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ORIGINAL RESEARCH

A Study of Post Operative Outcomes in Retropupillary Iris Claw Iolin Aphakic Patients

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ABSTRACT

Background:This study aims to evaluate the safety, effectiveness, and complication of retro pupillary iris claw intraocular lens in aphakic patients with inadequate capsular support.

Materials and Methods: This prospective interventional study was conducted in 40 eyes of 40 patients between January 2019 to June2020. Surgical aphakia with inadequate capsular support, Zonular dialysis, Posttraumatic subluxation of lens were included.Preoperative and postoperative best corrected visual acuity(BCVA) and the occurrence of various vision threatening complications such as iridocyclitis,decentration of iris claw IOL,Cystoid macular edema,Raised IOPand Ovalization of pupil were considered during the follow up period.

Results: Forty eyes of Forty patients who fulfilled the criteria were included.Indications for posterior iris claw IOL in our study were surgical aphakia(30/40), Zonular dialysis(6/40) and Post trauma(4/40).The mean follows up period was 6 to 12months.About 28 (70%) patients had improvement in vision with postoperative BCVA 6/12-6/9,10(25%)patientshad visual improvement with postoperative BCVA of 6/18-6/36,and 2(5%)patients had avisual acuity with less than 6/60. Postoperatively thirty eyes (75%) had no complaints, six eyes (15%) developed iridocyclitis, but all these patients had responded to topical steroids and cycloplegics.Five eyes (12.5%) developed raised IOP,five eyes (12.5%) developed Ovalization of Pupil,twoeyes (5%) developed CME and One (2.5%) eye developed IOL decentration.

Conclusion: Posterior iris claw IOL implantation is safe, effective,and timely procedure in aphakia with inadequate capsular support.

Keywords: Inadequate posterior capsule,posterior iris claw lens,Iritis,CME.

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INTRODUCTION

The most prevalent ophthalmic disease and the leading cause of reversible blindness throughout the world is Cataract. The development of cataract can be due to various aetiologies like congenital, old age, trauma, infectious and metabolic causes. It is estimated that every year in India alone 5.1 million people undergo cataract surgery.In the bag implantation of intraocular lens is the basic standardof care in cataract surgery.In aphakia with good capsular support,three-piece ciliary sulcus placed IOL is the best option.In case such as complicated cataract surgery with inadequate capsular support,traumatic dislocation of lens,subluxation of lens as in Marfan's syndrome,and aphakia following congenital cataract surgery,the various surgical options available to correct aphakiaare anterior chamber IOL,iris claw anterior and posterior IOL, Scleral fixated IOL,and more recently,glued IOL. In this studysafety,effectiveness and complications related to retro pupillary iris claw IOL

implantation wereevaluated.Dr Cornelius Binkhorst first introduced four loop and later modified to two loop iris supported IOLs in an intact posterior capsule also called iridocapsularIOLs to overcome the disadvantages of dislocation of Ridley's posterior chamber lens and increased risk of corneal decompensation in AC IOLs. Later,Prof John Worst et al1attempted to improve the stability of IOL without interfering pupillary dilation and introduced modern design of iris claw IOL in 1972.In 1977, it was further modified from circular haptic to a more oval and larger haptic to aid in easy Enclavation to iris tissue.

ACIOLs in spite of easy surgical procedures have the risk of increased corneal endothelial loss which can lead to decompensation, raised IOP causing secondary glaucoma,iris chafing,and poor pupillary dilatation if requires a retinal evaluation and procedures at later date.

SF IOLS though closely resemble the anatomical position of lens as a steep learning curve and a long surgical procedure considered a major disadvantage among the fast-paced surgeons of today.Suture tied to sclera can cause tilting of the lens leading to blinding astigmatism or sutures degenerate in long-term leading to decentration or dislocation of the IOL into the vitreous cavity.[1-4]Sutures can also erode the conjunctiva and become exposed causing irritation and glaucoma formation.

