



High Regular Astigmatism and Refractive Amblyopia Masquerading as Keratoconus

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Purpose

Present a case of high regular corneal astigmatism and refractive amblyopia showing clinical similarities to keratoconus.

Background

A 35-year-old Hispanic male presented to the office with interest in an orthokeratology, stating a history of high astigmatism. Patient currently wears soft toric contact lenses which provide more visual comfort than his current spectacle Rx.

Case Description

Autorefractometer performed with results of:

OD: +0.25-10.00x006

OS: -1.25-6.75x001

Retinoscopy yielded unreliable results due to scissoring reflex OU.

Refraction OD: -1.75-5.50x180 (20/30-)
OS: -1.75-3.00x015 (20/25++)

Slit lamp exam showed clear corneas with pigment deposition inferiorly resembling a partial Fleischer's ring (Figure 1).

Initial diagnosis of keratoconus was suspected and a topography was performed to confirm diagnosis which revealed very high regular corneal astigmatism OU. (Figure 2)

Sim K values OD: 41.3/50.2@107.5
OS: 42.3/48.7@092.6

Further questioning revealed possible refractive amblyopia as the cause of the visual reduction as the patient received his first pair of spectacles in his 20s.

Figure 1

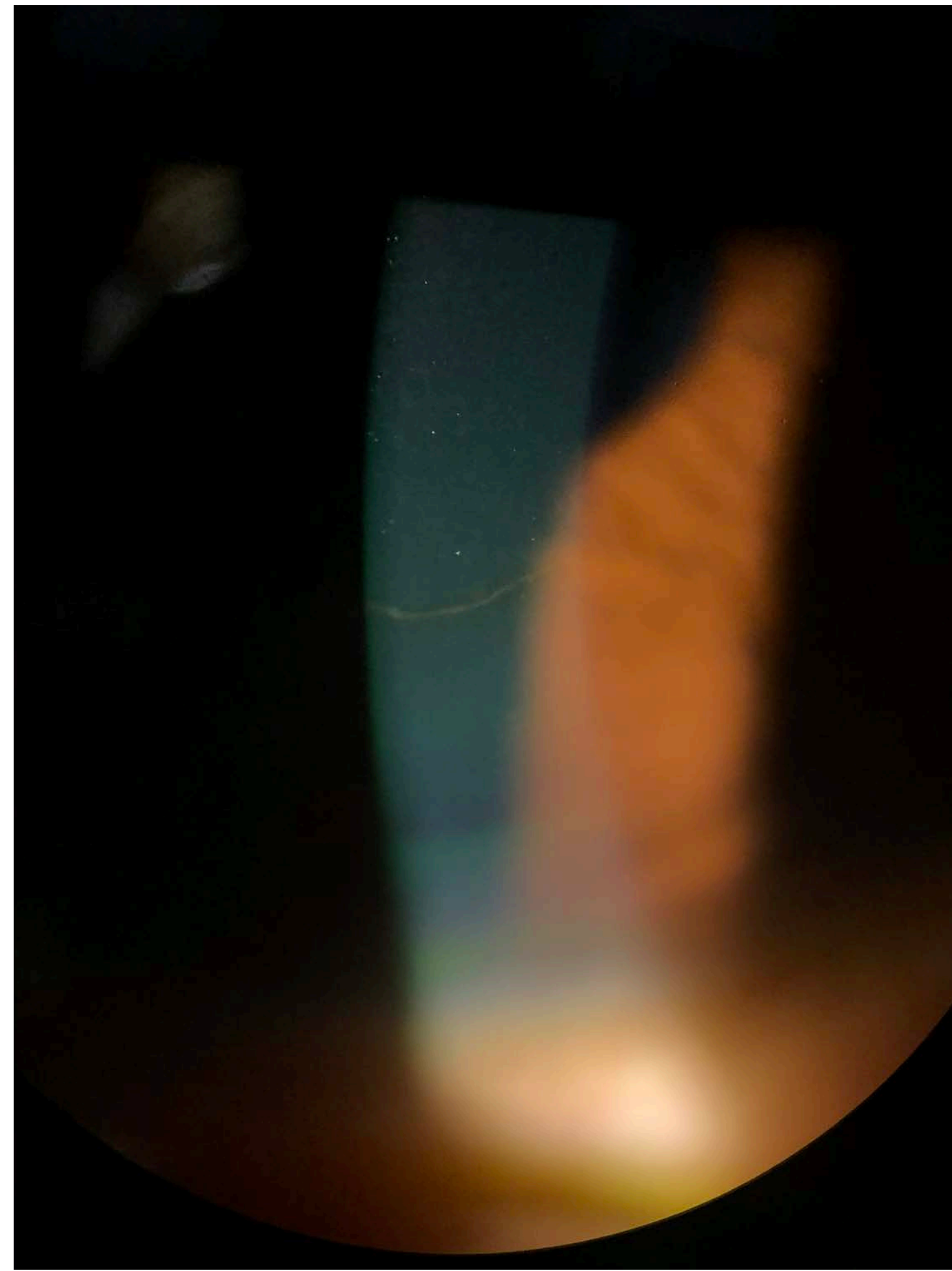


Figure 2

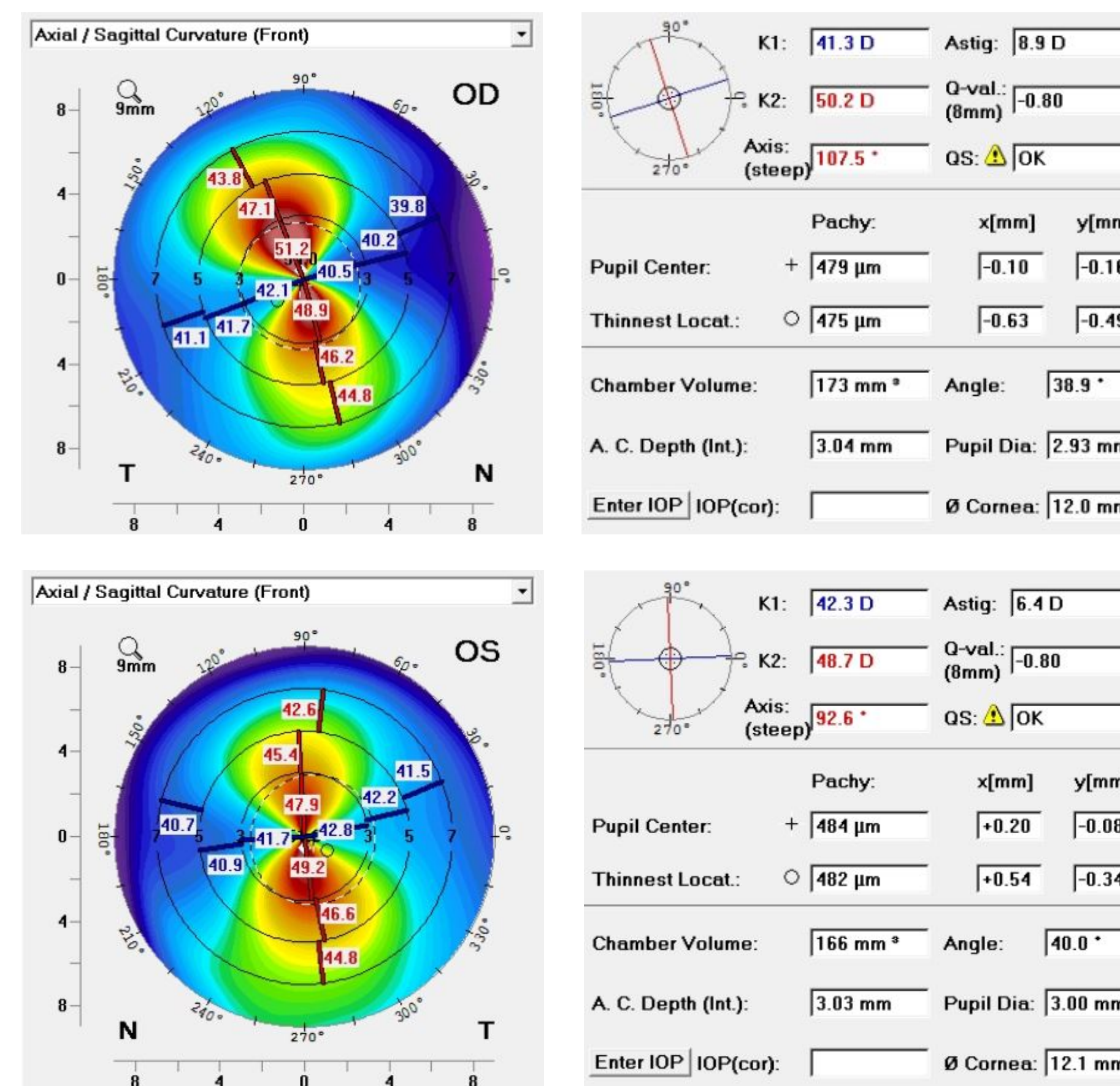


Figure 3



Discussion

The patient was fit with bitoric rigid gas permeable (RGP) contact lenses from TruForm Optics (Dallas, TX) which yielded greater visual comfort compared to his habitual soft toric contact lenses. The fit of the contact lens can be seen in Figure 3 above.

OD: 8.07/6.80, -2.25/-6.12, 9.5 (20/25)

