Orthokeratology and Presbyopia

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Introduction

Since more than 10 years the new accelerated Orthokeratology procedure is on the market and is used worldwide as a satisfaction for our patients. However Presbyopia was so far only corrected by Monovision or additional reading glasses and in many cases patients were informed that with Presbyopia they were not able to benefit from Orthokeratology in any matter. But since 2009 bifocal Orthokeratology is available too! So this case report will show the benefit and example of such a simultaneous bifocal Orthokeratology design (Falco Switzerland)

Case Report - Bifocal Design

Patient GI, caucasian male, age 52, was wearing contact lenses since he was in the age of 20. During the last 7 years he suffered from Presbyopia and tried several different contact lens solutions, including Monovision, RGP translating and simultaneous Designs as well as hydrogel translating and simultaneous designs. But all solutions created problems, either comfort (dry eye) or vision related. Orthokeratology eliminates dry eye issues completely and creates with the new bifocal design, simultaneous bifocal images to the patient similar to other principals for RGP's or Hydrogel's on the market. The design includes an additional curve between central Treatment zone and Reverse zone. The individual Near Addition will implanted in the new created Zone. (Figure 1)

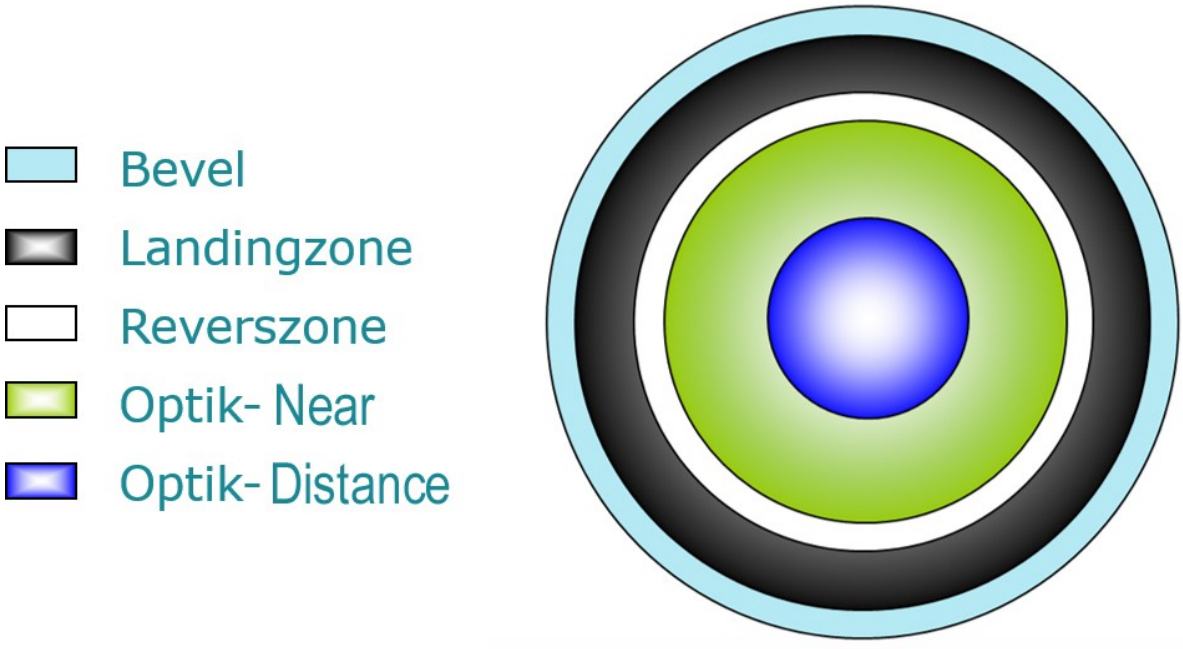

Figure 1: Bifocal Orthokeratology Design (Falco Switzerland)

The ordered contact lenses presented the assumed zones in the fluorescein pattern very nicely. The Reverse Zone appears much wider than in regular orthokeratology. A closer look presents a fine classical reverse curve, in the area where a bubble was present, and a faint Addition Zone towards central Treatment Zone. (Picture 2)

