

BACKGROUND

With the rise of myopia in children, orthokeratology (orthoK) has become a popular option in slowing the progression of myopia. OrthoK lenses achieve this goal by temporarily reshaping the corneal surface through the use of specialty gas permeable lenses worn overnight. A pair of these lenses is typically replaced yearly; as such, lens care is important to the comfort of the lenses and their performance.

CASE DESCRIPTION

A 13 yo white female presented for a 6 month follow up for orthok with complaints of recent discomfort in lenses. She had a history of myopia OU and been wearing orthok lenses from a previous provider for over 2 years. Patient's previous 1 day/week/month follow ups revealed good fit and vision with no changes made to the treatment course.

Orthok lenses evaluated at previous 1 month follow-up (Six months prior):
 -VA: 20/20 OD; 20/20- OS
 -Over refraction: +0.25 sph OD; plano sph OS; VA: 20/20 OD/OS
 -Fit evaluation revealed OU well centered, bull's-eye patterns, and appropriate movement. Poor wettability.
 -Patient reported good vision throughout the day and did not report any complaints.

Ortho k lenses evaluated at current 6 months follow-up:
 -Unaided VA: **20/30-2 OD; 20/40 OS**
 -Refraction over lens: +0.25 sph OD; fluctuating OS
 -Fit evaluation OU revealed heavily deposited lenses. Poor wettability.
 -Fluorescein evaluation of the cornea revealed peripheral SPK OD and OS
 -Mild injection of bulbar conjunctiva OU also noted.
 -Patient reported discomfort in OD lens starting 3 weeks ago.

When asked about her lens care, the patient reported only storing lenses in the multipurpose GP solution with no digital rubbing or enzymatic cleaner. Prior visit revealed poor wettability of the lens indicating the issue may have been long standing.

