Intraocular Lens Implantation Procedures in Aphakic Eyes With Insufficient Capsular Support Associated With Previous Cataract Surgery

Leyla Hazar, MD; Necip Kara, MD; Ercument Bozkurt, MD; Engin Bilge Ozgurhan, MD; Ahmet Demirok, MD

ABSTRACT

PURPOSE: The aim was to evaluate the results of three different secondary intraocular lens implantation (IOL) procedures in aphakic eyes without capsular support

METHODS: In this retrospective comparative case series, 90 eyes of 90 patients who underwent secondary IOL implantation for correction of aphakia were enrolled. Patients were divided into three groups based on the secondary IOL implantation procedure: anterior chamber iris-fixated IOL (AC-IFIOL), retropupillary iris-fixated IOL (RP-IFIOL), and scleral-fixated posterior chamber IOL (SF-PCIOL). The efficacy and safety of each procedure were assessed at follow-up.

RESULTS: All eyes had aphakia caused by a previous cataract surgery. A final corrected distance visual acuity of 20/40 or better was achieved in 22 eyes (62.9%) implanted with an AC-IFIOL, in 12 eyes (50%) with an RP-IFIOL, and 18 eyes (58.1%) with an SF-PCIOL. At final visit, mean postoperative endothelial cell loss was 175 cells/mm^2 (7.2%) in the AC-IFIOL group, 255 cells/mm^2 (11.4%) in the RP-IFIOL group, and 135 cells/mm^2 (5.9%) in the AC-IFIOL group ($P > 0.05$).

CONCLUSIONS: The study showed that AC-IFIOL, RP-IFIOL, and SF-PCIOL implantation had similar visual outcomes and mean corneal endothelial cell loss.

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Cataract surgery is one of the most common and successful surgical procedures performed today. Although aphakia after cataract surgery is usually not planned and is caused by a complication during surgery, postoperative aphakia is intended in some cases.[1]

The correction of aphakia after complicated cataract surgery is challenging for surgeons. Loss of the capsule and/or zonules results in inadequate support for the placement of a standard posterior chamber intraocular lens (IOL).[2] One approach when complications occur is to leave the eye aphakic for possible later secondary IOL implantation. In the absence of capsular support, surgical options to correct aphakia include implantation of an angle-supported anterior chamber IOL, anterior chamber iris-fixated IOL (AC-IFIOL), retropupillary iris-fixated IOL (RP-IFIOL), iris-sutured posterior chamber IOL, and scleral-fixated posterior chamber IOL (SF-PCIOL).[3-7] All techniques have advantages and disadvantages, and no consensus exists on the indications for and relative efficacy and safety of these options.[8]

We retrospectively studied the charts of patients who had secondary implantation of an AC-IFIOL, RP-IFIOL, and SF-PCIOL in left aphakic eyes related to previous cataract surgery and compared the outcomes between the approaches.

PATIENTS AND METHODS

Study Population and Design

This retrospective case series comprised patients who had secondary IOL implantation because of aphakia with a lack of posterior capsular support after cataract surgery at Beyoglu Eye Research and Education Hospital from 2008 to 2011. The study was conducted according to the tenets of the Declara-

From Beyoglu Eye Research and Education Hospital, Istanbul, Turkey (LH, EB, EBO, AD); and Sehitkamil State Hospital, Department of Ophthalmology, Istanbul, Turkey (NK).

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Correspondence: Necip Kara, MD, Kartaltepe Mh. Akin Sk. Akin Apt. No:8/14 Bakirkoy, Istanbul, Turkey. E-mail: dr.necipkara@gmail.com

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tion of Helsinki and was approved by the local ethics committee. A written informed consent was obtained from all patients before the surgery.

Patients were included in the study if they underwent a secondary IOL implantation for correction of aphakia without adequate capsular support. The cause of aphakia was previous cataract surgery in all patients. The patients were divided into three groups based on surgical approach. An AC-IFIOL was implanted in 35 eyes of 35 patients. An RP-IFIOL was implanted in 24 eyes of 24 patients. A three-piece SF-PCIOL was implanted in 31 eyes of 31 patients.

