

Corneal Gas Permeable Lens Management: Post-DSEK and PKP Secondary to Fuch’s Endothelial Corneal Dystrophy

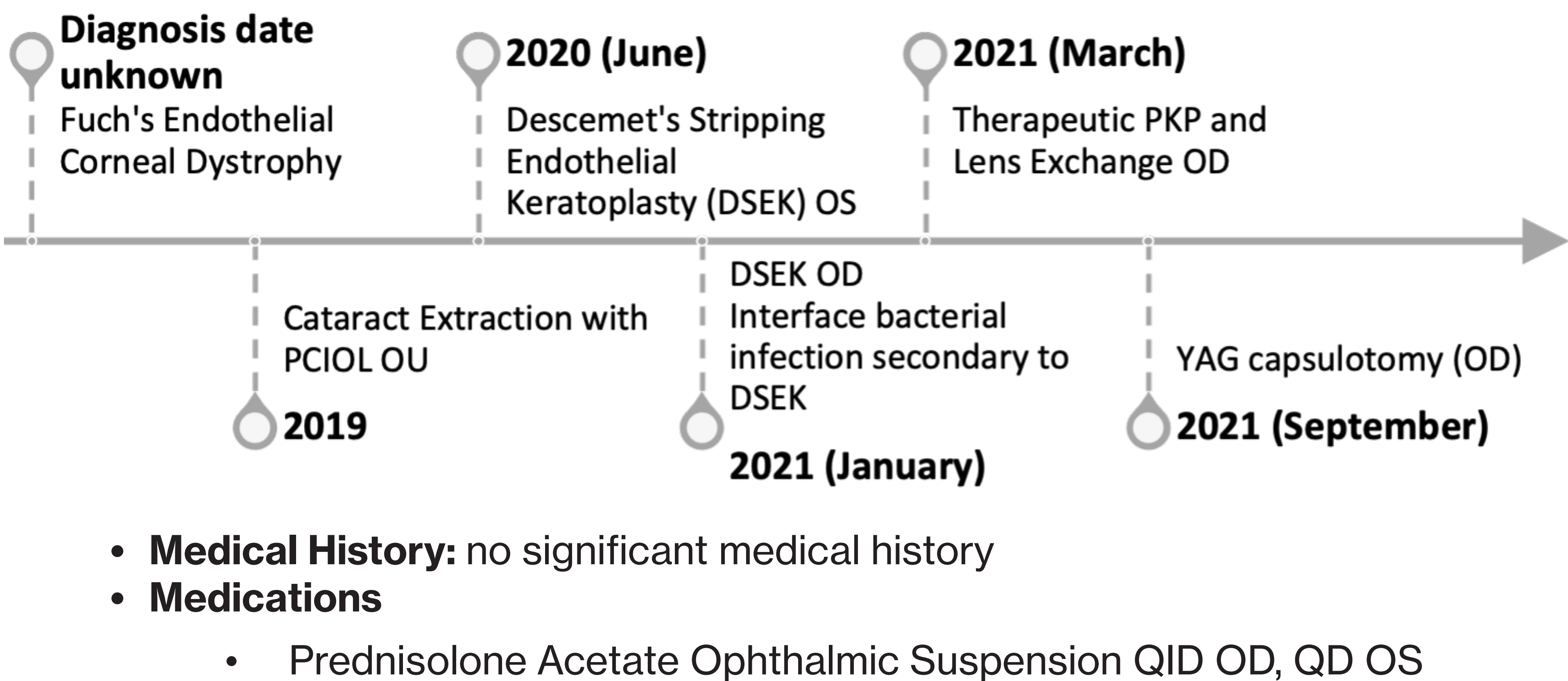
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BACKGROUND

Patients with irregular astigmatism following a penetrating keratoplasty (PKP) procedure can benefit from rigid gas permeable (GP) contact lenses (corneal or scleral), to optimize vision. This case illustrates the necessary considerations when selecting a specialty lens modality for a patient with Fuch’s Endothelial Corneal Dystrophy (FECD) following a therapeutic PKP OD and DSEK OS

CASE HISTORY

- Chief Complaint: A 66-year-old Caucasian female presented to the clinic in August 2021 reporting double vision with and without glasses. The patient was referred to the UEC for a specialty contact lens fitting OD.



