Piggybacking With the Add-On IOL

The toric model of this lens provides good astigmatic correction.

BY GERD U. AUFFARTH, MD

The Add-On IOL (HumanOptics AG, Erlangen, Germany) is a line of sulcus-fixated silicone lenses designed for piggyback implantation in pseudophakic patients. When implanted, these IOLs compensate for residual spherical and astigmatic refractive errors\textsuperscript{1,2} or correct presbyopia in patients with monofocal IOLs.

In our clinical practice, the Add-On is primarily implanted in cases of residual astigmatism after penetrating keratoplasty (PKP). In these cases, we first perform cataract surgery and monofocal IOL implantation, then implant the toric Add-On IOL 8 to 12 weeks later. This two-stage approach provides accurate IOL calculation, and it also offers the possibility to explant the Add-On in the case of repeat PKP. The toric Add-On is also used in patients with residual astigmatism after refractive lens exchange. Implantation of the multifocal Add-On is fairly rare in our practice and has been performed only twice.

HumanOptics produces the foldable three-piece silicone Add-On IOL for piggyback implantation (Figure 1). The posterior surface of the optic is concave to adapt to the already implanted IOL’s anterior surface. The overall diameter is 14 mm, and the optic diameter is 6 to 7 mm. The IOL can be implanted with forceps or with several commercially available injectors.

RESULTS

We have implanted the toric Add-On in 11 eyes (mean age, 70 ±8.8 years; Figures 2 and 3), the multifocal Add-On in two eyes (mean age, 43.5 ±6.4 years), and the spherical Add-On in two eyes (mean age, 61.5 ±9.2 years). In the toric Add-On group, spherical power ranged from -14.00 to -2.00 D (-6.60 ±3.75 D), and toric power from 2.00 to 26.00 D (12.40 ±7.10 D). These fairly high astigmatic values resulted from previous PKP or cataract surgery. Patient follow-up was conducted at 1 day, 1 month, and 2 months.

At postoperative day 1, for all eyes, mean spherical equivalent was 0.09 ±0.4, and median distance UCVA was 0.4 logMAR. The residual astigmatism was -0.38 ±0.66. At 1 month, spherical equivalent was 0.03 ±0.68, and median distance UCVA was 0.25 logMAR. The residual astigmatism was -0.88 ±1.18. At 2 months, spherical equivalent was -0.05 ±0.51, and median distance UCVA was 0.25 logMAR. The residual astigmatism was -1.22 ±1.04.

Figure 1. The Add-On IOL is available in three models: (A) spherical, (B) multifocal, and (C) toric.
CONCLUSION

In general, the results achieved with these Add-On lenses were excellent. IOL implantation was uneventful in all cases and none of the implanted lenses had to be removed. The IOL calculation was reliable.

There was a good outcome for astigmatic correction with the toric Add-On models. Even though not all of the patients achieved emmetropia, the residual astigmatism was well within the range that could be corrected with spectacles.

Two patients with very high astigmatism after PKP required IOL rotation in the early days after surgery, which was done without complication. Otherwise, no complications occurred, including intraocular pressure elevation, pigment dispersion, or fibrin reaction.

In general, the Add-On IOL has been shown to be safe and reliable in compensating for minor to severe refractive errors. In very complicated cases, the IOL powers required can be calculated by HumanOptics, resulting in excellent outcomes.3,4

Patients with high astigmatism after PKP can benefit from this lens. The possibility to offer multifocality to pseudophakic patients is also an attractive solution in refractive surgery.

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TAKE-HOME MESSAGE

- The Add-On IOL is a line of sulcus-fixated silicone lenses designed for piggyback implantation in pseudophakic patients to compensate for residual spherical and astigmatic refractive errors or to correct presbyopia in patients with monofocal IOLs.
- The toric Add-On IOL can be implanted in patients with residual astigmatism after PKP or refractive lens exchange.
- The lens can be implanted with forceps or with several commercially available injectors.

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