Patients who had a history of uveitis, proliferative diabetic retinopathy, age-related macular degeneration, and those who underwent any surgery except previous cataract surgery were excluded from the study.

Preoperative information recorded included demographic data, corrected distance visual acuity (CDVA), slit-lamp examination, Goldmann applanation tonometry, dilated fundus examination and fluorescein angiography if needed, and endothelial cell density (ECD). Postoperative evaluations included visual acuity, postoperative intraocular pressure (IOP), ECD, and rate of complications. At the follow-up, optical coherence tomography and a visual field test were performed in selected cases.

Surgical Procedures

All surgeries were performed by experienced surgeons. Anesthesia was sub-Tenon or general depending on the surgeon's preference and patient's needs. An anterior vitrectomy was performed if vitreous was present in the anterior chamber. The power of the implanted IOL was determined using the SRK/T formula calculated by the IOLMaster (Carl Zeiss Meditec, Jena, Germany). The estimated A constant was 116.9 for retropupillar iris-claw lenses

AC-IFIOL Implantation. A superior 6.0-mm clear corneal incision was performed at the 12-o'clock position. Carbachol intraocular solution (Miostat; Alcon Laboratories, Inc., Fort Worth, TX) was injected into the anterior chamber to constrict the pupil. The anterior chamber was filled with viscoelastic. The two side port incisions were made for enclavation at the 2- and 10-o'clock positions. An AC-IFIOL (Artisan; OPHTEC, Groningen, Netherlands, and Verisyse; AMO, Santa Ana, CA) was implanted in the anterior chamber with forceps and fixated to the iris with enclavation needles. A peripheral iridotomy was performed at the 12-o'clock position. The corneal wound was closed with 10-0 nylon sutures, and the viscoelastic material was aspirated.

RP-IFIOL Implantation. A superior 6.0-mm clear corneal incision was performed at the 12-o'clock position. The anterior chamber was filled with a space maintaining viscoelastic. A side port incision was made on the temporal side (at the 3-o'clock position for the left eye and at the 9-o'clock position for the right eye). The inverted iris-fixated IOL (Artisan; OPHTEC, and Verisyse; AMO) was inserted anterior to the iris into the anterior chamber and allowed to rest on the iris with a horizontal alignment. The lens was grasped with a specifically designed lens-holding forceps and the haptics of the lens were sequentially pushed behind the iris through the pupil. The midperipheral iris tissue was pushed into the claw haptics with a Sinskey hook or iris spatula inserted via a paracentesis. The wound was closed with interrupted 10-0 nylon sutures and the viscoelastic removed via irrigation and aspiration.

SF-PCIOL Implantation. The pupil was dilated preoperatively. After conjunctival peritomy, two triangular scleral flaps approximately 1.0 mm posterior to the limbus were created 180 degrees apart (eg, at the 1- and 7-o'clock positions). Both flaps were dissected toward the limbus at one-half thickness. A three-piece posterior chamber IOL (MA60 AcrySof IOL; Alcon Laboratories, Inc.) was used for implantation. A looped 10-0 polypropylene suture with an attached curved needle was tied to each haptic eyelet of the IOL. One needle was inserted into the posterior chamber and passed transsclerally through the base of the lower partial-thickness scleral flap approximately 1.0 mm posterior to the limbus. Similar manipulation was made with the other haptic. The IOL was grasped at the optic with a forceps and placed in the posterior chamber, with the haptics in the sulcus, by applying traction on the polypropylene sutures emerging from the two opposite partial-thickness scleral flaps. After the lens was adequately positioned, the knot was buried under partial-thickness scleral flaps. The viscoelastic material was removed and both scleral flaps and corneal incisions were closed with 10-0 nylon. The conjunctiva was secured over the flaps.

In all groups, a subconjunctival injection of gentamicin and dexamethasone was given at the end of surgery. All patients in each group were treated with frequent topical steroids and antibiotics for 1 week. The steroids were tapered over 2 weeks depending on the inflammatory findings. Postoperative examinations were done at 1 month, 3 months, and a final visit (mean: 11.7 ± 8.4 months, range: 6 to 40 months).

