

Long-term RGP wear Induced Limbal Stem Cell Deficiency

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INTRODUCTION

Limbal stem cells reside in the limbal area of the cornea and function to maintain and regenerate the corneal epithelium. Limbal stem cell deficiency (LSCD) is a condition caused by the destruction of stem cell precursors of the corneal epithelium and is typically seen clinically as corneal conjunctivalization.¹ LSCD can be caused by numerous acquired etiologies like chemical injuries, Stevens-Johnson syndrome, or iatrogenic disease.¹

CASE PRESENTATION

A 61-year-old African American male presents with blurry vision in the left eye (OS). The patient's ocular history is unremarkable except for his long-term history of RGP lens wear for over 30 years. His medical history is remarkable for hypertension which is managed by taking amlodipine and hydrochlorothiazide. The patient's entering corrected visual acuities are 20/20 in the right eye (OD) and 20/40 OS with no improvement on pinhole. Slit-lamp examination reveals 1+ scurf, 2+ Meibomian gland dysfunction, dense 360 arcus and 1+ nuclear sclerosis. Upon follow-up examination, careful staining of the cornea exposed whorl-like staining patterns around the limbus 360 in both of his eyes OS>OD consistent with limbal stem cell deficiency.

DISCUSSION

Our corneal limbal stem cells are crucial in the normal regeneration of the corneal cells and therefore are responsible for maintaining a healthy cornea. Contact lens-induced LSCD is less well-known and often forgotten since its presentation is not as severe as in other cases however the basic pathologic process is the same.² Three principal mechanisms associated with long term rigid gas permeable (RGP) lens wear known to damage the ocular surface includes chronic mechanical micro-trauma, hypoxia, and toxic lens solutions.³ For these reasons, long term RGP

FIGURE 1
Pentacam
Holladay report
OS showing
irregular
astigmatism
with flattening
in the periphery
causing reduced
BCVA.

