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To Analyse the Visual Outcomes and Immediate Postoperative Complications After Retropupillary Iris-Claw Lens Implantation in A Tertiary Care Hospital- A Prospective Study

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KEYWORDS

Iris claw, Secondary lens implantation, IOL, Cataract

ABSTRACT:

Background: To analyse the visual outcomes and immediate postoperative complications after retro pupillary iris-claw lens implantation in a tertiary care hospital.

Methods: In this prospective investigation, retro pupillary iris claw lens implantation was performed on 46 patients who lacked sufficient capsular support. The research was carried out in Raipur, Chhattisgarh, India, at the Shri Aurobindo Medical Research Centre. The time frame for the study was December 2022 to July 2023.

Results: A total of 46 individuals (20 men and 26 women) had retro pupillary iris claw lenses placed in their eyes. **56.52 ±7.029** years was the patients' mean age (41-70 years). Fifteen aphakic eyes (32.39%) had the IOLs placed as a secondary treatment, and 31 eyes (67.39%) had them inserted during primary lens surgery (SICS). Pupil ovalization in 12 eyes (26.08%), striate keratopathy in 14 eyes (30.43%), Descemet membrane folds in 9 eyes (19.56%), the shallow anterior chamber in 7 eyes (15.21%), corneal edema in 5 eyes (10.86%), and choroidal detachment in 2 eyes (4.34%), were among the immediate post-operative problems.

Conclusions: The implantation of retro pupillary iris claws in patients who had insufficient posterior capsular support yielded positive results. Iris claw lens implantation can be completed in the primary setting rather than waiting for secondary implantation at a later time, as evidenced by the identical visual acuity in both primary and secondary implantation.

1. INTRODUCTION

Surgeons are increasingly selecting retropupillary iris-claw intraocular lenses (ICIOL) as a primary or secondary operation for IOL placement in eyes that do not have enough zonular or capsular support. They are becoming more and more well-liked because of their quick and easy technique, good functional results, and safety. In order to correct aphakia in eyes without capsular support, 4-point fixation flexible open-loop angle-supported anterior chamber intraocular lenses (ACIOL) have been used since the 1980s. Other techniques, such as iris-fixation with iris-sutured intraocular lenses and iris-claw intraocular lenses (ICIOL) and scleral-fixation by suturing of posterior chamber intraocular lenses (PCIOL) or intrascleral haptic fixation of PCIOL, have also been developed [1,2].

The primary disadvantage of anterior chamber angle-supported iris-claw IOLs is their size. To keep the lens in place and avoid difficulties, the lens's diameter must be suitable in relation to the anterior chamber's diameter. Due to the restricted availability of various diameters, issues resulting from improper size are frequent. A short lens can rotate or dislocate, which raises the possibility of corneal endothelial decompensation and anterior chamber angle injury. Large iris-claw IOLs put undue strain on the iris root, which damages the anterior chamber angle and raises the risk of glaucoma, elevated intraocular pressure (IOP), and peripheral anterior synechiae development. Although **scleral sutured PCIOLs** are anatomically more similar to the original IOL and provide good visual outcomes, they are technically challenging to insert and there is an increased risk of endophthalmitis, intraocular bleeding, and suture breakage when scleral needle passes are made. Cystoid

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macular edema, persistent uveitis, and dyscoria and decentered pupils are further significant consequences. Conversely, angle-supported IOL implantation requires less surgical time and is simpler. [3, 4, 5, 6, 7]

One of the primary issues with ACIOL is that its size is not as widely available as it should be in relation to the anterior chamber's diameter, which is essential to keep the lens in place and prevent difficulties. An excessively short lens can dislocate the cornea, which raises the risk of injury to the corneal endothelium and anterior chamber angle. An excessively big lens increases the risk of glaucoma by creating an unequal pressure over the anterior chamber angle. [8, 9] If iris assistance is possible, the preferred method may be an iris claw lens. Postoperative complications are common with peripupillary iris claw lenses. Because the lens is fastened to the mid-periphery of the iris, there is no danger of injury to the anterior chamber angle or iris root when using a retropupillary iris claw lens. Aim to analyse the visual outcomes and immediate postoperative complications after retropupillary iris-claw lens implantation in a tertiary care hospital.

