

Original Research Article

## VISUAL OUTCOMES AND POST OP COMPLICATIONS IN IRIS CLAW IOL -OUR EXPERIENCE IN REH, KURNOOL

Dr. P.A.S. Chalapathy Reddy<sup>1</sup>, Dr. Bommathahalli Latha<sup>2</sup>, Dr. O. Udayasree<sup>3</sup>, Dr. P.R. Siva Sankar<sup>4</sup>

<sup>1</sup>Associate Professor, Department of Ophthalmology, REH, Kurnool Medical College, Kurnool, Andhra Pradesh, India.

<sup>2</sup>Assistant Professor, Department of Ophthalmology, REH, Kurnool Medical College, Kurnool, Andhra Pradesh, India.

<sup>3</sup>Junior Resident, Department of Ophthalmology, REH, Kurnool Medical College, Kurnool, Andhra Pradesh, India.

<sup>4</sup>Assistant Professor, Department of Ophthalmology, REH, Kurnool Medical College, Kurnool, Andhra Pradesh, India.

### Corresponding Author

Dr. P.R. Siva Sankar, Assistant Professor, Department of Ophthalmology, REH, Kurnool Medical College, Kurnool, Andhra Pradesh, India.

### ABSTRACT

#### Background

The objective of this research was to evaluate the ultimate visual result and different issues that arose during the posterior iris-claw intraocular lens (IOL) implantation procedure in eyes that were aphakic and had insufficient capsular support.

#### Methods

This is a prospective study approved by ethical committee at Kurnool medical college Kurnool. All the patients who underwent iris fixation of a Iris claw IOL from a period of June 2022 to July 2023 for correction of aphakia, intraoperative posterior capsular rent, dislocated and subluxed IOLs, ectopia lentis. patients were followed for period of 2 months post surgery. A total of 67 eyes from 67 eyes met our inclusion criteria and were included in this study

#### Results

A total of 67 eyes from 67 individuals were included in our study; the majority were between the ages of 50 and 70. Of the patients, 37 were male and 30 were female.. The commonest indication for Posterior Iris Claw IOL implantation in our study was surgical aphakia

LogMAR 0.3 was the postoperative mean best-corrected visual acuity (BCVA). According to a study of problems, striate keratitis (26.6%), iritis (36%), corneal edema (30%), hyphema (6.66%), iris capture (6.66%), and CME (3.33%) were the most frequent postoperative consequences.

#### Conclusion

The most frequent reason for posterior iris-claw IOL implantation is surgical aphakia. The mean BCVA after surgery is comparable to other approaches. Complications most frequently

occur from iritis. Postgraduate students can master this reasonably safe and simple method easily.

**Keywords:** Visual result, surgical problems, insufficient posterior capsule, posterior iris-claw lens

## INTRODUCTION

One of the techniques that is most frequently used globally is phacoemulsification.<sup>[1]</sup> The most recent advancements in intraocular lens (IOL) designs and surgical instruments made this process safe and effective. Nonetheless, complex scenarios continue to arise. After surgery, in-the-bag One such instance is IOL dislocation, which can occur in people between the ages of 0.2 and 3%.<sup>[2-4]</sup> Furthermore, zonulopathy, trauma, and spontaneous crystalline lens dislocations can all result in insufficient capsular support for in-the-bag IOL implantation. There are various choices for primary or secondary IOL implantation in eyes without capsular support. An angular support or iris fixation (iris claw) can be used to implant an anterior chamber (AC) IOL. As an alternative, iris fixation (with suture or claw) or scleral fixation (suture, adhesive, or intrascleral haptic fixation) can be used to implant a posterior chamber (PC) IOL A recent meta-analysis revealed that while the problems varied, there was no proof that one method was better than the other<sup>[5]</sup>. Despite being simple to implant, AC IOLs may cause secondary glaucoma or endothelial decompensation.<sup>[6-7]</sup> IOLs with scleral sutures are susceptible to suture-related problems, including exposure, erosion, and rupture; endophthalmitis being the most common consequence<sup>[8]</sup>. There are also rare cases of high intraocular pressure (IOP), retinal detachment (RD), and intraocular haemorrhage. The use of numerous adaptations to an intrascleral haptic fixation approach has been growing in popularity. Iris fixation offers some advantages including shorter surgical time and lower risk of intraocular haemorrhage and glaucoma progression. Nonetheless, it can also be associated with potential complications, including pigment dispersion, chronic inflammation, progressive anterior synechia formation, and pupillary distortion leading to glare or halos. The purpose of the current study was to assess the visual and refractive outcomes and complications of Iris claw lens implantation in eyes with inadequate capsular support and complex ocular history.