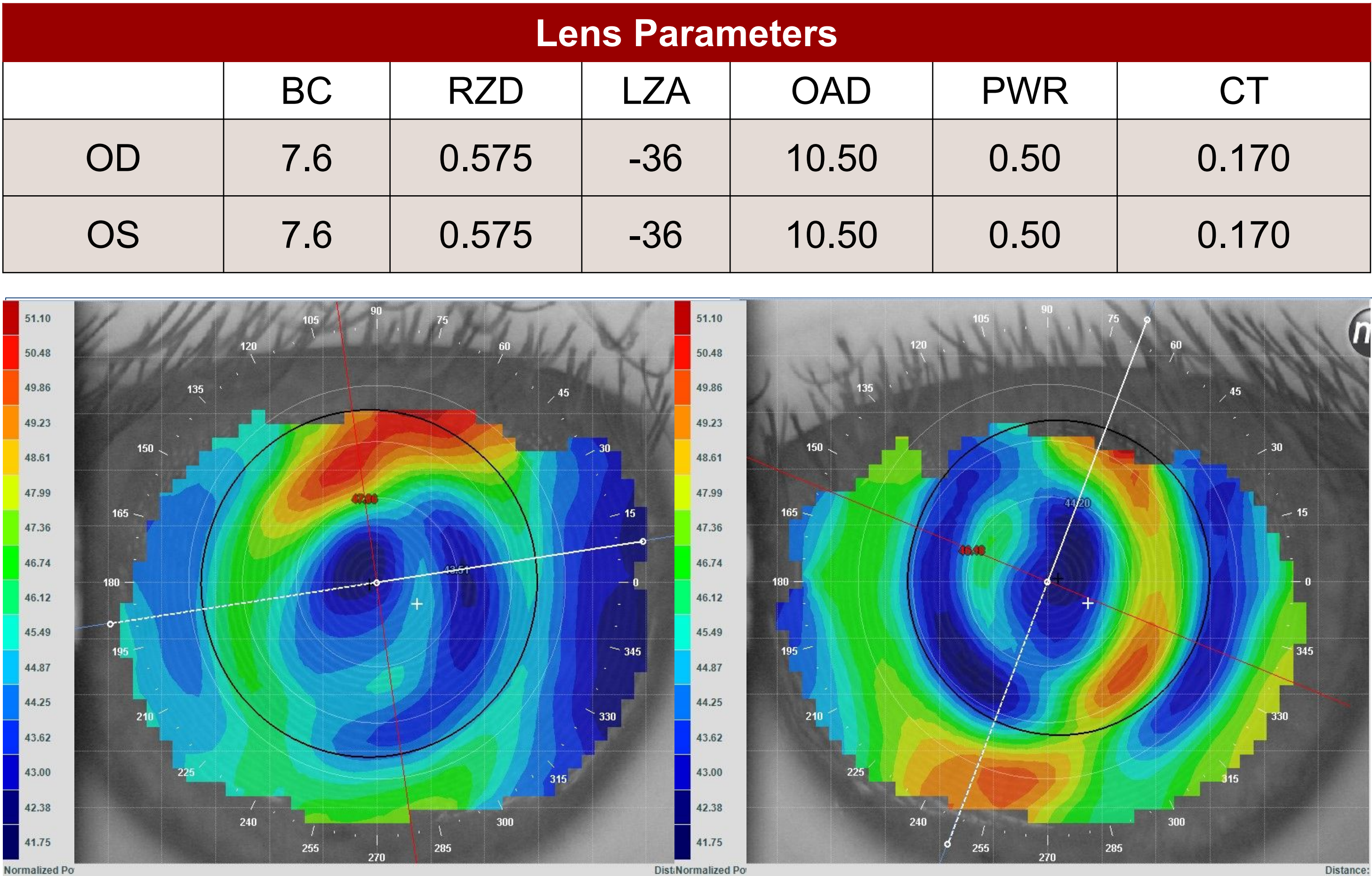


Figure 1. Topography showed ill-defined treatment zones with various islands of under correction due to deposits in lenses both OD (left) and OS (right).

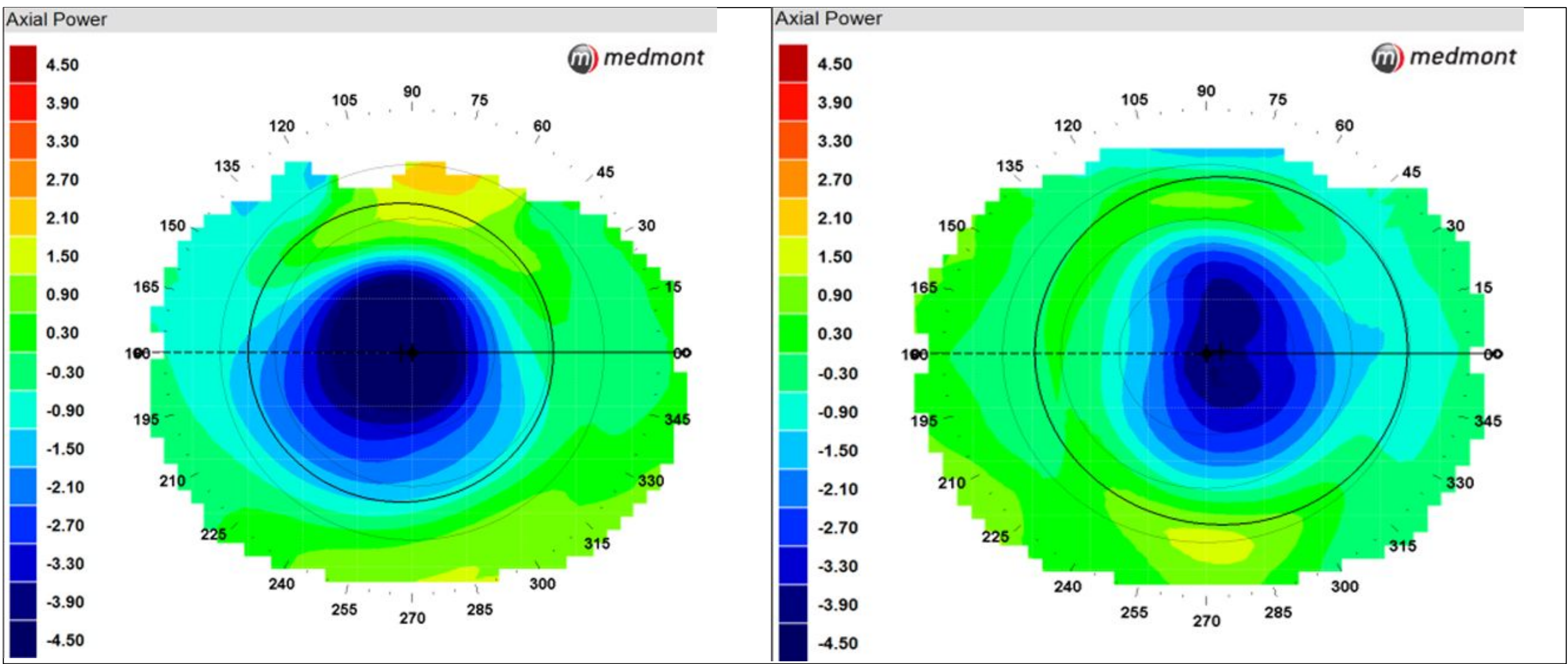


Figure 2. Final treatment zones 2 weeks after lenses cleaned (OD left).

