

Successful Reshaping of Dry Eye Despite Poor Candidacy in an Adult Patient

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INTRODUCTION

Orthokeratology (OK)’s primary indication is to manage refractive error by reshaping the cornea overnight⁴. It is a popular method of myopia control in children but rarely a first choice for adults with critical visual demands. This is a case presentation of an adult patient with poor OK candidacy who was extremely motivated to continue contact lens wear despite being on the verge of soft contact lens (SCL) intolerance based on symptoms and clinical signs. For this patient, converting to overnight OK greatly alleviated the patient's discomfort and biomicroscopy signs, specifically scleral impression rings and limbal hyperemia. It also alleviated his symptoms of dryness¹⁻³, a known associated finding in soft lens intolerance.

CASE PRESENTATION

A 25-year-old Asian male presents with intense dryness, irritation, and redness while wearing and after removal of SCLs for over ten years.

Ocular History

- Dry eye syndrome OU
- SCL wear x 10+ years for 12 hours/day

Ocular Medications

- Systane® Hydration (PF) 1gtt QID-PRN OU
- Bruder Mask® therapy 2x/week x 10 min
- Lumify® Brimonidine Tartrate Ophthalmic Solution 0.025% PRN OU

Baseline Findings

	OD	OS
Manifest Refraction	-2.00 -2.00 x 180	-2.75 -1.25 x 180
Best-corrected VA	20/20	20/20
Corneal Astigmatism	1.90 D	1.50 D
Corneal Staining	Diffuse 1+ SPK	Diffuse 1+ SPK
Limbal Hyperemia	2+ limbal injection	2+ limbal injection
Bulbar Conjunctival Hyperemia	2+ injection	2+ injection
Bulbar Conjunctival Compression/Indentation	Presence	Presence
Conjunctival Staining	3+ staining with Lissamine Green	3+ staining with Lissamine Green
CLDEQ-8	28	

SOFT LENS INTOLERANCE

Contact lens intolerance is not well understood and there are numerous factors that have been studied including: underlying ocular surface disease, poor cleaning regimen, and improperly fitting lenses. As soft contact lenses require continuous moisture, a dry ocular surface can contribute to poor success. One way of screening for dryness symptoms is using a questionnaire like the Contact Lens Dry Eye Questionnaire-8, which was used in the management of our patient. To address the symptoms related to poor contact lens tolerance, this patient had been prescribed over 6 different soft contact lens brands/designs before OK. While trialing OK, the patient opted to cease all dry eye therapies.



Figure 1. Anterior segment photograph of anterior segment findings with soft contact lens wear

CONTACT LENS QUESTIONNAIRE-8 (CLDEQ-8)

1. Questions about EYE DISCOMFORT:

a. During a typical day in the past 2 weeks, how often did your eyes feel discomfort while wearing your contact lenses?

0 Never

1 Rarely

2 Sometimes

3 Frequently

4 Constantly

b. When your eyes felt discomfort with your contact lenses, how intense was this feeling of discomfort?

Never Not at All

Very Intense

0 1 2 3 4 5

2. Questions about EYE DRYNESS:

a. During a typical day in the past 2 weeks, how often did your eyes feel dry?

0 Never

1 Rarely

2 Sometimes

3 Frequently

4 Constantly

b. At the end of your wearing time?

Never Not at All

Very Intense

0 1 2 3 4 5

3. Questions about CHANGEABLE, BLURRY VISION:

a. During a typical day in the past 2 weeks, how often did your vision change between clear and blurry or foggy while wearing your contact lenses?

0 Never

1 Rarely

2 Sometimes

3 Frequently

4 Constantly

b. At the end of your wearing time?

Never Not at All

Very Intense

0 1 2 3 4 5

4. Questions about CLOSING YOUR EYES:

a. During a typical day in the past 2 weeks, how often did your eyes bother you so much that you wanted to close them?

0 Never

1 Rarely

2 Sometimes

3 Frequently

4 Constantly

b. At the end of your wearing time?

Never Not at All

Very Intense

0 1 2 3 4 5

5. Question about REMOVING YOUR LENSES:

a. How often during the past 2 weeks, did your eyes bother you so much while wearing your contact lenses that you felt as if you needed to stop whenever you were doing and take out your contact lenses?

