



Split Prism Wavefront Guided Scleral Lenses to Resolve Vertical Diplopia and Improve Aniseikonia-like Symptoms

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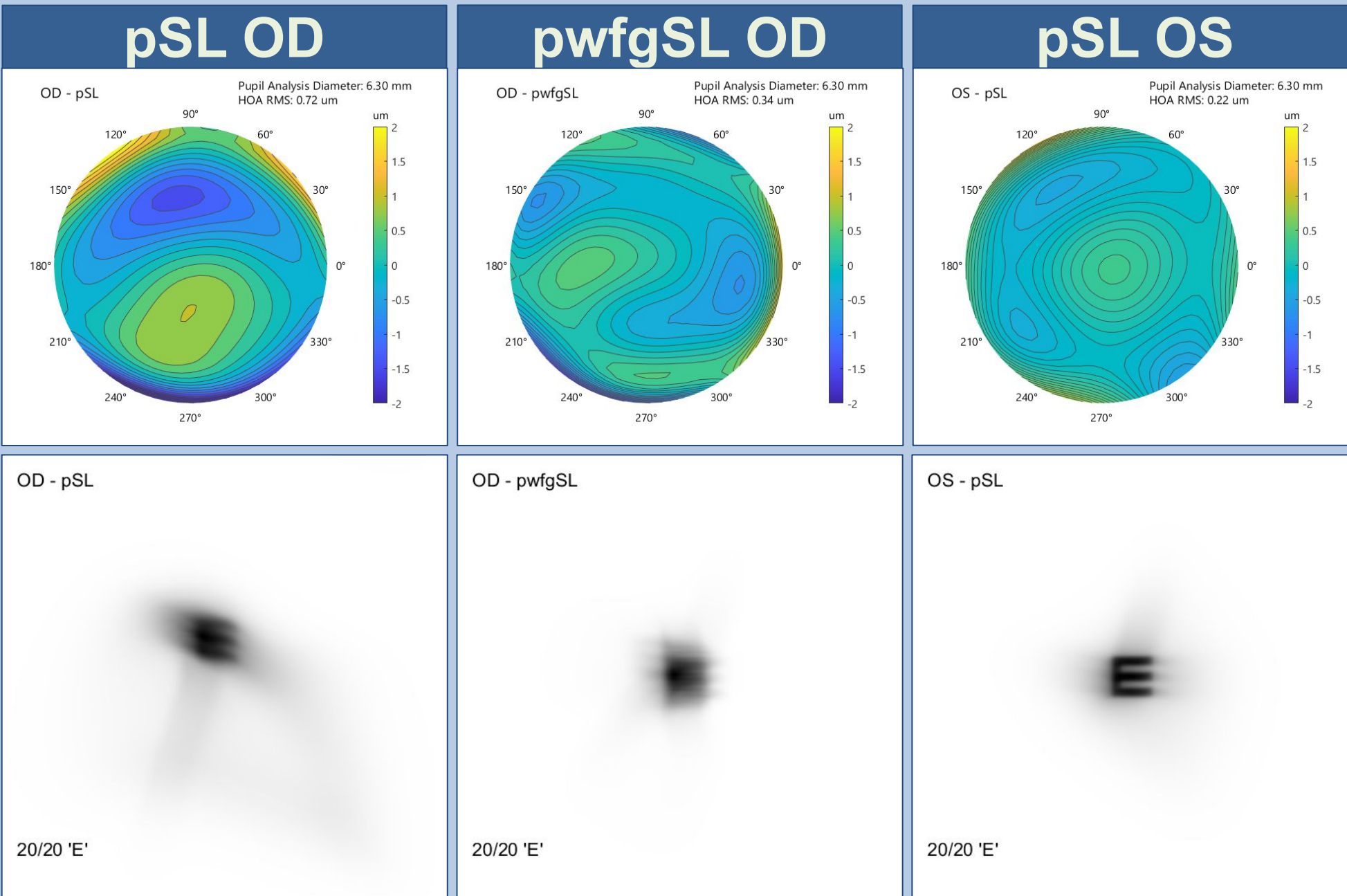
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Introduction

