Multiple Benefits with Multifocals: Myopia Control in a Five-year Old High Myope with Near Esophoria

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Background: With growing concern of myopia epidemic across the globe, myopia control has gained much popularity in clinical practice. Currently there are limited options for controlling myopia in patients with high myopia and astigmatism. Herein, we report on myopia control success of a five-year-old high myope with astigmatism. Soft multifocal (MF) lenses were effective in slowing progression of his myopia and providing improved and stable binocular function over a 3-year period.

Case Presentation

In 2016, a five year- old male presented to our clinic for a contact lens fitting for myopia control. Family ocular history was remarkable for having both parents and a brother with high myopia. Initial best corrected visual acuities were 20/25 OD and OS at distance and 20/20 OD and OS at near. His cycloplegic manifest refraction was -5.75-1.25 x 180 OU. Cover test revealed orthophoria at distance, and 5 prism diopters (PD) of esophoria at near. His amplitudes of accommodation were 20 diopters (D) OD and OS. All other entrance tests and biomicroscopy findings were unremarkable. Due to concerns regarding cost, the patient was initially fit with Cooper Vision's Biofinity Center Distance multifocals (MF). With the launch of Visioneering Technologies (VT) NaturalVue MF center distance lenses, the patient was re-fit into these daily disposable lenses in 2017. In 2019, more than three years after his initial fit in MF lenses, our patient's refractive error and visual acuities have remained stable and his binocular vision improved (Table 1).

Discussion

Orthokeratology, soft MF contact lenses, and use of anti-muscarinic agents are the most effective methods of myopia control[1]. However, there are limited options for controlling myopia in patients with high myopia and astigmatism. For these patients, other alternatives could be considered such as employing over spectacles with the residual toric correction, utilizing a toric MF contact lens, or prescribing low dose topical atropine. Unfortunately, our patient was not willing to use spectacles over contacts. Currently, there is only one center-distance multifocal toric lens available which is re-useable with low oxygen transmissibility. Hence, corneal health and hygiene are concerns with that method. Additionally, his visual acuities were similar with and without the astigmatism correction. Atropine treatment wasn't utilized as the parents weren't interested in using medication. As Table 1 reflects, MF contacts without astigmatism correction successfully controlled myopia in our patient. All in all, soft multifocal lenses provided myopia control in a cost-effective, safe, and convenient method for the patient and his parents.

1. Walline JJ., Myopia Control: A Review. Eye Contact Lens. 2016 Jan;42(1):3-8.

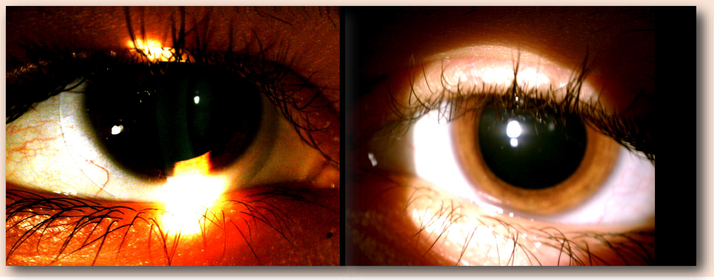

Figure 1. NaturalVue multifocal contact lenses on patient's eyes

Table 1. Refractive Parameters over the past four years	2016	2017	2018	2019
Cycloplegic Refraction	OD: -5.75-1.25X180 OS: -5.75-1.25X180	OD: -5.00-1.50X010 OS: -5.25-1.25X180	OD: -5.25-1.25X005 OS: -5.25-1.00X005	OD:-5.50-1.50X180 OS:-5.50-1.00X180
Distance VA (spectacles and contact lenses)	20/25 OD and OS	20/25 OD and OS	20/20 OD and 20/25 OS	20/25 OD and 20/25 OS
Distance Cover Test cc (spectacles)	Orthophoria	Orthophoria	Orthophoria	Orthophoria
Near Cover Test cc (spectacles)	4 pd Esophoria	2 pd Esophoria	Orthophoria	Orthophoria
Near Cover Test cc (contact lenses)	3 pd Exophoria	3 pd Exophoria	2 pd Exophoria	Orthophoria
Contact Lens Rx	CV Biofinity MFs OD -5.50D OS -6.00D +2.50D OU Center Distance	CV Biofinity MFs OD -5.50D OS -5.50D +2.00D OU Center Distance	VT NaturalVue MFs OD -5.50D OS -5.50D	VT NaturalVue MFs OD -5.50D OS -5.50D

Conclusion Soft MF contact lenses are a promising option for slowing the progression of myopia in young children. These lenses may also benefit patients with near esophoria. Future studies on healthy strategies for controlling myopia in patients with high myopia and astigmatism are warranted.