ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

DOI: 10.5336/ophthal.2020-79285

Long-term Results of Posterior Iris-Claw Lens Implantation and a Comparative Analysis with the Fellow Eye

İris Arkasına İntraoküler Lens İmplantasyonu Uzun Dönem Sonuçlarımız ve Diğer Gözle Karşılaştırılması

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This manuscript was presented verbal declaration at 50th TOA National Congress in 2016/Antalya/Turkey.

ABSTRACT Objective: To evaluate the long-term results of primary and secondary posterior iris-claw intraocular lens (IOL) implantation and a comparative analysis with the fellow eye **Material and Methods:** One hundred-one eye of 99 patients who underwent iris-claw IOL implantation were included in this retrospective study. Data recorded for each subject consisted of preoperative and postoperative spherical equivalent (SE), best-corrected visual acuity (BCVA), intraocular pressure (IOP), central corneal thickness (CCT), endothelial cell count (ECC) values, and biomicroscopic findings. Patients were divided into two main groups according to primary (complicated cases) and secondary (aphakic cases) implantation. The comparison of the groups was made in terms of SE, BCVA, IOP, CCT, and ECC values. Also, postoperative CCT and ECC comparison was made between the fellow eye and iris-claw IOL implanted eyes. **Results:** Median duration of follow-up was 44.6 (range 1-83) months. While postoperative SE, IOP, CCT values were similar in two groups (p=0.754, p=0.621, p=0.520, respectively), postoperative BCVA and ECC values were statistically higher in the aphakic group than the complicated group (p=0.048, p=0.004, respectively). ECC values in iris-claw IOL-implanted eyes were lower than the same patients' fellow phakic eyes (p=0.003), but there was no statistically significant difference between iris-claw IOL-implanted eyes and the fellow pseudophakic eyes for ECC values (p=0.520). **Conclusion:** Although retropupillary iris-claw IOL fixation with scleral tunnel might be challenging, it is a safe and effective method with better visual and refractive outcomes.

Keywords: Lens implantation, intraocular; aphakia; secondary intraocular lens implantation; endothelial cell count

ÖZET Amaç: Birincil veya ikincil olarak iris arkasına iris kıskaçlı lens (İKL) implantasyonu uygulanan hastaların uzun dönem sonuçlarının incelenmesi ve diğer gözle karşılaştırılmasıdır. **Gereç ve Yöntemler:** Bu retrosprektif çalışmaya iris arkasına İKL implantasyonu uygulanan 99 hastanın 101 gözü dâhil edildi. Olguların ameliyat öncesi ve ameliyat sonrası sferik eşdeğer (SE), en iyi düzeltilmiş görme keskinliği (EİDGK), göz içi basınç (GİB), santral kornea kalınlığı (SKK), endotel hücre sayısı (ES) ve biyomikroskobik bulguları kaydedildi. Hastalar primer (komplike vakalar) ve sekonder (afakik vakalar) implantasyon yapılmasına göre 2 ana gruba ayrıldı. Gruplar SE, EİDGK, GİB, santral kornea kalınlığı (SKK) ve endotel sayısı (ES) açısından karşılaştırıldı. Ayrıca İKL takılan gözlerle hastaların diğer gözleri arasında postoperatif SKK ve ES karşılaştırılması yapıldı. **Bulgular:** Ortanca takip süresi 44,6 (1-83) ay idi. Postoperatif SE, GİB, SKK değerleri her iki grupta birbiri ile benzer iken (sırasıyla p=0,754, p=0,621, p=0,520), postoperatif EİDGK ve ES değerleri istatistiksel anlamlı olarak afakik grupta komplike gruba göre daha yüksekti (sırasıyla p=0,048, p=0,004). İKL implantasyonu uygulanan gözlerin ES değerleri, aynı hastaların fakik olan diğer gözlerine göre daha düşüktü (p=0,003), ancak İKL implantasyonu uygulanan gözlerle psödofakik olan diğer gözleri arasında ES değerleri açısından istatistiksel olarak anlamlı bir farklılık yoktu (p=0,520). **Sonuç:** Skleral tünelden iris arkasına İKL implantasyonu implantasyon zor olabilmesine rağmen, daha iyi görsel ve refraktif sonuçlara sahip güvenli ve etkili bir yöntemdir.

