

Introduction

- Fuchs' Endothelial Dystrophy (FED) and Keratoconus (Kc) occurring concomitantly in the same cornea is rare and presents the contact lens practitioner with a cornea challenged by disease at both its anterior and posterior faces. While the incidence of Kc is known to be 1 in 2000, the incidence of combined FED and Kc is estimated to be 1 in 100,000.
- The present case report described the management of Penetrating Keratoplasty (PKP) and Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK) surgeries in a patient with this uncommon combination of corneal pathologies.

Patient Details

Chief Complaint: 40yo White Male presenting for specialty lens evaluation

Ocular/Medical History: Kc- diagnosed 1995, FED- diagnosed 2011, H/o **DSAEK- OS in 2009, OD in 2011**

Medications: None, NKDA

Case Report

9/2014:

Synergeyes Ultrahealth Hybrid Lenses Prescribed

- **Biomicroscopy:** 3+ guttae OU, Fleischer's ring OS

10/2014:

CC of glare and halos

- **Biomicroscopy:** 3+ guttae OU, epithelial bullae inferior-nasal OD
- Tx: Muro-128 ointment OU QPM, and Muro-128 solution OU q6h x 2 wks

2/2015:

PKP OD d/t FED re-emergence. Scleral lens (SL) prescribing initiated OS.

6/2015:

- **Biomicroscopy:** Clear PKP graft OD, 3+ guttae OS

11/2015:

PKP OS d/t FED re-emergence and Kc

8/2017:

Graft rejection OD. Tx w/ Durezol under Ophthalmologist's direction. Resolved in 1 month, resulting in clear and quiet grafts OU.

8/2018:

- **Biomicroscopy:** Clear PKP grafts OU
- Endothelial cell count: 1101 c/mm² OD, 2284 c/mm² OS

12/2018:

- **Biomicroscopy:** Microcystic edema on the lower 1.5mm of graft with keratic precipitates OD
- Endothelial cell count: 879 c/mm² OD

10/2020:

- **Biomicroscopy:** Large sub-epithelial bullae and microcystic edema OD (**Figure 1**), clear and quiet graft OS
- Endothelial cell count: 500 c/mm² OD, 2372 c/mm² OS



Figure 1: Large sub-epithelial bullae and microcystic edema. Right eye. October 2020.

1/2021:

DSAEK OD d/t FED re-emergence

7/2021:

SL prescribed OU

- **Biomicroscopy:** Stable DSAEK graft OD, clear PKP graft OS, guttae OU
- Endothelial cell count: 1248 c/mm² OD, 2354 c/mm² OS

7/2021 cont'd:

- Final SL (**Figure 2**):

OD: **Valley Contax/Custom Stable Elite**
8.23/+4.50/15.8/CT 0.36/Opt.Extreme w/HydraPEG

OS: **Alden Optical/ZenLens Oblate**
8.50/+4.50/16.0/CT 0.49/Boston XO2 w/HydraPEG

- Achieved Monovision fit (OS Distance)

