

المؤتمر السنوي الدولي للجمعية المصرية
INTERNATIONAL CONGRESS OF THE

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

EOS 2023

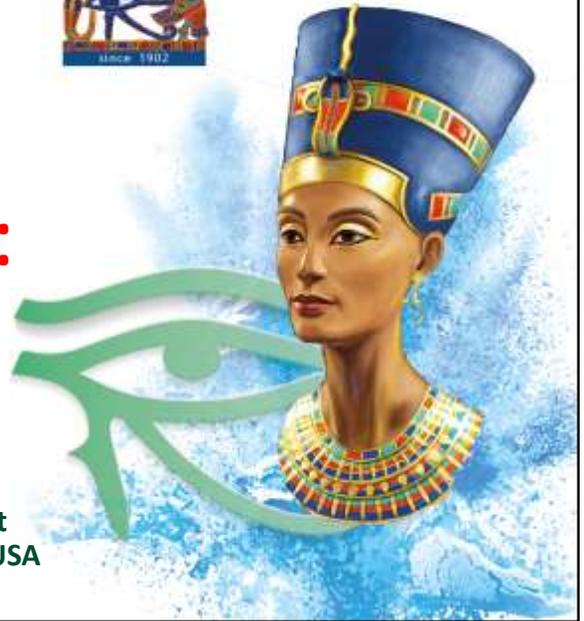


The Invisible Guest: Orthokeratology

Presented by

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No financial disclosure



Are you familiar with Ortho-k lenses?

- Y
- N



What is Orthokeratology?

- Programmed **alteration of the corneal topography** to create predictable change in refractive error to improve uncorrected visual acuity
- Use of **reverse geometry** rigid gas permeable contact lenses to reshape the corneal surface
- Usually done as an **overnight** procedure with no lens wear during waking hours



What is orthokeratology indicated for the correction of?

- A. Myopia
- B. Hyperopia
- C. Presbyopia
- D. All of the above



Indications?

- **Myopia**
 - FDA approval: Paragon CRT up to -6.00, B+L VST up to -5.00
- Astigmatism
 - FDA approval: Paragon CRT up to -1.75, B+L VST up to -1.50
- **Myopia control**
 - For children who are progressive myopes
- Hyperopia
 - Off-label, lower amounts of correction
- Presbyopia
 - Off-label
- No age restrictions for OK treatment



OK for myopia

- The vast majority of OK is performed for myopia
- Recently, **children are the primary population** being fitted for OK due to its apparent myopia control effects
- Efficacy
 - Effective for reducing moderate myopia and low astigmatism
 - Seems to retard the progression of myopia vs conventional correction



Contact Lens and Anterior Eye
Volume 45, Issue 4, August 2020, Pages 322-332



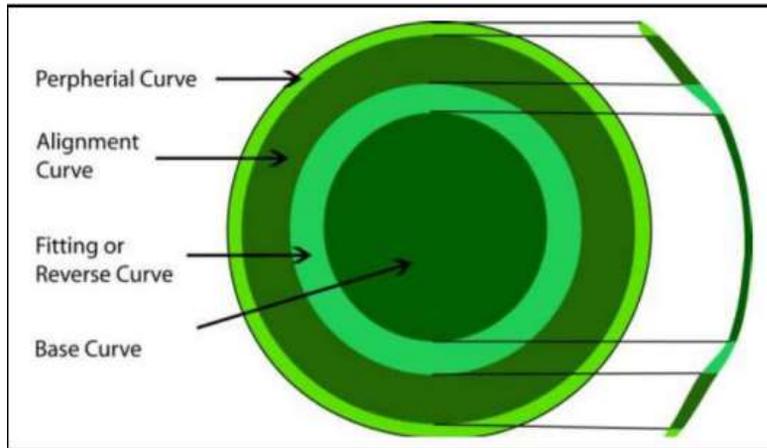
Overnight orthokeratology

Mark A. Bullimore^a, Leah A. Johnson^{a,b}

Table 3. Summary of four published meta-analyses summarizing the effects of orthokeratology on myopia progression.

Si et al. [54]:	-0.26 mm (95 % CI: -0.31 to -0.21 mm)
Sun et al. [55]:	-0.27 mm (95 % CI: -0.32 to -0.22 mm)
Wen [56]:	-0.25 mm (95 % CI: -0.30 to -0.21 mm)
Li [57]:	-0.27 mm (95 % CI: -0.32 to -0.23 mm)

OK design?



