

# A Sublime Prosthetic Soft Lens for Corneal Scarring Secondary to Lyme Disease

## NOVA SOUTHEASTERN UNIVERSITY

Eric D. Yoshinaga, O.D., Andrea M. Janoff, O.D., F.A.A.O.

Nova Southeastern University College of Optometry, Fort Lauderdale, Florida

#### Introduction

This case report features a prosthetic contact lens fitting on a patient with significant corneal scarring from Lyme disease infection.

## **Case History**

A 46-year-old female was referred for a prosthetic soft contact lens (PSCL) fitting for dense corneal scarring, OD secondary to Lyme disease induced interstitial keratitis and iridocyclitis resulting in corneal opacification, glaucoma, and profound vision loss. Her current BCVA is LP, OD and 20/20, OS. She has a tube shunt and uses timolol q.d. and brimonidine b.i.d. for glaucoma, OD making her a poor candidate for a corneal transplant. The patient was self-conscious about her appearance and requested a colored contact lens, OD for improved cosmesis during daytime wear.

## **Examination Findings**

OD	Entrance Testing	OS	
LP	VA	20/20	
Fixed Pupil	Pupils	Round, reactive	
FROM	EOMs	FROM	
Unable to see fingers	CVF	FTFC	
OD	Slit Lamp Exam	OS	
Normal	Adnexa	Normal	
Clean, no debris	Lids/Lashes	Clean, no debris	
Sup-Temp Bleb	Conjunctiva	Clear and quiet	
3+ Diffuse opacification, Band Keratopathy Temp+Nas	Cornea	Band Keratopathy Temp+Nas	
Sup-Temp tube shunt	Anterior Chamber	Deep and quiet	
Unable to view	Iris	Flat, intact, brown	
Unable to view	Lens	PCIOL Clear to view	



Figure 1: External photo demonstrating corneal scarring, OD only.



Figure 2: External photo of PSCL OD, to match non-contact lens wearing OS.

## **Diagnosis and Discussion**

Corneal disease can lead to dense corneal scarring and neovascularization and is a prominent cause of blindness. One ocular infection, Lyme disease, is a systemic tick-borne infection caused by the species *Borrelia burgdorferi* and presents with a wide array of systemic and ocular manifestations. These ocular manifestations include follicular conjunctivitis, keratitis, iridocyclitis, vitritis, multifocal choroiditis, panophthalmitis, and optic neuritis.<sup>1</sup>

Interstitial keratitis in Lyme disease causes inflammation and vascularization of the corneal stroma, which induces permanent opacification. Corneal opacification can lead to significantly reduced vision and cosmetic difficulties which can adversely affect a patient's personal and social life.

Prosthetic soft contact lenses are a useful tool to improve the cosmetic appearance of corneal scarring or opacification, especially in patients where functional vision will not improve with surgical intervention. Patients fit into a PSCL should be monitored regularly for potential complications with lens wear.<sup>2</sup>

#### **Treatment and Management**

Careful measurements of the patient's OS were taken including pupil size in light, moderate, and dark illuminations; horizontal visible iris diameter; iris color; and the prominence of a limbal ring. She was trialed with a BioColors<sup>®</sup> Soft Prosthetic Lens (Orion<sup>™</sup>), OD in chestnut brown with an iris diameter most closely matching her 11.1 mm HVID, OS. Based on the patient's pupil size, OS in moderate illumination, a 3 mm opaque black pupil was ordered for OD. Additional lenses in varying iris diameters were trialed with the patient ultimately preferring a 10.5 mm iris diameter on a black underprint, without a limbal ring. The 1 week and 1 month post dispensing follow-up visits confirmed there were no adverse effects of lens wear on the ocular surface, cornea, or conjunctiva, OD.

Final Lens Parameters: Orion<sup>™</sup> BioColors<sup>®</sup> Prosthetic Sphere

Power (D)	BC (mm)	Dia (mm)	lris Dia (mm)	Underprint	Color	Pupil	Material
Plano	8.60	14.30	10.5	U2 Black	54-vChestnut	3mm black	Polymacon

#### Conclusion

Lyme disease, the most common tick-borne infection, presents with a variety of ocular manifestations such as keratitis, iridocyclitis, vitritis, multifocal choroiditis, and panophthalmitis. It can lead to severe vision loss and permanent damage that is noticeable long after the active infection has been treated. Dense corneal scarring can have a significant impact on a patient's vision, image, and psychological well-being. A prosthetic contact lens can play an important role in improving self-confidence and social relationships. With the wider availability of diagnostic lenses and improved affordability, prosthetic lens fitting should be considered whenever indicated.<sup>3</sup>

#### References

- Lesser RL. Ocular manifestations of Lyme disease. Am J Med. 1995 Apr 24;98(4A):60S-62S. doi: 10.1016/s0002-9343(99)80045-x. PMID: 7726193.
- Yildirim, Nilgun M.D.; Basmak, Hikmet M.D.; Sahin, Afsun M.D. Prosthetic Contact Lenses: Adventure or Miracle, Eye & Contact Lens: Science & Clinical Practice: March 2006 - Volume 32 - Issue 2 - p 102-1306/ii 10.1097/01.160000174747 34202.75
- Chang, K. C., Kwon, J. W., Han, Y. K., Wee, W. R., & Lee, J. H. (2010). The epidemiology of cosmetic treatments for corneal opacities in a Korean population. *Keono Journal of* ophthalmology: KIO, 24(3), 148–154. https://doi.org/10.3341/Kjo.2010.24.3.148