2. METHODS

In this prospective investigation, retropupillary iris claw lens implantation was performed on 46 patients who lacked sufficient capsular support. The research was carried out in Raipur, Chhattisgarh, India, at the Shri Aurobindo Medical Research Centre. The time frame for the study was December 2022 to July 2023.

Patients with aphakia, normal iris anatomy, and insufficient posterior capsular support following surgery met the inclusion criteria. Exclusion criteria: Patients with diffuse iris atrophy, pro-found iridodonesis, aniridia, rubeosis iridis, active uveitis, any retinal pathology, traumatic mydriasis, and surgical aphakia with decompensated corneas were not allowed.

The following investigations were carried out prior to surgery: keratometry, biometry, best corrected visual acuity using a Snellen chart, anterior segment examination with a slit lamp, posterior segment examination with a B scan or 78 D lens in a slit lamp, keratometry, and IOP measurement using applanation tonometry. With an A constant of 116.5 and the SRK/T formula, the IOL power was computed. Polymethyl methacrylate was used to create the Iris claw lens that was utilized.

On the first postoperative day following surgery, immediate problems were observed. After two months, the final visual results were recorded. The patient's informed permission was obtained and approved by the institutional ethics committee. Data is entered into proforma that have been specially created and then copied to Excel sheets.

Procedure

Small incision cataract surgery (SICS) was the type of cataract surgery that was done. A cautious anterior vitrectomy was performed following the discovery of vitreous in the anterior chamber. To induce miosis, 1% acetylcholine was administered into the anterior chamber. To shield the corneal endothelium, viscoelastic was poured into the anterior chamber. In the limbus, paracentesis was performed 180° apart. Using a blunt sinskey hook, one haptic was guided beneath the iris and enclaved in the mid-peripheral iris after the iris claw IOL was placed over it. For the other haptic, the same process was carried out again. Lastly, the wound's integrity was examined and, if necessary, sutured. In each case, subconjunctival steroids were administered. On the first postoperative day, immediate postoperative problems were identified.

To do additional statistical analysis, the IBM SPSS model 26 software was used to evaluate the records. Data were expressed as frequency (percentage) for nominal data, mean ± standard deviation of the mean (SD). Statistical significance between the study groups regarding the previously mentioned parameters was determined single t-test for continuous variables. $P \leq 0.05$ was considered statistically significant. Simple linear regression test was applied to study the relation between two continuous variables. Multiple logistic regression analyses were performed to study the multiple effects of different variables. The sample size was confirmed retrospectively at alpha level of 0.05 and power of analysis at 95%.

3. RESULTS

A total of 46 individuals (20 men and 26 women) had retropupillary iris claw lenses placed in their eyes. **56.52 ±7.029** years was the patients' mean age (41-70 years). Treatment was given to the right eyes of 30 (65.21%) and left eyes of 16 (34.78%) patients. The majority of patients were between the ages of 51 and 60 (Table 1).

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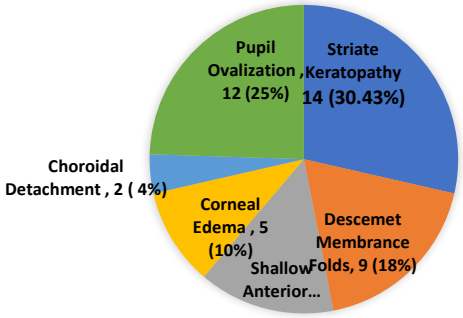
Table no.1: Demographic characteristics of the study.

Variables	Categories	N	%	Mean	SD	STD Error Mean	95% Confidence Interval of the Difference	
							Lower	Higher
Age Groups	Male (n-20)	20	43.47%	Mean Age 56.52 ±7.029				
	Female(n-26)	26	56.52%					
Boys Age Groups	41-50 Years	10	21.72%	0.43	0.507	0.106	0.22	0.65
	51-60 Years	22	47.82%	0.96	0.209	0.43	0.87	1.05
	61-70	14	30.43%	0.61	0.499	0.104	0.39	0.82
Eye	Right	30	65.21%	0.97	0.180	0.032	0.90	1.03
	Left	16	34.78	0.52	0.508	0.091	0.33	0.70

Fifteen aphakic eyes (32.39%) had the IOLs placed as a secondary treatment, and 31 eyes (67.39%) had them inserted during primary lens surgery (SICS).

