterior segment optical coherence tomography of the right eye at presentation. Evidence of separation of the anterior iris stromal layer, and contact of iris fibrils with the posterior cornea, are present in the inferior quadrant (A, right side of image 315°) extending into the nasal quadrant (B, right side of image 0°).

capsulorhexis. No iris restraining device was used. After performing uneventful phacoemulsification and in-the-bag lens implantation, freely mobile iris strands were noticed and additional vitrector-assisted superficial iridectomy was performed. One month later, uncomplicated DMEK was performed in the right eye using our previously published technique.[1] Graft edge lifts were not noted. One month after DMEK in the right eye, BCVA was 20/30, slit lamp examination showed an attached DMEK graft with clear overlying stroma, and CCT was 538 μm