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A bigger way to handle 3 and 9 o'clock staining

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Introduction

In cases with 3 and 9 o'clock staining, the eye care practitioner needs to consider different causes. Oftentimes this typical staining is multifactorial, and that makes it more difficult to solve than many other, more straightforward cases. Three and 9 o'clock staining can be located on the cornea and/or on the adjacent conjunctiva. Both types cause mostly conjunctival redness and, sometimes, conjunctival edema. Subjective symptoms vary from slight foreign body sensation to pain but can also include tearing and dryness symptoms. The more the staining is located on the cornea, the more likely there are to be subjective symptoms.

Tear film quality and contact lens care are two key factors in 3 and 9 o'clock staining. This condition with (R)GP's can be improved by changing the lens diameter, lens edge thickness, back surface design, material components and the movement of the lens. Of those, this article will focus on the possibilities in changing contact lens diameter to solve 3 and 9 o'clock staining.

Case Report

A 52-year-old, caucasian female patient had 13.00D of myopia for which she has been wearing (R)GP lenses for 31 years. During the last few years, the patient has suffered from increased 3 and 9 o'clock staining OD, which led to decreased wearing time and marked red eyes - grade 2-3 - in the horizontal meridian (Figure 1).

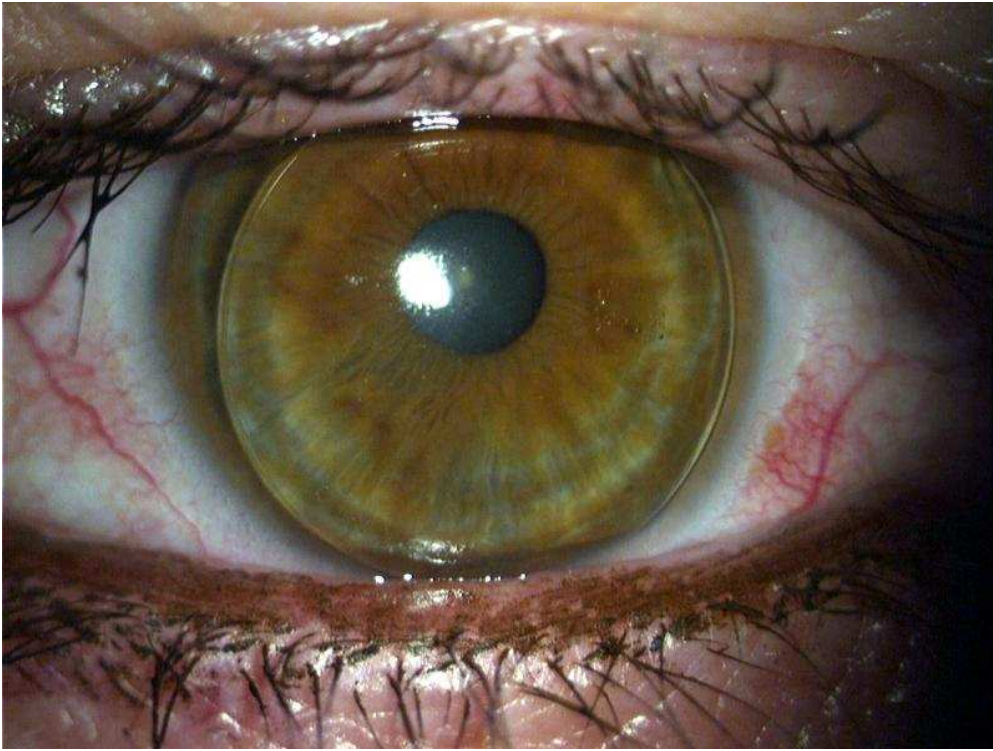


Figure 1: Conjunctival hyperemia due to 3 and 9 o'clock staining

Her current (R)GP lenses were in a rotationally symmetrical, aspherical design with an overall diameter of 9.80mm. The chosen material was the high-Dk gas permeable Contamac Optimum Extreme. Fluorescein application showed 3 and 9 o'clock staining, more present in the temporal than in the nasal region. The staining affected the peripheral cornea as well as the conjunctiva. The corneal staining location correlated perfectly with the increased focal redness on the conjunctiva. The contact lens fit exhibited good movement and acceptable centration. From a fitting point of view, no improvement was possible regarding contact lens geometry (Figure 2).