Posterior iris claw IOLs have less risk of corneal endothelial damage and secondary glaucoma than ACIOL,clipped to the immobile mid periphery portion of iris can achieve good pupillary dilatation,less risk of tilting of IOL causing astigmatism though this can occur when equal enclavation is not done,and less inflammation in the hands of skilled surgeons.5The greater advantage is the centration and stability of IOL.

MATERIALS & METHODS

This prospective interventional study was conducted from January2019 to June 2020 for a period of 18 months in Kamineniinstitute of medical sciences, Narketpally.

Inclusion Criteria

- Aphakic patients with inadequate capsular support due to posterior capsular rupture during surgery,
- Large zonular dialysis >180°,
- Post traumatic anterior subluxation /dislocation of lens with preoperative best corrected visual acuity (BCVA)>6/36.

Exclusion Criteria

- Endothelial cell count <1200 cells/cumm,
- No improvement of vision with aphakic correction,
- Macular pathology,
- Retinal detachment and glaucomatous patients.
- Eyes with Intraocular inflammation

Methodology:

Based on the inclusion criteria 40 patients were included in this study. A Complete preoperative evaluation was done, which included visual acuity by Snellen's chart, tonometry, slit lamp bio microscopy, Ascan biometry, Bscan ultrasonography, keratometry, indirect ophthalmoscopy, specular microscopy, blood sugars were done.

Surgical technique:

Under peribulbar anaesthesia, sclera corneal tunnel of 5.5 mm was made and two side ports at 3'o clock and 9'o clock were made. A thorough anterior vitrectomy was done. 0.5%

pilocarpine was injected intracamerally for pupillary constriction which aids in centration of IOL. Posterior iris claw IOL was introduced into the anterior chamber using iris claw holding forceps and one of the haptics is brought behind the iris and enclaved using a blunt tipped instrument with proper care to avoid too much pressure. Similarly,second haptic is brought under iris and enclaved. The IOL is gently tapped at centre to ensure its clipping and slight dimple is conformed with at the iris mid periphery.Scleralwound was closed with 10'0 nylon suture. Postoperative follow up were done on the 1st day,1st week,4th week, 3 months, and 6 months.During follow up patient was examined for BCVA, signs of inflammation(cells,flare,and pigment dispersion),decentration and dislocation, iridocyclitis, cystoid macula oedema, vitritis,and retinal detachment.

RESULTS

Forty eyes of 40 patients were included in the study. Three eyes were in the age group of 30-40 years, Eight eyes in the age group of 40-50 years, Twenty eyes between 50-60 years and Nine eyes between 60-70 years.The mean age of patient was 50years.Of the 40 patients,26(65%) were males and 16(35%) were females. Various indications for surgery were posterior capsular rupture with inadequate posterior capsule in 75% (30/40),followed by large zonular dialysis in 15%(6/40) and post traumatic anterior dislocation of lens in 10%(4/40) of eyes.

Duration between cataract surgery and iris claw lens implantation was performed within 2 months in 60% of eyes,20% of eyes in 2-4 months ,15% of eyes in 4-6 months and 5% of eyes after 6 months.Duration of surgery for iris claw lens implantation 22+/-4 mins for 85% of eyes and 31+-2minsfor 20% of eyes.There were no preoperative and intraoperative complications.Of those 40 eyes,twenty-eighteyes had BCVA 6/18-6/9,Ten eyes had BCVA 6/18-6/36, and Two eyes had BCVA of <6/60 at 6weeks postoperative period.Patient who had BCVA <6/60 developed Cystoid macular oedema. Postoperatively 30 eyes(75%) having no complaints,sixeyes (15%) developed iridocyclitis, but all these patients had responded to topical steroids and cycloplegics.Mean postoperative intraocular pressure was 15.73+/-3.50mm Hg,five eyes (12.5%) withpostoperative high IOP were medically managed with antiglaucoma drugs. Five eyes (12.5%) developed Ovalisation of pupil, two eyes (5%)developed Cystoid macular oedema,and Oneeye (2.5) developed IOL decentration.