Statistical Analyses

All statistical analyses were performed using Statistical Package for the Social Sciences (SPSS) version 16 (SPSS, Inc., Chicago, IL). The normality of the data was

TABLE 1
Demographics and Clinical Characteristics of Patients

Characteristic	AC-IFIOL	RP-IFIOL	SF-PCIOL	*P*
No. of eyes/patients	35/35	24/24	31/31	
Gender, female/male	11/24	10/14	11/20	.946[a]
Age, y				.089[b]
Mean ± SD	52 ± 18	61 ± 16	53 ± 16	
Range	23 to 82	22 to 78	27 to 81	
History of glaucoma	3	2	2	
Follow-up, mo				.543[b]
Mean ± SD	12.0 ± 7.7	10.1 ± 7.3	12.6 ± 9.9	
Range	6 to 36	6 to 29	6 to 40	

AC-IFIOL = anterior chamber iris-fixated intraocular lens; RP-IFIOL = retropupillary iris-fixated intraocular lens implantation; SF-PCIOL = scleral-fixated posterior chamber intraocular lens; SD = standard deviation
[a]*Pearson chi-square test.*
[b]*Analysis of variance.*

TABLE 2
Preoperative and Postoperative Corrected Distance Visual Acuity in logMAR Units

Corrected Distance Visual Acuity	AC-IFIOL	RP-IFIOL	SF-PCIOL	*P*[a]
Preoperative				.683
Mean ± SD	0.99 ± 0.94	0.97 ± 0.83	0.86 ± 0.75	
Range	0.05 to 3.00	0.10 to 3.00	0.05 to 3.00	
1 month				.894
Mean ± SD	0.64 ± 0.56	0.83 ± 0.49	0.89 ± 0.70	
Range	0.00 to 2.00	0.10 to 1.70	0.05 to 3.00	
3 month				.344
Mean ± SD	0.45 ± 0.44	0.62 ± 0.45	0.60 ± 0.53	
Range	0.00 to 1.70	0.10 to 2.00	0.00 to 2.00	
Final visit				.837
Mean ± SD	0.42 ± 0.42	0.56 ± 0.45	0.51 ± 0.07	
Range	0.00 to 1.30	0.05 to 2.00	0.00 to 2.00	

AC-IFIOL = anterior chamber iris-fixated intraocular lens; RP-IFIOL = retropupillary iris-fixated intraocular lens implantation; SF-PCIOL = scleral-fixated posterior chamber intraocular lens; SD = standard deviation
[a]*One-way analysis of variance.*

confirmed using the Shapiro-Wilk test ($P > .05$). An analysis of variance test was used to compare the results of the three groups. The chi-square test was used to determine the differences of rate of patients between the groups. A P value of less than .05 was considered statistically significant.

RESULTS

Demographic Profile

Ninety eyes of 90 patients who underwent secondary IOL implantation to correct aphakia were enrolled in this retrospective study. The demographic and clinical characteristics of the groups of subjects are shown in **Table 1**. No statistically significant differences were observed among the groups in terms of age, gender distribution, mean follow-up time, and number of patients who had a history of glaucoma ($P > .05$).

Visual Acuity

Table 2 shows the results of CDVA for three groups. Mean baseline and postoperative CDVA at each follow-up visit were not significantly different between the three groups ($P > .05$). **Figure 1** shows the percentage of patients with a CDVA of 20/40 or better preoperatively and at follow-up in the three groups. There were no significant differences between the three groups preop-

