

Comment on: Long-term efficacy and safety profiles of iris-fixated foldable anterior chamber phakic intraocular lens implantation in eyes with more than 10 years of follow-up



We read with interest the article by Papa-Vettorazzi et al. on Artiflex phakic intraocular lens (pIOL) results.¹ The authors found that the mean corneal endothelial cell loss (ECL) at the final follow-up (10.7 ± 0.6 years) was 12.2% ± 12.5%. The postoperative ECL not related to surgical trauma (calculated from 12 months after the procedure to the last follow-up visit) was 8.8% ± 11.9%, and the authors indicated that the calculated mean rate was 1.0% cell loss per year.

We consider it important to clarify some additional details about ECL. What percentage of eyes lost more than 1.6% of endothelial density yearly (upper limit of normality obtained from the mean plus 2 standard deviations of the classic study by Bourne et al.)? In the box and whisker plot shown in the supplementary material, it can be seen that a number of eyes reached final endothelial densities of less than 2000 cells/mm² and, in fact, some densities dropped to a value close to 1600 cells/mm², which is in proximity to the explantation criterion defined by the French Agency for the Safety of Medical Devices (1500 cells/mm²). It would be very interesting to know what percentage of eyes were below 2000 cells/mm², the age of these patients, and the postoperative follow-up time. It would also be important to know if any of the eyes lost ≥25% of preoperative endothelial density, which is the limit recommended by the American Academy of Ophthalmology to consider explanting a pIOL.

Several studies have recently been published showing significant long-term ECL with iris-claw pIOLs (Artisan and Artiflex). In 67 eyes with the Artisan iris-claw pIOL for myopic errors with a mean follow-up of 9.6 ± 3.0 years, we found that 29.9% of them lost ≥25% of preoperative endothelial cell density at the last follow-up visit, that 60.8% lost a percentage of endothelial cells greater than the expected physiological loss (>1.6% per year), and that 7.5% had an endothelial density of less than 1500 cells/mm².²

Indeed, in a newer publication, we reported that we had to explant 5 Artisan pIOLs (6.3% of the group) because of late ECL (mean follow-up time 11.9 ± 3.5 years).³ In 2018, Jonker et al., with Artiflex and Artiflex toric pIOLs, reported a total chronic ECL from 6 months to 5 years postoperatively of 10.5% in the spherical group and 10.2% in the toric group. After 5 years, 4.4% and 4.3% of eyes, respectively, had ≥25% loss of endothelial cells and 3.0% of eyes in the Artiflex pIOL group had a cell density of less than 1500 cells/mm².^{2,4}

The issue of chronic corneal endothelial loss, knowing that in humans, these cells have almost completely inhibited the in vivo mitosis, is critical, especially in these patients who are implanted with these pIOLs at an early age and have many decades of life ahead of them.⁵

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Reply: Long-term efficacy and safety profiles of iris-fixated foldable anterior chamber phakic intraocular lens implantation in eyes with more than 10-years of follow-up.



We thank Tello et al. for their interest in our study, for their valuable comments, and for sharing their long-term experience regarding endothelial cell (EC) loss after phakic intraocular lens (IOL) implantation.

In our series, the percentage of eyes that lost more than 1.6% of EC density yearly (upper limit of normality obtained from the study by Bourne et al.) was 19.7% (15/76).¹ However, of those 15 eyes, 11 had an endothelial cell count (ECC) of more than 2000 cells/mm² and none have lost more than 25% of their EC density at the final follow-up. Four eyes of 3 patients (5.2%) had less than 2000 cells/mm² and have lost more than 25% of their ECC at the final follow-up, and this is similar to the 5-year results reported by Jonker et al. in their Artiflex study (4.3% - 4.4%).² The mean age of these patients was 49 years. Two of those 4 eyes (1 patient) underwent combined phakic IOL explantation plus cataract surgery 9.3 years after the initial surgery, as described in the “Adverse Events” section of the “Results”. The remaining 2 eyes (2 patients) had more than 1900 cells/mm² at the last follow-up, the phakic IOL was not explanted because both eyes had excellent visual acuity, their ECC was still considered safe, explanting the phakic IOL would result in a high anisometropia, and because at the last follow-up, they were not candidates for crystalline lens surgery; however, both patients are being closely followed.

We think that the potential risks of these implantations should be borne in mind, especially the long-term loss of EC. Patients must be checked regularly and instructed to avoid rubbing their eyes to diminish the risk of accelerated EC loss and therefore early explantation; in fact, at our center, these are two of the main issues that are discussed preoperatively with the patients.

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Comment on: Outcomes of manual small incision cataract surgery in hypermature morgagnian cataract



We read the article by Christy et al. and must congratulate the authors for this interesting retrospective analysis.¹ Here, we want to add our experience of performing more than 20 000 manual small-incision cataract surgeries and more than 1000 hypermature Morgagnian cataract surgeries combined over 8 years. We believe these points will benefit all the authors, especially in the developed world where phacoemulsification takes the upper hand.

During manual small-incision cataract surgeries in Morgagnian cataract, cystitome has no limited role. Since there is milky fluid in the bag, there is no firm base to perform a continuous curvilinear capsulorhexis (CCC) with cystitome. The cystitome can only be used to initiate the capsulorhexis by puncturing the anterior lens capsule, but CCC has to be performed only with the help of utrata forceps. We suggest a smaller CCC in these cases because the nucleus size is small and can be easily prolapsed through a 5 mm CCC. A small CCC has 2 advantages. In patients with weak zonular support, a capsular tension ring can be easily implanted, and when there is a posterior capsular rent, the intraocular lens (IOL) can be placed in the sulcus with confidence.² Can opener capsulotomy should be avoided in these cases because radial nick over the capsule can stretch

the zonular fibers and may result in zonular dialysis. Moreover, the option of placing a capsular tension ring is eliminated with can opener capsulotomy.

For performing a successful CCC, we usually follow this technique. After a small puncture over the capsule with a cystitome, the milky fluid is washed with saline through a hydrodissection cannula to give a clear view of the anterior lens capsule, and the bag is inflated with an ophthalmic viscosurgical device to provide a firm hold for performing the CCC with forceps. The alternative way is instead of saline, an ophthalmic viscosurgical device can be directly used. In cases of pseudoexfoliation with small pupils and Morgagnian cataract, we recommend not to perform multiple sphincterotomies, as we are all aware of the hypotheses that the smaller the pupillary size, the weaker the zonular fibers.³ The surgeon should expect 360 weak zonular fibers in such cases and be prepared for whole bag removal and secondary IOL implantation. Multiple sphincterotomies will refrain us from implanting an iris-claw in the same sitting and will invite more postoperative anterior chamber reaction and photophobia for the patient. In cases of phacolytic glaucoma with Morgagnian cataract, the first step should be paracentesis placement and anterior chamber wash with saline through a hydrodissection cannula. This will provide a clear view of the anterior chamber and help in planning the case meticulously. If there is whole bag removal in such cases, if the anterior vitreous phase is intact, and when there is minimal to no anterior chamber inflammation, we recommend a secondary IOL such as an iris-claw or scleral-fixed IOL in the same sitting. In cases with severe anterior chamber inflammation and requiring anterior vitrectomy, we suggest to wait at least 2 to 3 months before a secondary IOL placement. We believe these salient points will help plan these cases with good postoperative outcomes.

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