## MATERIALS AND METHODS

This is a prospective study approved by ethical committee at Kurnool medical college Kurnool. All the patients who underwent iris fixation of a Iris claw IOL from a period of June 2022 to July 2023 for correction of aphakia, intraoperative posterior capsular rent, dislocated and subluxed IOLs, ectopia lentis. patients were followed for period of 2 months post surgery. A total of 67 eyes from 67 eyes met our inclusion criteria and were included in this study.

The following baseline data were gathered after patient records were examined: demographic data, related eye problems, the amount of time since the first cataract surgery and information about prior procedures, predisposing risk factors, concurrent procedures, and indications for iris suture fixation. Data on manifest refraction (MRx), IOP, and uncorrected and best corrected visual acuity (UCVA and BCVA) were recorded at baseline and after surgery.

All patients had ocular examinations using slit-lamp biomicroscopy, tonometry, and Snellen visual acuity at 1 day (POD1), 1 week (POW1), and 1 month (POM1), as well as at all follow-up post-operative visits. Every surgical complication was noted. An axial length more than 26 mm was considered to be high myopia. IOP  $\geq$  30 mmHg on POD1 was considered an IOP increase. Any post-operative oedema with a fresh onset that lasted longer than one month was considered corneal oedema. A newly developed post-operative oedema was described as cystoid macular oedema (CME). Lens dislocation was defined as the actual physical movement of the IOL into the posterior pole or vitreous cavity, whereas lens tilt was described as decentration along the horizontal or vertical meridian.

The study's main end measure was postoperative visual acuity, namely BCVA. Changes in post-operative MRx, mean absolute refractive error, IOP, number of glaucoma drugs, shift in ECD, and post-operative complications were among the secondary outcomes.

### **Surgical Technique**

All cases were operated on by a single surgeon following written informed permission. Every instance was handled within the peribulbar block. polymethyl methacrylate single-piece biconvex iris-claw IOL, which has an optic dimension of 5.5 mm and a total length of 8 mm, was the lens employed in our investigation. The manufacturer suggested using a constant of 117.2. For the purpose of obtaining postoperative emmetropia, we favored the SRK-T formula.

Using a crescent knife, a 5.5 mm scleral tunnel was created or corrected during elective secondary implantation. A double paracentesis was performed at the 3 and 9 o'clock positions, followed by an intracameral injection of pilocarpine (0.5%). Following the injection of viscoelastic material, the anterior chamber was reached. Using an iris-claw IOL holding forceps and a Sinsky hook, a posterior iris-fixated IOL was implanted and enclaved on the posterior surface of the iris mid-peripherally at the 3 and 9 o'clock meridian. The peripheral iridectomy was performed at either one or eleven o'clock. The viscoelastic substance was eliminated. The incision was sealed with a suture. An antibiotic injection subconjunctivally was administered. Following surgery, a topical steroid-antibiotic treatment was adhered to.