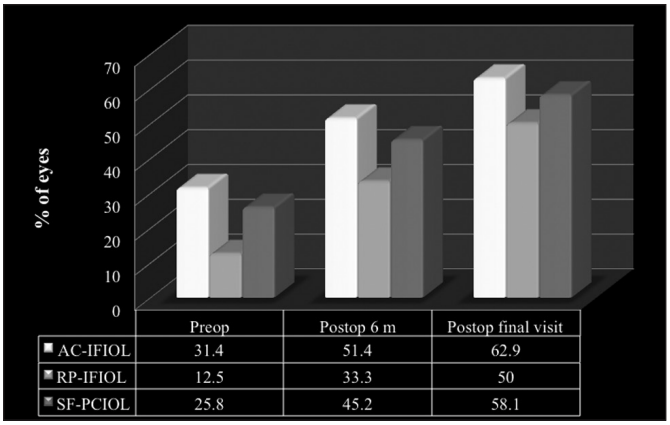

Figure 1. Distribution of patients with a corrected distance visual acuity of 20/40 or better. AC-IFIOL = anterior chamber iris-fixated intraocular lens; RP-IFIOL = retropupillary iris-fixated intraocular lens implantation; SF-PCIOL = scleral-fixated posterior chamber intraocular lens.

eratively and at postoperative 1 month, 3 months, and final visit ($P = .245$, $P = .387$, $P = .617$, respectively).

IOP

Table A (available in the online version of this article) summarizes the IOP values at baseline and follow-up visits. The mean IOP was not significantly different at baseline between the three groups. Although the mean IOP was significantly higher in the SF-PCIOL group than the AC-IFIOL group ($P = .012$) and RP-IFIOL group ($P = .042$) at postoperative 1 week, there was no difference in IOP between the groups at other follow-up visits. The rate of patients who had IOP of 22 mm Hg or more postoperatively was statistically higher in the SF-PCIOL group than in the other two groups at postoperative 1 week, whereas no differences were seen between the groups at the other follow-up visits (**Table B**, available in the online version of this article).

COMPLICATIONS

Table C (available in the online version of this article) shows the mean ECD values and mean endothelial cell loss at baseline and follow-up visits. Mean baseline ECD and postoperative ECD at each follow-up were not significantly different between the three groups ($P > .05$). All groups showed a significant mean endothelial cell loss at postoperative 3 months and final visit. Other postoperative complications during the early and late period are shown in **Table 3**.

DISCUSSION

Secondary IOL implantation is a widely practiced method for optical rehabilitation of eyes that are left aphakic after cataract extraction because of intolerance of contact lenses and/or spectacle correction.[9-13] Several surgical procedures have been described for correction of aphakia without sufficient capsular support. Each technique has advantages and disadvantages regarding difficulty and associated complications. There is no established consensus on the indications for and relative safety and efficacy of these alternatives.

In this study, we compared three different secondary IOL implantation procedures to correct the aphakia without sufficient capsular support. Aphakia was

TABLE 3
Postoperative Complications

Complication	AC-IFIOL	RP-IFIOL	SF-PCIOL	P[a]
Early period (within 1 week)				
Intraocular pressure elevation	1 (2.8%)	2 (8.3%)	9 (29.0%)	.005
Anterior chamber reaction	6 (17.1%)	5 (20.8%)	3 (9.6%)	.499
Corneal edema	2 (5.7%)	1 (4.1%)	3 (9.6%)	.689
Pupillar distortion	1 (2.8%)	0 (0%)	4 (12.9%)	.079
Vitreous hemorrhage	0 (0%)	1 (4.1%)	2 (6.4%)	.334
Late period (after 1 week)				
Cystoid macular edema	3 (8.5%)	2 (8.3%)	1 (3.2%)	.637
Glaucoma	0 (0%)	1 (4.1%)	3 (9.6%)	.163
Intraocular lens decentration	1 (2.8%)	1 (4.1%)	2 (6.4%)	.776
Scleromalasia	0 (0%)	0 (0%)	1 (3.2%)	.382
Suture erosion	0 (0%)	0 (0%)	1 (3.2%)	.382

AC-IFIOL = anterior chamber iris-fixated intraocular lens; RP-IFIOL = retropupillary iris-fixated intraocular lens implantation; SF-PCIOL = scleral-fixated posterior chamber intraocular lens
[a]*Pearson chi-square test.*

related to a previously performed cataract surgery in all of our patients. At final visit (at least 6 months postoperatively), mean CDVA showed a significant improvement in all three groups, but no significant difference was found between the groups at baseline and postoperative visits. There was also no difference in postoperative final CDVA of 20/40 or better between the three groups ($P = .617$).

