

Fitting Orthokeratology Contact Lenses

Using Novel Empirical Fitting Approach

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Introduction

Orthokeratology contact lenses are commonly fit using a diagnostic fitting set with many lenses. Practitioners select initial lenses and possibly several others to troubleshoot, if necessary, to attempt the best in-office fit. Using a novel empirically fit orthokeratology lens such as Emerald™ (Euclid Systems), practitioners can reduce chair time required to fit lenses diagnostically, and free up space that otherwise would be taken up with large diagnostic sets. This case report highlights three patients fit with the Emerald™ lens.

Materials and Methods

Three optometry students aged 24, 23, and 23, all with varying degrees of mild to moderate myopia were fit empirically with the Emerald™ orthokeratology lens using manifest refraction, keratometry readings, and horizontal visible iris diameter (HVID). This is a vision shaping treatment (VST) lens with a four zone design. Results were measured using corneal topography, unaided visual acuity and manifest refraction at one day, one week and one month. One week results are shown below with tangential corneal topographies of the right and left eye.

Discussion

When fitting patients with orthokeratology contact lenses, the practitioner has many choices in today’s market. Not only are there multiple labs to choose from, but each lab may have a different way to fit their lens. One of the most popular lens designs utilizes a large trial lens dispensing set which allows the practitioner to apply and evaluate diagnostic lenses, and dispense from the set. Another method used by several labs involves empirically ordering the initial pair. Each lab may require different parameters to order the first trial lens such as manifest refraction, keratometry readings, horizontal visible iris diameter (HVID), and/or corneal topography. When fitting empirically in any lens, it is usually the expectation that the first pair received is going to be a trial pair and that at least one subsequent pair will be ordered, due to the nature of the fitting, but that the initial pair will be a very good initial diagnostic lens.

In this case series, the Emerald™ (Euclid Systems) orthokeratology lens was used to fit three optometry students. This lens advertises an 85% first fit success rate, meaning the final lens dispensed to the patient would be the first lens ordered¹. To order this lens, the practitioner sends them a manifest refraction, keratometry readings, and HVID. All three patients fit in this case series, demonstrated success with the first pair, although it was expected to have to order at least one patient a new set of lenses.

Conclusion and References

Conclusion

Fitting empirically was a novel (at least to the author) method to fit orthokeratology contact lenses. By using this method, it can improve practitioner and patient experience by reducing chair time needed to fit these lenses. The empirical nature of the fitting provided easy ordering that was both quick and simple with an excellent initial success rate. As with any lens, there will still be times when having a diagnostic set may be helpful and the practitioner should be proficient in fitting these lenses using both methods. With today’s technology and labs, practitioners can have confidence that they can have success with empirical fitting, even with the first ordered lens, achieving good visual acuity and ideal topography.

References

- “Design and Procedure”. <https://euclidsys.com/for-practitioners/>

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Results

Patient 1 (24 yo male)