Anahtar Kelimeler: Lens implantasyonu, göz içi; afaki; ikincil intraoküler lens implantasyonu; endotel hücre sayısı

When adequate capsular support is not provided, various methods such as anterior chamber lens, scleral fixation (different techniques), iris-claw lens, and iris suturation of the intraocular lens (IOL) haptics have been used in the secondary IOL implantation.[1,2] However, nowadays, the anterior chamber lens is

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Peer review under responsibility of Turkiye Klinikleri Journal of Ophthalmology.

Received: 29 Sep 2020 ***Received in revised form:*** 16 Feb 2021 ***Accepted:*** 16 Feb 2021 ***Available online:*** 24 Feb 2021

rarely used due to complications such as bullous keratopathy and glaucoma.[3] Scleral fixation techniques have several disadvantages such as difficulty in suturing techniques, excessive intraocular manipulations, lens tilt, and decentralization.[4,5]

The first iris-claw lens was implanted into the aphakic eye by Worst and Fechner in 1989. Later, to avoid the complications related to the placement of lens into the anterior chamber, the technique of "posterior iris-claw IOL fixation" proposed by Amar and later developed by Mohr was introduced.[6-8] Less intraoperative and postoperative complications were observed with this technique.[9]

This retrospective study aims to evaluate the long-term results of primary and secondary posterior iris-claw IOL implantation from the scleral tunnel and a comparative analysis with the fellow eye.

MATERIAL AND METHODS

One hundred-one eye of 99 patients who underwent iris-claw IOL fixation in Uludağ University Department of Ophthalmology, between November 2008-December 2015, were included in this retrospective study. The study was approved by the Local Ethics Committee of Uludağ University (no: 2016-16/25, date: 19/09/2016), according to the principles of the Declaration of Helsinki. Written informed consent for patient information and images to be published was obtained from each patient.

The data of the patients who had posterior iris-claw IOL fixation through the scleral tunnel were examined retrospectively, and patients with incomplete data and those with a follow-up period of less than one month were excluded from the study.

PREOPERATIVE AND POSTOPERATIVE EVALUATION

Data recorded for each subject consisted of age, gender, surgical indications, history of trauma, preoperative and postoperative spherical equivalent (SE), best-corrected visual acuity (BCVA), intraocular pressure (IOP), and biomicroscopic findings. The central corneal thickness (CCT) and endothelial cell count (ECC) measurements were performed at the last control. Patients were divided into two main groups: primary implantation (complicated eyes) and secondary implantation (aphakic eyes) cases comparing the visual acuity, IOP, CCT, and ECC. Also, patients were classified into two subgroups according to their fellow eye's lens status (phakic or pseudophakic), and the CCT and ECC values were compared among these groups.

The postoperative lens position was evaluated using an ultrasound biomicroscopy (UBM) (Ophthalmic Technologies Inc, Canada). ECC and CCT measurements were performed using a non-contact specular microscope (Konan®, CellChek SL, Irvine-California, USA). While the ECC values were recorded, the endothelial cells in the images taken by the "center to center" method were counted individually.

Artisan Aphakia® (Ophthec BV, Groningen, Netherlands) lenses were used in our study. These lenses were one-piece convex plano (between +2 and +9) or biconvex lenses with polymethylmethacrylate (PMMA) composition, with an optical diameter of 5.4 mm and a length of 8.5 mm. They were used by the fixation on anterior of the iris or posterior of the iris of aphakic eyes, and they were produced by an available diopter range at +2.0 D to +30.0 D with 1.0 D increments and +14.5 D to +24.5 D with 0.5 D increments. IOL Master V.5 (Carl Zeiss, Meditec, Jena, Germany) was used to calculate the lens power, and ultrasound biometry (Nidek US-4000, Nidek Co., Ltd.) was used in cases where the optical biometry could not be performed. The appropriate lens diopters were determined using the SRK-T formula. The A constant, recommended by the manufacturer, was 115.0, and since we implanted iris-claw IOL on the posterior surface of the iris, the A constant was taken as 116.5.