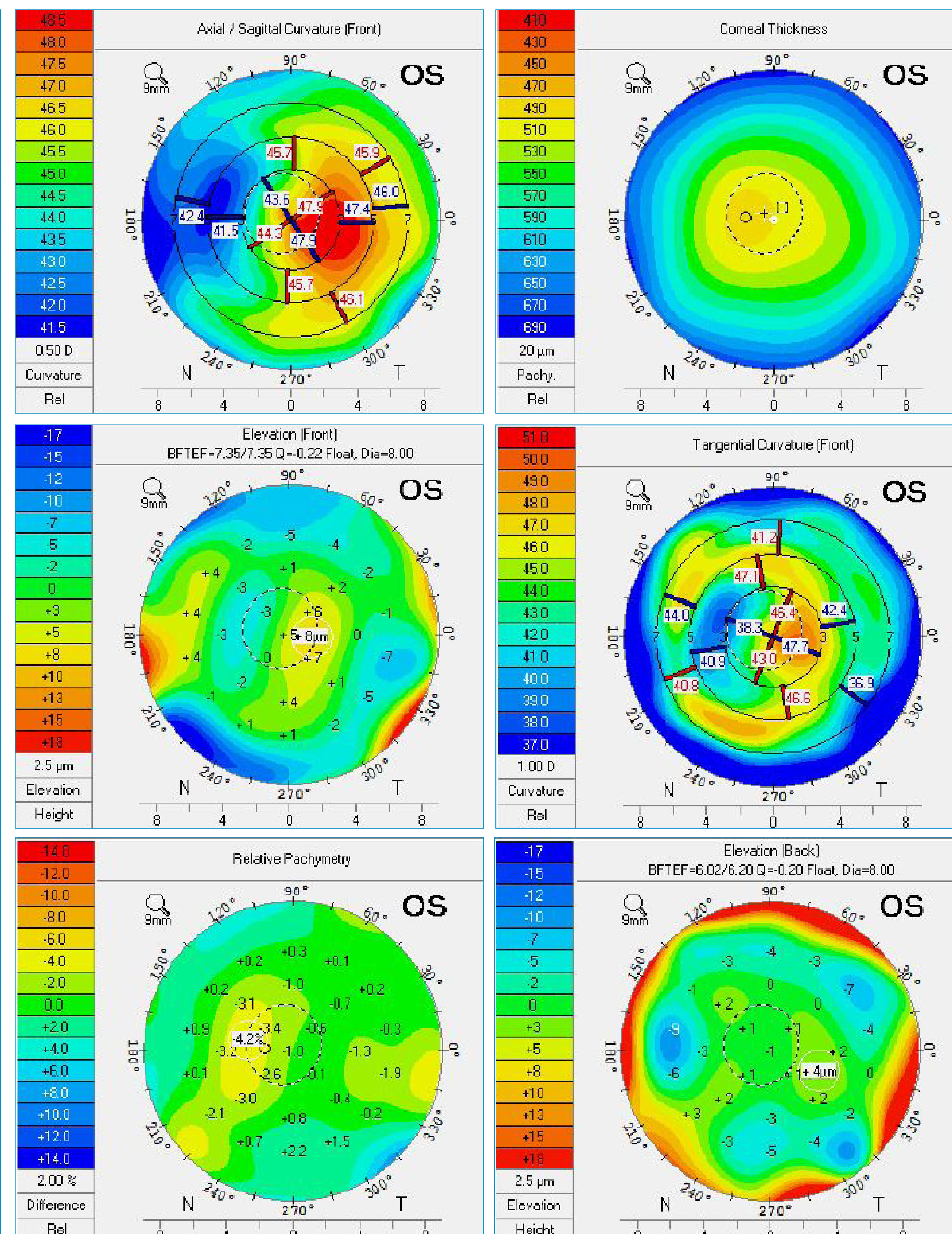


FIGURE 2
Blue light with NaFl demonstrating scalloped
staining pattern around the limbus
superior>inferior OS.

