



Surgeon reports first 3-month results of accommodating IOL

The design of the Crystalens HD allows patients to see objects at different distances as continuous vision.

By *Mark Tomalla, MD*

As one of four selected centers in Germany, we have been implanting the Bausch & Lomb Crystalens HD since January. Our postoperative data now cover up to 3 months.

The Crystalens HD is a refractive IOL, with which cataract treatment and myopia or hyperopia correction can be performed at the same time. The correction of high astigmatism values can be made using the bioptics procedure. The Crystalens is available in a range from 10 D to 35 D, and from 18 D to 22 D in 0.25 D steps in Germany. In addition, the lens has a central near-vision additive of 1.5 D, whereby presbyopia correction is made at the same time.



**Mark
Tomalla**

Thanks to its design, the IOL can move forward and thus enables pseudophakic accommodation, which has now been confirmed in numerous studies with objective and subjective methods.

[Story continues below](#)↓

ADVERTISEMENT

The 5-mm optic of the IOL consists of the soft, flexible, clear silicone material Biosil, which has a refractive index of 1.427. The rigid haptics are made of stable polyimide. This material causes the IOL to grow together quickly and firmly with the capsular bag by fibrosis, which is desired because of the accommodative IOL design.

What is special about this IOL is that – especially from the patient’s point of view – it works with only one focus, unlike multifocal or diffractive IOL models, which function with several foci (for example, with various rings or various zones). Thanks to the Crystalens design, the patient perceives objects at different distances (near vision, intermediate vision and distance vision) as continuous vision. This IOL enables the surgeon to make visual correction for various distances at the same time, which is comfortable for the patient, who no longer must learn to deal with various foci and optical images.

In Germany, before the first implantation of the Crystalens, every surgeon must complete the certification offered by Bausch & Lomb. For this, a specialist attends the first 10 implantations on site and specifically trains on the proper placement into the injector. He also explains details about the surgery, which has to be performed in a certain way so that the Crystalens can develop its optimal postoperative effect.

The surgery

Implantation of the Crystalens should only be performed by an experienced surgeon because the surgical procedure is clearly different from standard cataract surgery. In placing in the shooter, attention must be paid to the correct implantation direction of the IOL. This can be checked by the different ends of the haptics.

The lens is implanted in the capsular bag, whereby the natural movement of the ciliary muscle can be used later for focusing. The capsulorrhexis must always be larger than the optic of the IOL, ie, a capsulorrhexis of 6 mm must be selected for an IOL optic of 5 mm. The anterior capsular bag must be placed clearly outside the optic.

Because the silicone optic is soft but the polyimide haptics are rigid and inflexible, the Crystalens is difficult to position in the capsular bag, especially in patients with narrow pupils, and this requires surgical skill. Usually, the lens has to be rotated until it fits perfectly. Then the viscoelastic behind the optic must be thoroughly sucked off. Finally, the lens must be pushed backward until there is complete contact to the posterior capsular bag and the haptics of the IOL are facing the back surface of the cornea. In this stage of the surgery, the IOL should not move forward at all.

As already mentioned, the polyimide material used for the haptics causes the IOL to grow quickly and firmly together with the capsular bag by a desired development of fibrosis. For undisturbed and complete growth, it is important that the patient does not accommodate at all during the first 10 days after the implantation. Otherwise, the refocus capacity of the IOL would not be guaranteed after accommodation. First the ends of the haptics must grow firmly together with the capsular bag by fibrosis. If this is not the case, the patient will have problems when he has focused on a close object and afterwards wants to focus on an object with normal vision.

To avoid premature accommodation, the pupil is dilated after surgery with a single dose of atropine, and it takes 3 to 5 days for this accommodation blockade to abate. In this phase, the patient suffers from severe glare and cannot yet read and must be told before surgery. Our experience has shown that optimal postoperative results are achieved after 4 to 6 weeks.

First 3-month results

The patient data of all study participants are reported to SurgiVision Consultants, an independent organization that performs statistical assessment of the data.

To date, we have implanted the Crystalens in 25 patients. After 3 months, 75% of our treated patients had an average uncorrected visual acuity of 20/20 and 100% had an average best corrected visual acuity of 20/20.

We used the Sloan chart for examination of intermediate vision. On average, 65% of our patients could read type size of 0.8 with UCVA and 95% of our patients with BCVA. The remaining 3% of the patients could read a type size of 0.5 with BCVA. Concerning near vision, 70% of our patients reached an average of J1 with UCVA and 85% reached J1 with BCVA. The remaining 15% reached an average of J2 or less with BCVA.

There was unchanged glare or blinding sensitivity. Night vision also remained unchanged and good. The patients benefited especially from strong intermediate vision and good reading comfort without halo effects. No secondary cataract has occurred thus far, thanks to the sharp edges of the Crystalens. However, the postoperative period is not yet long enough to enable a long-term statement.

Most convincing about the Crystalens for us is the particularly good imaging quality of the lens and especially the high level of subjective patient satisfaction after the implantation.

-
- Mark Tomalla, MD, can be reached at Clinic Niederrhein gGmbH, Clinic for Refractive and Ophthalmic Surgery, Fahrnerstr. 133-135, 47169 Duisburg, Germany; +49-203-5081711; fax: +49-203-5081713; e-mail: mark.tomalla@ejk.de; Web site: www.augenklinik-duisburg.de.