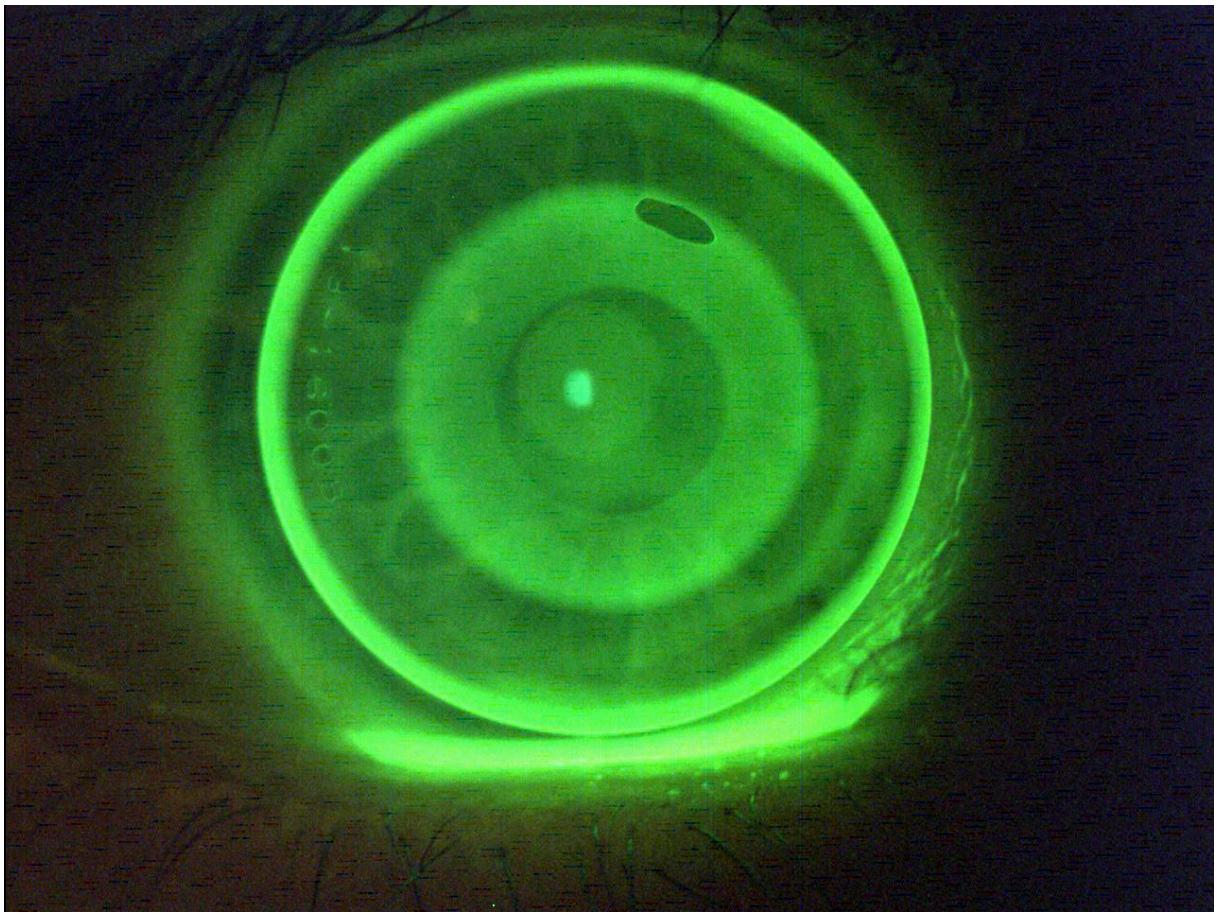

Figure 2: Fluorescein pattern of the bifocal Orthokeratology Design

Optical outcome after 1 month of fitting and stabilization time was superb! Adaptation time compared to traditional Orthokeratology took about 1 week longer for distance vision to be achieved. Patient reported a massive increase in overall quality of life. Visual acuity OU was for distance 1.0 and reading in 40cm achieved 1.0 as well, without having any assistance on or around the eye. Topography showed well centered and regular treatment zone. Distance Zone appeared a little smaller, in contrast the bulls eye formation presented softer transition than in normal Orthokeratology (Picture 3)