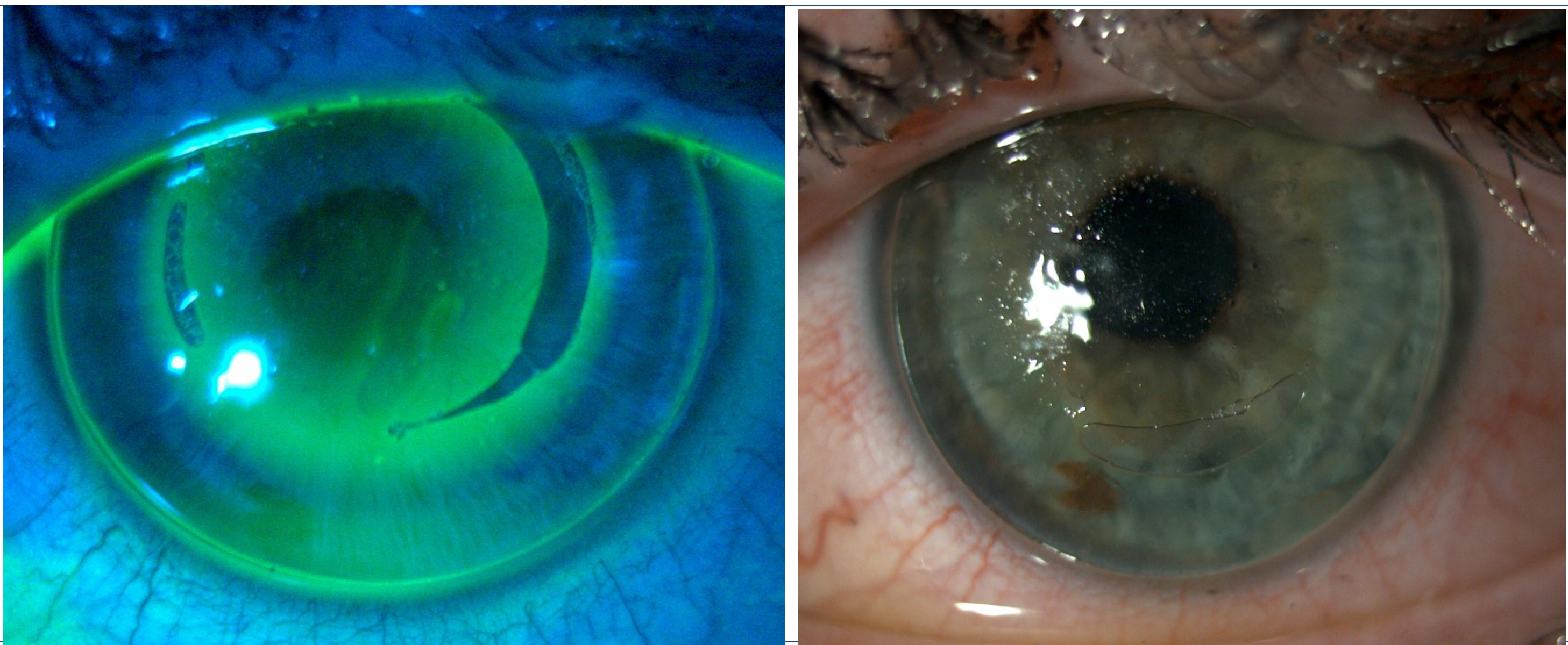


Figure 3. Fluorescein pattern and white light imaging showing heavily deposited lenses after 6 months of wear.

MANAGEMENT

No changes were made to the overall parameters of the orthoK lenses. The heavily deposited lenses were deep cleaned in office with Progent and returned to the patient. The family was re-educated on proper lens care and were stressed the importance of good compliance for best visual outcomes.

DISCUSSION

Studies have shown that improper lens care can lead to various negative outcomes such as increased risk for corneal infection and overall orthok discontinuation. Lens deposit buildup in the bowl can result in splotchy topography patterns with islands of correction and poorly formed treatment zones. As patients become more comfortable with their lenses, there may be a lapse in care compliance. This seems to be the case in this report since the patient had worn lenses already for two years. No fit changes were needed to improve VA after the lenses were deep cleaned in office, returning to 20/20 after two weeks.

CONCLUSION

The overall performance of these lenses changed due to substantial debris and depositing. As a result, the patient experienced discomfort and decreased vision in both eyes despite being stable at previous follow up appointments. Protein depositions can affect the overall optical and comfort quality of orthokeratology lenses. If left untreated, deposit build up can damage the lens and cause irritation as in the case of this patient. Deposits on the inside of the lens can cause changes in the corneal surface resulting in variable and irregular topography patterns. Thorough case history should be done at each exam visit to ascertain the quality of the patient's lens handling including; cleaning, rubbing, rinsing, disinfecting, and storing, despite being an established wearer. It is also recommended to use an enzymatic or deep cleaner periodically in addition to digital massage of the lenses to thoroughly remove any protein deposits. As many of the patients who use orthokeratology are children, it is beneficial to educate both patient and parent to create appropriate habits for better care of their specialty lenses.

REFERENCES

Available upon request.

ACKNOWLEDGMENTS

Thank you to CooperVision for their support of our research and educational programs to allow our students to experience the benefits of orthokeratology.