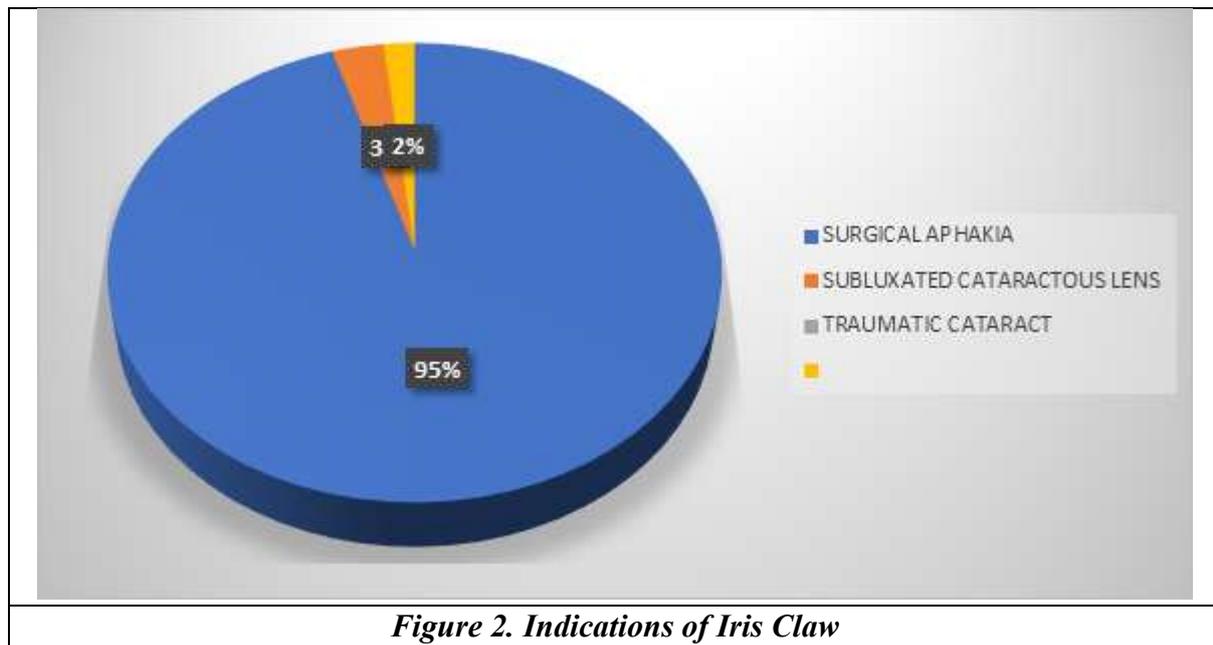
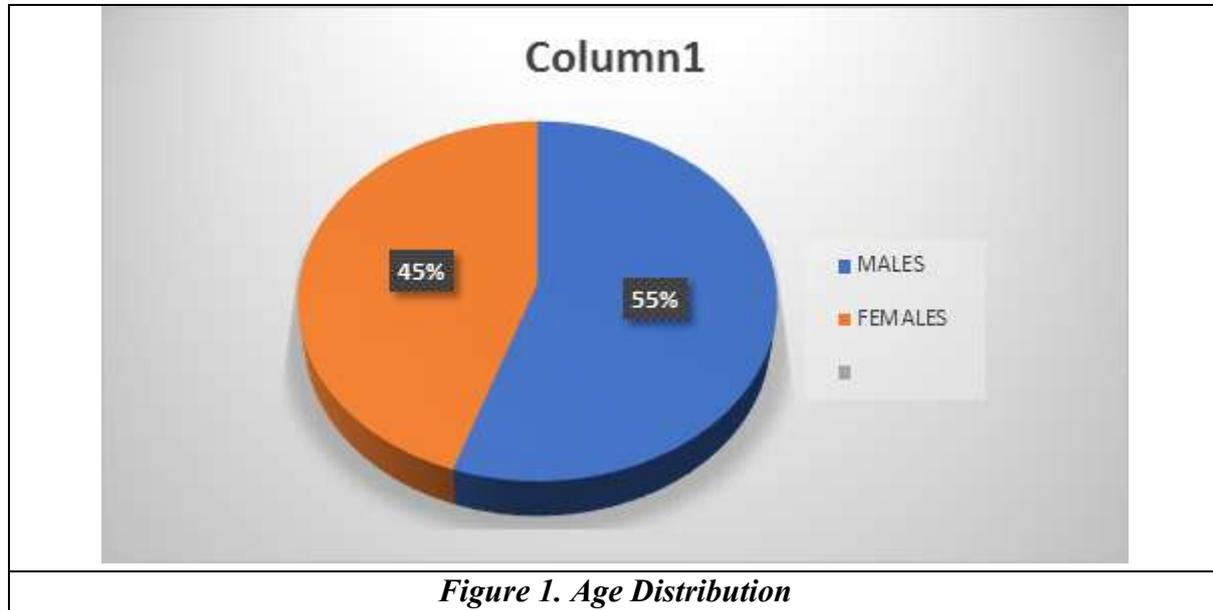
One observer performed the postoperative assessment on day 1, day 7, day 14, one month, and 2 months after the procedure. Visual acuity and comorbidities such anterior chamber reaction, corneal edema, hyphema, hypotony, IOL stability, cystoid macular edema (CME), and retinal detachment were the primary outcome measures.

