

# "I am not Lazy...My Doctor Was!" Utilizing Hybrid Lens Designs on "Amblyopic" Anisometropic Astigmat

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## BACKGROUND

Amblyopia, commonly referred to as "lazy eye" can manifest in a variety of ways including strabismus, anisometropia, astigmatism, myopia, cataract, and other conditions resulting in visual deprivation. Anisometropia is defined as a condition where each eye has a significantly different refractive error, usually differing in at least 3.00D.<sup>1</sup> The main focus of this case series will be refractive amblyopia due to anisometropia and ultimately uncorrected astigmatism. Varying treatment options have been used including patching, spectacles and contact lenses with the latter offering the least amount of aniseikonia and potentially improved outcomes. Since many of these patients are children, it is often challenging to discover the astigmatic portion in the highly ametropic eye thus that portion remains untreated. Limited parameters or practitioner avoidance, aka "laziness" can also contribute to this deepening amblyopia. Recent developments in specialty contact lenses have offered new options for patient with high amounts of spherical anisometropia and astigmatism. This case series demonstrates the benefits of ultimately correcting this portion of the prescription even after decades of lens wear.

This case report will focus on two patients followed for 10+ years by the same practitioner at the University of Chicago Hospital, SoLo Eye Care and the Illinois Eye Institute (IEI) presenting with anisometropia and high myopia with uncorrected cylinder that were treated with Duette hybrid contact lenses.



IEI EYE CARE & EYEWEAR GALLERY



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## CASE SERIES

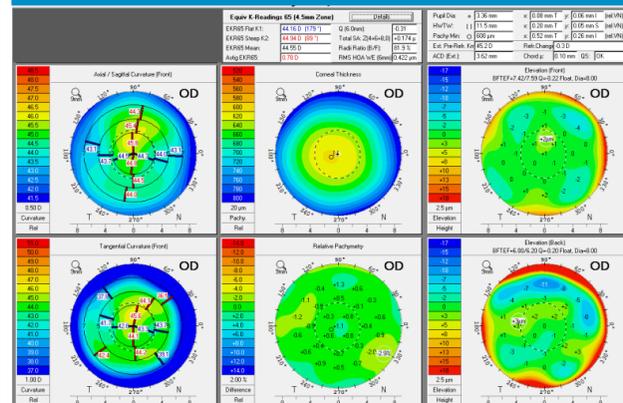
Patient 1: 29 yo AAF originally diagnosed at the age of 5 with 5 D anisometropia. At that time and for the years subsequent, she was treated with spherical soft lenses with various powers and brands as the years progressed. At times, she experienced compliance issues with patching, I/R and hypoxia however as she matured, she became a more mature lens wearer. Her best visual potential was OD = 20/20 and OS = 20/60. Most recently, she developed elevated IOP secondary to steroid treatment of Lupus and her awareness of visual acuity became more astute. She presents 6 months ago wearing Bausch & Lomb's PureVision lenses, OD -6.00D sphere, OS -11.50D sphere with the visual acuity (20/20, 20/60) however reports "blur" in the left eye. Her IOP was well managed with a prostaglandin, however a stable and repeatable over-refraction indicates OS = pl -1.00 015 = 20/40. Topography was performed and revealed significant corneal cylinder measuring 43.70 @ 010/ 45.80 @100. The patient was offered a spectacle over-correction to be worn over the soft spheres, gas permeable lenses or hybrid lenses. She opted for hybrid lenses and was successfully fit in SynergEyes Duette® lens. She achieved her best lifetime visual acuity = 20/25-.