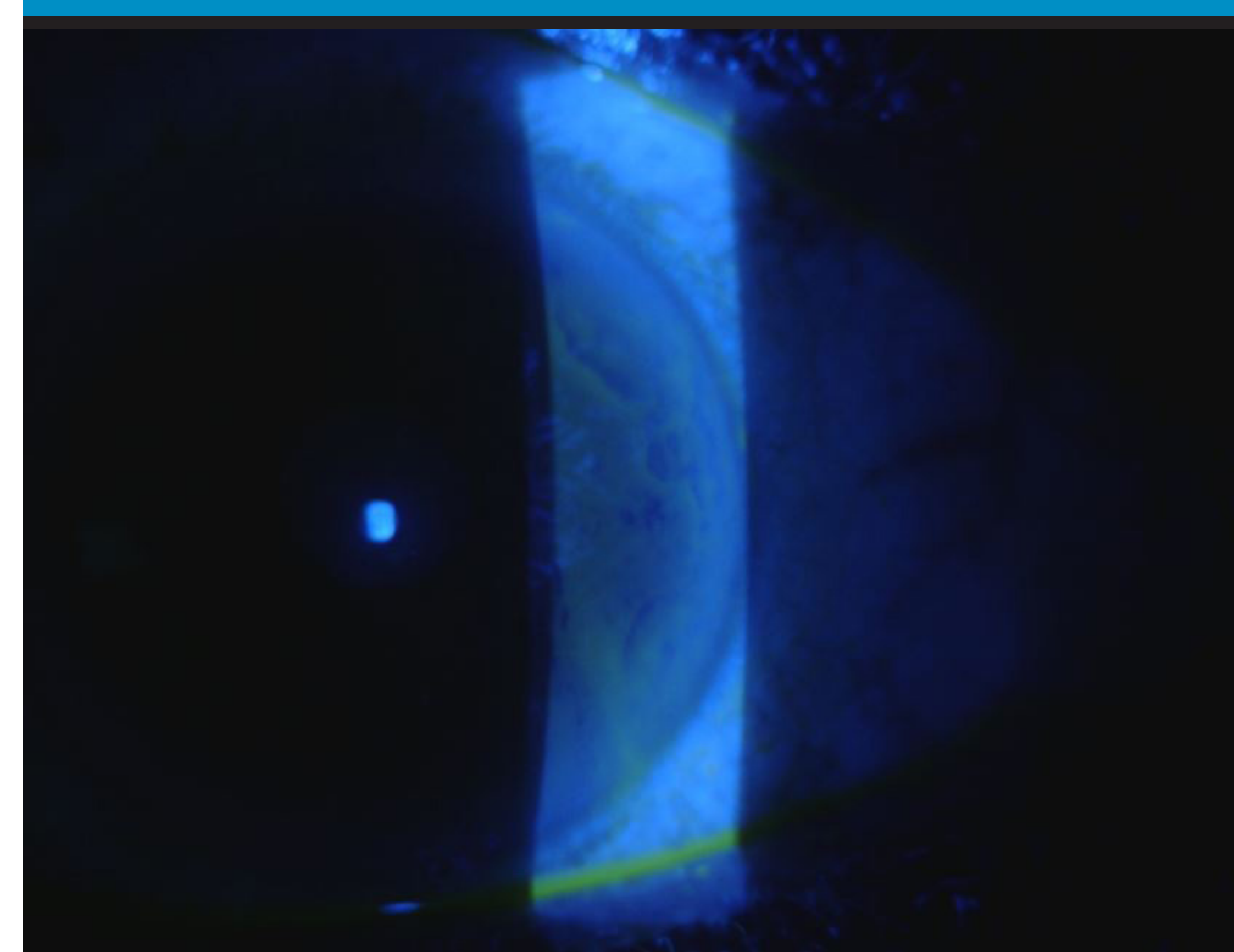
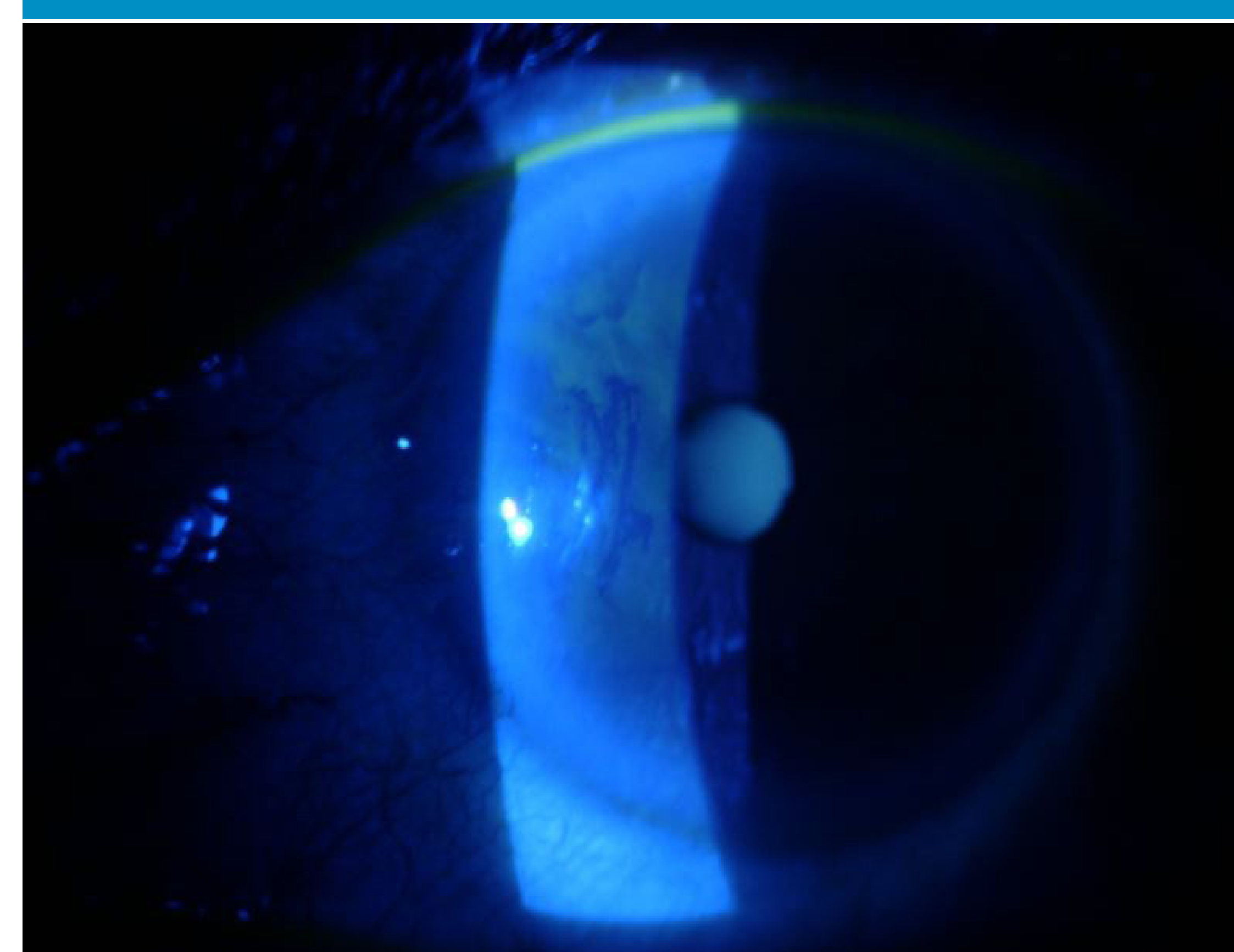


FIGURE 3
Blue light with NaFl showing central whorl-like
staining pattern.



lens wear may be responsible for the damage to the limbus destroying the limbal stem cells. Treatment options for CL-induced LSCD begin with conservative management by discontinuing CL wear and maintaining an adequate tear film with aggressive lubrication.⁴ This alone can begin to reverse the damage caused by long-term CL wear.

CONCLUSION

The long term complications that can arise with prolonged contact lens wear are often forgotten. Although long term RGP wear has been proven to be safe with relatively few complications, keep in mind that a small amount of micro-trauma and hypoxia to the limbus over long periods can build up. This small amount of damage that builds up can lead to LSCD and can present with a range of symptoms including irritation and decreased visual acuity.

REFERENCES

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