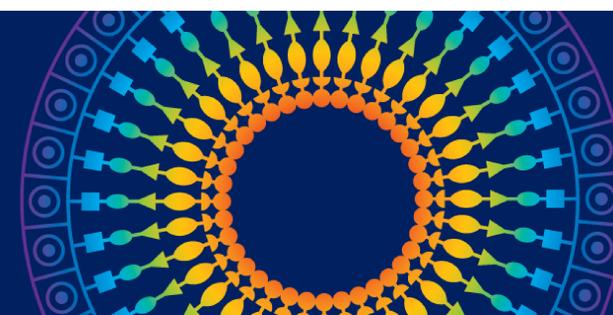


Contact Lens Options for the Extreme Myope: A Case Series

Vicente, Jennifer; Joslin, Charlotte; McMahon, Timothy; Scanzera, Angelica; Shorter, Ellen.

University of Illinois at Chicago - Department of Ophthalmology and Visual Sciences



INTRODUCTION

High myopia is defined as refractive error of -6 diopters or greater or axial length of 26.5mm or more [1]. Most patients with high myopia can achieve 20/20 vision with spectacles or commercially available soft contact lenses. However, patients with very high amounts of myopia and posterior pathology secondary to axial elongation often have reduced best corrected visual acuity. These patients in particular may benefit from contact lenses, both with improved cosmesis and visual function. In patients without macular pathology, 1-2 lines of improvement in visual acuity due to reduced spectacle magnification can be expected [2]. In patients with reduced central vision, contact lens correction offers improved peripheral vision and a larger field of view due to decreased vertex distance [2]. When fitting patients with pathological myopia, it is important to remember that in addition to the challenges that come with contact lens wear, high myopes pose unique considerations when choosing the right contact lens. This is a case series of three patients with high myopia fit with specialty contact lenses.

CASE 1: THE FRUGAL MYOPE

A 37-year-old female presented for a comprehensive eye exam with a chief complaint of blurry vision due to broken spectacles.

Her manifest refraction was:
 OD -17.25-1.75x087 VA 20/25-
 OS -16.50-1.50x090 VA 20/25-

Topographies were normal with about 1.50D of corneal cylinder in each eye (values in summary below). She was interested in exploring contact lens options available as she had never previously worn contact lenses, however, she was concerned with the expense. Toric power availability limited commercially available soft lens options and cost limited the use of a customized soft lens. The patient was educated about the advantages of a rigid corneal gas permeable lens but was not interested due to fear of discomfort. Thus, a trial of Biofinity XR (@CooperVision) silicone hydrogel sphere lenses (-15.00 OD, -14.50 OS) were ordered. At follow up, the patient reported good comfort but vision was reduced to 20/60 OD and 20/30- OS partially due to residual uncorrected astigmatism. Corneal gas permeable lenses were again recommended to improve visual acuity as an economic alternative. Small diameter corneal gas permeable lenses were fit in order to minimize lens weight and facilitate centration. After an initial adaptation period, the patient achieved 20/20- and 20/25 vision OD and OS.

SUMMARY

	OD	VA	OS	VA
Keratometry	45.92/44.13@100	—	44.40/43.54 @075	—
Manifest Refraction	-17.25-1.75x087	20/25-	-16.50-1.50x090	20/25-
Trial Soft Lens	Biofinity XR 8.6/-15.00/14.0	20/60	Biofinity XR 8.6/-14.50/14.0	20/30-
Final RGP Lens	Boston XO/7.63/-17.25/8.6	20/20-1	Boston XO/7.63/-15.00/8.6	20/20

CASE 2: THE AGING MYOPE

A 57-year-old male with a history of retinal detachment in the right eye and myopic CNVM in the left eye presented for a yearly exam. He was a longtime wearer of quarterly replacement custom soft hydrogel SpecialEyes (@SpecialEyes) lenses and complained of decreased vision OU.

His manifest refraction was:
 OD: -20.00D (vertexed: -16.00D) VA 20/400
 OS: -26.00D (vertexed: -19.87D) VA 20/70

Over-refraction over his current contact lenses revealed a myopic shift of 2D in the right eye and 1D in the left eye improving visual acuity to previous BCVA. Dilated fundus examination revealed increasing nuclear sclerotic cataracts and stable retinal status OU. After discussing the risks and benefits of cataract removal in a patients with high myopia (i.e. intraocular lens miscalculation, retinal detachment, posterior capsular rupture, etc.) and that he would have to remain out of contact lenses for an extended period of time prior to surgery, the patient decided to defer surgery and order new Specialeyes custom soft contact lenses (54%/8.5 B.C/14.8mm diameter).

CASE 3: THE DRY MYOPE

A 58 year-old female presented with complaints of severe dryness and decreased wear time with her corneal gas permeable lenses. Her ocular history was remarkable for posterior staphylomas in both eyes.

Her manifest refraction was:
 OD: -37.00D (vertexed: -25.62D) VA 20/100
 OS: -33.00D (vertexed: -23.62D) VA 20/40

Several contact lens options were discussed including scleral lenses and bandage soft contact lenses in order to minimize ocular surface issues. She was fit with scleral gas permeable lenses however discontinued due to poor tolerance. Ultimately, a combination of daily disposable Acuvue TruEye (@Johnson & Johnson Vision Care) -12D lenses with -14D and -12D spectacles over the contacts helped the patient achieve comfortable wear and functional vision.

SUMMARY

	OD	VA	OS	VA
Manifest Refraction	-37.00sph (vertexed: -25.62D)	20/400	-33.00sph (vertexed: -23.62D)	20/80
RGP Rx	Boston XO/7.5/-21.50/9.8	20/125	Boston XO/7.46/-21.25/9.8	20/40
Final Contact Lens	Acuvue TruEye/8.5/-12.00/14.2	20/100	Acuvue TruEye/8.5/-12.00/14.2	20/40
Final Spectacle Rx	-14.00sph		-12.00sph	

CONCLUSION

In this series, several contact lens options and contact lens/spectacle combinations were successfully adapted to meet each individual patient's ocular needs. Benefits of contact lenses over spectacles include: improved cosmesis, higher quality optics, and increased peripheral vision. Lens modality and power availability need to be considered carefully when fitting the pathological myope in order to maintain good comfort, maximize remaining vision and above all, protect the ocular health of the eyes. High myopes deal with the same contact lens issues as other patients (i.e. dryness, rigid lens intolerance, cost, etc.) with the added challenge of lens power availability. In addition, the aging myope must deal with inevitable presbyopia and cataracts. With the prevalence of myopia increasing over the past couple of decades [3], it is important for optometrists to be able to provide contact lens options that fit their needs.

REFERENCES

1. Duker, Jay S., and Myron Yanoff. "Degenerative Myopia." Ophthalmology, Mosby, 1999.
2. Vincent, Stephen J. "The Use of Contact Lenses in Low Vision Rehabilitation: Optical and Therapeutic Applications." Clinical and Experimental Optometry, vol. 100, no. 5, 2017, pp. 513-521.
3. Vitale, S., et al., Increased prevalence of myopia in the United States between 1971-1972 and 1999-2004. Archives of Ophthalmology, 2009. 127(12): p. 1632-1639.