SURGICAL TECHNIQUE

The patients were operated under local (peribulbar or retrobulbar) anesthesia (97%), sedation (1%), or general anesthesia (2%) by the same surgeon (M.B). A mixture of 2 ml mepivacaine (2%) and 2 ml bupivacaine (0.75%) was applied as peribulbar or retrobulbar for local anesthesia.

In elective secondary implantation, the upper conjunctiva was opened based on fornix, 4-mm long and 5-mm wide scleral tunnel was created as centered

at the direction of 12 o'clock. Two side port incisions were made at the directions of 10 and 2 o'clock. If necessary, anterior vitrectomy and pupilloplasty were performed before iris-claw IOL fixation in some cases. After the injection of 0.01% carbachol (Miostat®, Alcon, Alcon Laboratories Inc. 6201 South Freeway Fort Worth 76134 Texas/ABD) acetylcholine into the anterior chamber, a cohesive viscoelastic agent (1% sodium hyaluronic acid) was used to secure the corneal endothelium and keep the vitreous behind. The iris-claw IOL was inverted by using the lens forceps (Ophthec Artisan Implantation Standard D02-74), placed from self-sealing scleral tunnel to the anterior chamber (as it would be fixed to the posterior of the iris). Then the IOL haptics were fixed on the mid-peripheral iris with the help of the enclavation needle (Ophtec OD-125 Artisan Enclavation needle) at directions of 3 and 9 o'clock. No patient underwent a peripheric iridectomy. The conjunctiva was closed with an 8/0 vicryl suture. Viscoelastic material was aspirated with a bimanual irrigation-aspiration system, and corneal side ports were closed.

In complicated cases, the capsular support was not preserved during the surgery, such a crystalline lens subluxation, mature-morgagnian cataract, and traumatic cataract with zonular dialysis, the phenomenon of lens extraction is performed first, and in cases of IOL subluxation and anterior chamber IOL, IOLs are removed from scleral tunnel. Before iris-claw IOL implantation, 16 (15.8%) patients underwent pupilloplasty due to iris defect or pupil irregularity, 51 (50.4%) patients underwent anterior vitrectomy.

Postoperative topical moxifloxacin and dexamethasone 4*1 were prescribed, and the treatment was reduced and stopped in about four weeks.

STATISTICAL ANALYSIS

SPSS 23.0 (IBM Corp. Armonk, NY) program was used to analyze all data. The distribution of data was tested by the Shapiro-Wilk test. As descriptive statistics, the median (minimum-maximum) was used for quantitative data, and the percentage was used for qualitative data. Since the data did not show normal distribution, the Wilcoxon Signed-Rank test was used to analyze the dependent variables, and Mann-Whitney U test was used to analyze the independent variables. The Pearson Chi-square test was used to analyze the categorical data. The significance level was determined as α=0.05.

RESULTS

Of 99 patients included in the study, 39 (39.4%) were women, 60 (60.6%) were men, 45 of 101 eyes (44.6%) were right, 56 (55.4%) were left-sided. The median age was 70 (21-90) years. Fifty four (53.4%) of the cases had aphakic eyes that resulted from complicated cataract surgery, and secondary iris-claw IOL fixation was applied to these cases. The remaining patients had eyes with a crystalline lens/IOL subluxation, zonular insufficiency, traumatic cataract, or anterior chamber lens. These patients underwent (primary) iris-claw IOL fixation in the same session with cataract surgery or IOL extraction. The indications of iris-claw IOL implantation were summarized in Table 1.

Thirty-six (35.6%) patients had a history of trauma. Among them, 21 patients had IOL subluxation. On the other hand, seven patients had crystalline lens subluxation, and, in this group, one patient had Marfan syndrome, one patient had microspherophakia. Four patients had trauma-related cataracts and zonular dialysis. Of the remaining 4 of 32 patients, two eyes had a traumatic cataract, and two eyes had aphakia.