15.1 mmHg was the mean intraocular pressure immediately following surgery. Pupil ovalization in 12 eyes (26.08%), striate keratopathy in 14 eyes (30.43%), descemet membrane folds in 9 eyes (19.56%), shallow anterior chamber in 7 eyes (15.21%), corneal edema in 5 eyes (10.86%), and choroidal detachment in 2 eye (4.34%), were among the immediate post-operative problems.

Figure 1: Bar graph showing percentage of IOL insertion as a primary and secondary procedure.



The BCVA ranged from 6/6 to 6/24, with the largest number of patients 18(39.13%) having visual acuity of 6/12 , 13 (28.26%) having visual acuity of 6/9, 9 (19.56%) having visual acuity6/6 and the lowest number of cases 3(6.52%) having visual acuity of 6/18 and 6/24.

4. DISCUSSION

Our goal in doing this study was to examine the visual results and acute post-operative problems following the implantation of retropupillary iris claw lenses. Comparable outcomes from the primary and secondary operations led to the conclusion that IOL implantation can be completed during the primary procedure to prevent the need for a second surgery. [11, 12, 10], Vishal Kalode et al. even conducted a similar investigation. When iris claw lens implantation is performed on cataract patients with insufficient capsular support, the visual prognosis is good. 13] The majority of the eyes exhibited best corrected visual acuity of 6/12 (41.6%), according to a study by Panchbhai, D. et al. Stritiate keratopathy (25%) and pupil ovalization (25%) were the most frequent immediate postoperative complications. Choroidal detachment was the least frequent complication (3.6%).[14]

Striate keratopathy (30.43%) and pupil ovalization (26.08%) were the most frequent immediate post-operative complications [15, 16, 17]. Corneal edema (10.86%) and choroidal detachment (4.34%) were the least common complications. Panchbhai, D. et al. reported similar observations. Striate keratopathy (25%) and pupil ovalization (25%) were the most frequent acute postoperative complications. Choroidal detachment was the least frequent complication (3.6%). In [14] According to research by Moschos et al., bullous keratopathy was the most frequent side effect of angle-supported anterior chamber IOLs, followed by retinal detachment, macular edema, lens dislocation, and secondary glaucoma [18, 19]. In our investigation, no macular oedema resulted in complications. Isolated dislocation may be one of the drawbacks of an iris claw lens. In our investigation, no dislocation was found. The study's patients had no ocular comorbidities, therefore the lens implantation had a direct impact on their visual prognosis.

5. CONCLUSION

The implantation of retropupillary iris claws in patients who had insufficient posterior capsular support yielded positive results. Iris claw lens implantation can be

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completed in the primary setting rather of waiting for secondary implantation at a later time, as evidenced by the identical visual acuity in both primary and secondary implantation. After two months, the majority of typical acute problems did not impair visual acuity, indicating that the difficulties are manageable. The short follow-up time (2 months) of the current study is one of its shortcomings. Documentation of post-operative issues following iris claw lens implantation can be used to plan future research.

6. Limitation

The study's small sample size and brief follow-up time are two of its drawbacks. To improve the quantification of visual acuity, extended follow-up studies employing LOG Mar visual acuity might be undertaken. Previous investigations have also identified late problems.

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9. CONFLICT OF INTEREST- The authors declare that they need no conflict of interest.

