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INTRODUCTION

Corneal diameter is one of the most important factors that influences sagittal depth¹, yet the majority of commercially available soft lenses are only available in one diameter and designed to fit only 80% of potential contact lens patients.² Patients with horizontal visible iris diameters (HVID) larger than average are routinely left with few options: spectacle wear, custom soft lens, or a scleral lens.³ In reality, many of these patients are left with poor-fitting soft lenses yielding limbal exposure, desiccation, and the potential for limbal stem cell destruction. The patient below was managed and treated for limbal exposure with an often-forgotten option: hybrid contact lenses.

Hybrid lenses are typically offered to patients to provide the visual benefits of a GP lens and the comfort of a soft lens. The rigid gas permeable center provides optimal vision while the soft skirt minimizes discomfort from traditional GP lens wear. Hybrid lenses consist of a high central dK and a silicone hydrogel soft skirt. The utilization of hybrid lenses ranges from refractive error correction to multifocal capabilities and correction for irregular corneas.

CASE REPORT

A 26-year-old female with a history of antimetropia presented to the University Eye Center complaining of discomfort in commercially available soft contact lenses. The patient's fundus photos display the asymmetry between the two eyes at least in part attributable to the differing eye lengths. The patient's contact lens history was remarkable for a history of poor-fitting soft contact lenses yielding temporal decentration and inadequate nasal limbal coverage. The patient has been a contact lens wearer for fourteen years in a daily wear modality. The patient's medical history is unremarkable and she denied the use of systemic medications. Objective findings include:

	OD	OS
Manifest Refraction	+3.50 sph	-1.25 sph
Keratometry	43.25 / 43.00 @ 004	43.50 / 43.25 @ 180
Horizontal visible iris diameter (HVID)	12.2 mm	12.2 mm
Abnormal slit lamp findings	0.5mm inferonasal corneal neovascularization	0.5mm inferonasal corneal neovascularization

Initially, five different soft lens options with various base curves and diameters were trialed but failed: Alcon AIR OPTIX® plus HydraGlyde®, Bausch + Lomb Ultra®, CooperVision clariti® 1 Day, Alcon PRECISION1®, and Johnson & Johnson Acuvue Oasys® 1 Day. Scleral lenses were considered next but not attempted due to the patient's asymmetrical cup-to-disc ratio and the possibility for this lens type to raise intraocular pressure. The patient also preferred a more frequent replacement which led us to the SynergEyes® Duette, a single vision lens for normal corneas used to correct refractive error. This hybrid lens utilized was designed empirically based on the patient's HVID, manifest refraction, and corneal curvature.