As an intraoperative complication, hyphema occurred in only three patients during pupilloplasty. Early postoperative complications such as transient IOP elevation (5 eyes), anterior chamber reaction (6 eyes), and corneal edema (5 eyes) were observed in

TABLE 1: The indications of iris-claw IOL implantation.

Indication	Number of the patient (n) and rate (%)
Aphakia	54 (53.4%)
Crystalline lens subluxation	
(1 Marphan, 1 Microspherophakia)	9 (8.9%)
IOL subluxation	21 (20.8%)
Mature-Morgagnian cataract	9 (8.9%)
Traumatic cataract, zonular dialysis	4 (4.0%)
Anterior chamber IOL	4 (4.0%)

IOL: Intra-ocular lens.

complicated cases, while no early postoperative complications were developed in aphakic cases.

The power of the implanted IOLs ranged from +12.0 to +23.5 D, with a mean of +20.5 D.

The median follow-up duration was 44.6 (range 1-83) months. Compared to preoperative values, SE at first month was significantly improved [pre-op +7.50 (-21.0 to 14.0) D and post-op at 1 month -0.08 (-3.00 to 0.25) D, p=0.007]; and BCVA at first week (0.50 (3.09 to 0.00) logMAR) and first month [0.40 (3.09 to 0.00) logMAR] significantly increased according to preoperative values [1.30 (3.09 to 0.09) logMAR] (p=0.001). IOP changes between the postoperative first week and the first month were not statistically significant compared to preoperative values (p=0.421 and p=0.498, respectively). The preoperative, postoperative first week, the first month, and the last control values for SE, BCVA, IOP in patients are presented in Table 2.

Patients were divided into two main groups: primary implantation (complicated eyes, n=57) and secondary implantation (aphakic eyes, n=54). The groups were similar in terms of age and gender (p=0.371, p=0.556, respectively). While preoperative SE values were statistically different in the two groups (p=0.044), postoperative first month SE values were consistent (p=0.805). The preoperative and postoperative first week and first month BCVA values were significantly higher in the aphakic group than the complicated group (p=0.032, p=0.042, p=0.046, respectively). Preoperative and postoperative 1-week and 1-month IOP values were similar in two groups (p=0.450, p=0.169, p=0.880) (Table 3).

Most of the cases were not followed up after one month. Long-term follow-up (44.6 months) of only 40 eyes of 38 patients (aphakic=25, complicated=15 eyes) could be performed. At the last control, CCT and ECC measurements were also performed using a non-contact specular microscope. While postoperative SE, IOP, CCT values were similar in two groups (p=0.754, p=0.621, p=0.520, respectively) at last control, postoperative BCVA and ECC values were statistically higher in the aphakic group (p=0.038, p=0.003, respectively) (Table 4).

Also, patients were classified into two subgroups according to their fellow eye's lens status (phakic or pseudophakic), and the CCT and ECC values were compared among these groups. Compared to patients' phakic (n=21, Group 1) eyes, ECC significantly decreased in eyes with iris-claw IOL fixation, and no significant difference was detected between CCTs of both eyes (p=0.003, p=0.670, respectively) (Table 5). Compared to patients' pseudophakic (n=15, Group 2) eyes, although ECC values were lower in the iris-claw IOL implanted eyes, there was no statistically significant difference for ECC and CCT values

TABLE 2: Preoperative and postoperative refraction SE, BCVA, and IOP values.

Median (min-max)	Pre-op	Post-op 1 week	Post-op 1 month	Last control	p value
SE	+7.50 (-21.0 to 14.0)	-----	-0.08 (-3.00 to -0.25)	-0.07 (-3.00 to -0.25)	0.007** 0.003*** 0.546*****
BCVA (LogMAR)	1.30 (3.09 to 0.09)	0.50 (3.09 to 0.00)	0.40 (3.09 to 0.00)	0.22 (3.09 to 0.00)	0.001* 0.001** 0.003*** 0.235**** 0.002*****
IOP (mmHg)	14.0 (8-30)	13.0 (11-25)	12.0 (6-22)	12.0 (8-20)	0.421* 0.498** 0.776***

*Pre-op vs Post-op first week; **Pre-op vs Post-op first month; ***Pre-op vs last examination; ****Post-op first week vs post-op first month; *****Post-op first month vs. the last examination; SE: Spherical equivalent; BCVA: Best-corrected visual acuity; IOP: Intraocular pressure.

