



VISUAL OUTCOME IN PATIENTS WITH PRIMARY RETROPUPILLARY IRIS CLAW LENS IMPLANTATION BY BEGINNERS IN A TERTIARY CENTER

Ophthalmology

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ABSTRACT

Background: In complicated cataract surgeries where capsular support is inadequate, it is impossible to implant PCIOL in the bag or in the sulcus. Retropupillary iris claw lens is preferred because chances of damage to the anterior chamber angle and iris root are avoided as the lens is fixed to the mid periphery of iris. This retrospective study aims to analyze the visual outcomes and immediate postoperative complications after retropupillary iris-claw lens implantation in a tertiary care hospital. **Materials and Methods:** It is a retrospective study of 50 patients who underwent retropupillary fixation of iris claw between December 1 2023 to May 31 2024, were retrieved from the medical records department at sankara eye hospital, kanpur. Immediate postoperative complications were noted. Final visual outcomes were noted after 2 months. **Results:** The study comprised of 50 eyes. The mean patient age was 55.91 years (range 50-85 years). The IOLs were inserted during primary lens surgery. The mean postoperative intraocular pressure was 19.1 mmHg. Majority of the eyes had best corrected visual acuity of <6/12 (40%). The most common immediate postoperative complication was pupil ovalization (32%) and anterior chamber reaction (26%). **Conclusion:** Visual outcomes of primary iris claw implantation provided good visual outcome with tolerable complications. It can be used in eyes with inadequate posterior capsular support.

KEYWORDS

Iris Claw, Primary Iris Claw Implantation, IOL, Cataract

Introduction

The 'gold standard' procedure for cataract surgery is extracapsular cataract extraction with posterior intraocular lens implantation (PCIOL). However, in complicated cataract surgeries where capsular support is inadequate, it is impossible to implant PCIOL in the bag or in the sulcus. Leaving the eye aphakic affects the quality of life as it causes high hypermetropia and anisometropia.

In such cases, different techniques have been employed for IOL fixation. These techniques include sutured or sutureless scleral fixation, angle-supported anterior chamber IOL implantation, and anterior chamber or retropupillary iris claw IOLs^[1]. Scleral fixated IOL (SFIOLs) is an option for many surgeons, but the technique is more challenging and chances of intraocular hemorrhage and endophthalmitis is high. Angle-supported anterior chamber IOL is safe and fast, but complications are more. In 1972, Worst *et al.* presented the first iris-claw lens^[2].

The iris claw lens may be preferred when there is adequate support from the iris. The retro-pupillary iris claw lens is often preferred due to its reduced risk of damage to the anterior chamber angle and iris root, as it is secured to the middle periphery of the iris where iris is less vascularised and less reactive. It also enhances stability, prevents tilting of the lens and reduces the glare phenomenon.^[3,4]

MATERIAL AND METHODS

This retrospective study was approved by the institutional review board of parent institution. Informed consent was obtained from all the patients prior to surgery. Case records of all the patients who underwent retropupillary fixation of iris claw between December 1 2023 to May 31 2024, were retrieved from the medical records department. The study was conducted at sankara eye hospital, kanpur.

Study Design: Retrospective observational study

Study Location: This was a tertiary care teaching hospital based study done at Sankara eye hospital, Kanpur.

Study Duration: December 1 2023 to May 2024.

Sample size: 50 patients.

Inclusion criteria:

1. Patients with intraoperative complications with inadequate posterior capsular support

Exclusion Criteria:

1. Those with pre-existing posterior segment pathologies compromising vision.
2. Patients with gross iris abnormalities like aniridia, diffuse iris atrophy, rubeosis iridis, profound iridodonesis.

Preoperative evaluation

All the patients who has undergone manual small incision cataract surgery with iris claw where selected for the study purpose. Preoperatively, all patients underwent complete ophthalmologic evaluation, Including- Best-corrected visual acuity (BCVA) using snellen chart, slit lamp examination for anterior segment, 90D examination for posterior segment examination, intraocular pressure (IOP), keratometry, A scan biometry or B scan. Detailed history of any previous intraocular surgeries and any complications.

Surgical technique

All the surgeries with iris claw implantation were performed by fellows of the institution who have already completed more than 500 small incision cataract surgeries. Written informed consent was taken. The lens used in our study was polymethyl methacrylate single-piece biconvex iris-claw IOL with a total length of 8 mm and 5.5 mm optic size. The A constant by the manufacturer was 117.2. We preferred the SRK-T formula for achieving postoperative emmetropia.

In all of these primary cases, a 5-6 mm scleral tunnel was made using a crescent knife temporally. Paracentesis was made using sideport at 12 and 6 o'clock position depending on the eye being operated. Capsulorhexis was done using cystitome. Hydrodissection was done and lens extraction was done using wire vectis. Intraoperative complications and capsular bag inadequacy was identified. Vitreous was noted in the anterior chamber. Anterior vitrectomy was done carefully. Pilocarpine (0.5%) was injected intracamerally. The anterior chamber was entered after injecting viscoelastic material.

Posterior iris-fixated IOL was implanted using an iris-claw IOL holding forceps and enclaved on the posterior surface of the iris mid peripherally at 12 and 6 o'clock meridian. Peripheral iridectomy was done. Viscoelastic material was removed. A 10-0 nylon suture was placed. Section was covered with conjunctiva using cautery. Postoperatively, the topical steroid-antibiotic regimen was followed.