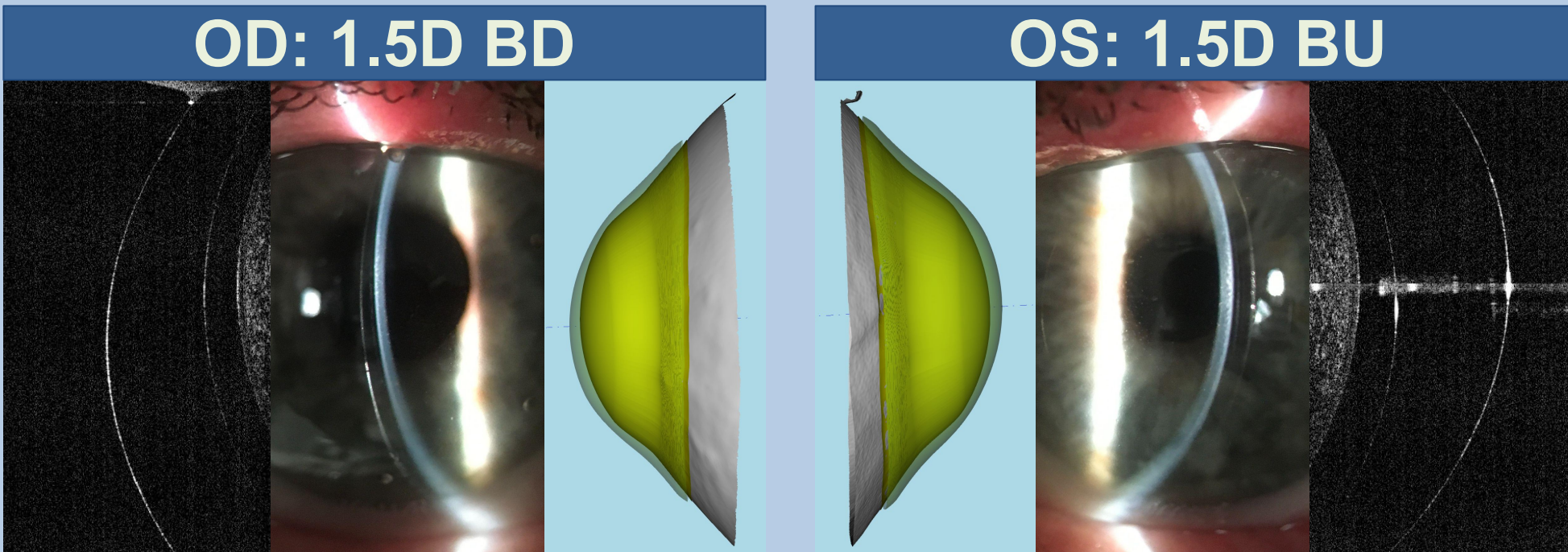
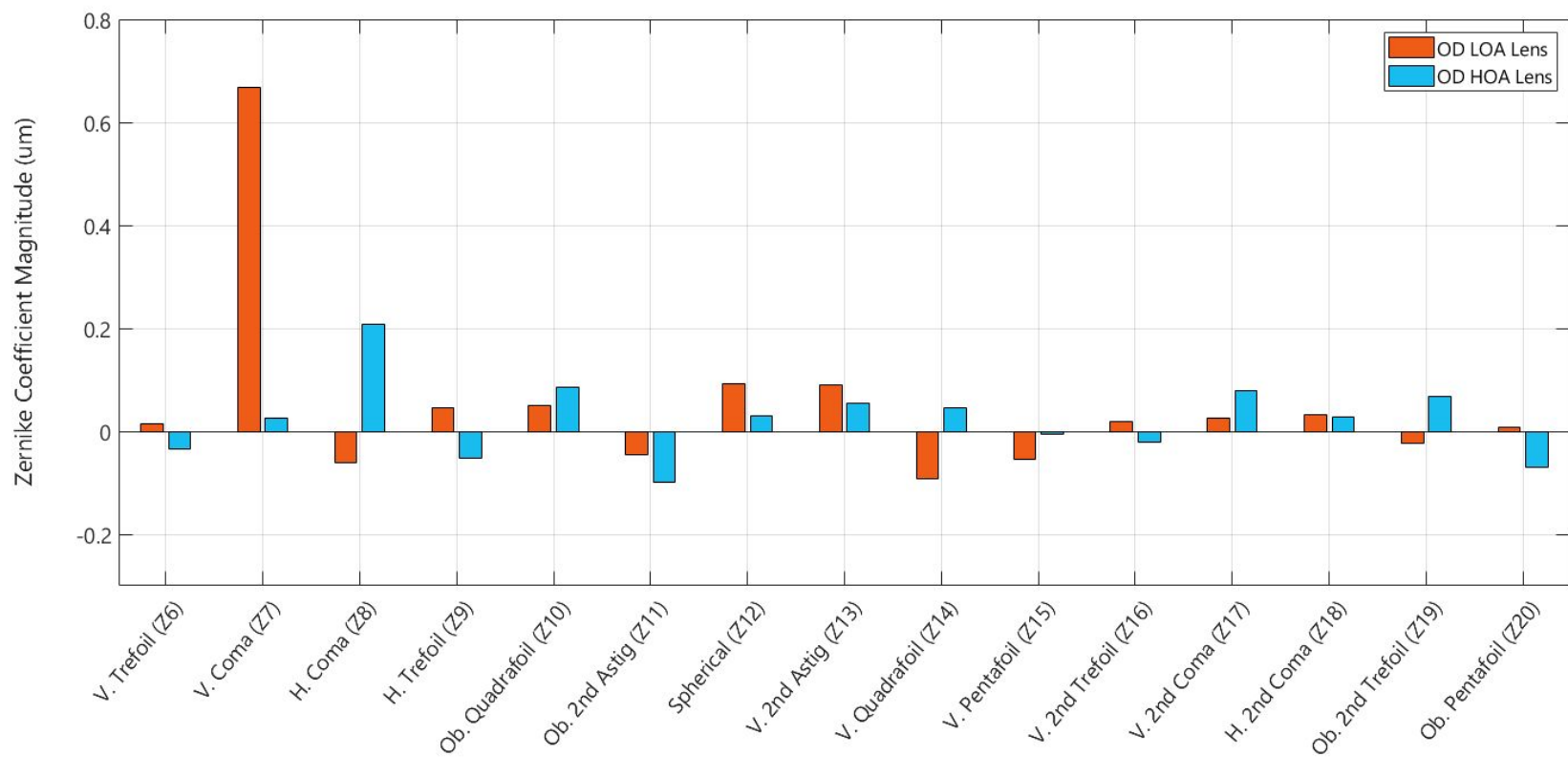
- Wavefront-guided scleral lenses (wfgSLs) can improve visual acuity (VA) and reduce residual higher-order aberrations (HOAs).¹
- This case report discusses the use of prism-incorporated wfgSLs (pwfgSL) to resolve vertical diplopia and aniseikonia-like symptoms.

