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## July 2015

### Tilted & Displaced

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#### Introduction

Fitting (R)GPs after penetrating keratoplasty (PKP) is a challenge in itself. If the graft is tilted or displaced, it is a nightmare. This article will discuss using custom reverse curve designs in tilted or displaced PKP cases.

#### Case Report

A 43-year-old Caucasian female underwent a PKP. The patient complained of shadow (double) vision and some discomfort with her current reverse curve (R)GPs. Fluorescein pattern evaluation showed adequate peripheral landing of the contact lens OS, but heavy bearing on the temporal part of the graft. In contrast, the nasal portion of the graft showed a large pooling area. (Figure 1)

*Figure 1: Patient's reverse curve (R)GP design.*

While observing the Pentacam (Scheimpflug) cross-section measurements, the reason for the asymmetric fitting became obvious. The whole graft is tilted and displaced (Figure 2).

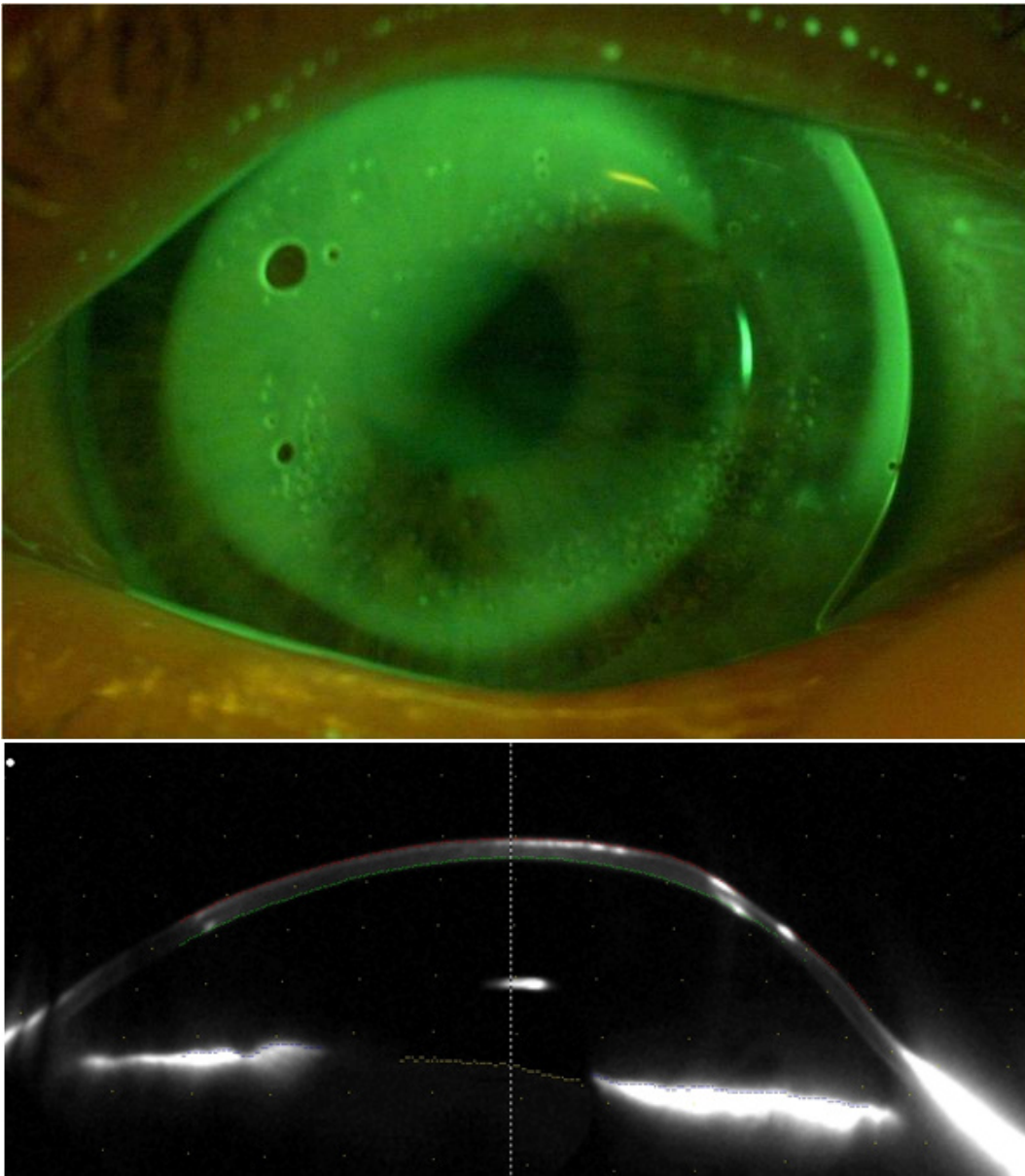


Figure 2: Pentacam cross section of the tilted graft.

After learning this, the same reverse curve design was chosen, but with tilted optics to mimic the unique geometry of the tilted graft, as shown in Figure 3.