The iris-claw IOL attached to the anterior iris was developed by Worst.[14] AC-IFIOLs provide satisfactory results in aphakic eyes and in refractive surgery for correction of refractive errors.[15,16] In our study, a final CDVA of 20/40 or better was achieved in 22 eyes (62.9%) implanted with an AC-IFIOL. These results compare favorably with results in other published series in which 62% to 68% of cases had a final visual acuity of 20/40 or better.[4,17,18]

The AC-IFIOL implantation technique was modified by Mohr et al. by clipping the lens to the posterior iris for preventing the corneal endothelium.[19] Our study showed an improvement in CDVA from 0.97 logMAR at baseline and 0.56 logMAR at final visit after RP-IFIOL implantation. These results are comparable to the outcomes of a previous study that showed a significant improvement in CDVA from 0.83 logMAR at baseline to 0.53 logMAR at last follow-up after RP-IFIOL implantation.[20] In our study, a final CDVA of 20/40 or better was achieved in 12 eyes (50%) implanted with an RP-IFIOL. Hsing and Lee reported a final CDVA of 20/40 or better in 58% of eyes after RP-IFIOL implantation.[2]

SF-PCIOL implantation is an accepted alternative because it more closely simulates the normal physiologic and anatomic position of the crystalline lens. In our study, a final CDVA of 20/40 or better was achieved in 18 eyes (58.1%) implanted with an SF-PCIOL. Previous studies have reported that 67% to 82% of cases had a final CDVA of 20/40 or better.[8,21,22]

Corneal endothelial cell loss is one of the most serious complications following secondary IOL implantation. The endothelium, a neural crest-derived tissue, has a limited regenerative capacity for repair.[23] Hence, prevention of endothelial cell loss is one of the most important issues in secondary IOL implantation. In this study, average postoperative endothelial cell loss was 175 cells/mm^2 (7.2%) in the AC-IFIOL group, 255 cells/mm^2 (11.4%) in the RP-IFIOL group, and 135 cells/mm^2 (5.9%) in the SF-PCIOL group at the final visit, respectively. There was no statistically significant difference for postoperative endothelial cell loss between the groups ($P > .05$), but there was a statistically significant difference in the ECD between preoperative and postoperative values in the three groups. Although many studies have reported endothelial cell loss after phakic AC-IFIOL implantation, there are few studies in aphakic eyes. A similar result to our study was reported by Guell et al.[24] and Riazi et al.,[25] who found 7.78% and 8.61% endothelial cell loss, respectively, after AC-IFIOL implantation for aphakic correction.

Posterior chamber IOL implantation has been an alternative procedure to anterior chamber IOL implantation for prevention of endothelial damage. There are a few studies on corneal endothelial cell loss after secondary posterior chamber IOL implantation. A previous study showed that mean endothelial cell loss was 10.3% in aphakic eyes with sutured-fixated posterior chamber IOL implantation.[26] To the best of our knowledge, our study is the first to compare mean endothelial cell loss between the AC-IFIOL and posterior chamber IOL including RP-IFIOL and SF-PCIOL. Our study showed similar ECD loss after secondary IOL implantation. Two possible hypotheses may explain postoperative endothelial cell loss. First, endothelial cell loss can be caused by direct contact with surgical instruments or the IOL during surgery. Second, endothelial cell loss can be explained by the toxic effect of inflammatory mediators on the corneal endothelium.[27]

Although secondary IOL implantation in aphakic eyes is an established procedure, it has some potential complications. In the early postoperative period (within 1 week), an anterior chamber reaction was the most common postoperative complication in the AC-IFIOL group (6 eyes, 17.1%) and the RP-IFIOL group (5 eyes, 20.8%). In the SF-PCIOL group, 3 eyes (9.6%) had an anterior chamber reaction. No significant difference was found between the groups in terms of incidence of anterior chamber reaction. Anterior chamber reaction has been associated with extensive anterior vitrectomy and iris manipulation by a previous study.[24]