FIGURES

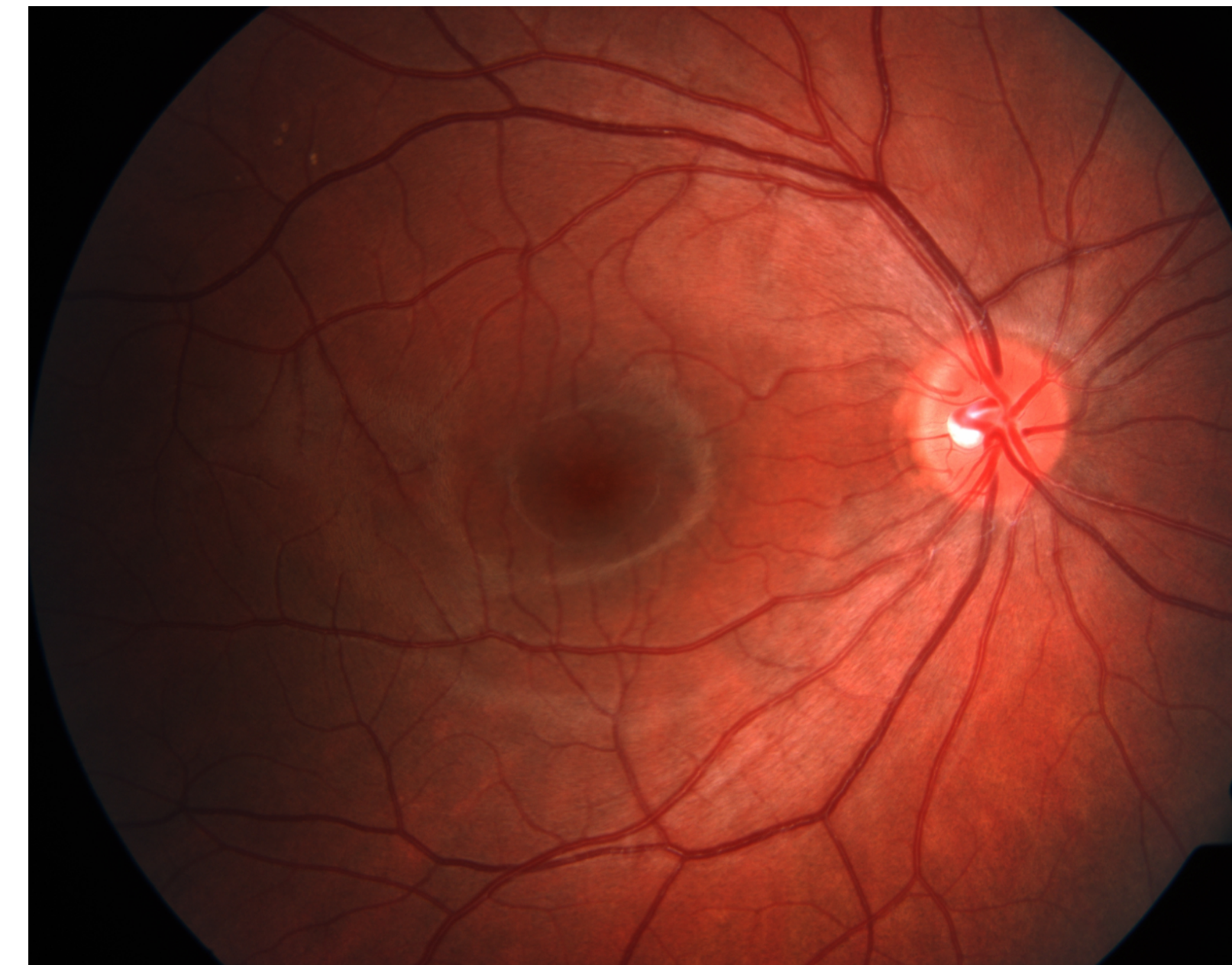


Figure 1: Fundus photo OD



Figure 2: Fundus photo OS

Lens Option 1: Commercially Available Soft Lens

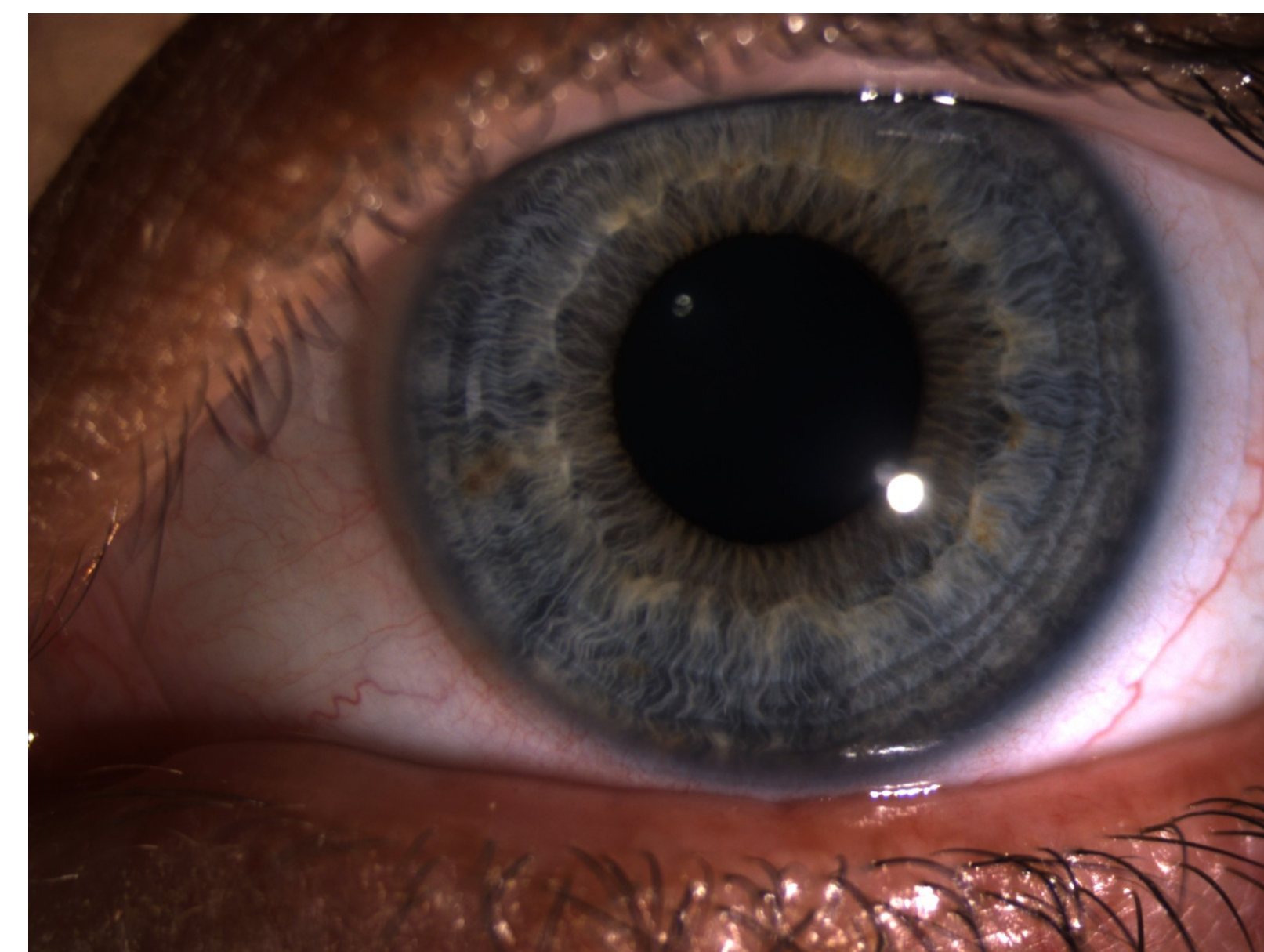


Figure 3: Air Optix; 14 mm OAD, 8.6 mm BC

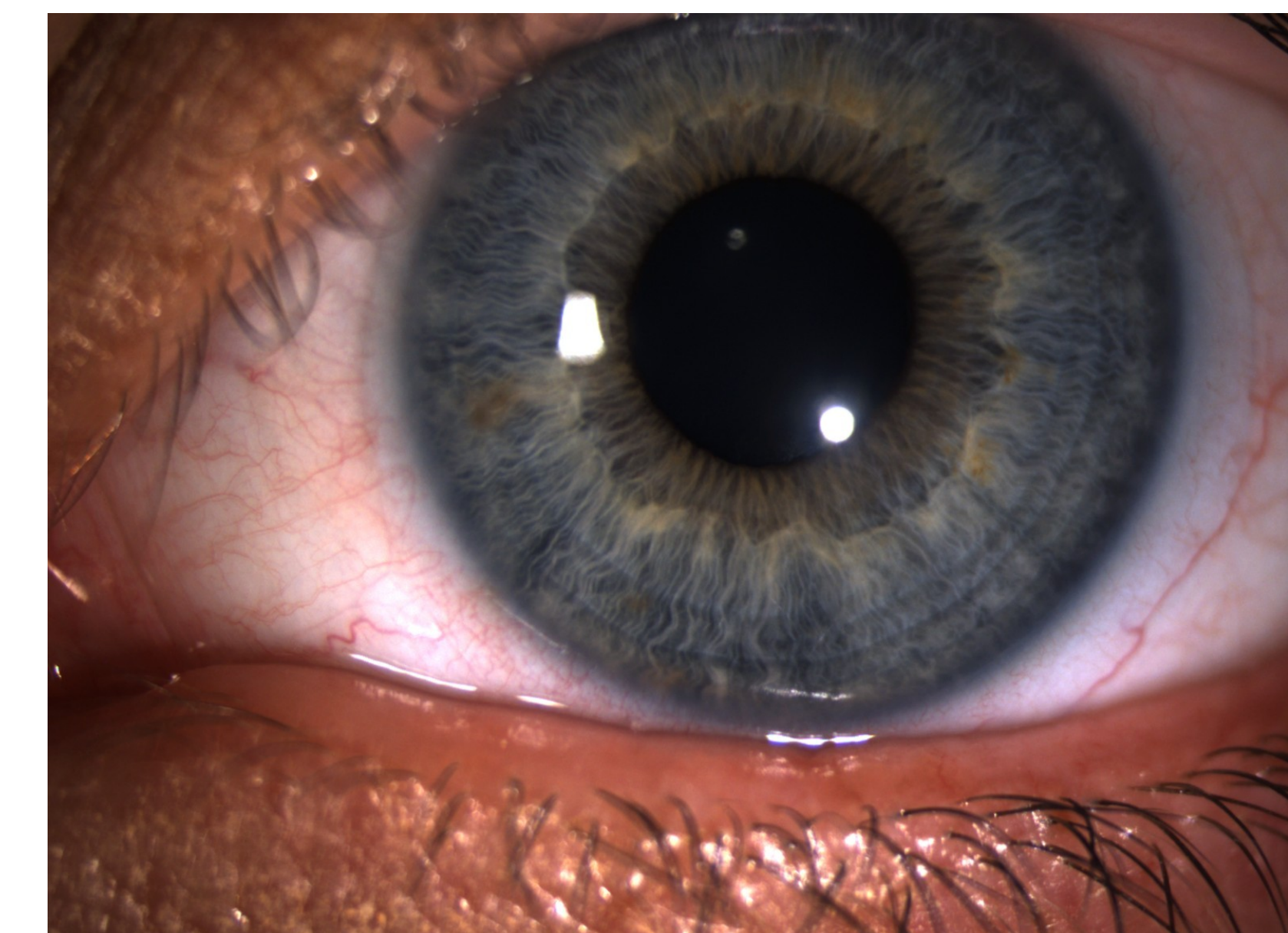


Figure 4: Ultra; 14.2 mm OAD, 8.5 mm BC

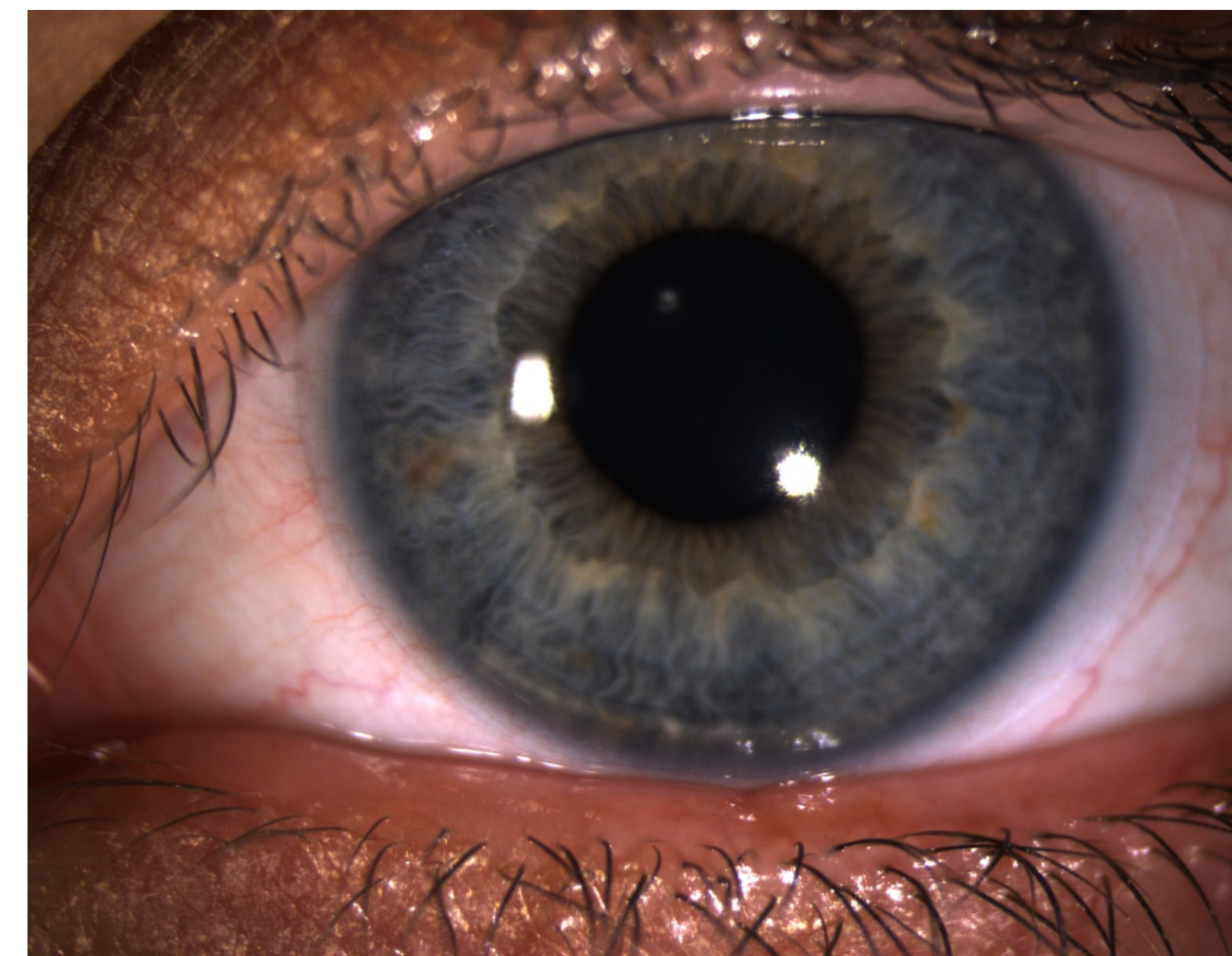