The postoperative assessment was done by a single observer on day 1, day 7, 1 month and 2 month. Main outcome measures were visual acuity, and complications such as anterior chamber reaction, corneal edema and the stability of IOL.

Analysis of Data

Data was analysed using microsoft excel.

RESULT

Total, 50 eyes of 50 patients were enrolled in our study, 31 were male, and 19 were female, 50–85 years was the majority age group. Mean age of the patients was 63.02 ± 8.1 (min-max: 50-85years). 31 patients (62%) were operated in right eye and 19 patients (28%) in the left eye.

All the cases were treated with primary iris claw implantation. The commonest indication for primary iris claw implantation was intraoperative complication that occurred during cataract surgery, that is, PCR (50%) and zonular dialysis more than 4 clock hours (30%). Since there was non availability of CTR, iris claw was the only option. Retropupillary iris Claw IOL were implanted in the primary procedure in were subluxated ($>180^\circ$) or dislocated lens was identified during preoperative work up. These two eyes had subluxation of cataractous lens due to pseudoexfoliation.

The mean immediate post-operative intraocular pressure was 19.1 ± 4.10 mmHg.

Immediate post-operative complications included: pupil ovalization in 16 eyes (32%); anterior chamber reaction in 13 eyes (26%); striae keratopathy in 7 eyes (14%); descemet membrane folds in 5 eyes (10%); shallow anterior chamber in 2 eyes (4%); corneal edema in 6 eyes (12%); descemets membrane detachment in 1 eye (2%).

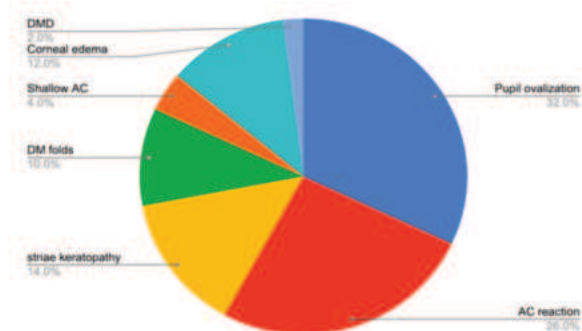


Fig1 - Immediate postoperative complications after iris claw lens implantation

The average BCVA attained was log MAR 0.39 ± 0.23 . BVCA were in the range 2/60 to 6/6, maximum patients being in the range of 6/12- 6/6 (23 cases; 46%) and minimum in the acuity of $<6/60$ (2 cases; 4%).

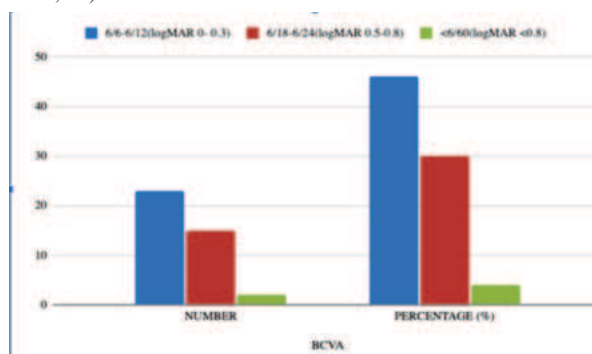


Fig2 - Postop BCVA in after 2 months

DISCUSSION

In this study, our objective was to investigate the visual outcome and immediate complications following the implantation of an iris claw lens behind the pupil. We found that when the retropupillary iris-claw implantation was performed during the primary procedure, it was associated with complications such as posterior capsular rupture and lens subluxation.

All our patients had completed the 2 months follow-up. The rationale for favoring a posterior iris-claw intraocular lens (IOL) over an anterior one is based on the finding that a posteriorly fixated IOL,

carries a lower risk of endothelial decompensation which was observed in the study by Jare et al [5] Our study showed BCVA in the range of 6/9 to 6/24 which are similar to other studies like Madhvinan et al, Forlini et al, Helvacı et al, Jare et al concluding that IOL implantation can be done in the primary procedure to avoid an additional surgery.

The most common immediate postoperative complication in our study was pupil ovalization, in 16 patients and iritis in the first 1 week of surgery, in 13 patients. None of them had chronic anterior chamber inflammation, similar to a study by Jare et al.

IOP in our study population was within 8–26 mm Hg postoperatively. One patient showed postoperative IOP value of 26, and he was started on Timolol maleate eye drops and continued for 4 months, it could be due to an increased response to steroids. Güell et al. reported three eyes with steroid-induced increase in IOP.[6] Similarly, Schallenberg et al. Observed raised IOP in one out of 31 patients.[7]

While one potential drawback of the iris claw lens is the risk of IOL dislocation, none occurred in our study. It's worth noting that since the patients included in our study did not have any ocular comorbidities, the visual outcomes directly reflect the success of the lens implantation procedure.

Shortcomings of our study lie in the limited number of patients, and short follow-up period.

CONCLUSION

Retropupillary iris claw implantation yielded favorable outcomes in patients with insufficient posterior capsular support. Notably, primary iris claw implantation resulted in good visual acuity, suggesting its feasibility as a primary intervention rather than deferring to secondary implantation later on. Although some immediate complications were observed, they did not significantly impact visual acuity after two months, indicating their tolerability. However, it's important to acknowledge a limitation of our study: the relatively short follow-up period of two months. Future research could extend this period to document late complications associated with iris claw lens implantation.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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