1 Never

2 Less than once a week

3 Weekly

4 Several times a week

5 Several times a day

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Figure 2. CLDEQ-8

ORTHO-K CANDIDACY

Candidacy was discussed candidly with the patient as his corneal astigmatism, critical vision demands, and flat keratometry values made his fit more challenging. The Paragon CRT® Initial Lens Selector indicated use of a Paragon CRT Dual Axis® lens with the following parameters:

	OD	OS
Lens Type	CRT Dual Axis®	CRT Dual Axis®
Base Curve	8.90	9.10
Return Zone Depth	500-600	525-600
Landing Zone Angle	30-31	30-31
Diameter	11.0	11.0
Power	+0.50 Sph	+0.50 Sph
Material	Paragon HDS	Paragon HDS
Tint	Red	Blue

As compared to children who have less critical vision demands, sleep more overnight, and benefit from myopic management, adult OK requires more patient discussion regarding the risks vs. benefits. Adults may be symptomatic of the increase in high—order aberrations induced by OK including glare, distortion, and halos.

POST-ORTHOKERATOLOGY FINDINGS

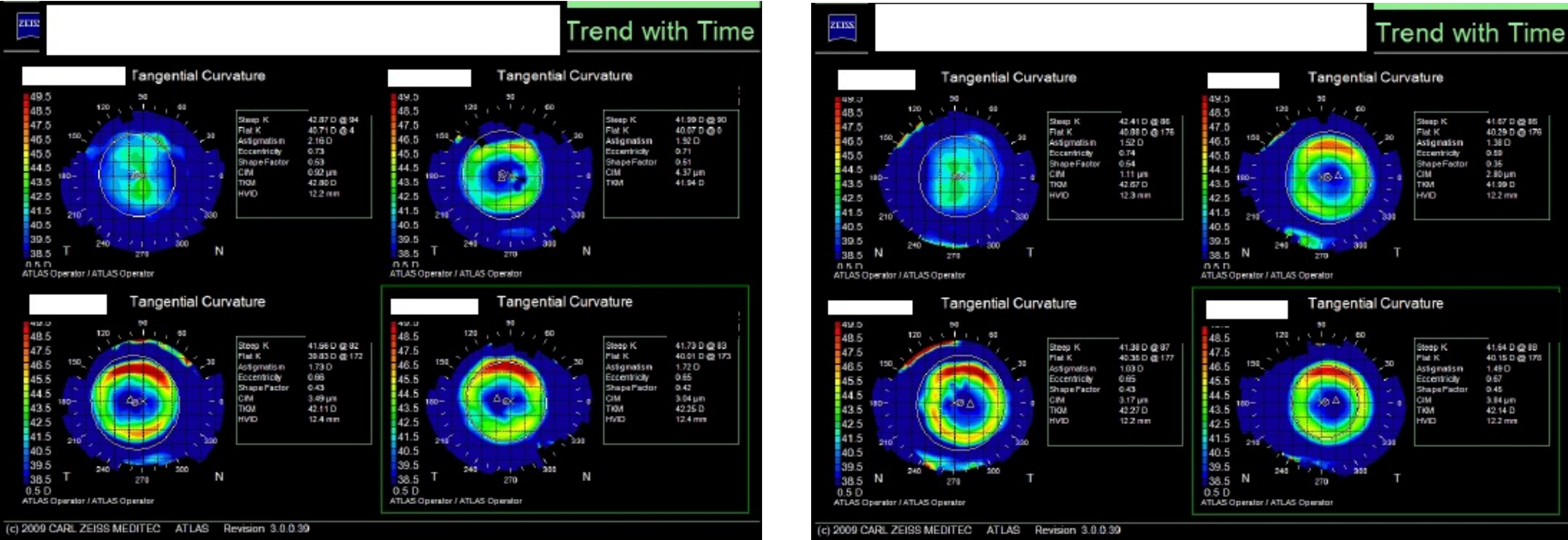


Figure 3. Topography after one month of orthokeratology treatment OD on right and OS on left.