REFERENCE

1. Wagoner, M.D.; Cox, T.A.; Ariyasu, R.G.; Jacobs, D.S.; Karp, C.L. Intraocular lens implantation in the absence of capsular support: A report by the American Academy of Ophthalmology. Ophthalmology 2003, 110, 840–859.
2. Shen, J.F.; Deng, S.; Hammersmith, K.M.; Kuo, A.N.; Li, J.Y.; Weikert, M.P.; Shtein, R.M. Intraocular Lens Implantation in the Absence of Zonular Support: An Outcomes and Safety Update: A Report by the American Academy of Ophthalmology. Ophthalmology 2020, 127, 1234–1258.
3. Weene LE. Flexible open–loop anterior chamber intraocular lens implants. Ophthalmology. 1993;100:1636–9.
4. Ellerton CR, Rattigan SM, Chapman FM, Chitkara DK, Smerdon DL. Secondary implantation of open-loop, flexible, anterior chamber intraocular lenses. J Cataract Refract Surg. 1996;22:951–4.
5. Biro Z. Results and complications of secondary intraocular lens implantation. J Cataract Refract Surg. 1993;19:64–7.
6. Hykin PG, Gardner ID, Corbett MC, Cheng H. Primary or secondary anterior chamber lens implantation after extracapsular cataract surgery and vitreous loss. Eye. 1991;5:694–8.
7. Drolsum L, Haaskjold E. Secondary implantation of flexible open loop anterior chamber IOLs. Acta Ophthalmol (Copenh) 1993;71:482–6.
8. Gonnermann J, Klamann MK, Maier AK, Rjasanow J, Joussen AM, Bertelmann E, et al. Visual outcome and complications after posterior iris-claw aphakic intraocular lens implantation. J Cataract Refract Surg. 2012;38(12):2139-43.
9. Rao R, Sasidharan A. Iris claw intraocular lens: a viable option in monocular surgical aphakia. Indian J Ophthalmol. 2013;61(2):74-5.
10. Forlini M, Soliman W, Bratu A, Rossini P, Cavallini GM, Forlini C. Long-term follow-up of retropupillary iris-claw intraocular lens implantation: a retrospective analysis. BMC Ophthalmol. 2015;15:143.
11. Helvacı S, Demirdüzen S, Öksüz H. Iris-claw intraocular lens implantation: Anterior chamber versus retropupillary implantation. Indian J Ophthalmol. 2016;64(1):45.
12. Jare NM, Kesari AG, Gadkari SS, Deshpande MD. The posterior iris-claw lens outcome study: 6-month follow-up. Indian J Ophthalmol. 2016;64(12):878-83.
13. Vishal Kalode, Sachin Daigavane. Study of visual outcome and complications of iris-claw intraocular lens implantation to correct aphakia. Journal of Datta Megha Institute of Medical Science University, Year: 2019 , Volume : 14, Issue : 3 ,Page : 141-154
14. Panchbhai, D., Rao, A. T., Satyavathi, G., Viswabharathi, P., & Manjula, P. (2023). Outcomes of retropupillary iris-claw lens implantation. International Journal of Research in Medical Sciences, 11(3), 982–985.
15. Yueqin C, Qinghuai L, Chunyan X, Zhenping H, Yin C. Three-year follow-up of secondary anterior iris fixation of an aphakic intraocular lens to correct aphakia. Cataract Refract Surg. 2012; 38: 1595–1601.
16. Gu¨ell JL, Velasco F, Malecaze F, Va´zquez M, Gris O, Manero F. Secondary Artisan-Verysise aphakic lens implantation. J Cataract Refract Surg. 2005; 31: 2266–2271. https://doi.org/10.1016/j.jcrs.2005.06. 047 PMID: 16473216

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www.jchr.org

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17. Anbari A, Lake DB. Posteriorly enclavated iris claw intraocular lens for aphakia: long-term corneal endothelial safety study. Eur J Ophthalmol. 2015; 25: 208–213. https://doi.org/10.5301/ejo.5000527 PMID: 25363856
18. Moschos MM, Nitoda E. The correction of aphakiausing anterior chamber intraocular lens. In vivo. 2016; 30: 733–738. PMID: 27815455
19. Sawada T, Kimura W, Kimura T, Suga H, Ohte A, Yamanishi S, et al. Long-term follow-up of primary anterior chamber intraocular lens implantation. J Cataract Refract Surg. 1998;24:1515–20.