Pre-Treatment findings

Unaided Visual Acuity

20//400 OD/OS
20/400 OU

Manifest Refraction

OD: -2.75-0.50x157
OS: -3.25 sph

Keratometry

OD: 41.25/41.12 @ 153
OS: 41.50/41.37 @ 025

1 Week Findings

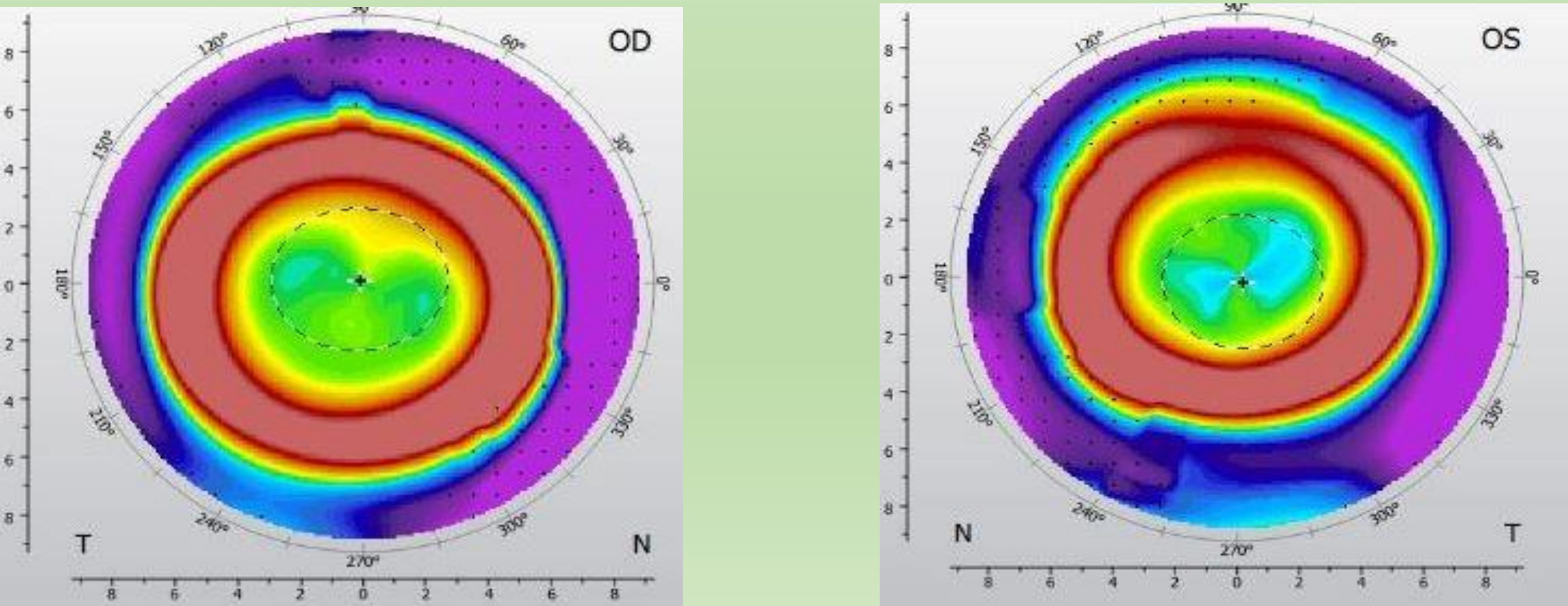
Unaided Visual Acuity

20/15 OD, 20/20 OS
20/15 OU

Manifest Refraction

OD: +0.50 sph
OS: Plano

1 Week Topography



Patient 2 (23 yo male)

Pre-Treatment findings

Unaided Visual Acuity

20/200 OD, 20/200+ OS
20/150- OU

Manifest Refraction

OD: -2.50-0.50x122
OS: -3.00 sph

Keratometry

OD: 41.50/42.50 @ 004
OS: 41.75/42.50 @ 169

1 Week Findings

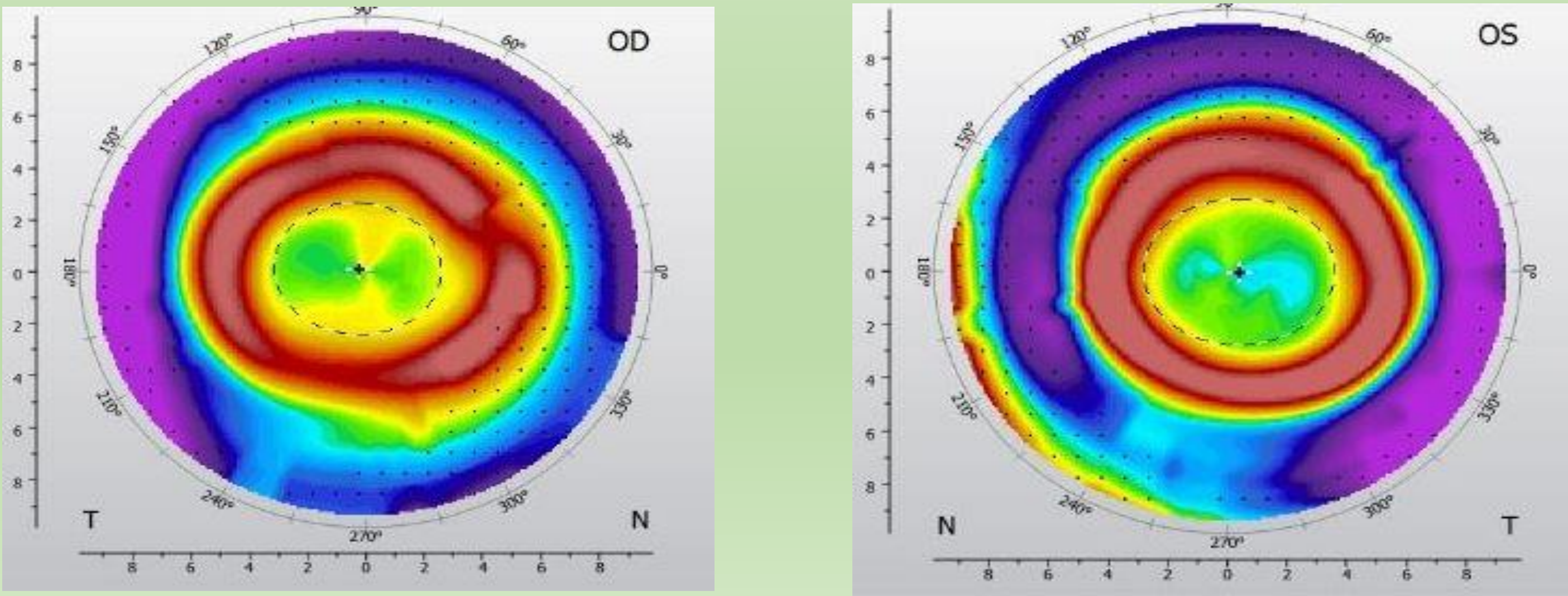
Unaided Visual Acuity

20/20+ OD/OS
20/15 OU

Manifest Refraction

OD: Plano
OS: Plano

1 Week Topography



Patient 3 (23 yo female)

Pre-Treatment findings

Unaided Visual Acuity

20/400 OD/OS
20/400 OU

Manifest Refraction

OD: -4.00-0.25x094
OS: -4.50 sph

Keratometry

OD: 44.00/44.25 @ 168
OS: 44.50/45.25 @ 035

1 Week Findings

Unaided Visual Acuity

20/20+ OD, 20/20- OS
20/15 OU

Manifest Refraction

OD: -0.50 sph
OS: -0.50 sph

1 Week Topography

