Comparison of Treatment Zone Size in Two Orthokeratology Lens Designs

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BACKGROUND

Orthokeratology technology is one of the fastest growing contact lens products on the market today. With the increased interest in myopia management, this vision correction modality is great for children who are at risk for myopia progression. This is also a great option for any myopic patient seeking a lens free option during the day.

Guo et al. noted a positive correlation between a smaller treatment size and the effect on axial elongation[1]. In contrast, a smaller treatment zone may cause patients to have higher magnitudes of glare, flare, or halos due to a treatment size that is smaller than the pupil[2].

The standard 6.2mm OZ is offered by Euclid, whereas the Paragon CRT lens offers a standard OZ of 6.0mm. Whether or not the similar optic zone sizes in these two different designs will create the same treatment zone size has yet to be investigated.

CASE HISTORY

28 year old Caucasian female previously fit with Paragon CRT lenses presented for an orthokeratology lens refit. The patient learned about the Euclid orthokeratology lens and was curious to test out a different lens design.

Lens wear was discontinued for 9 days and daily disposable soft lenses were dispensed to provide adequate vision during the washout period (i.e. -0.50D, -1.00D, -1.50D, -1.75D, -2.00D, -2.25D). Euclid lenses were ordered empirically from baseline measurements.

Baseline
Refraction: OD -2.25/-0.50x005 20/15-1
OS -2.00/-0.50x165 20/15-1

Keratometry: OD 41.74/43.06@094
OS 41.68/43.27@076

Paragon CRT
Refraction: OD +0.25/-0.25x090 20/15
OS +0.25 DS 20/15-1

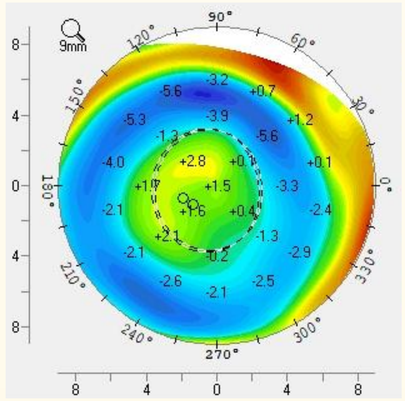
Euclid MAX Toric
Refraction: OD +0.25 DS 20/15
OS +0.50 DS 20/15-1

LENS PARAMETERS AND FINDINGS

Treatment zone was determined by subtracting the tangential baseline topography with the corresponding treatment map on Pentacam[3] (Figure 1 and 2). Size was measured horizontally and vertically from the point where the keratometric difference was zero.

Paragon CRT
BC 8.70 | OAD 10.5 | **OZ 6.0** | RZD 0.525/0.575 | LZA 32/32
BC 8.60 | OAD 10.5 | **OZ 6.0** | RZD 0.525 | LZA 32

Treatment Zone:
OD 3.59 x 3.75mm



OS 3.48 x 2.80mm

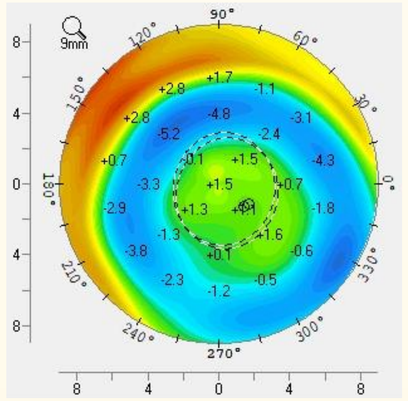
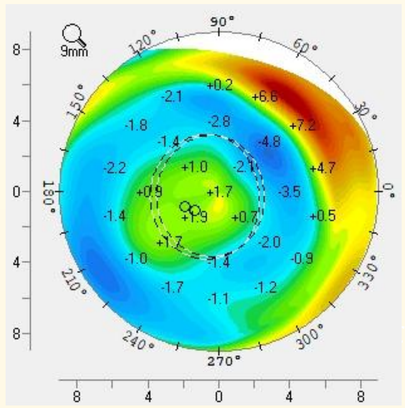


Figure 1: Difference maps of baseline topography and Paragon CRT post-treatment maps.

Euclid MAX Toric
BC 8.71 | OAD 10.6 | **OZ 6.2** | AC 8.09/8.39 | PC 11.5
BC 8.67 | OAD 10.6 | **OZ 6.2** | AC 8.10/8.40 | PC 11.5

The patient reported more glare/ halos but improved comfort.

Treatment Zone:
OD 3.48 x 2.80 mm



OS 3.25 x 2.96mm

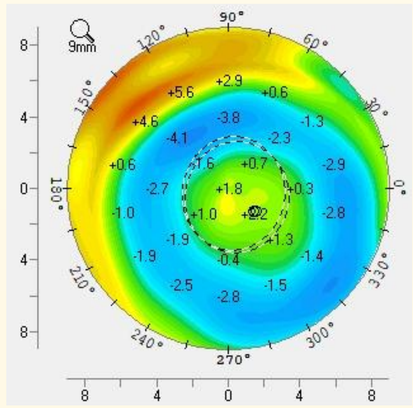


Figure 2: Difference maps of baseline topography subtracted by Euclid MAX post-treatment maps.

CONCLUSION

Although both designs have similar optic zone sizes, the standard Paragon CRT lens design provided a slightly larger treatment zone compared to the Euclid MAX Toric lens.

This difference in treatment zone size may be important for optimally slowing axial length progression or controlling for glare and halos in patients with larger pupil sizes.

More studies with enhanced measurement accuracy and consistency will be required to determine repeatability of findings.

REFERENCES

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3. Lin, W., Li, N., Gu, T. et al. The treatment zone size and its decentration influence axial elongation in children with orthokeratology treatment. *BMC Ophthalmology*, 21, 362 (2021).

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DISCLOSURES AND CONTACT

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