TABLE 3: Comparison of preoperative and postoperative refraction SE, BCVA, and IOP values between the complicated and aphakic groups.

Median (minimum-maximum)	Complicated Group n=47	Aphakic Group n=54	p value
Age (years)	71 (23-90)	69.5 (21-90)	0.371
Gender (male/female)	32/15	28/24	0.148
Preoperative SE	0.13 (-21.0 to +14)	9.5 (0 to +13)	0.094
Postoperative SE at first month	-0.50 (-3.00 to 0.50)	-0.50 (-3.00 to 2.00)	0.805
Preoperative BCVA (LogMAR)	1.30 (3.09 to 0.09)	0.22 (3.09 to 0.02)	0.032*
Postoperative BCVA (LogMAR)			
First week	0.52 (3.09 to 0.00)	0.13 (3.09 to 0.00)	0.036*
First month	0.30 (3.09 to 0.00)	0.15 (3.09 to 0.00)	0.042*
Preoperative IOP (mmHg)	14 (9-30)	13.5 (8-30)	0.450
Postoperative IOP (mmHg)			
First week	14 (12-25)	12 (11-20)	0.169
First month	12 (6-18)	12 (10-22)	0.880

*p<0.05 statistically significant; SE: Spherical equivalent; BCVA: Best-corrected visual acuity; IOP: Intraocular pressure.

TABLE 4: Comparison of postoperative (last examination) refraction SE, BCVA, IOP, ECC, and CCT values between the complicated and aphakic groups.

Mean±SD, Median (minimum-maximum)	Complicated Group n=15	Aphakic Group n=25	p value
Postoperative SE	1.00 (-4.00 to +2.00)	0.00 (-4.00 to +2.50)	0.754
Postoperative BCVA (LogMAR)	0.22 (2.09 to 0.00)	0.15 (1.79 to 0.00)	0.038*
Postoperative IOP (mmHg)	12 (11-15)	12 (11-18)	0.621
Postoperative CCT (µm)	577 (472-614)	541 (471-652)	0.520
Postoperative ECC (cells/mm^2)	1,781 (768-2,309)	1,885 (844-2710)	0.003*

*p<0.05 statistically significant; SE: Spherical equivalent; BCVA: Best-corrected visual acuity; IOP: Intraocular pressure; ECC: Endothelial cell count; CCT: Central corneal thickness; SD: Standard deviation.

among groups (p=0.520, p=0.630, respectively) (Table 6).

On the biomicroscopic examination performed at the 1st week and the first month following the operation, all iris-claw IOLs were well-centered before (Figure 1a) and after pupil dilation (Figure 1b). In the last control, it was observed that there was localized iris atrophy (Figure 2) in nine eyes and pigment dispersion in two eyes without IOP elevation or glaucoma as late complications.

TABLE 5: ECC and CCT values of the eyes with an iris-claw IOL versus without surgery.

Median (minimum-maximum)	Iris-claw IOL	Fellow eye (phakic)	p value
CCT (µm)	541 (471-656)	532 (422-658)	0.670
ECC (cells/mm^2)	1,781 (768-2309)	1,985 (844-2710)	0.003*

*p<0.05 statistically significant; ECC: Endothelial cell count; CCT: Central corneal thickness; IOL: Intra-ocular lens.

TABLE 6: ECC and CCT values of the eyes with an iris-claw IOL versus with PCIOL.

Median (minimum-maximum)	Iris-claw IOL	Fellow eye (PCIOL)	p value
CCT (µm)	545 (471-650)	530 (420-658)	0.630
ECC (cells/mm^2)	1,810 (768-2309)	1,995 (844-2700)	0.520

ECC: Endothelial cell count; CCT: Central corneal thickness; IOL: Intraocular lens; PCIOL: Posterior capsular intraocular lens.

