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i-site@netherlens.com

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September

Topography Assisted Analysis of Simultaneous Multifocal (R)GP Lens Designs

Michael Baertschi, MSc Mmed Education FAAO

Michael Wyss, MSc FAAO

Simon Bolli, Eidg dipl Augenoptiker

Marc Fankhauser, Eidg dipl Augenoptiker

Introduction

Simultaneous multifocal systems for presbyopia are like a question mark for practitioners regarding the optical outcome for the patient. Despite a good refraction and choosing the correct near or distance centered design and the optimal zone diameter, sometimes patients describe halos or double vision of unknown origin. This is especially difficult when a previous contact lens with identical parameters was tolerated well. The ability to measure or image the different optic zones in situ in such cases would be beneficial.

Fitting Pearl – Topography Tangential Mapping

A 53-year-old Caucasian female presented with a high amount of regular astigmatism. She had been a (R)GP wearer for many years. Her presbyopia had steadily increased during the last few years, and she

complained of difficulties while reading. Due to significant 3-9 o'clock staining, she was fitted with a peripheral toric scleral lens with a center near (CN) simultaneous design in 2011. The comfort and vision of that system were regarded as optimal. Tangential mapping with topography imaging, with the scleral lens in situ, showed that the CN design centered nicely (Figure 1). The black-and-white circle represents the pupil, whereas the red colored area is steeper than the green area, illustrating the near plus add.

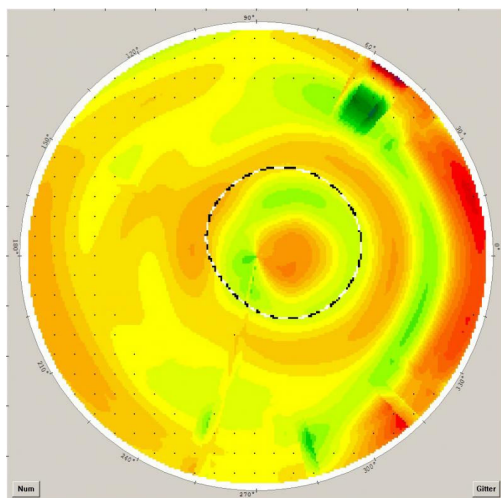


Figure 1: Tangential topography mapping over the scleral lens in situ, with a CN presbyopic simultaneous design visible

One year later, the contact lens was replaced as scheduled with identical parameters. But now the patient complained of double vision while reading. Over-refraction at near showed that almost the full addition was needed, almost as if there was no near portion present in the lens design. Tangential topography mapping showed an entirely different picture this time, as is evident in Figure 2.

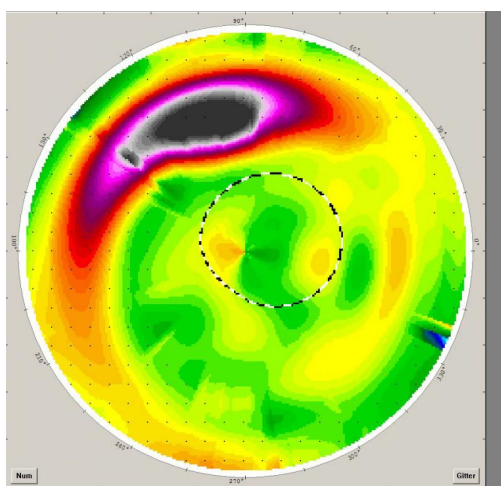
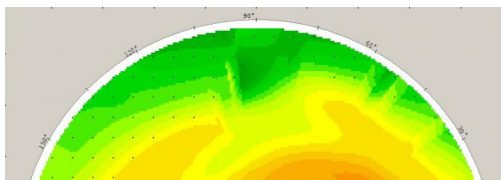


Figure 2: Tangential topography mapping over the newly ordered scleral lens

There is almost no or only a very distorted near portion visible on this contact lens, which explains the patient's vision problem with reading tasks. The manufacturer was informed of the issue and the contact lens was remade with identical parameters. The new lens achieved much better near acuity – and the same as the previous contact lens from 2011. Tangential mapping showed an almost identical plot compared to the 2011 scleral lens. (Figure 3)



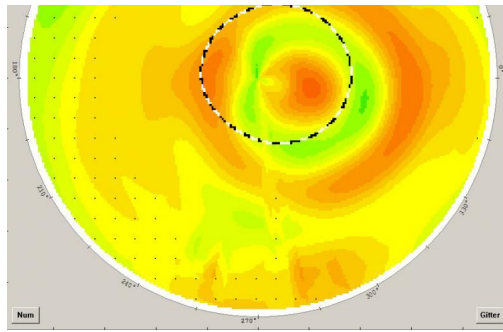


Figure 3: Tangential topographical mapping of the final ordered scleral lens

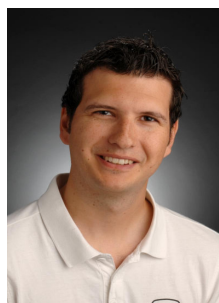
Discussion

Tangential mapping with the contact lenses in place can be of great value in ensuring that the optical zones of the simultaneous presbyopic design are correctly positioned, in width and in terms of optical quality. Before making any contact lens design changes, tangential topographical mapping should be performed first to rule out any errors in the lens design. With this mapping technique, the evaluation and calculation of contact lens parameters in the fitting process becomes much more predictable and reproducible. This is a major step forward compared to just guessing.



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 the vice chairman of the Admittance Committee for new Fellows outside the USA.

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