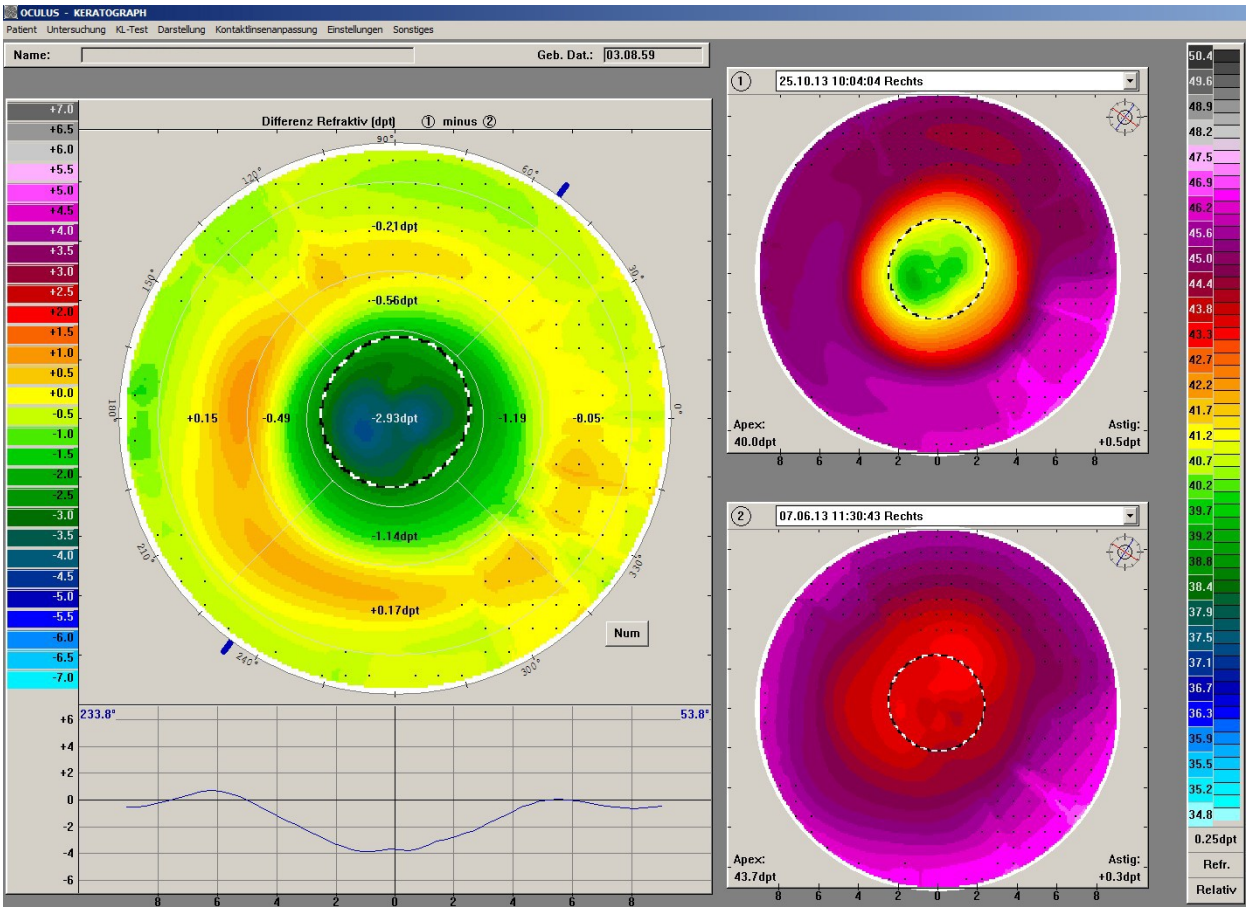

Figure 2: Differential Mapping of Pre/Post - Treatment

I would like to postulate the importance of Topographical differential mapping during Orthokeratology. Sagittal or tangential mapping do reflect different aspects of fitting, but differential mapping pre / post treatment are most power full. The true corneal changings since the beginning are showed. Especially centration is key for successful orthokeratology, but the apex is not always in the theoretical center of the cornea. This is not addressed in normal mapping, but is considered in differential mapping. Additionally precise measurements of corrected myopia can be read directly out of the mapping and gives a good idea of the subjective visual outcome.

Discussion

Orthokeratology gives a lot of freedom to our patients and increases quality of life. Presbyopia should no longer considered as impossible for Orthokeratology. The 2009 presented Bifocal Design works very well and patients love to be relieved from their visual aids. Especially patients with dry eye problems during multifocal contact lens wear could have a huge improvement visually and for comfort as well.