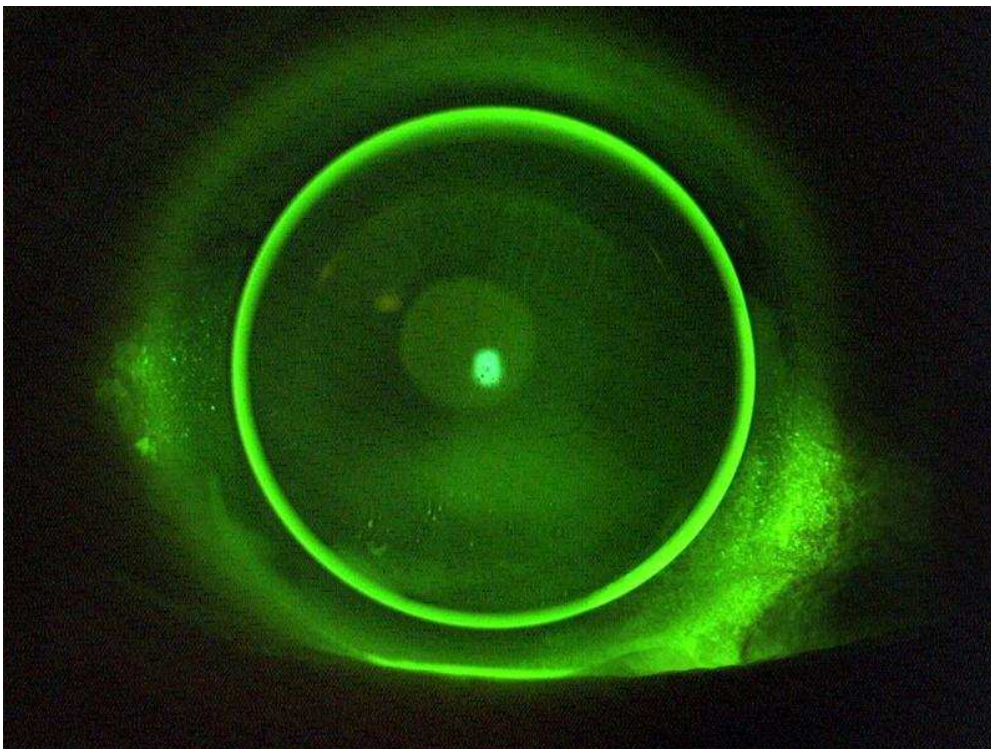


Figure 2: 3- and 9 o'clock staining with the current (R)GP lens, diameter 9.80mm

To reduce the exposure to dryness for the cornea, we decided to significantly increase the overall lens diameter. For this, the contact lens should cover the entire cornea out to the limbus and, as a consequence, protect the underlying cornea from drying out. The calculated contact lens design was still a rotationally symmetrical aspheric design, but with special peripheral asphericity to meet the corneal curvatures in the far periphery. This is very important to note. If you plan to go that large, you need a special back surface design to respect the peripheral corneal curves. If you just increase the diameter of a current (R)GP design, the contact lens may bind to the eye.

The new (R)GP design calculated for this patient was a PERIT lens from Falco (Switzerland), which is a perilimbal or intralimbal design, with a standard diameter of 11.2mm (all parameters can be ordered individually). With this lens the conjunctival hyperemia decreased after 1 week to grade 0-1 for the temporal region, whereas the nasal region still presented minor redness of grade 1-2 due to minor but persistent conjunctival staining. The patient's subjective response was just amazing. Her wearing time increased to up to 16 hours a day, and the foreign body sensation and dryness symptoms disappeared completely (Figure 3).

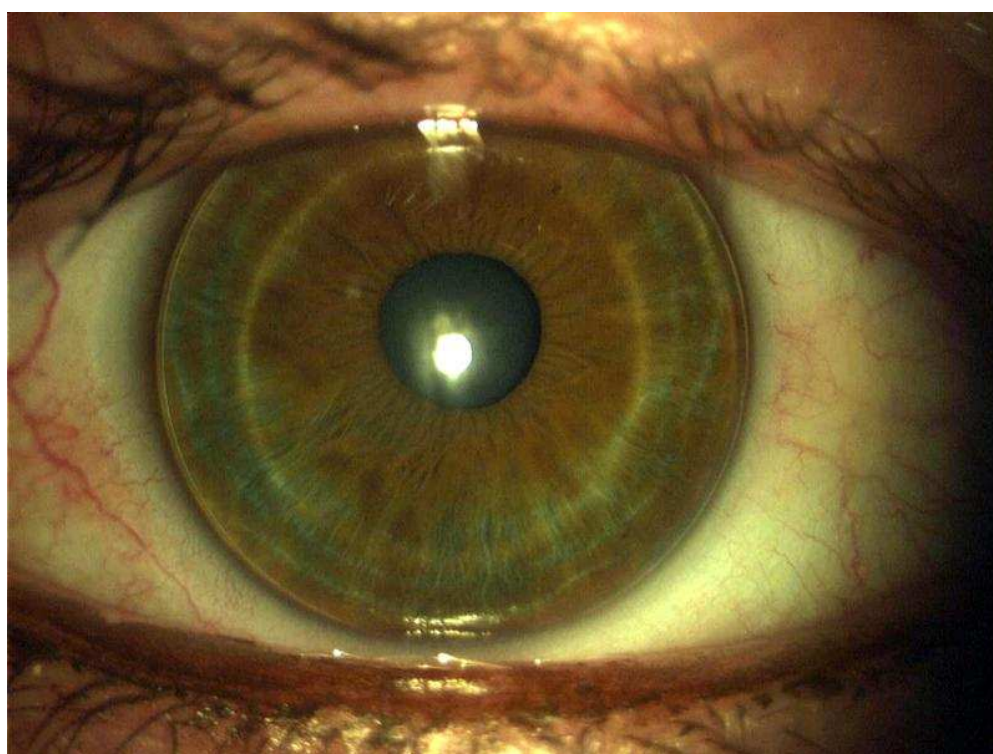


Figure 3: Dramatic decrease in redness of the conjunctiva, with the perilimbal (R)GP in place

No corneal staining was seen upon fluorescein instillation, however some minor staining was still detected on the conjunctiva (Figure 4). The engraving at 7 o'clock on the lens marks the right contact lens for the patient.

