Posterior Optic Zone Diameters

Clinical Opinion 7/2022: Posterior Optic Zone Diameters

Euclid lens designs balance optic zone, reverse curve, fit curves and lens diameter to provide the best possible patient outcomes. We are continuously evaluating real-world research and clinical data to evaluate how to optimize OrthoK fits to deliver a balance of fit performance, myopia management and quality vision.

Our clinical team works to learn from researchers and doctors around the globe, to best understand how doctors can select the fit parameters specifically needed for the young adult OrthoK or pediatric patients using OrthoK for myopia. Reduced/enlarged posterior optic zone diameter (POZD) and steeper/wider reverse curves are often suggested by our clinical consultants to result in an adjusted treatment zone when requested by doctors.

1. **Fitting Performance**

Euclid's proprietary designs provide a consistent flattened topographical treatment area of 3-4mm for most patients, good lens centration and movement in the closed eye, as well as clear daytime vision.

2. **Myopia Management**

Orthokeratology has been shown in research to be an effective treatment for slowing myopia progression and axial elongation,[1]as well as reducing the risks of the sight-threatening medical complications linked to myopia.

A number of recent studies have shown linkage in reduced axial elongation using Ortho-K designs that provide increased peripheral retinal defocus by positioning positive aberrations and plus power closer into the pupil area,[3–5].[3 2] In addition, today there are over 20 independent research publications (with varying protocols) reviewing the effects of Ortho K lenses (many utilizing Euclid products), that show a slowing of axial length growth. (Data on file).

3. **Quality Vision**

While research has suggested that smaller corneal treatment zones may enhance myopic correction, the occurrences of visual complaints can be expected to rise if the practitioner choses a very small POZD to achieve this reduction in treatment area. Also, fit adjustments to maintain proper centration may also be needed as POZD are reduced.

Euclid continues to review historical records, perform internal clinical evaluations, and is currently supporting independent studies evaluating the fit and vision impact of very small POZ diameters with Euclid designs.

Our suggestions on selecting POZDs are provided only as general information to doctors so they may provide a carefully chosen prescription of Ortho K parameters to best balance the potential myopic advantages and visual performance for their patients.

Optic Zone Choice Guidance

<u>Patient selection suggestion:</u> Scenario 1

4. Low rate of myopia progression
    - Refractive increase less than ~0.50D/year[6]
    - Axial length increase less than ~0.2 mm/year[7]
5. 0-1 risk factors for myopia progression (Asian ethnicity,[8,9]parental myopia,[10]early onset of myopia age <9,[8,11]reduced outdoor time,[12]excessive digital device usage[13])

Note: Provides quality daytime vision by offering an optimized treatment zone. Reduces glare and halos without impacting overall fit and performance. This POZ is ideal for children with large pupils, older students, driving-age patients, or anyone who may be frequently out after dark.

Consider starting with 6.2 POZ to optimize fit and vision for this patient.

Patient selection suggestion: Scenario 2

6. Moderate rate of myopia progression
    - Refractive increase of ~0.50D-1.00D/year
    - Axial length increase of ~0.2-0.4 mm/year
7. 1-2 risk factors for myopia progression (Asian ethnicity,[8,9]parental myopia,[10]early onset of myopia age <9,[8,11]reduced outdoor time,[12]excessive digital device usage[13])

Note: Balances fit centration and daytime vision with the need to focus parameters on keeping myopia changes minimized. Most patients will be successful in this POZD but some may notice acceptable halos and glare.

Consider starting with 5.8 POZ to optimize myopia management for this patient.

Patient selection suggestion:

Scenario 3

8. High rate of myopia progression
    - Refraction increasing greater than ~1.00D/year
    - Axial length increasing more than ~0.4 mm/year
9. 3+ risk factors for myopia progression (Asian ethnicity,[8,9]parental myopia,[10]early onset of myopia age <9,[8,11]reduced outdoor time,[12]excessive digital device usage[13])

Consider starting with 5.4 POZ, available range (sphere) to focus strongly on managing this patient's myopia changes.

If this patient's cornea also shows the need for toricity, start with 5.6 POZ as studies on smaller POZD impact in this challenging design are still ongoing.
Note: Prioritizes myopia management. Patients can experience increased glare/halos and decentration with very small POZ size and/or require additional fit modifications to maintain centration and fit alignment.

FAQs

10. What can be the long-term risk of myopia and are those risk the clinical reason behind starting myopia management at early ages?
    - Site the Bullimore and Brennan study for better understanding of clinical issues.

11. If I have not seen many issues with the standard Euclid designs through the years, do I need to change my existing fits to the new recommendations?
    - *No changes are necessary if your patients are successful, and vision is stable.*

12. What kind of fit modifications might be needed when incorporating smaller than 5.4 POZD?
    - *The alignment curves may need to be adjusted to fit accurately along the cornea when incorporating smaller OZ's. Steepening the alignment curves is may be needed as the alignment zone is now located more central, steeper center of the cornea.*

13. Research is suggesting that smaller POZ may be more effective for myopia management. What POZD does Euclid suggest for young, rapidly progressing myopes?
    - *See Optic Zone Guidance*

14. When will the very small POZ diameters become available for toric designs?
    - *Toric designs with very small POZ's are currently under evaluation.*

15. Your recommendations of 5.8 is close to the original Euclid POZD. Why is that?
    - *Our historical standard POZ size is 6.2, which has been very successful with an 87% fitting success on millions of eyes around the world. A recently concluded, independent retrospective study evaluated the efficacy of the Euclid design in the 5.8 POZD over 3 years with children showing good patient acceptance, good day-time vision and slow axial length growth, supporting Euclid's current recommendation.*

16. Other companies may be recommending a 5.0 mm OZ. What is Euclid's clinical position on this?
    - *Based on different studies, the very small 5.0 mm POZD does not appear to be the perfect size for many patients, and the fit performance may differ by design. Thus, Euclid strives to offer a wide range of parameter options in precise increments (including the very small POZD) to improve the doctor's patient outcomes while balancing visual quality.*

17. I've had such great historical success with Euclid. What evidence is Euclid using to make these new suggestions?
    - *Our clinical teams are continuously evaluating real-world scientific data for new information that can be used to aid in patient success.*

Listed are a few examples our clinical team has studied in detail to help form the latest suggestions:

18. *Research such as the VOLTZ study[3] has provided insight on the role of smaller optic zones and its relationship to treatment zone size.*
19. *Small internal clinical evaluations have been performed in both the US and China to explore the impact of smaller optic zones on fitting characteristics and visual performance.*
20. *Independent studies are currently underway, evaluating the impact of very small POZD with Euclid designs.*
21. *A historical record review has found a high first fit success rate (85.85%) using the 5.8 POZD with the Euclid designs.*

References

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