IOP elevation was the most common complication in the SF-PCIOL group (9 eyes, 29%) and the incidence was significantly higher than in the other two groups. A similar result to our study was reported by Kjeka et al. after implantation of an SF-PCIOL in aphakic adults.[22] They found that 9.9% of eyes had an elevated IOP in the early postoperative period. Monteiro et al. reported an elevated IOP in 5 of 15 eyes after SF-PCIOL in eyes with loss of capsular support.[28] The rate of early elevated IOP following AC-IFIOL implantation in aphakic eyes ranged from 0% to 18%.[4,24,29] In our study, only 1 eye (2.8%) had an elevated IOP after AC-IFIOL implantation. However, there have been a few studies that reported IOP elevation after retropupillar iris-claw lens implantation for aphakic correction. Hsing and Lee reported no patients had an elevated IOP.[2] In our study, 2 eyes (8.3%) had an elevated IOP after RP-IFIOL implantation. Elevated IOP following IOL implantation

has been associated with pupillary block, retained viscoelastic in the anterior chamber, decreased aqueous drainage due to trabecular mesh work block by fibrin, pigments, and steroid responsiveness.[30]

Other complications in the early postoperative period were transient corneal edema and irregular pupil.[2,28,31-33] The rates of these complications were not significantly different between the groups.

In the late postoperative period, the most common complication was cystoid macular edema seen in 3 eyes (8.5%) in the AC-IFIOL group, 2 eyes (8.3%) in the RP-IFIOL group, and in 1 eye (3.2%) in the SF-PCIOL group. The rate of cystoid macular edema ranged from 7.7% to 12.5% after AC-IFIOL implantation and 2.2% to 10% after SF-PCIOL implantation in aphakic eyes.[4,8,22,24,34,35] Prolonged surgical time and intraocular manipulation have been described as two risk factors for cystoid macular edema.[36]

In our study, glaucoma was the second most common complication after secondary IOL implantation. The rate of glaucoma was higher in the SF-PCIOL group (in 3 eyes, 9.6%) than the AC-IFIOL group (no eyes, 0%) and the RP-IFIOL group (in 1 eyes, 4.1%), without significant differences. The rate of glaucoma after AC-IFIOL implantation ranged from 0% to 6%.[4,17,26] Hsing and Lee[2] reported no cases of glaucoma after RP-IFIOL implantation and Mazhri et al. reported that 6% of eyes had glaucoma after SF-PCIOL implantation.[21]

IOL decentration was another complication in the early postoperative period that was seen in 1 eye (2.8%) in the AC-IFIOL group, 1 eye (4.1%) in the RP-IFIOL group, and 2 eyes (6.4%) in the SF-PCIOL group. Other postoperative late complications were suture erosion (1 eye, 3.2%) and scleromalacia (1 eye, 3.2%), which were seen in the SF-PCIOL group.

Our study showed that each procedure had similar outcomes in terms of visual acuity and complications. However, many previous studies have reported different advantages for each procedure. The RP-IFIOL technique offers several advantages, including considerable cosmetic benefit, by hiding the IOL haptic and parts of the lens behind the iris and reducing the glare phenomenon, which is characteristic of the lens being implanted in the anterior chamber.[19] Moreover, due to the retropupillar location, which corresponds to that of the natural lens, the aniseikonia risk is lower than that observed with anterior chamber lenses. Hara et al. reported that mean surgical time in the RP-IFIOL implantation was significantly shorter than that in the SF-PCIOL implantation.[37] Unlike in SF-PCIOL implantation, the opening of the conjunctiva and sclera is not required in RP-IOL or AC-IFIOL implantation. Although dislocation of the RP-IFIOL and collapse into the vitreous cavity were not observed during the follow-up period in the current study, it is also possible that the iris-claw haptics might release the chronically damaged iris and cause dislocation of the IOL for a long period after the surgery.

To our knowledge, this is the first study that compares three different secondary IOL implantation procedures including AC-IFIOL, RP-IFIOL, and SF-IFIOL for correction of aphakia without sufficient capsular support. The study is important in terms of homogeneity of patients. In our study, aphakia was related to a previous cataract surgery without any other ocular surgery. However, this study was limited by the small number of patients in each group, short follow-up period, and by its retrospective study design.

