



Background

- The use of contact lenses for correcting ametropia has been around for decades, yet some patients who are great candidates for them are not educated on the options available to them.
- This case presents an adolescent who is fit into rigid gas permeable (RGP) contact lenses due to her high myopia and astigmatism in set the setting of retinopathy of prematurity (ROP).
- ROP is a disease seen in babies born prematurely that can cause blindness. The normal development of retinal vasculature is interrupted and an abnormal growth of capillaries results¹. The two major risk factors of ROP are premature birth and neonatal use of supplementary oxygen after delivery².
- Oxygen is pertinent to give because of the underdeveloped lungs in premature babies¹. In the developing world, the prevalence of this disease is increasing².
- A study by Nissenkorn et al. has shown that 50% of premature infants with ROP become myopic, while only 16% of premature infants without ROP become myopic³. Furthermore, they found that there is a positive correlation between the degree of myopia and the severity of ROP³. Contact lenses can play a role for these highly myopic and astigmatic patients.

Case Details

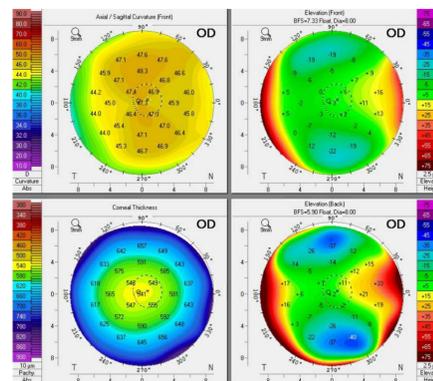
- 17 year-old female initially presented to Mass Eye and Ear (MEE) for a peripheral field test.
- Ocular history:
 - Retinopathy of prematurity OU
 - Multiple retinal detachments, s/p laser therapy repair OU
- Patient was going to be starting high school and getting her driver's permit soon - this prompted her mother to inquire about her daughter's safety while driving, even if she is passing the vision requirements.
- Patient is being followed by her local pediatric ophthalmologist since birth - he made the referral to MEE for a peripheral field test.

	Spectacle Prescription	Entering Visual Acuity
OD	-15.50 -2.50 x040	20/50-2 PHNI
OS	-13.50 -2.50 x155	20/40 PHNI

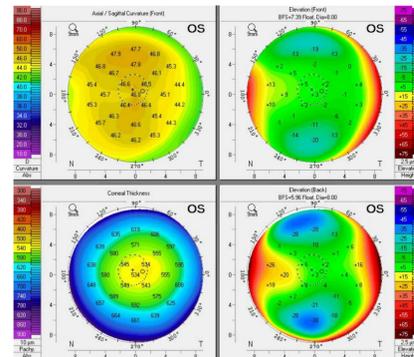
- Goldmann visual field findings suggested that the patient is eligible to drive, though there was a mild inferior nasal depression in each eye.
- Provider at MEE who assessed the visual field discussed a referral to the contact lens department, however mother and patient were hesitant as they had been told since she was a young age that she is a non-candidate for contact lenses.

Contact Lens Fitting

- One month later - patient and mother return for contact lens fitting appointment.
- Manifest Refraction:
 - OD: -16.25 -2.25 x030 20/50-2
 - OS: -14.25 -2.00 x010 20/30-2
- Slit lamp exam: Unremarkable OD, OS



K-Values OD
45.7/47.9 @98.6°



K-Values OS
45.5/47.3 @89.6°

- Extensive discussion on contact lens options: corneal RGP vs soft toric vs custom soft toric vs hybrid.
- After giving pros and cons of each, patient and mother opted to try RGPs first due to the possible increase in BCVA. They would consider soft contacts only if RGPs are intolerable to patient.
- The following contact lenses were ordered empirically:
 - OD: Optimum Comfort 7.26 BC / 9.3mm / -14.25D / Dot
 - OS: Optimum Comfort 7.33 BC / 9.3mm / -12.75D
- At initial lens pick-up, VA 20/50-2 OD and 20/30-1 OS with minimal over-refraction.
- Lens was dispensed after successful insertion and removal training was completed.
- At three-week follow-up, the power and edge profile of the lens was adjusted, and a second pair of lenses was ordered.

Results

- At six-week follow-up, patient had been able to wear lenses for up to eight hours with adequate comfort and her corneas were tolerating lenses well. New lens pair dispensed with the following parameters:

	Final RGP Lens	Visual Acuity
OD	Optimum Comfort 7.26 BC / 7.7 OZ 9.3mm / -14.50D / +lenticular	20/30-2
OS	Optimum Comfort 7.33 BC / 7.7 OZ 9.3mm / -13.00D / +lenticular	20/20-3

- Plan: RTC three months for progress evaluation and corneal tolerance check.

Discussion

- A variety of contact lens options exist to help patients. These options range from commercial silicone hydrogel and hydrogel contact lenses to custom corneal or scleral rigid lenses, and hybrid lenses.
- In this case, the patient's BCVA improved by two lines in each eye with RGP lenses (vs glasses). Cosmetically, the patient was pleased to have an alternative to her habitual thick glasses.
- Specialty lenses have therapeutic indications, can be used for high refractive errors, anisometropia, cosmesis, and irregular corneas to due a variety of corneal conditions.
- It has been documented in literature that correction with RGP lenses in a normal population resulted in significantly better optical quality than soft contacts or glasses⁴. Furthermore, another study with highly myopic and astigmatic patients demonstrated vision improvement in RGP lenses vs glasses in over 48% of patients⁵.

Conclusions

The use of RGP contacts has increased this patient's BCVA by two lines in each eye and improved her confidence as she begins driving and junior year in high school. It is pertinent for us as optometrists specialized in contact lenses to educate our patients and other health care professionals on the benefits and many uses of contact lenses.

References

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