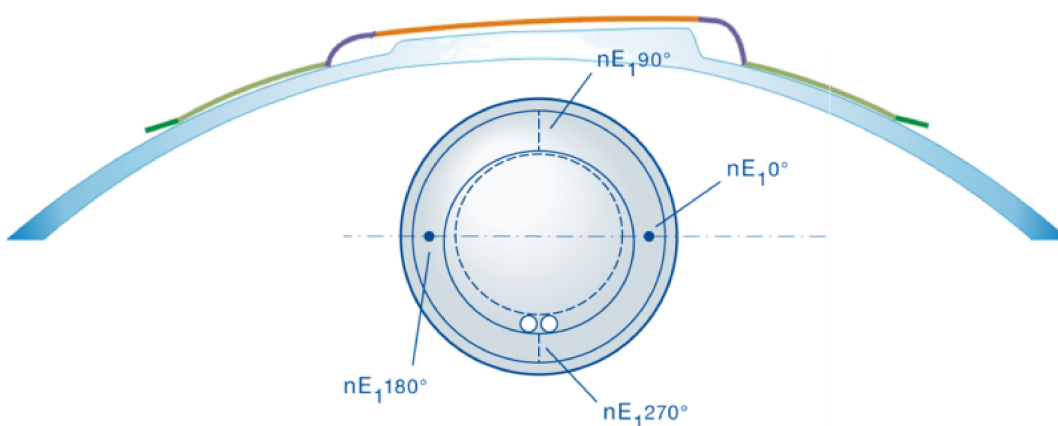
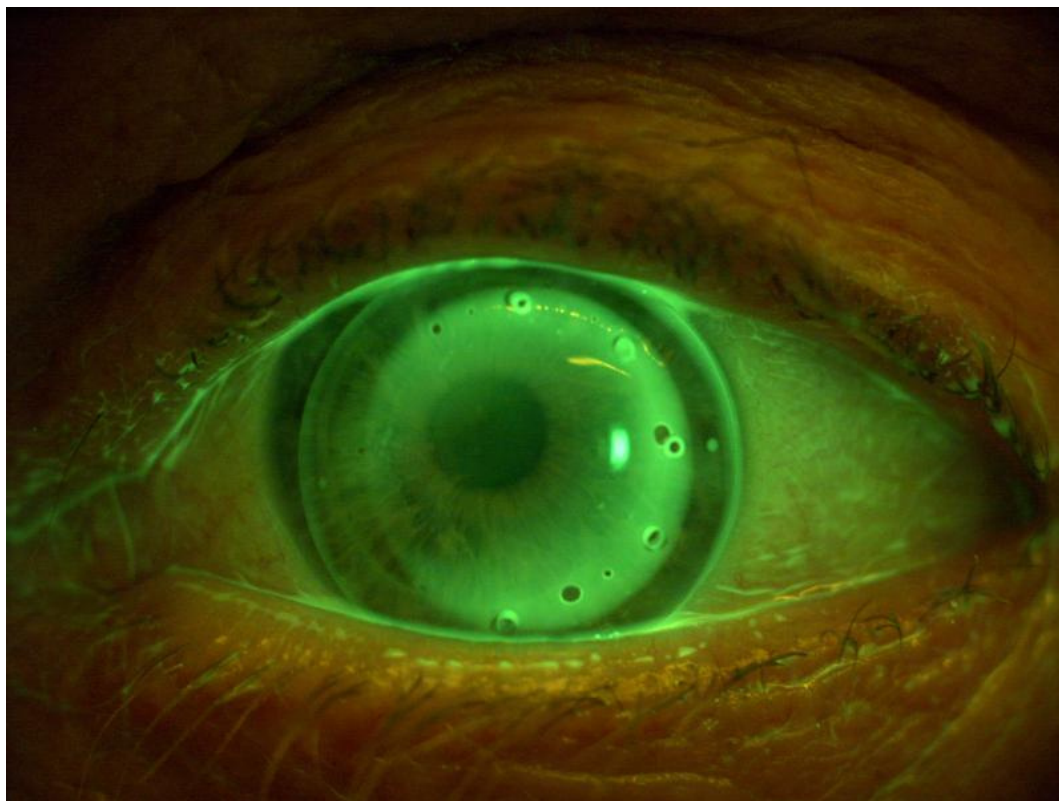


Figure 3: Drawing of a quadrant-specific (R)GP design with a tilted optic, courtesy of Falco, Switzerland.

The final reverse geometry lens had a 10.60mm diameter with a peripheral-toric landing zone and a tilted optic zone due to a steeper reverse curve at 180°. In that deep reverse zone

area, fenestrations allow air bubbles to escape. Due to the peripheral-toric design, the lens 'snaps' into the toric curvature of the host cornea and so for doesn't need any additional stabilization. At 270°, the lens has a 3<sup>rd</sup> colored engraving to ensure that it will be inserted the right way. Fluorescein pattern evaluation showed the typical reverse curve pattern, peripheral alignment, adequate sagittal depth and overall a much better centration of the whole lens. (Figure 4)



*Figure 4: Fluorescein pattern of final, well centered (R)GP with tilted optic zone.*

Subjectively, the contact lens could be tolerated much better, and the shadowing perception disappeared

### Discussion

Custom reverse geometries offer a fascinating approach for fitting (R)GPs after displaced or tilted PKP.

It is still challenging to fit lenses to these corneas; both the practitioner and the manufacturer need a high level of knowledge and skills. But it is fascinating and satisfying to restore vision in such patients, and this is more than worth going the extra mile.



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

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