The outcomes of this study suggest that AC-IFIOL, RP-IFIOL, and SF-IFIOL were similar in visual efficacy and mean corneal endothelial cell loss. Although IOP elevation was significantly higher in the SF-PCIOL group than in the other groups, other rates of complications were similar between the groups.

AUTHOR CONTRIBUTIONS

Study concept and design (EB, LH, NK); data collection (EB, LH, NK, EBO); analysis and interpretation of data (EB, AD, LH, NK); drafting of the manuscript (EB, LH, NK); critical revision of the manuscript (EB, AD, LH, NK, EBO); statistical expertise (LH, EBO); supervision (AD)

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TABLE A

Mean Preoperative and Postoperative IOP (mm Hg) Values

IOP	AC-IFIOL	RP-IFIOL	SF-PCIOL	P[a]
Preoperative				.907
Mean ± SD	14.6 ± 2.7	15.0 ± 5.6	14.7 ± 3.0	
Range	6 to 19	6 to 38	8 to 222	
1 week				.034
Mean ± SD	12.9±4.2	13.0±7.3	16.7±8.0	
Range	6 to 24	8 to 36	7 to 31	
1 month				.321
Mean ± SD	14.4 ± 3.6	13.0 ± 2.2	14.5 ± 5.5	
Range	8 to 28	10 to 21	10 to 36	
3 months				.101
Mean ± SD	13.1 ± 1.8	12.6 ± 1.7	14.0 ± 3.0	
Range	10 to 18	10 to 17	11 to 26	
Final visit				.703
Mean ± SD	15.1 ± 4.0	14.2 ± 4.8	14.5 ± 3.4	
Range	10 to 30	10 to 28	8 to 26	

IOP = intraocular pressure; AC-IFIOL = anterior chamber iris-fixated intraocular lens; RP-IFIOL = retropupillary iris-fixated intraocular lens implantation; SF-PCIOL = scleral-fixated posterior chamber intraocular lens; SD = standard deviation
[a]One-way analysis of variance.

TABLE B

No. of Patients Who Had Postoperative Intraocular Pressure of 22 mm Hg or More

Intraocular Pressure	AC-IFIOL	RP-IFIOL	SF-PCIOL	P[a]
1 week	1 (2.8%)	2 (8.3%)	9 (29%)	.004
1 month	1 (2.8%)	0 (0%)	2 (6.4%)	.420
3 months	0 (0%)	0 (0%)	1 (3.2%)	.383
Final visit	1 (2.8%)	2 (8.3%)	1 (3.2%)	.557

AC-IFIOL = anterior chamber iris-fixated intraocular lens; RP-IFIOL = retropupillary iris-fixated intraocular lens implantation; SF-PCIOL = scleral-fixated posterior chamber intraocular lens
[a]Pearson chi-square test.

TABLE C

Mean Preoperative and Postoperatiave ECD (cells/mm^2) Values

ECD	AC-IFIOL	P[a]	RP-IFIOL	P[a]	SF-PCIOL	P[a]	P[b]
Preoperative							
Mean ± SD	2,410 ± 550	–	2,233 ± 578	–	2,264 ± 599	–	.533
Range	1,250 to 3,980		1,230 to 3,344		1,277 to 3,267		
3 months							
Mean ± SD (% loss)	2,289 ± 560 (5.0)	.001	2,062 ± 591 (7.6)	.005	2,185 ± 610 (3.5)	.001	.303
Range	1,162 to 3,960		1,018 to 3,062		1,191 to 3,162		
Final visit							
Mean ± SD (% loss)	2,235 ± 515 (7.2)	.000	1,978 ± 559 (11.4)	.000	2,129 ± 588 (5.9)	.002	.214
Range	1,142 to 3,925		1,006 to 2,928		1,106 to 3,062		

ECD = endothelial cell density; AC-IFIOL = anterior chamber iris-fixated intraocular lens; RP-IFIOL = retropupillary iris-fixated intraocular lens implantation; SF-PCIOL = scleral-fixated posterior chamber intraocular lens; SD = standard deviation
[a]Paired t test for analysis of mean ECD values at baseline and during the follow-up period.
[b]One-way analysis of variance to compare intraocular pressure measurements between the groups.