OS: 7.87/7.00, -2.25/-4.00, 9.5 (20/25-)

Bitoric RGP lenses are the lenses of choice in the correction of high corneal astigmatism. The advantages of RGP lenses are clear vision and stable correction of astigmatism. Soft toric lenses ensure quick adaptation and comfort, but the most prominent disadvantage is variable visual acuity caused by lens rotation.¹

The corneal pigment is presumed to be iron deposition due to the steepness of the cornea and tear stasis similar to a pigmented corneal ring in orthokeratology or a poor fitting soft contact lens.^{2,3} The pigment ring etiology could be differentiated from corneal shape vs contact lens related if the rings resolved with discontinuation of contact lens wear. However, the patient deferred discontinuation of contact lens wear as his vision is superior with contact lenses compared to spectacles. Pigmented corneal rings have been reported in normal aging corneas, in certain pathological conditions, and altered corneal topography following LASIK and orthokeratology.^{3,4}

Conclusion

The patient's high corneal astigmatism coupled with probable refractive amblyopia and slit lamp findings does pose many similarities to keratoconus. This patient had many of the same signs and symptoms that suggested keratoconus including thinner pachymetry values 479/484 OD/OS, respectively. Keratoconus presents with a multitude of signs and symptoms and corneal topography is crucial to confirm the diagnosis. This case shows how corneal topography can be integral to differentiate corneal irregularities as well as reinforce the benefits of bitoric RGPs over soft contact lenses for high corneal astigmatic patients.

References

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