Figure 5: Clariti 1 Day; 14.1 mm OAD, 8.6 mm BC

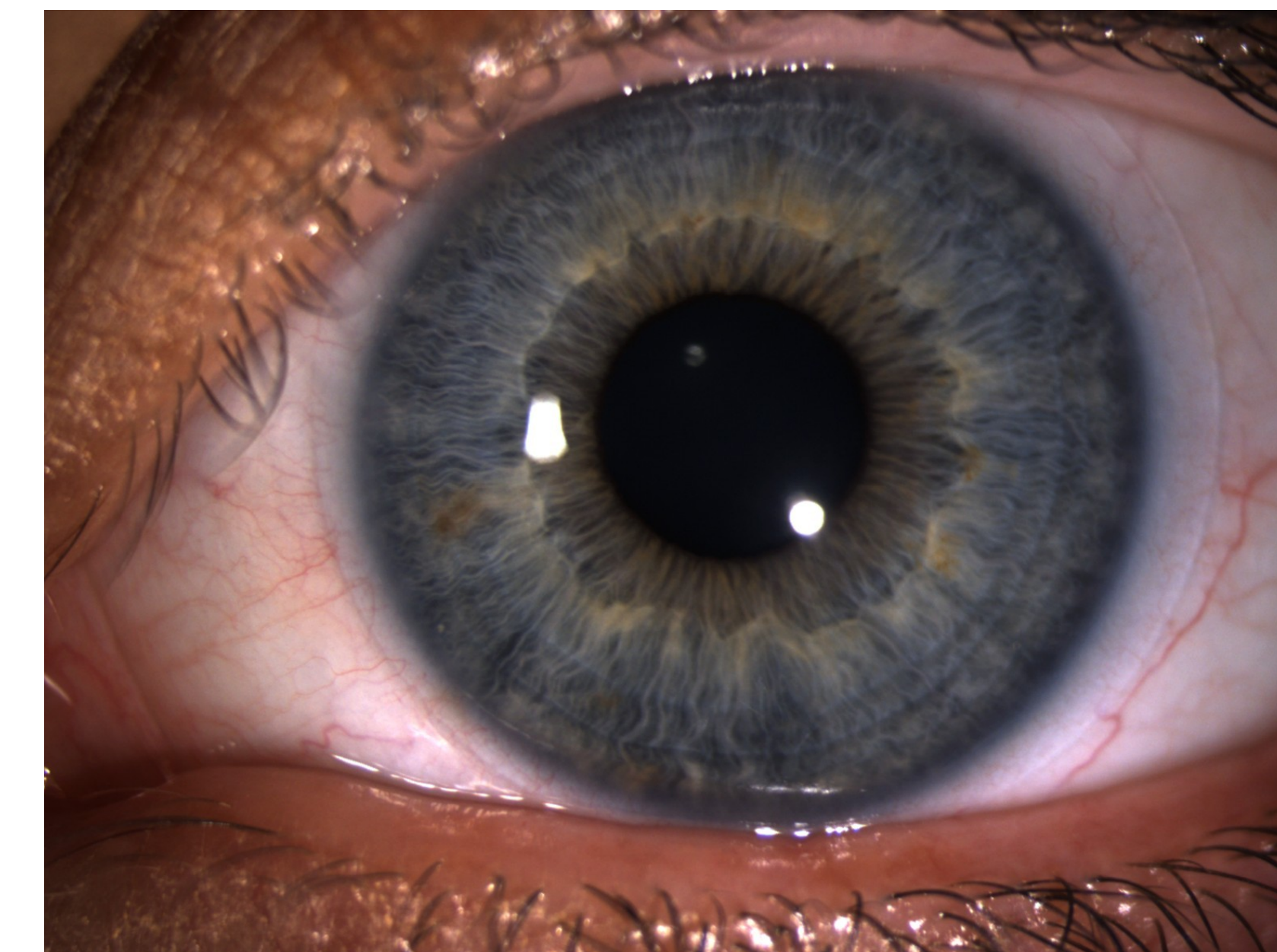


Figure 6: Precision 1; 14.2 mm OAD, 8.3 mm BC

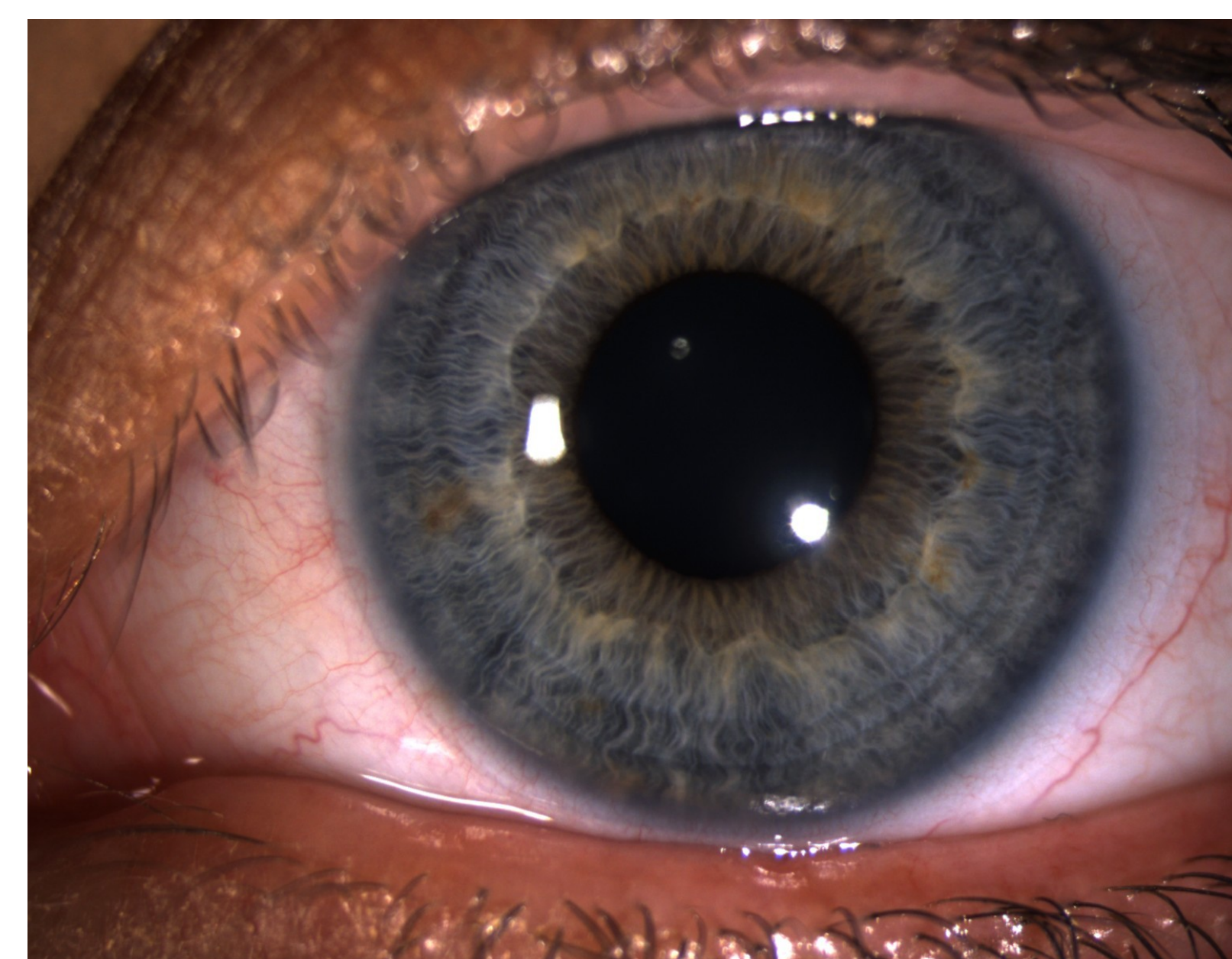


Figure 7: Acuvue Oasys; 14.0 mm OAD, 8.4 mm BC

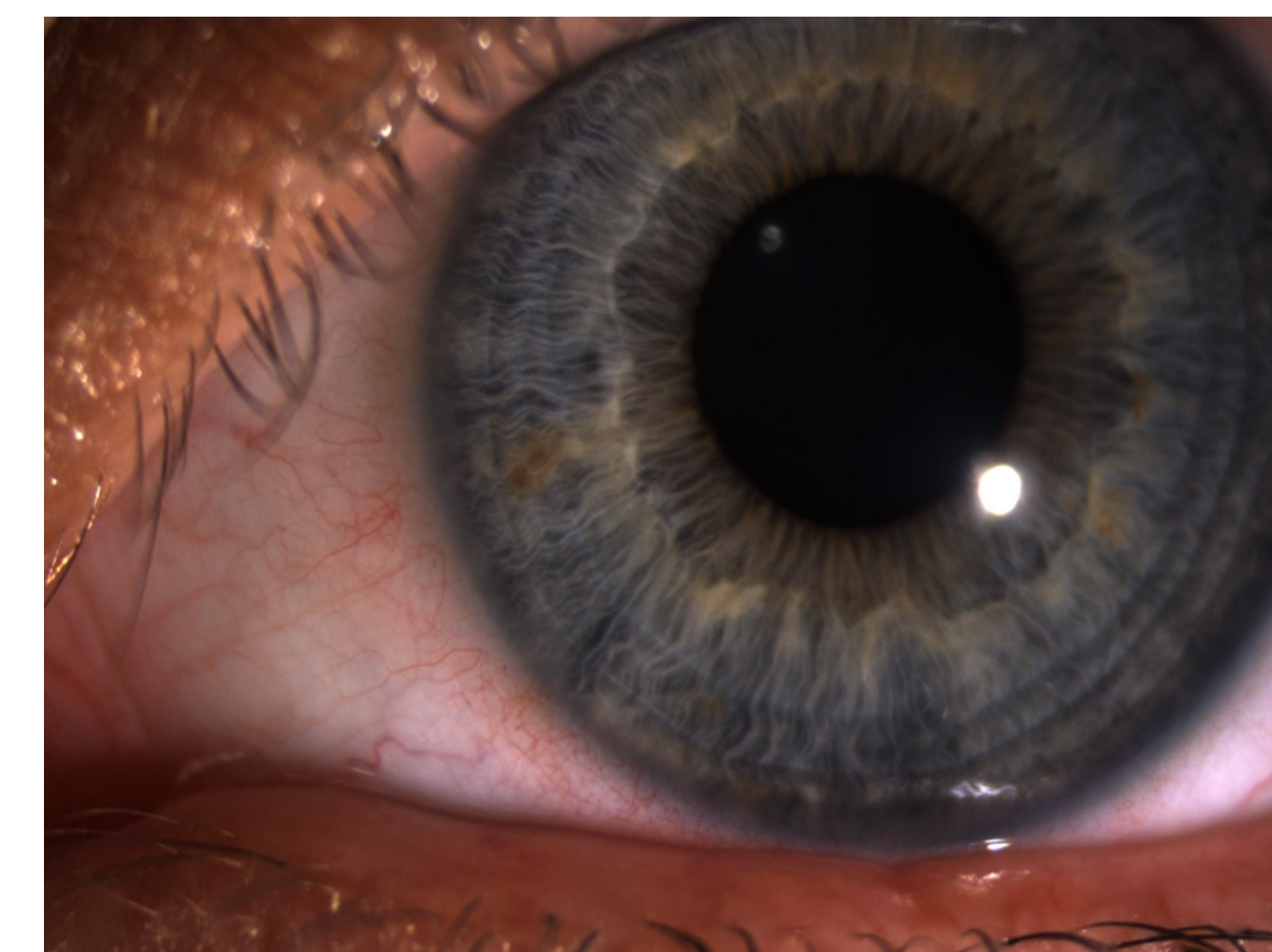


Figure 8: Corneal health OS s/p SCL wear

Lens Option 2: Hybrid Lens

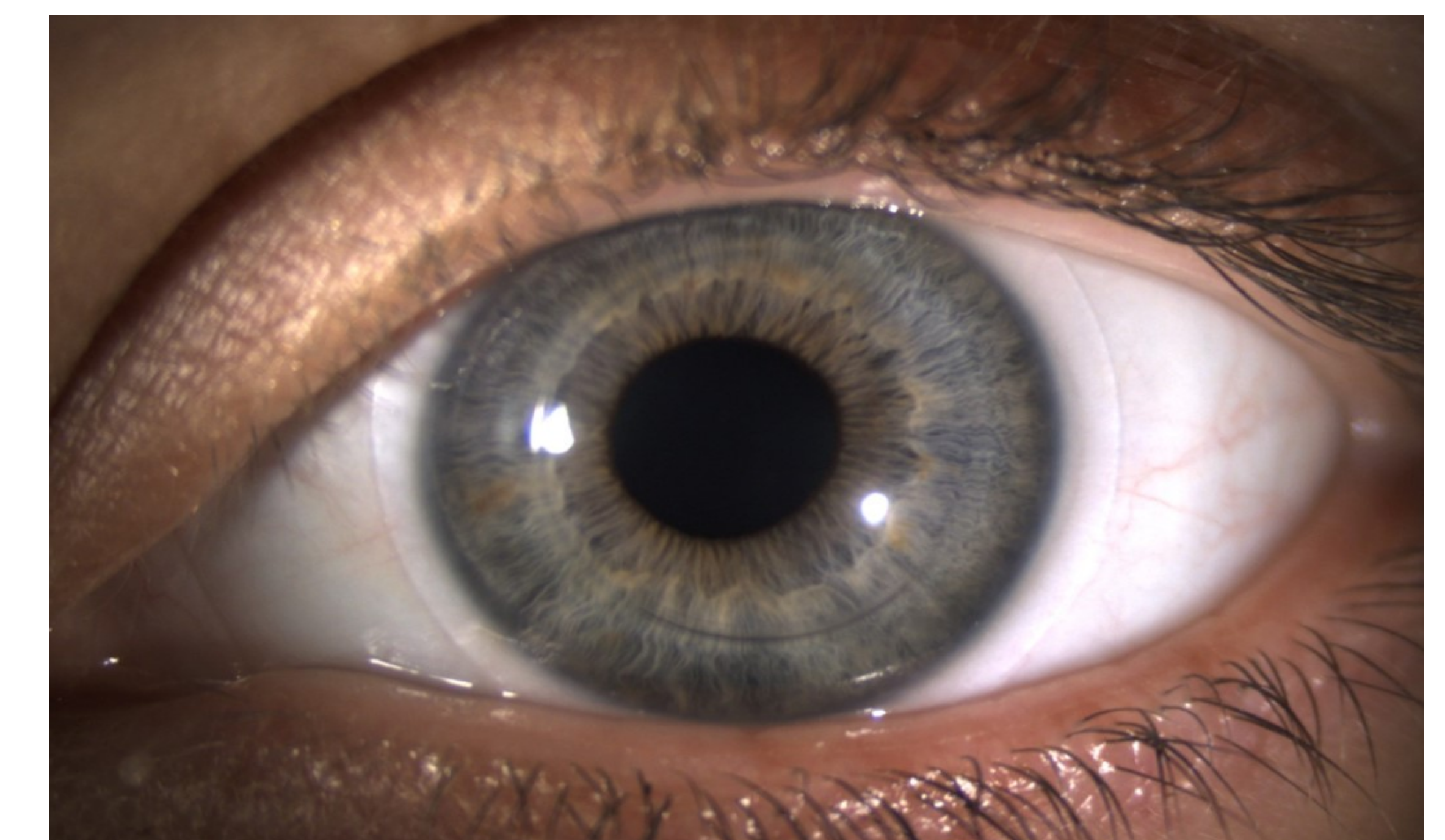