Case Description

- A 56-year-old male with myopia and a right hypertropia reported visual discomfort and an aniseikonia-like “coke-bottle” visual distortion in the right eye with prism-incorporated spectacles.
- Ocular history: Cataract surgery OU. Pneumatic retinopexy with gas bubble tamponade OD and silicone oil tamponade OS.
- He was fit with a prism incorporated scleral lens (pSL) (EyePrintPro, EyePrint Prosthetics, Lakewood, CO) with 3pd of vertical prism split to correct the diplopia but the aniseikonia-like symptoms persisted.
- A pwfgSL was created for the right eye only, in an attempt to balance the visual quality.
- A comprehensive system (Ovitz, xWave, Rochester NY) that included a dot matrix on the pSL and a wavefront aberrometer with iris and dot registration with direct data transfer was used to create a pwfgSL.
- Best contact lens visual acuity (BCLVA), and total higher-order root mean square (HORMS) was measured.
- Data was collected after 2 weeks of lens wear and a minimum of 3 hours of wear prior to examination.



OD Zernike Coefficient Comparison



Results

- BCLVA with pSL was 20/20-2 OD and 20/20 OS. Double vision was resolved but there were minimal improvement to aniseikonia-like symptoms.
- Aberrometry over pSL revealed a total HORMS of 0.72μm OD and 0.22μm OS (at a 6.3 mm pupil diameter).
- BCLVA with the pwfgSL in the right eye was 20/20
- pwfgSL HORMS in the right eye was 0.34 μm, a 52% reduction in HOAs relative to the pSL.

Conclusions

- The use of pwfgSLs OD and pSL OS was effective in managing both diplopia and aniseikonia-like symptoms.
- The patient reported a significant improvement in the aniseikonia-like symptoms with more balanced visual quality between the two eyes.

References

- Hastings GD, Applegate RA, Nguyen LC, Kauffman MJ, Hemmati RT, Marsack JD. Comparison of Wavefront-guided and Best Conventional Scleral Lenses after Habituation in Eyes with Corneal Ectasia. Optom Vis Sci. 2019 Apr;96(4):238-247

Disclosures

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