



WORLD  
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CONGRESS

SAN DIEGO  
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## Topography Guided Photorefractive Keratectomy of Corneas With Irregular Astigmatism

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The author has no financial interest to disclose

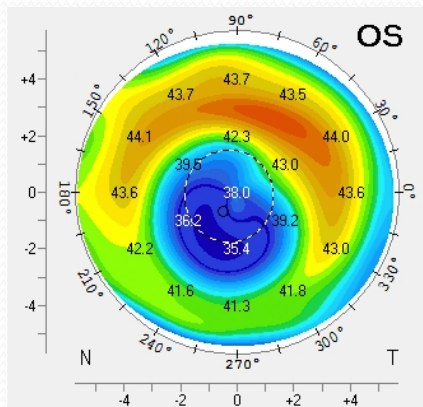
# Introduction and Purpose

- Irregular astigmatism can cause visual disturbances and are difficult to improve
- Irregular astigmatism can be seen after decentred ablation, small optical zone, post penetrating keratoplasty and in corneas with scars
- Current excimer laser platforms are able to deliver topography guided treatment in order to regularize irregular corneas
- The aim of this study is to report 1 year results of topography guided PRK in eyes with irregular astigmatism

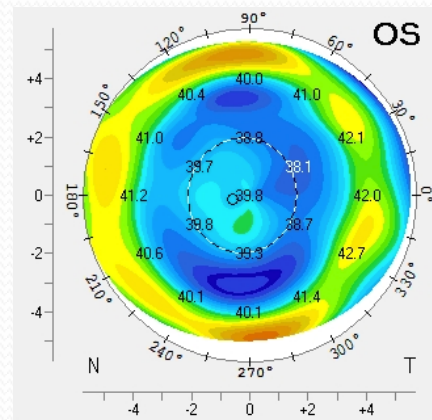
# Methods

- The Schwind Amaris Excimer platform with the ORK-CAM software was used to calculate treatment profiles
- The TransPRK protocol was used to deliver the treatment
- All HOA were treated in all patients
- Refractive Error was treated if needed and desired
- Retrospective case analysis of pre- and postoperative data were performed
- Parameters recorded were: Kmax, Kmean, simK's, Pachymetrie, Sphere, Cylinder, HOA RMS, Coma and Spherical aberration, UCVA and BCVA
- Pre- and Postoperative data were collected at 3, 6 and 12 months

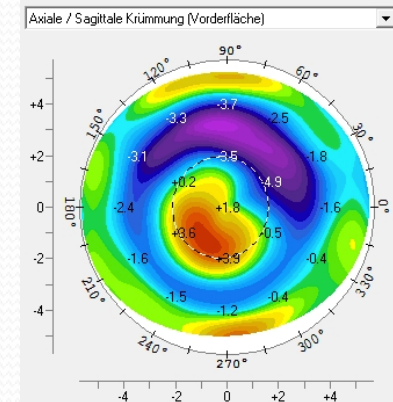
# Results small optical zone (1 year, Pentacam-Comparison)



Pre-Treatment



Post-Treatment

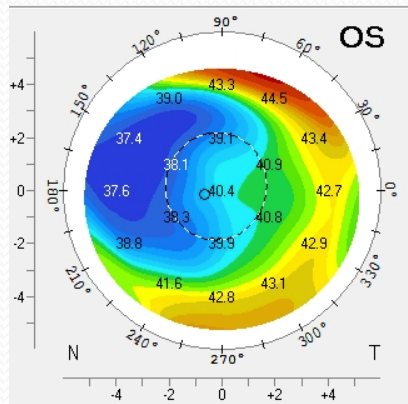


Difference Map

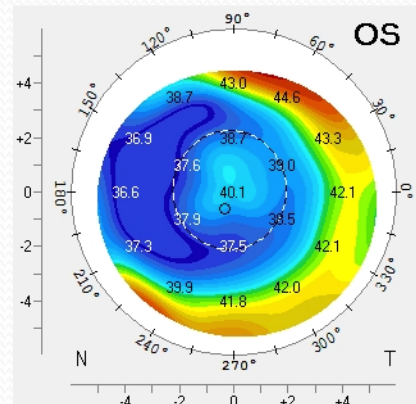
UCVA                      CF  
 BCVA                      0.3  
 Refraction            -3.75=-1.5/101°

CF  
 0.8  
 -8.00=-0.25/97°

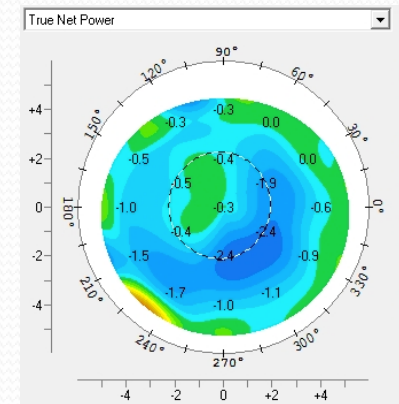
# Results decentered ablation (1 year, Pentacam-Comparison)



Pre-Treatment



Post-Treatment



Difference Map

UCVA

0.5

0.8

BCVA

0.8

0.8

Refraction

+0.50=-+1.0/12°

-0.75=-0.5/170°

# Results

- 22 eyes of 19 patients with irregular astigmatism (decentered ablation, small optical zone, post PKP, post RK, corneal scars) were included
- 13 of 22 eyes gained UCVA, 6 lost UCVA, 3 remained unchanged
- 14 of 22 eyes gained BCVA, whereas 3 lost BCVA and 5 remained unchanged
- HOA RMS was reduced in 19 of 22 eye (mean 0.55, range +1.90 to -0.99)
- Coma was reduced in 13 of 22 eyes (mean -0.04, range +1.03 to -0.97  $\mu\text{m}$ )
- Spherical Aberration was reduced in 17 of 22 eyes (mean 0.15, range +1.26 to -0.66  $\mu\text{m}$ )
- Spherical Equivalent was reduced in 8 of 22 eyes (mean -0.87, range by +4.13 to -4.25 Diopters)
- Astigmatism was reduced in 17 of 22 eyes (mean 0.91, range +5.5 to - 1.0 diopters)



# Conclusions

- Topography-guided PRK was successfully used to regularize corneas with irregular astigmatism
- Most of the corneas improved in topography, HOA, UCVA and BCVA
- Prediction and Control of refraction (especially spherical equivalent) in corneas with irregular astigmatism remains a major challenge