	OD	OS
Manifest Refraction	+0.75 -0.50 x 045	+0.50 -0.50 x 005
Best-corrected VA	20/20	20/20
Corneal Astigmatism	1.85 D	1.38 D
Corneal Staining	Clear	Clear
Limbal Hyperemia	White and quiet	White and quiet
Bulbar Conjunctival Hyperemia	White and quiet	White and quiet
Bulbar Conjunctival Compression/Indentation	Absence	Absence
Conjunctival Staining	Absence	Absence
CLDEQ-8	5	

CONCLUSIONS

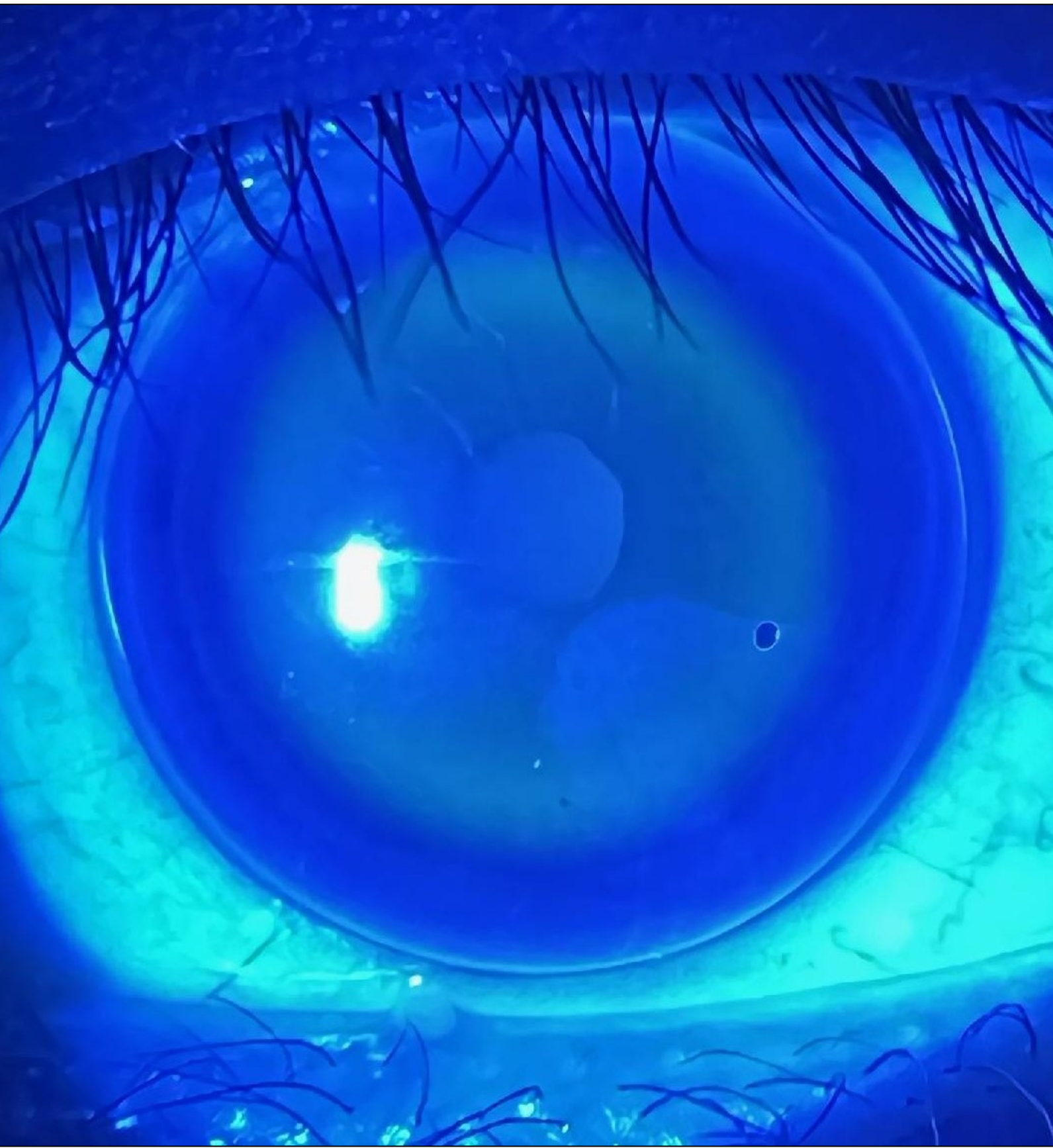


Figure 4. Anterior segment photograph of orthokeratology contact lens wear

Despite the increase in SCL options and dry eye therapies, less can be more when it comes to individuals suffering from SCL intolerance. While OK is often reserved for younger patients with low refractive error, steep corneas, and low corneal astigmatism, this case explored the benefits of OK in adults when utilized with proper patient education and communication. In this case, the underlying severe limbal and conjunctival hyperemia had not been adequately addressed until OK was introduced. Clinicians should be familiar with different contact lens modalities to manage and care for motivated patients.

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