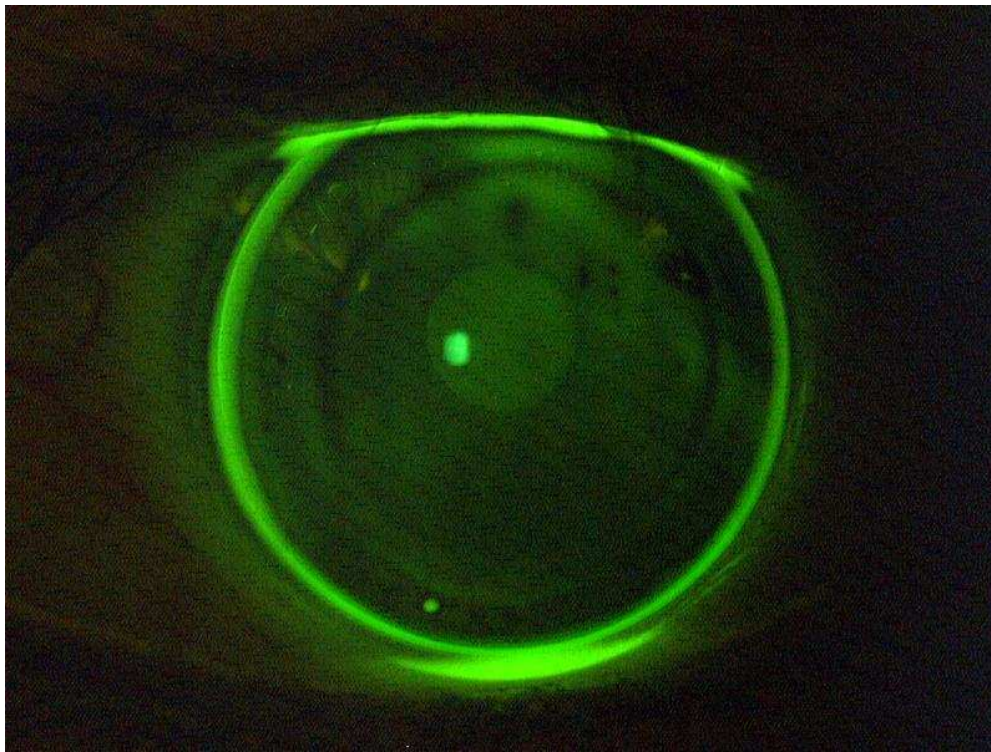


Figure 4: 3- and 9 o'clock staining solved with a diameter of 11.20mm.

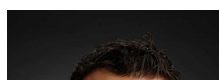
Summary & Discussion

Management of 3 and 9 o'clock staining is sometimes like the book of seven seals - every case needs to be evaluated carefully and separately. There are several options to solve 3 and 9 o'clock staining such as enhancing tear film quality, lens care, material properties and lens design. Changing the overall diameter is a simple but, nevertheless, very powerful option. Despite the importance of changing fitting strategies, treating the increased tear film evaporation should be started parallel to the fitting process. This includes warm compresses and eyelid care as well as Omega-3 intake. Also, during the first few weeks of treatment liposomal sprays can enhance quick improvement of the condition. Never give up with dry eye patients, there is (almost always) a solution. And sometimes, there's a big one.



Michael Baertschi

Michael Baertschi was the senior optometrist at the University Eyehospital Basel from 2000 to 2007. He is the owner of Kontaktlinsenstudio Baertschi in Bern, Switzerland and the CEO of Eyeness AG in Bern. Michael graduated from Pennsylvania College of Optometry as M.Sc. Optom. and from the University of Bern as M.med. Educ. Michael Baertschi is a fellow of the American Academy of Optometry and president of the Swiss Interlens group.





Michael Wyss

Michael graduated from Olten SHFA in Switzerland and did his MSc at the Hochschule Aalen Germany (in cooperation with New England College of Optometry and Pacific University, USA). Since 1999 he has worked in a private practice (kontaktlinsenstudio Baertschi in Bern, Switzerland) as Optometrist for specialty contact lens fitting. Additionally, he is an adjunct Faculty Member at the New England College of Optometry USA, Hochschule Aalen Germany,

TVCI in Prague (Czech Republic) and FHNW Optometry in Olten Switzerland. Michael is a clinical investigator for several Industry Partners and has published or lectured on several topics in the contact lens field throughout the world. Michael is a Fellow of the American Academy of Optometry and serves as a Member of the Admittance Committee for new Fellows outside the USA.

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