

# Implantation of bitoric MICS IOL after CO-MICS to correct keratoconus

## Case study report

By Dr Detlev Breyer

Patients with both cataract and stable keratoconus are rare, however, these cases, when they do come to our practices, are challenging. In this article, I will discuss a case study that demonstrates how the implantation of a bitoric MICS IOL post CO-MICS was a suitable and reliable solution to this problem.

### Materials and methods

Corneal ectasia was found in a 69 year old patient who had suffered from this situation for nearly 50 years. He was treated during that time with glasses and told he had an extreme form of astigmatism. He never had contact lenses. He was referred to us for cataract treatment.

When we did a keratography the diagnosis of an ectatic cornea was obvious and easy to diagnose (Figure 1). His subjective refraction was as follows:

OD: +2.00 -5.50 72 BCVA: 0.25  
OS: +2.25 -3.25 138 BCVA: 0.33

After we had discussed different alternatives we decided to implant a bitoric customized toric IOL: AT. Torbi from Carl Zeiss Meditec (Jena, Germany). All the relevant data were entered into the CZM Online Calculator and a customized bitoric IOL was suggested.

The patient's eye reference axis and target axis were marked with a Tabo scheme CZM ocular with the Nd:YAG Laser. We prefer this method in comparison to any marker because it is much more convenient for the patient and can be less influenced by the patient, by rotating the eyeball or retracting the head. After we had done coaxial microincision phacoemulsification (CO-MICS, OS3 — Oertli Instrumente, Berneck, Switzerland) we implanted the bitoric IOL through a 1.6 mm incision with a wound assisted on axis technique under irrigation without the use of OVD. The orientation of the IOL was checked with a Breyer screen transparency (STACY).

Aberrometry and subjective refraction was tested 2 weeks post-op: we achieved a perfect and acceptable result on the OD respective of OS.

### Results

A full overview of our results for OD and OS can be seen in Figures 2 and 3 respectively. We also observed binocular uncorrected far visual acuity (UCFVA) of 0.8 D and a binocular best-corrected far visual acuity (BCVA) of 1.0 D.

The non perfect residual astigmatism in OS was due to a 5° orientation residual deficit of the target line. A rotation of the IOL was suggested to the patient, but due to his good visual acuity he refused. He told us he had never seen as well as he had been able to after the surgery and didn't want to risk this.

### In short...

Dr Breyer discusses a case study of a 69-year old patient suffering from both cataract and stable keratoconus. Performing an implantation of a bitoric MICS IOL through a 1.6 mm incision after CO-MICS offered the patient a satisfactory and reliable correction of astigmatism.

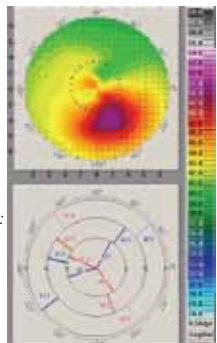
Figure 1: Keratography.

#### Background and Method: Pre-operative Exam

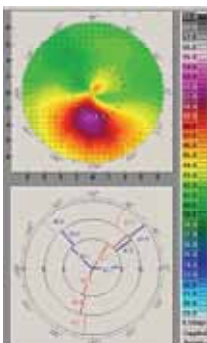
- 69-old man with hyperopia, cataract and keratoconus in both eyes
- Subjective refraction:

Sph. Cyl. Axis  
OD: +2.00 -5.50 72 BCVA: 0.25  
OS: +2.25 -3.25 138 BCVA: 0.33

Topography OD



OS Topography



Corneal astigmatism:  
IOL-Master  
D [41.81]  
D [46.11]

Corneal astigmatism:  
IOL-Master  
D [41.81]  
D [44.99]

Figure 2: Postoperative exams — OD.

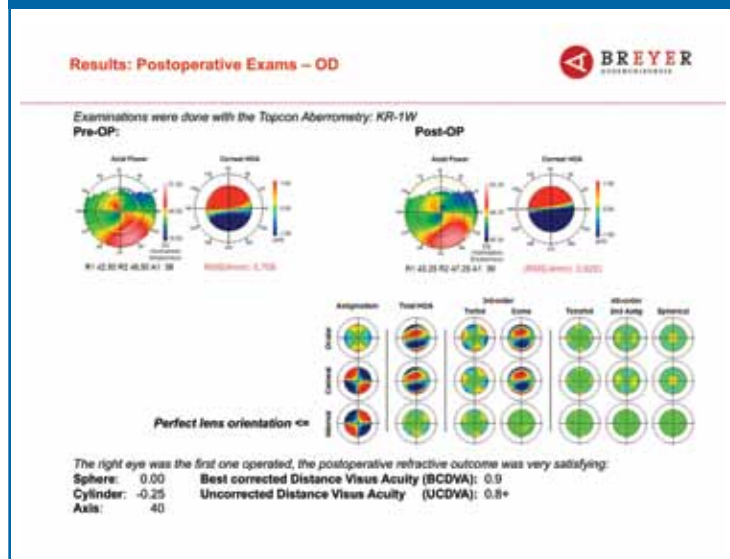
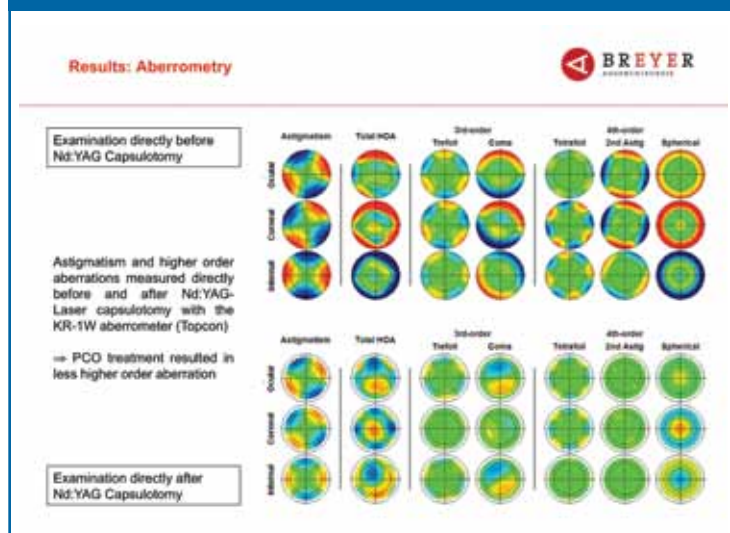


Figure 3: Aberrometry results.



## Conclusion

The implantation of customized bitoric MICS IOL through a 1.6 mm incision after CO-MICS seems to be a reliable tool to correct astigmatism in keratoconic cataract eyes.

## References

1. J. Venter, *J. Refract. Surg.*, 2009;25: 759–764.
2. K.Kamiya, *J. Refract. Surg.*, 2008;24:840–842.

### Author

**Dr med. Detlev R.H. Breyer** is a specialist in cataract and refractive surgery and is senior surgeon at the Breyer Eye Surgery, Dusseldorf, Germany. He may be reached by E-mail: d.breyer@breyer-augenchirurgie.de  
 Dr Breyer is a consultant to Oertli and Carl Zeiss Meditec.