Profilometry Precision: A Scleral Lens Fit Utilizing Profilometry in a Young ANA+ Keratoconjunctivitis Sicca Patient

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Introduction

- A clinical indication of scleral lenses is keratoconjunctivitis sicca (k. sicca)
- Scleral lenses protect the corneal surface and provide a contact lens (CL) option for these patients, who often cannot tolerate traditional soft lenses.
- When fitting scleral lenses, matching the scleral toricity with a customizable quadrant-specific peripheral design such as the Blanchard Onefit Med:
  - Reduces debris influx under the lens
  - Improves lens centration
  - Increases wear time and comfort
- Thus, a well-fit periphery is critical in k. sicca patients.
- Profilometry can be used to design the lens periphery and reduce chair time.
- The objective of this case report is to emphasize the use to profilometry in a scleral lens fit in a k. sicca patient.

History

Demographics
- 29 -year-old Caucasian female

Ocular and Systemic History
- Unremarkable

Complaints
- Dry eye, unable to tolerate soft CLs

Pertinent Findings (at initial dry eye eval)
- + Inflammadry OU
- Reduced Schirmer 1 (1mm) OU
- TBUT 7 OU
- Osmolarity OD: 308 OD: 292

Diagnosis
- K. sicca

Management
- Bloodwork ordered: +ANA
- Started on artificial tears, warm compress, Restasis BID with a steroid pulse

Follow-up Treatment
- 3 IPL treatments followed by Lipiflow OU
- Scleral CL fit initiated OU
- Referral to Rheumatology

Exam Findings

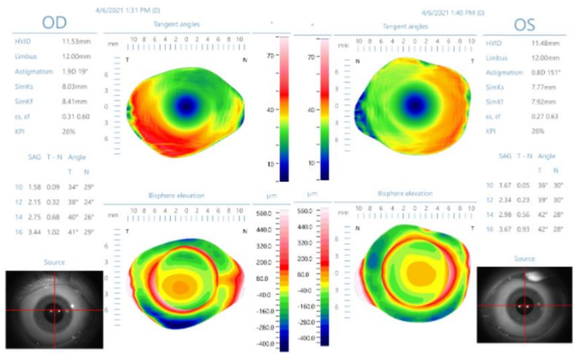

Figure 1: Profilometry OD (right) and OS (left) with the Eaglet Eye Surface Profiler (ESP).

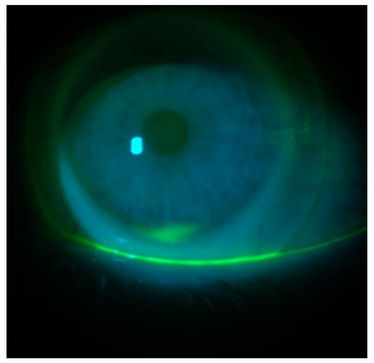

Figure 2: Inferior tear exchange with initial OS lens, indicating a flat inferior edge.

	OD	OS
Initial Lens Parameters (Designed empirically via the Eaglet ESP scans)	Blanchard Onefit Med, Material: Optimum Infinite, Power: -0.62, Diam: 15.6, Sag: 4,000, M: -175, L: -200, E @ 12 o'clock: -50, E @ 3 o'clock: +150, E @ 6 o'clock: -150, E @ 9 o'clock: -50	Blanchard Onefit Med, Material: Optimum Infinite, Power: -1.00, Diam: 15.6,, Sag: 4,050, M: -175, L: -150, E @ 12 o'clock: +125, E @ 3 o'clock: -50, E @ 6 o'clock: +125, E @ 9 o'clock: +150
CL Dispense Visit	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 250 microns of central clearance, adequate limbal clearance, well-fit edges Lens dispensed after I&R training	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 300 microns of central clearance, adequate limbal clearance, minor edge lift inferiorly Lens dispensed after I&R training
Follow Up Visit (after 4 hours of wear)	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 50 microns of central clearance, adequate limbal clearance, well-fit edges Lens reordered w/ increased sag	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 125 microns of central clearance, adequate limbal clearance, edge lift inferiorly with tear exchange *(See Figure 2)* Lens reordered w/ increased sag and steeper edges in 2 quadrants inferiorly
CL Exchange Visit	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 350 microns of central clearance, adequate limbal clearance, well-fit edges Lens dispensed	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 375 microns of central clearance, adequate limbal clearance, well-fit edges Lens dispensed
Follow Up Visit (after 4 hours of wear)	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 175 microns of central clearance, adequate limbal clearance, well-fit edges *(See Figure 3)* Lens finalized	VA: 20/15, Over-refraction: plano CL Fit: Well-centered, approx. 200 microns of central clearance, adequate limbal clearance, well-fit edges *(See Figure 3)* Lens finalized
Final Lens Parameters	Blanchard Onefit Med, Material: Optimum Infinite, Power: -1.50, Diam: 15.6, Sag: 4,100, M: -175, L: -200, E @ 12 o'clock: -50, E @ 3 o'clock: +150, E @ 6 o'clock: -150, E @ 9 o'clock: -50	Blanchard Onefit Med, Material: Optimum Infinite, Power: -1.37, Diam: 15.6, Sag: 4,100, M: -175, L: -125 E @ 12 o'clock: +125, E @ 3 o'clock: -50. E @ 6 o'clock: +75, E @ 9 o'clock: +100

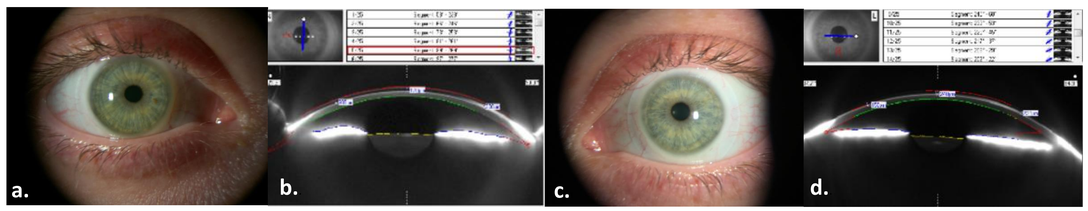

Figure 3: Final lens appearance (a) and clearance (b) OD; final lens appearance (c) and clearance (d) OS.

Discussion

Scleral lenses are a great option for patients with ocular surface disease, but it is important to manage the dry eye before initiating a fit. In this case, our patient began topical treatment, had an IPL + Lipiflow series, and was referred to rheum due to her +ANA. Once her signs and symptoms were better controlled, a scleral fit was initiated. Profilometry is often utilized in ocular surface disease fits in order to optimize the fit. In this patient's case, the original Blanchard Onefit Med quadrant-specific lenses ordered empirically from the Eaglet ESP scans were an excellent starting point and were able to be dispensed. On follow up, the scleral lenses settled more than average and there was minor tear exchange and edge lift inferiorly in the left eye. We were able to resolve both of these issues with 1 exchange in both eyes. The patient was happy and able to wear the final lenses comfortably all day.

Conclusion

Scleral lenses are a great option for patients with ocular surface disease. A near-perfect fit is often required in these patients in order to improve comfort and increase wear time. Profilometry should be utilized in these cases. It reduces chair time and greatly improves the overall experience for our ocular surface disease patients, who have often been suffering for too long.

References

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