

Case Report:

SAG-based Paragon CRT™ OrthoK Fitting

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Dr. Ortiz received his undergraduate degree from University of Puerto Rico at Mayaguez campus in 2001 and his Doctor of Optometry degree from the Interamerican University of Puerto Rico, School of Optometry in 2006. He then completed a post-doctorate residency program in Primary Care Optometry in IAUPR School of Optometry, where he enhanced his clinical knowledge of pre- and post-surgical management, glaucoma, retinopathy dry eye syndrome among others. Dr. Ortiz is the owner of Bright Vision Center in Cary, NC.



Introduction

11-year-old hispanic male with a history of myopia in both eyes, onset in 2019. Slit lamp exam and fundus exam were unremarkable, no medical history.

Prescription in 2019: OD -1.50 -0.50 x 030 | OS -1.00 -0.25 x 175

Prescription in 2021: OD -2.25 -1.00 x 005 | OS -2.00 -1.00 x 180

Due to the increase in myopia it was decided that Orthokeratology (OrthoK) was the best treatment plan for this patient to reduce myopia progression. This case report presents the left eye.

Background

The Eye Surface Profiler or ESP (Eaglet Eye, Houten, NL) directly measures the elevation of both, the cornea and the sclera. The recently OrthoK added function calculates the sagittal height (SAG) of the lens to match the SAG of the eye, with sufficient clearance at the end of the optical zone to create enough forces to correct for myopia. A precise alignment of the alignment zone is required to centre the lens.

Profilometry Measurement

Capturing images with the use of fluorescein sounds like a hurdle with children, but in fact it is as easy if not easier compared to adults. Fluorescein is an important part of the OrthoK safety toolkit, so early introduction will be beneficial for follow up in the future. Good alignment and focus are crucial and the measurement needs to be 1mm beyond the limbal area, covering the entire cornea.

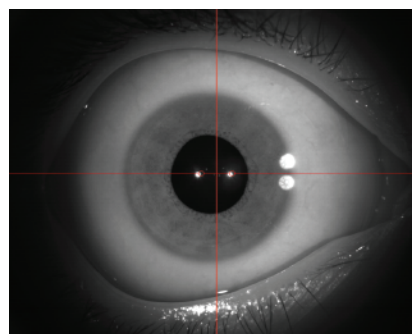


Figure 1 ESP source image.

Baseline

The integrated First Lens Fit algorithm for OrthoK was used to calculate the lens parameters of the Paragon CRT™ contact lens (CooperVision Speciality EyeCare). This feature offers SAG-based OrthoK fitting for the Paragon CRT and calculates each lens parameter required for the fit independently, giving a higher success rate with the first lens fit.

The predicted Paragon CRT lenses were ordered, for the left eye:

OD BC 8.3 RZD 550/575 LZA -33/-34

OS BC 8.4 RZD 525/575 LZA -33/-35

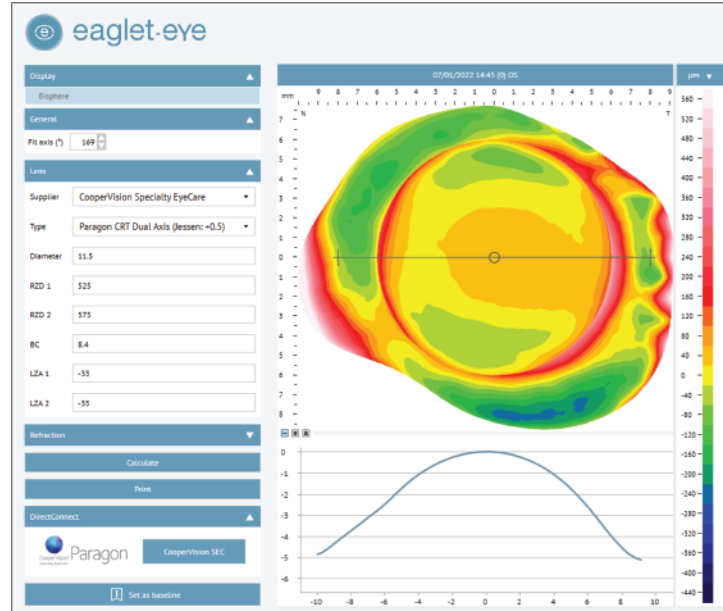


Figure 2 First Lens Fit OrthoK lens prediction.

One-week follow up

For follow up, the ESP offers a quick and easy way to get all relevant maps. In one mouse-click the axial and tangential curvature maps are created (Figure 4). The Tangential curvature difference map after one week shows good centration of the lens compared to the position of the pupil. The Axial curvature difference map, as well as the Power profile, show that the lens corrects about 2 Diopters. The follow up over refraction after 1 week was: OD Plano VA20/20 | OS Plano VA 20/20.

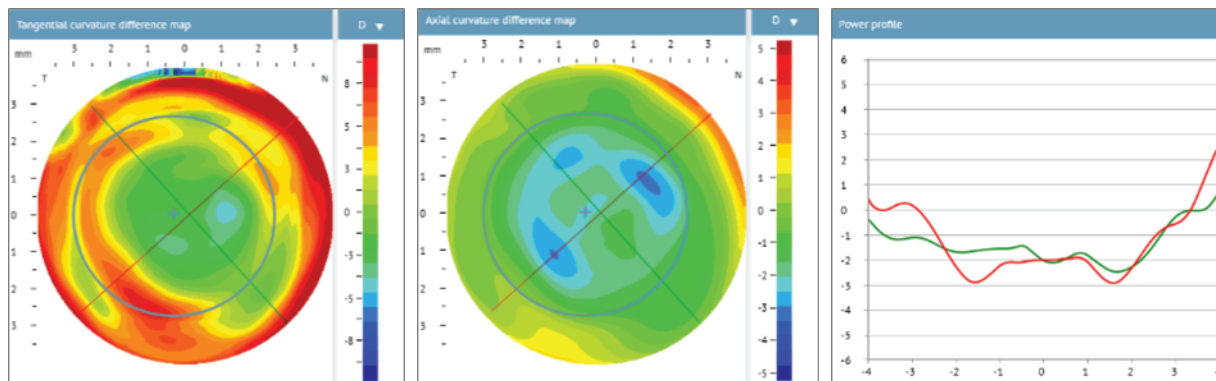


Figure 3 One-week difference maps with the ESP. As an extra tool, the Power profile shows the Diopters reduction.

Conclusion

With one single shot measurement, the ESP is able to get the precise height data of the entire cornea, needed for a successful OrthoK treatment. The DirectConnect function sends then all these Profilometry data directly to the lab, making the ordering of the lenses simple and exact. It speeds up the whole process for the child, the parents and the practitioner.