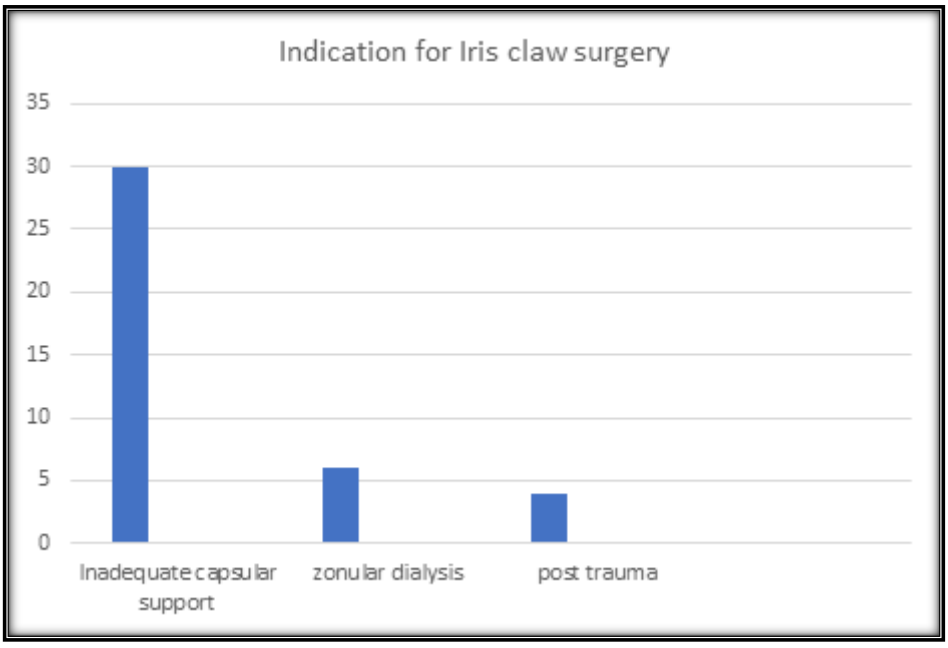

Figure 1: Postoperative indication of Iris claw surgery

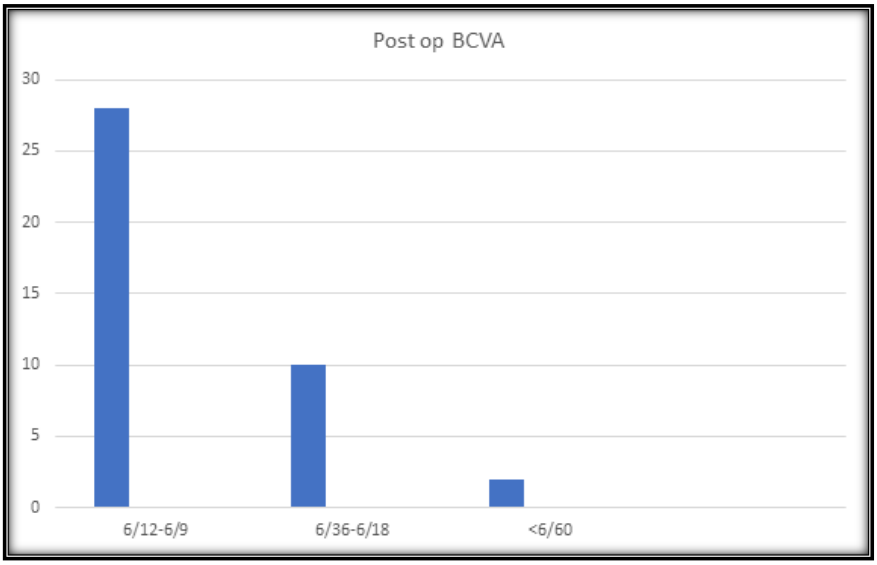

Figure 2: Postoperative BCVA

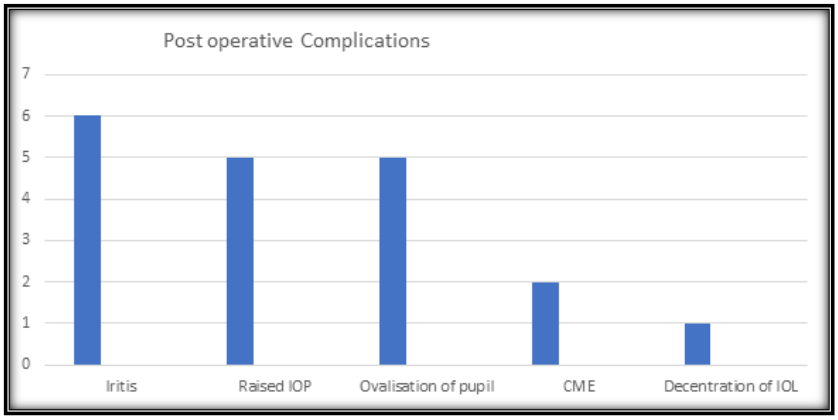

Figure 3: Postoperative complications

Figure 4: Posterior Iris claw implantation

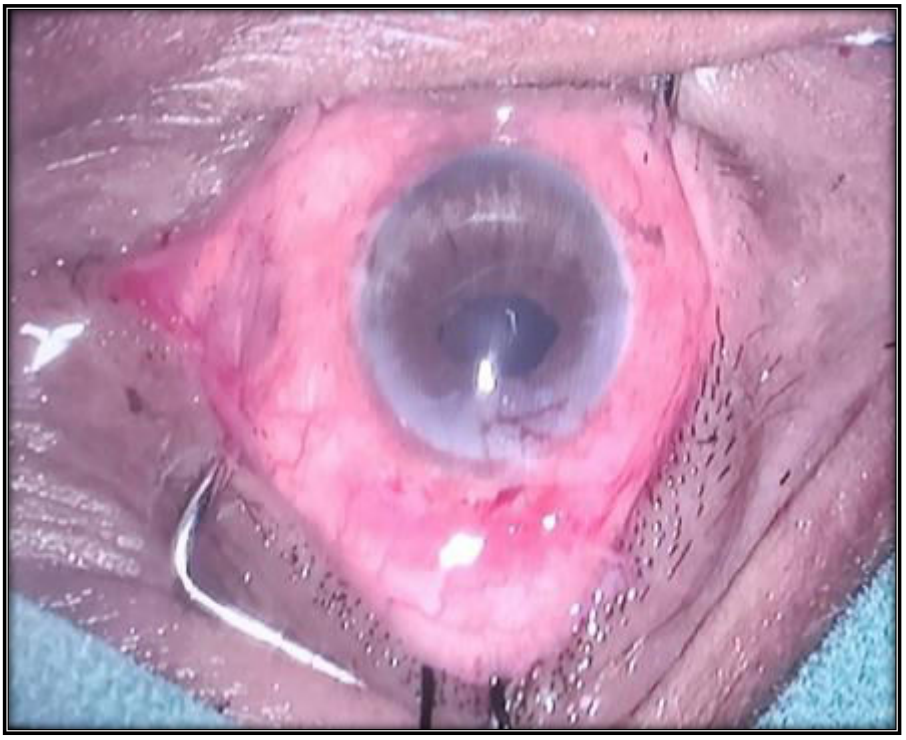

Figure 5: Ovalization of pupil

Table 1: Postoperative complications

Postoperative complication	**No.cases**
Iritis	6
Raised IOP	5
Ovalization of pupil	5
CME	2
Decentration of IOL	1

DISCUSSION

Retro pupillary fixation of iris claw intraocular lens is a safe and effective option for visual rehabilitation of patients with aphakia with inadequate capsular support following cataract surgery, large zonular dialysis, post traumatic cataract,Post traumatic subluxation and dislocation of lens. A similar study by Baykaraet al found that this technique is safe and effective.[6]

In our study 40 eyes of 40 patients were selected according to inclusion criteria. The mean age of the patients was 50 years. In Rao and Sasidharan et al,[7] study the mean age of presentation was 57±10 years. In Gonner man et al,[8]study iris claw lens implantation was done in 137 eyes.