### **Statistical analysis**

By accounting for the partial paired data, the mixed model was utilized to compare the pre-operative and post-operative measurements at each time point. To make statistical analysis easier, logMAR equivalents of Snellen visual acuity were converted. While counting fingers was set at 1.85 logMAR, hand motion visual acuity was set at 2.3 logMAR<sup>[9,10]</sup>. The investigation of post-operative UDVA, MRx, and spherical equivalent (SE) did not include eyes that were intended for near. P values less than 0.05 were deemed statistically significant.

**RESULTS**

A total of 67 eyes from 67 individuals were included in our study; the majority were between the ages of 50 and 70. Of the patients, 37 were male and 30 were female.. The commonest indication for Posterior Iris Claw IOL implantation in our study was surgical aphakia



Indications	Number of cases	Post-operative 6/6 -6/12 (Log MAR 0.0-0.3)	6/18-6/60(Log MAR 0.5-0.8)	<6/60 (Log MAR <0.8)
Aphakia	64	60	04	00
Subluxated PCIOL	02	01	01	00
Traumatic cataract	01	01	00	00

*Table 1: Post operative visual acuity of iris claw implanted patients*

### Post Operative Complications

- Iritis (36%), corneal edema (30%), striate keratitis (26.6%), ovalization of the pupil (26.6%), hyphema (6.66%), iris capture (6.66%), and CME (3.33%) were the most common postoperative consequences, according to the analysis of complications.
- In our study (25/67), iritis was the most often seen consequence; all of them had moderate iritis with cells and flared up to +1 or +2. After receiving frequent topical steroids, nonsteroidal anti-inflammatory medications, and cycloplegics, these patients healed in two weeks. Twenty one of the patients had corneal epithelial edema, and eighteen had striate keratitis. By the conclusion of the first week, both were settled.
- five patients experienced pupillary capture, while eighteen patients experienced ovalization of the pupil.
- Two weeks later, the hyphema in four of the eyes disappeared. IOP – Pre-operative IOP ranges between 8 and 18 mm Hg. Moreover, postoperative IOP was measured in each patient on every follow-up visits. It ranges between 10 and 24 mm Hg. One patient had an IOP value of 24 mm Hg at 1 month follow-up. He was started on timolol maleate eye drops and continued for 4 months and then stopped.

### DISCUSSION

Surgeons face a hurdle when it comes to optical rehabilitation of aphakia following manual small incision cataract surgery, since the patient's expectation is a favorable visual outcome. A relatively recent treatment for correcting aphakia is called retropupillary iris-claw implantation. It can be used as a secondary procedure later on, in cases of complications such as posterior capsular rupture and subluxated lens. For this operation, a good visual outcome and less postoperative problems are preferred.

The posterior iris-claw IOL is preferred over the anterior one because, according to a study by Jare et al, it is retro pupillary and has a lower risk of endothelial decompensation. Another benefit of posterior iris-claw lenses is that they are easy to implant; the lens is positioned close to the nodal point, and no additional sutures or glue are required. The visual outcome and low problems of our investigation were similar to those of prior studies on posterior iris-claw IOL implantation. Following primary cataract surgery, the incidence of PC IOL displacement has been estimated to be between 0.2 and 3%.

A significant population-based, retrospective cohort study found that there was a cumulative incidence of IOL dislocation after CE of 0.1% after ten years, 0.2% after fifteen years, and 0.7% after twenty years and 1.7% following 25 years<sup>[11]</sup>. While late in-the-bag dislocation is associated with growing zonular insufficiency and/or capsular bag contraction, early incidences of spontaneous IOL dislocation (<3 months) are typically caused by ripping of the posterior capsule and/or rupture of the equatorial zonules. For instance, in PEX cases, the average time between cataract surgery and IOL dislocation is typically 5.5–8.5<sup>[11, 12-15]</sup> years. While in rare circumstances, symptoms may not appear for up to 18 years following surgery<sup>[16]</sup>. In the event of dislocation or loss or insufficiency of the capsular support, there exist various techniques for repositioning IOLs. Technically speaking, iris fixation can be more difficult than scleral fixation and AC IOL insertion.