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Base curve

- Determines amount of **central flattening**
- **Flatter** than central curvature **by amount of refractive error** you are trying to correct + flattening factor by **0.50 to 1.00 D** to allow for regression throughout the day
- **Example:** K-reading = 44.00 DS Refraction = -3.00 DS BC is 3.50 D flatter than K = 40.50 D



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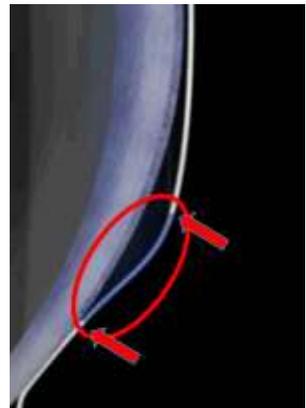
Optical zone diameter (OZD)

- OZD is generally about **6.0 mm**
- May be smaller when trying to correct higher refractive errors
- May be larger for patients with large **pupils**, but will reduce effect



Reverse curve (RC)

- To create lens **centration and stability**
- The RC is **steeper** than the BC and brings the lens back to the corneal surface
- RC is **0.6 to 1.0 mm** wide



Alignment curve

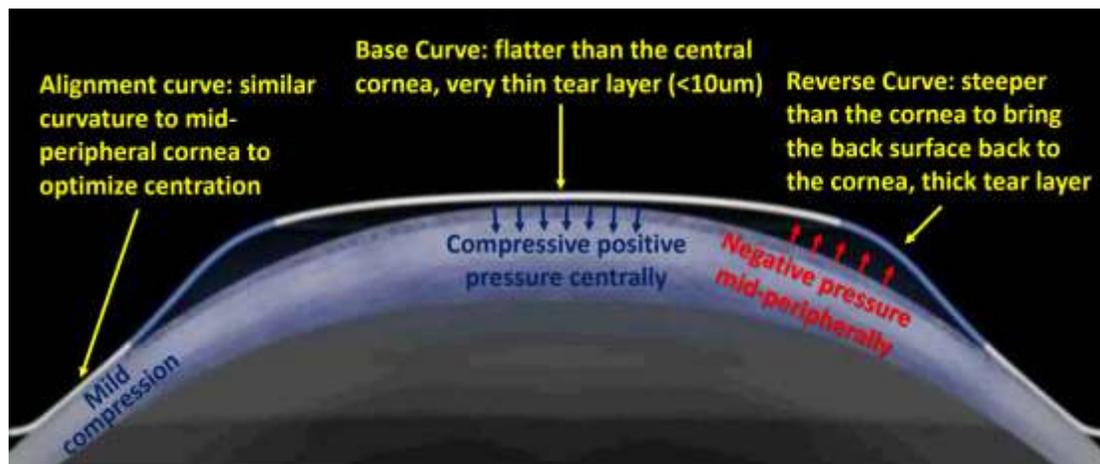
- Provides **stability and centration**
- Provides **mild compression** to maximize para-central steepening