DISCUSSION

In this study, we attempted to establish the posterior implantation results of Artisan Aphakia iris-claw IOLs in cases whose capsule support was not sufficient. Implantation of iris-claw IOLs on the posterior iris is a method that respects the anatomical structures of the anterior segment due to its distant location from the corneal endothelium and iridocorneal angle. It has advantages such as less endothelial decompensation, more easily implantation, and closer to the anatomical lens

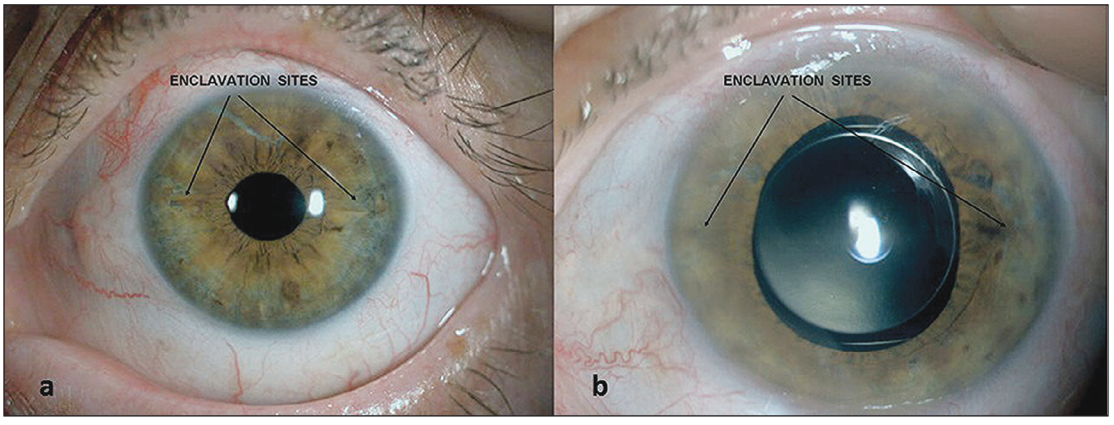

FIGURE 1: Slit-lamp photograph of posterior iris-claw Intraocular lens fixation (postoperative 1-month) a) before pupillary dilation b) after pupillary dilation.

position than iris-claw IOL implanted on the anterior surface of the iris.[10,11]

Since the aphakic iris-claw IOLs have a one-piece PMMA structure, the width of the incision made for the implantation is the main disadvantage of this method. However, with the scleral tunnel incision, the operation time is shortened, and better visual results can be obtained.[11-13] Besides, compared to the corneal incision, less corneal topographic changes, less corneal astigmatism, and better refractive results are obtained following the surgery.[14,15] For this reason, since 2007, we prefer iris-claw IOL implantation with a scleral tunnel incision in our clinic.

In the present study, the visual acuity values were similar to relevant literature in the first and last control of all patients.[10-14,16,17] The improvement in the postoperative SE was statistically significant compared to the preoperative value, and the obtained value was found to be slightly myopic [-0.08 (-3.00 to -0.25) in the first month and -0.07 (-3.00 to -0.25) at last follow-up (mean 44.6 months)]. In the first month and the last control, SE was similar to the values obtained by Gonnermann et al. and Choragiewicz et al. and was closer to emmetropia than other studies.[10,11-14,16-18]

The iris-claw IOL (Artisan Aphakia® model) used nowadays has an entirely different design than its previous models associated with various complications. Due to its domed shape, an optimum gap is created between the lens and the iris, the risk of a pupillary block is eliminated, so routine peripheral iridectomy is not required. Also, it has been shown