Patient 2: 24 yo WM who presented 5 years ago with a history of anisometropic amblyopia of 5 D and wearing spherical soft lenses. Astigmatism was discovered at that time and he was re-fit in a toric lens in the -8D left eye, however cylinder was not available for the amblyopic -15D right eye. He refused rigid lenses due to his occupation and the custom soft toric was cost prohibited. At the time one of the major contact lens companies was in process of expanding their parameters to meet this patient needs however after waiting several years, this did not come to fruition. He opted for a spectacle over-correction. Six months ago he presents wearing CooperVision Biofinity® lenses of the following: OD -15.00D 20/40 and OS -8.50 -0.75 x 170 20/25. Topography indicated corneal astigmatism and mild ectasia: OD = 43.36/44.71 @ 031 OS = 43.47/44.47 @ 074 that had been uncorrected for. A SynergEyes Duette® hybrid lens was ordered for the right eye rendering 20/20- vision and an updated Coopervision Biofinity Toric® for the left. The patient has requested to have the left eye refit in a hybrid lens.

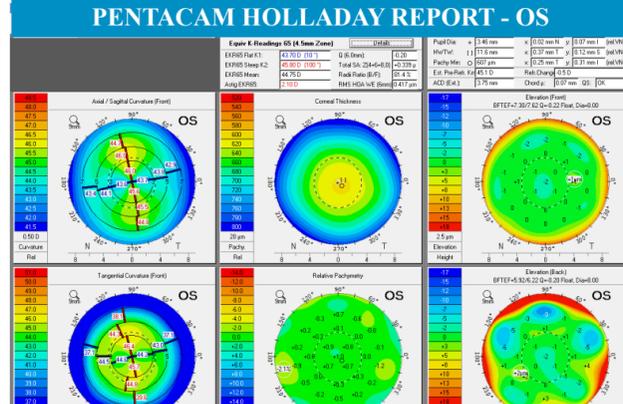
Both of these patients show evidence of the amazing benefits of specialty contact lenses. Each patient seemed unable to reach 20/20 vision due to refractive amblyopia, have now been correctable to their best visual acuity by means of these lenses. It is clear that there is true promise for optimal visual acuity in the field of specialty contacts.

### PATIENT 1

#### PENTACAM HOLLADAY REPORT - OD



#### PENTACAM HOLLADAY REPORT - OS



#### ANTERIOR SEG PHOTOS

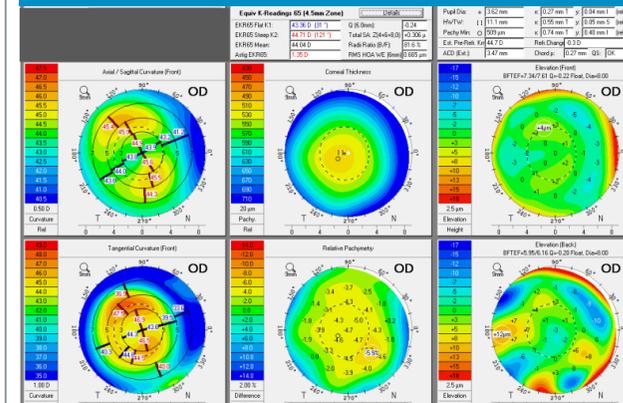


#### ORDERED LENSES

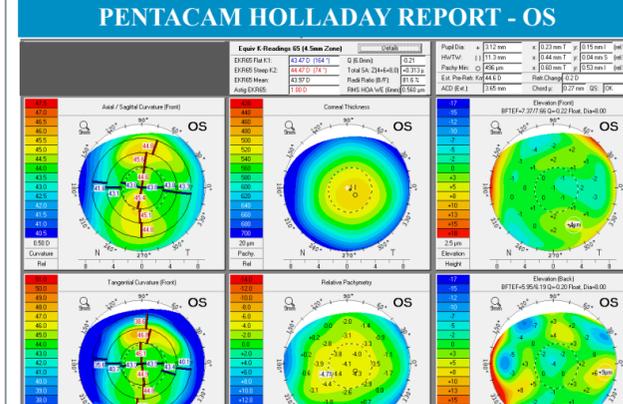
OD: Biofinity Energys® / BC 8.6/ -6.00 SPH  
OS: SynergEyes Duette® TH/ BC 7.6/ SC 8.4/ -11.50 SPH

