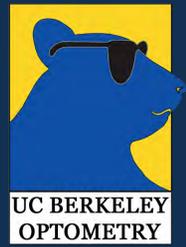




Degenerative Myopia & Keratoconus: Oversight Over Eyesight



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Introduction

A discussion on the importance of topographic imaging in a case of a patient with reduced visual acuity and longstanding pathological myopia in order to better serve your patients' visual needs.

Case History and Exam

A **37-year-old Hispanic female** presents for first time scleral lens fitting with a chief complaint of blurry vision OD > OS.

Ocular History:

- Longstanding pathological myopia OU with a history of an intra-retinal hemorrhage in the macula OS (2016)
- Keratoconus OD > OS diagnosed 3 months prior to fitting
- Extensive corneal scarring OD
- Unhappy with heavy spectacles
- History of being fit with corneal GP OS only with poor adaptation

Family Ocular History: Unremarkable

Medical History: HTN controlled with losartan

Monocular Subjective: **OD:** NI (20/200)
OS: -18.25-3.25x80 (20/30)

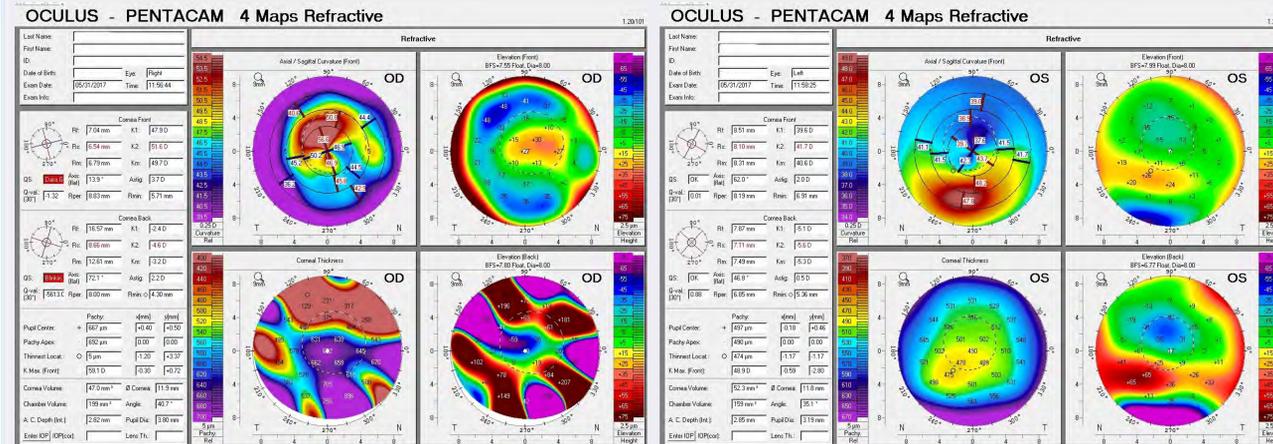
Anterior Segment:

- **OD:** Extensive corneal scarring within the visual axis with 2.3mm neovascularization encroaching on the visual axis inferiorly, corneal edema, negative striae or Fleischer ring
- **OS:** Pinpoint stromal scar superior to pupil, Inferior neovascularization 2mm encroaching central, trace inferior thinning, negative striae or Fleischer ring

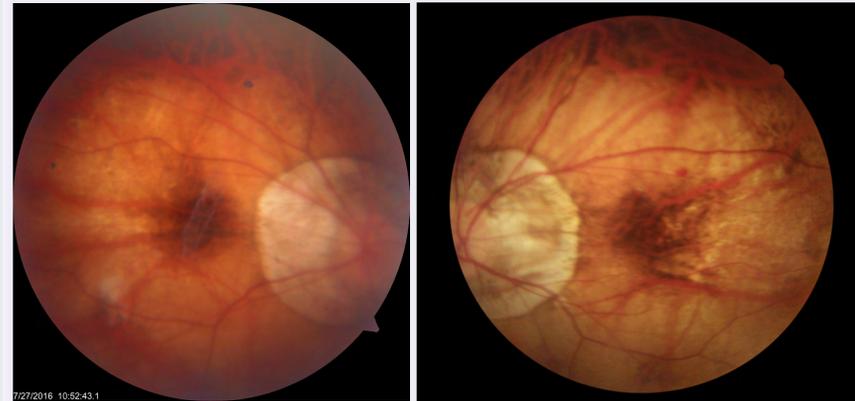
Posterior Segment:

- **OD:** 0.2 C/D with staphyloma, RPE hyperplasia in macula, RPE atrophy in posterior pole, attenuated arterioles, choroidal drop out infero-nasal in periphery with cystoid degeneration 360
- **OS:** 0.2 C/D with staphyloma, RPE hyperplasia in macula, RPE atrophy and lacquer cracks in posterior pole, attenuated arterioles, pigmented lattice infero-nasal in periphery with cystoid degeneration 360

Clinical Findings



Oculus Pentacam Imaging - OD: Superior steepening with irregular posterior corneal abnormalities and thickening centrally & inferiorly corresponding to corneal scarring, **OS:** Inferior steepening with irregular posterior corneal abnormalities



Fundus Photo (above left, above right) – OD: Significant myopic degeneration with RPE hyperplasia in the macula, **OS:** Significant myopic degeneration with RPE hyperplasia in the macula and intra-retinal hemorrhage in the macula

Anterior Segment Photo (below) – OS: Europa Standard Scleral Lens



Discussion

Degenerative retinal changes associated with pathological myopia is a known cause of vision impairment and blindness in the young, working-age population.¹ The patient's reduced visual acuity was assumed to be a result of her pathological myopia. As evidenced by her Pentacam imaging, the topography confirms the patient also has keratoconus.

Keratoconus is a bilateral, asymmetric, corneal condition characterized by progressive corneal ectasia. It appears in childhood and progresses up until the fourth decade of life.² Although reported prevalence of keratoconus is low, recent studies show the number has increased.

In an epidemiologic study done in the United States in 1986, the prevalence was reported as 1:2000 (54.5 cases per 100,000).³ In a 2017 study in the Netherlands, the estimated prevalence 1:375 (265 cases per 100,000) and annual incidence of keratoconus to be 1:7500 (13.3 new cases per 100,000) was reported. This is 5-10 fold higher than previous studies.⁴

The increase in prevalence reported, in the advent of new technology, suggests more patients may have subclinical signs and diagnoses are therefore missed.

Management

Patient was fit with a scleral lens in the left eye only. The right eye was not fit due to the patient's history of extensive corneal scarring.

Finalized Scleral Lens: Europa Standard Scleral Lens OS

- **Material:** Boston XO
- **Power:** -15.00, BC: 8.04, diameter: 16.0, standard peripheral curves
- **BCVA OS:** 20/25-3
- **Fit:** central clearance 0.75:1 (352 um), thin supero-nasal but clears with downgaze, decenters slightly inferiorly, limbal clearance 360, good scleral alignment, negative blanching

Further treatment considerations:

- Refer for corneal transplant for extensive corneal scar OD
- At the patient's age, progression is unlikely but if further change is noted, corneal collagen cross-linking OS can be considered

Clinical Pearls

- Do not rely solely on refraction and dilated fundus examination to determine patient's visual potential
- In cases of reduced visual acuity, it is important to consider topographical imaging to rule out anterior segment conditions such as keratoconus, pellucid marginal degeneration, or large amounts of irregular astigmatism

Acknowledgements & References

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