Figure 9: SynergEyes® Duette; 14.5 mm OAD, 8.4 mm RGP diameter

RESULTS

In the first trial, all five of the standard commercially available soft contact lenses decentered temporally and provided inadequate nasal limbal coverage OU. The patient's inferior nasal neovascularization was a direct result of the inadequate nasal limbal coverage the patient was subject to after years of standard soft contact lens wear. In the second trial, the SynergEyes® Duette hybrid lens provided suitable limbal coverage without decentration. The Duette lens was well centered and provided satisfactory vision and comfort for the patient. Due to the patient's difference in refractive error, contact lenses provide the best optical correction and the need for a well-fitting lens was crucial. The patient's combination of factors such as a large HVID, large pupil size, antimetropia, inferior nasal neovascularization, and glaucoma suspicion all indicated that the patient should not be in commercially available soft contact lens or scleral lenses. In this case report, the SynergEyes® Duette was a compelling option considering all of the patient's underlying factors. The Duette lens also solved both symptoms and signs of limbal compromise for the patient.

CONCLUSIONS

Hybrid contact lenses are an unexplored option for patients with large HVIDs in the absence of megalocornea. Patients who are unsuccessful with standard soft contact lenses have limited options, but the SynergEyes® Duette lens was found to be an acceptable contact lens to provide proper centration and limbal coverage, leading to successful contact lens wear for patients outside of the average HVID parameters.

ACKNOWLEDGEMENTS

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REFERENCES

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3. Lampa M. Custom Versus Standard Soft Lenses: What to Use When. Contact Lens Spectrum. 2020 November 1; 35(November 2020): 22, 23, 25