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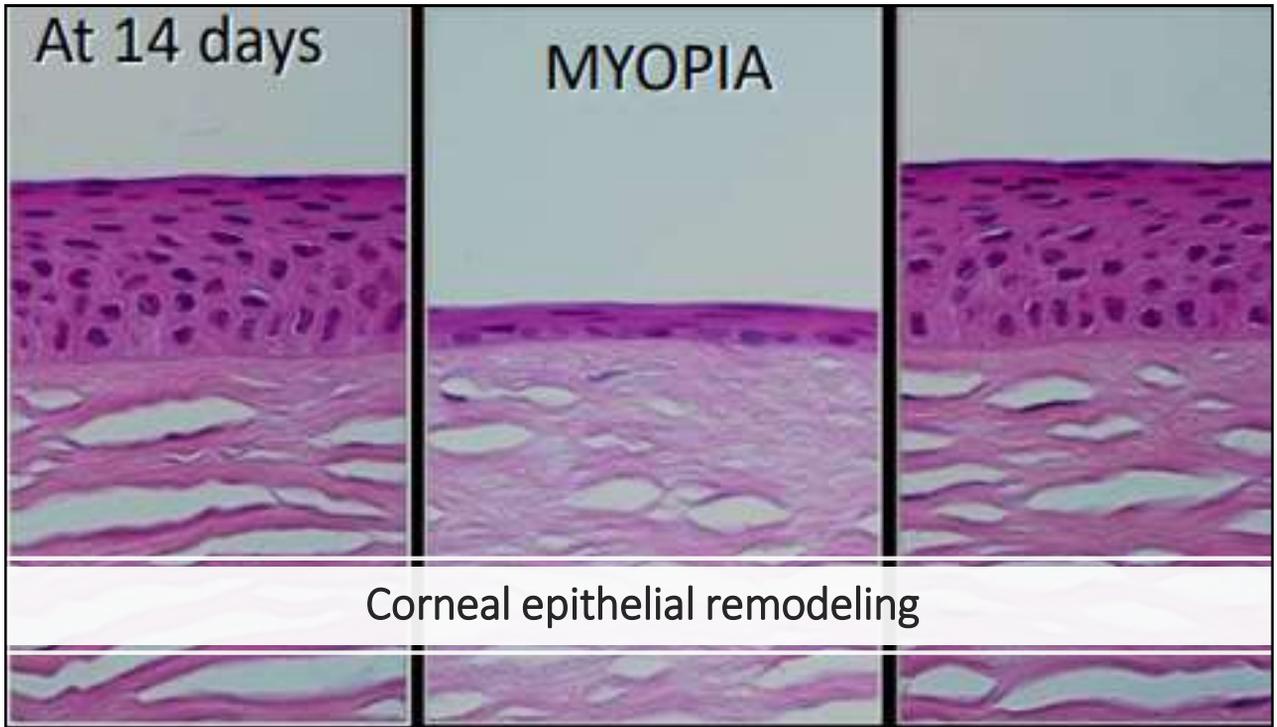


How it works?

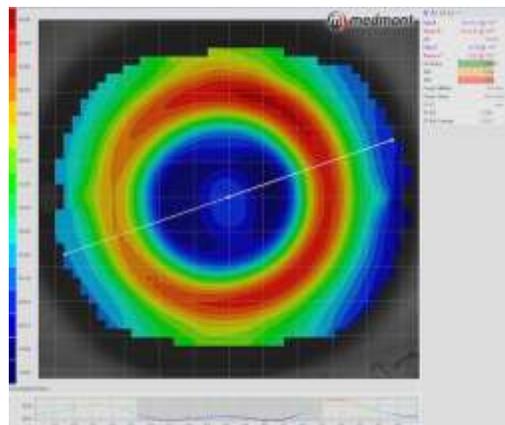
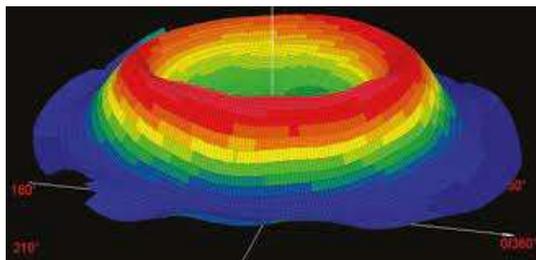


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Topography after OK



Safety of OK

Ophthalmic Technology Assessment

Safety of Overnight Orthokeratology for Myopia

A Report by the American Academy of Ophthalmology

*Woodford S. Van Meter, MD, David C. Musch, PhD, MPH, Deborah S. Jacobs, MD,
Stephen C. Kaufman, MD, PhD, William J. Reinhart, MD, Ira J. Udell, MD*

The main source of reports of adverse events associated with OOK was 38 case reports or noncomparative case series (level III evidence)



Who are the best candidates?

- Motivated / Appropriate expectations
- Refractive error falls within FDA approval
- Progressive myopes
- Good ocular surface health
- Anyone who wants to be free of spectacles and contact lenses during the day
- Laser surgery candidates who decide not to have surgery
- Athletes



Baseline data

- Uncorrected visual acuity • corneal diameter
- Pupil size
- Keratometry
- Corneal topography
- Subjective refraction
- SLE
 - Ocular surface health
 - Tear evaluation with fluorescein



Fitting

- Visual acuity
 - Should be 20/20 or equal to BCVA
- Over-refraction
 - Should be plano +0.25 D
- Fluorescein pattern
 - Central “touch” zone should be 4-5 mm in diameter
 - 1-2 mm wide ring of clearance under reverse curve
 - Alignment zone in mid-periphery with low to moderate peripheral clearance



What is the purpose of performing an overrefraction over the ortho-K lens?

- A. To make sure the base curve is appropriate
- B. To make sure the lens power is correct
- C. To make sure the lens will touch centrally
- D. To make sure the lens was made correctly



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THANK YOU