In our study there were 26 males and 14 females. This can be explained by the fact that males are at higher risk of occupational injury and being the earning member of the family, they report earlier for visual rehabilitation. In astudy conducted by Hsing and lee et al 23 were males and 9 were females.Both eyes were almost equally affected in our study. In Rao and Sasidharan et al,[7] study both eyes were almost equally affected.

The most common diagnosis at presentation was aphakia following cataract surgery [72%] followed by post traumatic cataract with zonular dialysis≥180° 6 eyes[15%]. In our study 24(60%) patients had presented within 2 months and 8 (20%) patients had presented within 4 months and 6(15%) patients had presented within 6 months and 2(5%) patients had presented after 6 months. Majority of patients presented within 2months.

85 % of patients were operated within 22-+4 mins in our study.In Hara et al,[9] study retro pupillary implantation of iris claw lens was compared with trans scleral suturing of foldable acrylic IOLs.The mean surgical time was 20 ± 8.9 mins which was significantly lower than trans scleral suturing of IOLs which was 49.7 ±18.9 mins.The postoperative period was uneventful in 75 % of patients. Most common postoperative complication in our study was Iritis observed in 6(15%) patients in the first week of surgery, none of them had chronic anterior chamber inflammation, similar to a study of Joraet al.[10]Iritis and striate keratopathy were statistically significant in terms of poor visual outcome with p value of 0.001 and 0.015 respectively.Mean postoperative intraocular pressure was 15.73+- 3.50mm Hg,five eyes (12.5%) postoperative high IOP were medically managed with antiglaucoma drugs, similar to Munyuehfariaet al.[11] The other complications were IOL decentration [2.5%], Ovalisation of pupil shape [12.5%],and CME[5%]. Gonnerman et al8 reported pupil ovalisation in13.9% of cases and ViphulBhandhari et al,[10] study pupil ovalisation was noted in 10 % of cases. Fixation of haptic asymmetrically and very tightly is probably reason for alteration in pupil shape. In Hsing ye et al study IOL decentration was noted in 2 cases. De silva et al,[11]in his study reported wound leak in 6% and iris claw dislocation in 6% of cases. In our study no such complications were noted. In Teng et al,[12]study, comparison of iris claw lens with sulcus fixated posterior chamber IOL was made. They found that iris claw lens implantation was less invasive, requires less surgical time, significant postoperative visual recovery and less complications when compared to scleral fixated IOLs. Gicquel et al compared anterior and posterior chamber IOL and found lower endothelial cell loss in posterior iris claw.[13]
The improvement in visual acuity at 6 weeks was between 6/9-6/12 in [28]70% of cases,6/18-6/36 in 25% of cases and less than 6/60 in 5% of cases. In de silva et al,[11] study 60% had visual acuity 6/12 or better and in Gonnerman et al7 study 63.6% had visual acuity 6/12 or better.
Forlini et al published a retrospective analysis of long-term follow-up of retro pupillary ICIOL implantation in 320 patients and concluded that complications related to retro pupillary iris claw were minimal compared with its benefits. Therefore, using retro pupillary implantation of the iris claw lens for secondary implantations is a valid alternative strategy for aphakia without capsular support.[14,15]

Limitations of the study:
Limitation of this study was small sample size andlonger follow up time is required to assess long term postoperative complications like iris atrophy, chronic iritis, and retinal diseases like Retinal detachment.

CONCLUSION
To conclude retro pupillary implantation of iris claw lens is safe, technically simple, requires less duration to perform the procedure, intraoperative and postoperative complications are less compared to other secondary IOLs and have a higher success rate in terms of visual outcome.

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