DVA 20/20 OU, NVA 20/20 OU

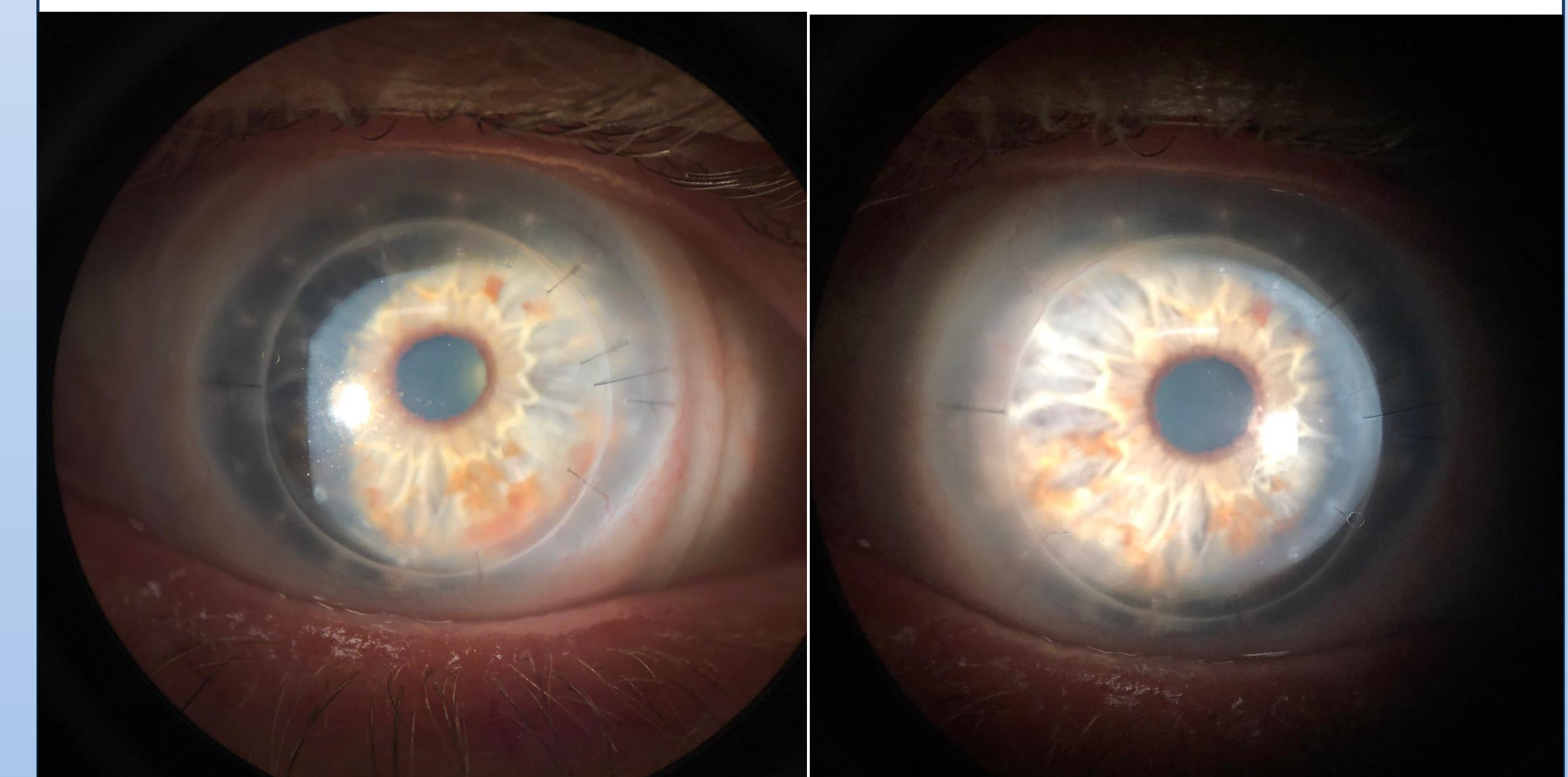


Figure 2: Finalized scleral lenses. Right eye (left photo) and left eye (right photo). July 2021.

Discussion

- Self-destructive endothelial behavior in FED leads to a decline in endothelial cell density resulting in edema and requiring a DSAEK, which may need to be repeated after surgically induced accelerated cell loss.
- Kc is a scar forming, anterior corneal thinning disease that may necessitate transplant surgery.
- Patients with these two diseases occurring concomitantly can successfully be managed with contact lenses.
- This case report demonstrated that after a DSAEK OU, PKP OU, and a repeated DSAEK OD, 20/20 vision can be obtained with the use of scleral lenses.**

References

- Bergmanson, J. and Walsh, J., 2021. *Clinical Ocular Anatomy & Physiology*. 28th ed. Houston: Texas Eye Research & Technology Center.
- Mylona I, Tsinopoulos I, Ziakas N: Comorbidity of Keratoconus and Fuchs' Corneal Endothelial Dystrophy: A Review of the Literature. *Ophthalmic Res* 2020;63:369-374. doi: 10.1159/000505579

Acknowledgements

The University Eye Institute- Houston, TX, Dr. Christina Kinate, Dr. John Goosey, Recipient of Valley Contax Honorarium