More Than a Decade of Experience With Implantable Collamer Lens

We read with great interest the article by Moya et al. in the August 2015 issue. The literature on long-term outcomes and complications of posterior chamber phakic intraocular lenses is scarce and the authors effectively describe their 12-year experience with implantable collamer lens (ICL) implantation.

We reviewed 349 eyes of 216 patients, of which 155 (44.4%) were treated with spheric ICLs and 194 (55.6%) with toric ICLs. The mean follow-up was 47 ± 31 months (range: 3 to 127 months); however, the study included more than 40 cases with more than a decade follow-up. The preoperative spherical equivalent was -11.60 ± 5.12 diopters (D) compared with -16.90 ± 4.26 D in Moya et al.’s study. Our postoperative spherical equivalent was slightly better, -0.52 ± 1.03 versus -0.89 ± 1.26 D, perhaps due to a lower preoperative sphere, inclusion of hyperopic cases, and the use of toric ICLs. In our study, the preoperative uncorrected distance visual acuity was 1.72 ± 0.49 (20/1000 Snellen), which improved to 0.23 ± 0.22 (20/33 Snellen) (P < .001). The mean corrected distance visual acuity was 0.21 ± 0.17 (20/32 Snellen) preoperatively and 0.12 ± 0.138 (20/26 Snellen) postoperatively (P < .001).

Moya et al.’s study had several strengths, such as the well-documented endothelial cell density of 2,586.61 cells/mm² preoperatively, 2,434.13 ± 290.12 cells/mm² at 1-year follow-up, and 2,071.13 ± 361.84 cells/mm² at the last visit, with a mean loss of 515.48 cells/mm² (19.75%) in 12 years, which is similar to other studies with shorter follow-up. One of the strengths of our study was long-term vault measurements with anterior segment optical coherence tomography, a more objective method. The vault measurement at the last visit was 481 ± 185 µm in our study versus 444 ± 204 µm at 1 day and 242 ± 157 µm 12 years postoperatively.

Postoperative complications were similar in both studies. We reported a total complication rate of 3.72% (13 eyes), 2% of which were ICL related and 1.72% related to myopia or other ocular pathologies, whereas Moya et al.’s study had 6.24% vitreoretinal-related complications. Interestingly, we did not observe any clinically relevant lens opacities, whereas Moya et al. reported 13.88% (20 eyes) with significant lens opacities and treated 7.63% (11 eyes) with bilensectomy. This specific complication correlated significantly (chi-square test, P = .007) to the V3 ICL model. Our ICL-related complications included a small vault (< 100 µm), which required an ICL exchange, two eyes had toric ICL rotation, and one case had recurrent uveitis that resolved with medical treatment. Other complications not related to the ICL included blunt trauma with related macular hemorrhage and ICL subluxation, myopic choroidal neovascularization, blunt trauma with endothelial failure treated with Descemet’s stripping automated endothelial keratoplasty, and a rhegmatogenous retinal detachment after ICL implantation treated with a scleral buckle.

The only two severe complications in our study included a patient who underwent ICL removal due to an unresponsive toxic anterior segment syndrome and one patient with endophthalmitis who lost 2 lines of corrected distance visual acuity after intravitreal therapy and vitrectomy.

Overall, our aim is to complement Moya et al.’s outstanding study with our findings in a large sample with long-term follow-up of ICL and toric ICL implantation, including visual, refractive, and anatomical outcomes and postoperative complications.

REFERENCES


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Reply

We would like to congratulate Gomez-Bastar et al. for their study regarding long-term outcomes after implanting posterior chamber phakic intraocular lenses (PIOLs) and its contribution to the current knowledge on the topic. Although the authors of this article used
the same brand of posterior chamber PIOLs that we did, some differences limit the comparability of our studies.

First of all, it must be remarked that the design of both studies is different. Although we conducted a longitudinal retrospective analysis, Gomez-Bastar et al. carried out a cross-sectional study. In this kind of design, different individuals with the same characteristics are compared while longitudinal studies track the same people over time. That explains why we decided to include only 144 eyes that were followed up for at least 12 years (patients who did not attend the examinations and those cases in which the posterior chamber PIOL was explanted after cataract formation were excluded from the final refractive analysis) even though our database included more than 5,000 posterior chamber PIOLs implanted from 1998 to the present.

These differences may be essential when considering the long-term results regarding the ability of the studies to detect complications happening over time, the stability of the refractive outcomes, or even the evolution of morphological parameters related to safety such as endothelial cell counts and vaulting of the posterior chamber PIOLs. In this sense, a longitudinal design may avoid the bias effect of possible non-homogeneous populations or patient dropouts. We decided to not include patients with hyperopia or hyperopic astigmatism because of the possible bias when analyzing the refractive predictability (ie, the mean spherical equivalent).

Although we did not find vault measurements using anterior segment optical coherence tomography in our study, we agree with Gomez-Bastar et al. about the advantages of this technology. Unfortunately, it was not available on the market during the first years of our study.

Differences in complication rates between both studies (overall regarding phacogenesis) can be explained by considering the different mean follow-up period (47 ± 31 months in the Gomez-Bastar et al. study versus more than 144 months in our series). In fact, we observed a mean period of latency between the posterior chamber PIOL implantation and the cataract diagnosis of 107.5 ± 44 months. Finally, due to their particular anatomical features, highly myopic eyes have an increased risk of developing vitreoretinal pathology and PIOL implantation has been associated with an even higher incidence rate, irrespective of the model of PIOL implanted. For this reason, we consider that the concomitant retinal pathology should be considered as a complication related to the implantation of posterior chamber PIOLs when analyzing the results.

REFERENCES


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