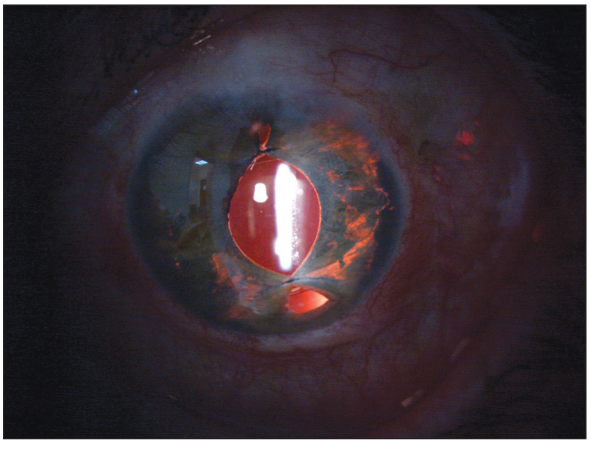

FIGURE 2: Slit-lamp photograph demonstrating iris atrophy and translumination defect in a patient who underwent posterior iris-claw intraocular lens implantation with pupilloplasty.

that the lens does not trigger a pigment dispersion since it is not in tight contact with the pigment epithelium behind the iris.[19,20] In our study, only two patients showed pigment dispersion as a late complication. In addition, no patient developed glaucoma, which would require surgical treatment.

To the best of our knowledge, there is only one study comparing the iris-claw IOL implanted eye and the fellow eye in the literature. In that study by Güell et al., patients were divided into two groups according to whether their fellow eyes were phakic or pseudophakic, and CCT and ECC were compared to the iris-claw IOL implanted eye.[16] ECC was significantly lower in the eye with iris-claw IOL fixation compared to the fellow phakic eye. Comparing the pseudopha-

kic eye with iris-claw IOL fixation, ECC was lower in the latter, but the difference was not statistically significant. Similar results were obtained in our study, suggesting that the iris-claw IOL implantation to the posterior of the iris does not pose a risk for endothelial damage, which may lead to corneal decompensation. Corneal decompensation was not observed in any of the patients in our study.

Considering other complications, an iris-claw IOL disenclavation, pupillary distortion, cystoid macular edema, or retinal detachment were not detected in any of the eyes. Three cases of disenclavation, one case of a random posterior dislocation, and one case of CME out of a total of 320 eyes operated for posterior iris-claw IOL were mentioned by Forlini et al., while Gonnermann et al. mentioned disenclavation in 8.7% of eyes and CME in 8.7% of eyes. Although Forlini et al. mentioned spontaneous disenclavation of one or both iris-claw haptics with or without IOL dislocation, we considered no such case in our sequence.[12,18] Our late complication rates were found to be less than other studies; There was localized iris atrophy in nine eyes; additionally, only two eyes showed a pigment dispersion symptom without IOP elevation or glaucoma.[10-14,16-18]

STUDY LIMITATIONS

The number of patients who have continued to be followed-up after the 1st month is low; only a particular group of patients had a more extended follow-up period. Moreover, since there was no specular microscope in our center when we began to perform the iris-claw IOL fixation, ECC could not be measured in all patients at preoperative and postoperative first-month control of the surgery. It was possible to perform the measurement only at the last control.

CONCLUSION

Iris-claw IOL has been successfully used in aphakic patients without adequate posterior capsule support. Although iris-claw IOL fixation is an experience-dependent method, complications mostly observed in the scleral fixation techniques such as lens tilt and decentralization, suture erosion, endophthalmitis, retinal detachment are infrequent, surgical time is shorter and visual results are better in iris-claw IOLs. Implantation from the scleral tunnel to the posterior of the iris does not create a corneal decompensation due to both the proper anatomical position of the IOL and the shorter and practical surgical procedure. Furthermore, scleral tunnel incision promises well refraction and visual acuity by providing lesser corneal astigmatism.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Mehmet Baykara;* ***Design:*** *Mehmet Baykara, Cansu Erseven;* ***Control/Supervision:*** *Mehmet Baykara;* ***Data Collection and/or Processing:*** *Cansu Erseven;* ***Analysis and/or Interpretation:*** *Cansu Erseven, Huri Sabur;* ***Literature Review:*** *Cansu Erseven, Huri Sabur;* ***Writing the Article:*** *Cansu Erseven, Huri Sabur;* ***Critical Review:*** *Cansu Erseven, Huri Sabur, Mehmet Baykara.*

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