### PATIENT 2

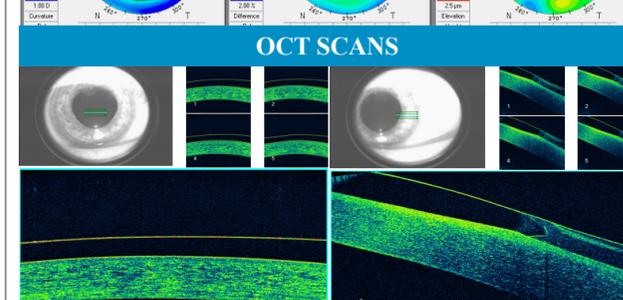
#### PENTACAM HOLLADAY REPORT - OD



#### PENTACAM HOLLADAY REPORT - OS



#### OCT SCANS



#### ORDERED LENSES

OD: SynergEyes Duette® TH/ BC 7.7/ SC 8.4/ -14.50 SPH  
OS: Coopervision Biofinity Toric® / BC 8.7/ -9.00 -0.75 x 170

## RELEVANCE

Both of these patients achieved much better visual outcomes when their astigmatism is managed. Often we neglect this portion in high ametropes because we assume that the amblyopia is a result of the difference in the spherical portion.<sup>2</sup> We can unmask this by utilizing topographical information in this population and thus determining better treatment options and ultimately better visual outcomes. Finally, it is important to utilize specialty lenses to correct astigmatism. A hybrid contact lens offers stable GP optics in the center, and the comfort of a soft surround. It is important for us to remember that we are in control of the management of these patients. The continuous development of new specialty contact lens technology has specifically helped with the treatment of patients with anisometropia.<sup>6</sup> Hybrid lenses give the optometrist the necessary parameters to correct for a patient's anisometropia and allow for the avoidance of anisocoria.<sup>4</sup> Being able to fully correct a patient's refractive error will help in the avoidance amblyopia associated with anisometropia, and allow the patient to experience clear, comfortable, binocular vision.

Advancement in contact lens technology has drastically increased in a variety of different applications. While many optometrists are aware of the advancement of lenses in the treatment of ocular surface diseases like keratoconus, contact lens optics are also pushing the standard of care to new levels. In the past, contact lens had limited ranges, reducing the number of potential candidates for lens wear. It was not uncommon for patients to sacrifice clarity of vision due to the limited parameters. However, with the expansion of contact lens development, more and more patients are experiencing the clearest vision they have ever had with the use of specialty contact lenses.

## REFERENCES

1. Daw, Nigel W. "Critical Periods and Amblyopia." Archives of Ophthalmology, vol. 116, no. 4, Jan. 1998, p. 502, doi: 10.1001/archoph.116.4.502.
2. Kutschke, Pamela J., et al. "Anisometropic Amblyopia." Ophthalmology, vol. 98, no. 2, 1991, pp.258-263., doi: 10.1016/s0161-6420(91)32307-8.
3. Rayner, Arline W. "Aniseikonia And Magnification In Ophthalmic Lenses. Problems And Solutions." Optometry and Vision Science, vol. 43, no. 10, 1966, pp. 617-632., doi: 10.1097/00006324-196610000-00001.
4. Winn, B. "Reduced Aniseikonia in Axial Anisometropia with Contact Lens Correction." Ophthalmic and Physiological Optics, vol. 8, no. 3, 1988, pp. 341-344., doi: 10.1016/0275-5408(88)90185-8.
5. Barrett, Brendan T., et al. "The Relationship between Anisometropia and Amblyopia." Progress in Retinal and Eye Research, vol. 36, 2013, pp. 120-158., doi:10.1016/j.preteyeres.2013.05.001
6. Roberts, C J, and G G W Adams. "Contact Lenses in the Management of High Anisometropia Amblyopia." Eye, vol. 16, no. 5, 2002, pp. 577-579., doi: 10.1038/sj.eye.6700159.