When compared to IOLs with scleral sutures, it can, nevertheless, offer fewer difficulties connected to sutures. Furthermore, iris fixation makes it easier to orient the IOL in relation to the physiological anatomic location. The conjunctiva is spared during the iris fixation procedure, which is favorable in the event that glaucoma or retinal surgery is necessary in the future. The use of intrascleral haptic fixation has grown in favor. This technique has been modified numerous times. It has been demonstrated that scleral IOL fixation with Gore-tex suture significantly improves visual acuity without causing issues from the suture. Nevertheless, a number of additional non-suture-related issues were noted, such as hypotony, ocular hypertension, hemorrhagic complications, and CME formation<sup>[8]</sup>. There are two more procedures that should be mentioned: the IOL flange technique by Yamane et al<sup>[11]</sup> and the scleral-glued IOL technique by Agarwal et al. Promising functional results were observed after a year of following the scleral-glued IOL method, with a risk of 5.6% IOL decentration, 3.7% pigment dispersion, and 7.5% CME<sup>[18]</sup>. The 36-month follow-up of the Flange IOL research revealed good functional outcomes with an 8% risk<sup>[17]</sup>. As far as we are aware, there is just one randomized study that contrasts the three IOL fixation methods in eyes without capsular support-iris-sutured, scleral-sutured, and AC IOL. In 176 patients, all operations were carried out concurrently with PKP. All three groups' visual results were comparable, however iris-sutured PC IOLs had a much lower frequency of CME (20%) than scleral-sutured IOLs (41%) and AC IOLs (38%)<sup>[19]</sup>. The greatest number of problems was seen in the group whose PC IOLs were scleral fixed. Intrascleral fixation was shown to have a lower risk of CME than transscleral fixation in a recent meta-analysis combining paired studies of transscleral-fixed, intrascleral-fixed, and iris-fixed IOLs. Additionally, iris fixation was associated with a decreased incidence of intraocular bleeding and glaucoma escalation than In terms of visual results, none of the pairs of comparisons in the aforementioned meta-analyses showed a statistically significant difference in postoperative BCVA. Furthermore, there was no discernible variation in the quantity of eyes that attained a BCVA of 20/40 or above during the last appointment.

After surgery, we saw improvement in UCVA when compared to baseline. Throughout the follow-up period, this improvement remained statistically significant compared to POW1. At every follow-up visit, the mean post-operative BCVA showed a significant improvement over baseline. Every single one of our patients had finished the six-month follow-up. On Log MAR, the average BCVA was 0.3, which is similar to many previous research. Gonnermann et al. conducted a retrospective case series in which eyes lacking sufficient capsular support underwent posterior iris-claw aphakic implantation. With a favorable complication rate of CME (8.7%), hyphema (2.1%), and high IOP (4.3%), they reported an excellent visual result. In our study, iritis was the most frequent postoperative complication, occurring in twenty five individuals within the first two weeks following surgery. In line with a research by Jare et al., none of them showed persistent anterior chamber inflammation. Prior to surgery, the study population's IOP ranged from 8 to 18 mm Hg. Due to an elevated steroid response, one patient had a postoperative IOP value of 24 and was treated with Timolol maleate eye drops for four months. Three eyes with an elevation in IOP brought on by steroids were reported by Güell et al.<sup>[20]</sup> In a same vein, Schallenberg et al. noted elevated IOP in one patient out of thirty-one. Hyphema occurred in five (6.6%) of our patients, but it eventually went away. A single patient (6.6%) experienced CME, which similarly to a research by Forlini et al.

affected his BCVA.<sup>[21,22]</sup> After a two-month follow-up, pupillary capture was observed in five apparently normal patients. Retinal detachment or IOL instability did not occur in any of our patients.

## CONCLUSION

In the absence of sufficient capsular support, the 2-month outcomes of this prospective trial with a sufficient sample size, an objective assessment of visual acuity, and a postoperative evaluation substantiate the use of posterior iris-fixed lenses in aphakic patients. Our research indicates that the most frequent reason for posterior iris-claw IOL implantation is surgical aphakia. The mean BCVA after surgery is similar to those of all prior IOL procedures. The most frequent side effect that doesn't affect the ultimate visual result is iritis. During their training, post-graduate students can also learn this reasonably simple and safe process.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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