CLINICAL FINDINGS

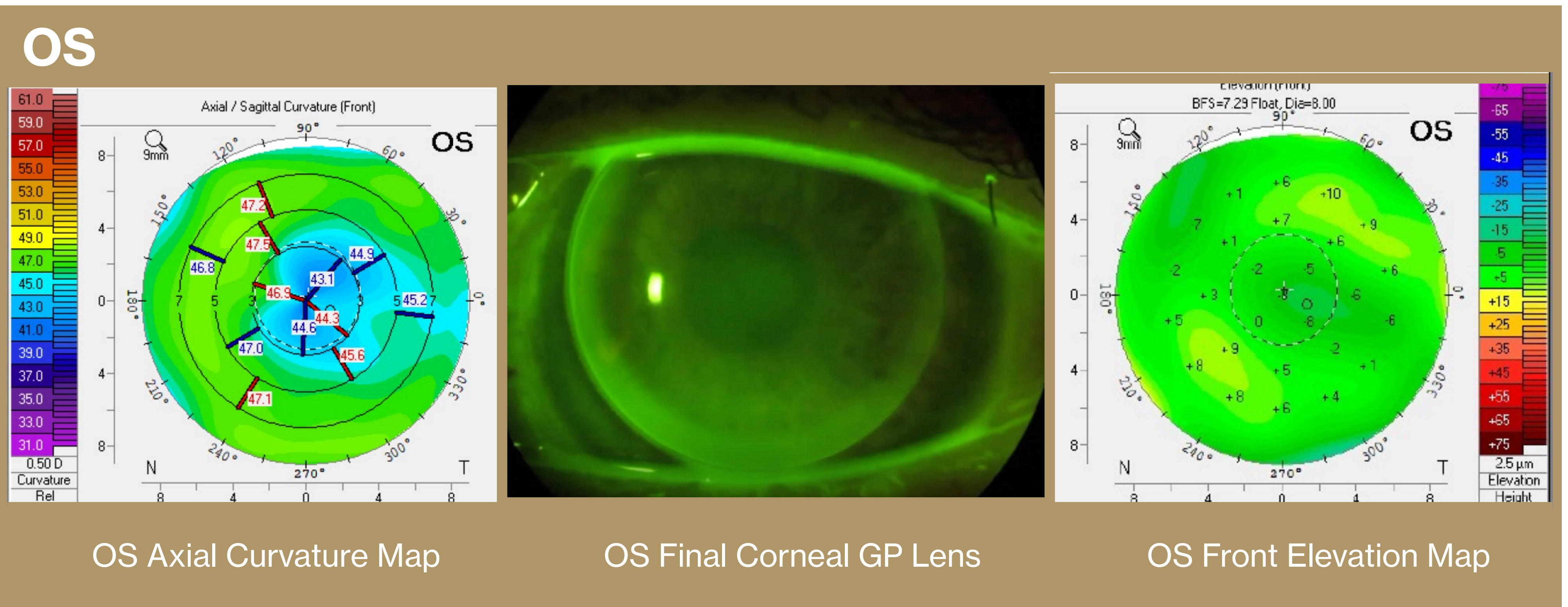
	OD	OS
Unaided Visual Acuities	20/30, PH 20/20	20/25, PH 20/25 Pt report of monocular double vision
Pupil Assessment	8mm fixed, surgically dilated	5mm dim, 3mm bright, round with 4+ direct response
Best Corrected Spectacle Visual Acuities	Plano -2.00 x 090 DVA: 20/25-2	+5.50 -4.50 x 090 DVA: 20/25 Pt report of monocular double vision
Cornea	Clear PKP with no signs of rejection and five remaining graft-host sutures: (-) edema, (-) neovascularization, (-) Khodadoust line, (-) haze	s/p DSEK, 2+ inferior endothelial pigment
Lens	PCIOL with open capsule	PCIOL
Keratometry readings	Flat K: 42.1 D @ 018 degrees, Steep K: 45.4 D @ 108 degrees	Flat K: 43.9 D @ 159 degrees, Steep K: 45.7 D @ 069 degrees

TREATMENT AND MANAGEMENT

Important considerations when selecting a specialty lens option for this patient:

- Long-term health of PKP OD and DSEK OS
- Patient’s need to adhere to prednisolone acetate QID OD
- Correction of the patient’s high refractive and corneal astigmatism OS with a corneal GP lens alleviated the patient’s double vision complaints.
- Final management: spherical corneal GP OD and bitoric corneal GP OS

	Material	Base Curve	Power	Overall Diameter	Optic Zone Diameter	Secondary Curve	Tertiary Curve	Visual Acuity
OD	Optimum Comfort	43.00 (7.85)	+1.00	9.6	7.4	9.60	12.00 x 0.2	20/20-1
OS	Optimum Comfort	47.50 45.50	-0.25 +1.75	9.4	7.6	8.10	12.00 x 0.2	20/20



DISCUSSION

- Fuch’s endothelial corneal dystrophy (FECD) - bilateral corneal disorder with progressive corneal endothelial cell loss leading to disruption in stromal deturgescence.¹
 - Diurnal visual fluctuations and ocular pain in the late stage of the disease.²
- Corneal transplant - endothelial keratoplasty (EK) procedures are advantageous for quick visual recovery and reduced incidence of graft rejection compared to penetrating keratoplasty (PKP).
 - Complications such as interface infection can still occur with EK which can lead to a subsequent therapeutic PKP.²
- Post-corneal transplant patients often benefit from a rigid gas permeable lens modality, as irregular astigmatism can limit clarity through spectacles.³
 - However, the visual acuity of DSEK patients can usually be managed with spectacles.
 - Post-operative anterior surface tends to be more irregular following PKP procedures⁴
 - However, if cataract surgery is performed prior to EK in patients with FECD, significant residual astigmatic prescriptions can occur.²
- Large diameter corneal GP lenses can successfully mask irregular astigmatism in post PKP patients.
 - These lenses provide improved visual acuity while limiting risk of corneal hypoxia and graft rejection.³
 - However, these fits have the potential to fail because of decentration and lens ejection if significant corneal irregularity is present.⁵
- Because of their design, scleral lenses can provide good centration and improved visual quality to patients with highly irregular corneas, making them a good option for post PKP patients.
 - However, close monitoring is necessary as concern for corneal edema, hypoxia, and endothelial cell damage exists with scleral lens wear.⁵

CONCLUSION

Corneal GP lenses can effectively correct both irregular astigmatism resulting from PKP as well as significant corneal and refractive astigmatism while maintaining corneal health in post-PKP and DSEK eyes.

RESOURCES

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