

Retropupillary Iris Claw and Scleral-Fixated Intraocular Lens in the Management of Post-Cataract Aphakia

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Abstract

Background: To compare retropupillary iris claw and scleral-fixated intraocular lens in the management of post-cataract aphakia. **Subjects and Methods:** Eighty- four patients of aphakia of either gender were classified into 2 groups of 42 each. Group I patients underwent retropupillary iris claw fixation and group II patients underwent scleral-fixated intraocular lens surgery. Parameters such as preoperative uncorrected distance visual acuity (UCDVA), best-corrected distance visual acuity (BCDVA), preoperative corneal edema, preoperative retinal pathology, interval between cataract surgery and IOL etc. were recorded in both groups. **Results:** There were 22 males and 20 females in group I and 18 males and 24 females in group II. The mean preoperative UCDVA was 1.54 in group I and 1.72 in group II. Preoperative corneal edema was seen in 10 in group I and 4 in group II. Preoperative retinal pathology was seen in 14 in group I and 6 in group II. Interval between cataract surgery and IOL was 1.2 months in group I and 7.6 months in group II. IOL placed at time of cataract surgery was seen in 23 in group I and 6 in group II. UCDVA at 1 month in group I was 0.9 and in group II was 0.8. BCDVA at 1 month was 0.8 in group I and 0.4 in group II. UCDVA at 1 year was 0.7 in group I and 0.8 in group II. BCDVA at 1 year was 0.5 in group I and 0.4 in group II. Complications was postoperative CME seen in 2 in group I and 5 in group II, transient hypotony was seen 5 in group I and 11 in group II, spike in IOP was seen 4 in group I and 0 in group II, severe iridocyclitis in 5 in group I and 1 in group II, retinal detachment in 2 in group I and 1 in group II, endophthalmitis in 1 in group I and 0 in group II and re-surgery in 1 in group I and 3 in group II. **Conclusion:** Retropupillary iris claw IOL fixation technique is equivalent to SFIOL for visual rehabilitation of post cataract aphakia.

Keywords: Aphakia, Cataract, Retropupillary iris claw, scleral fixated intraocular lenses.

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Introduction

The term aphakia means absence of lens of eye. It is corrected surgically. Various surgical procedures have evolved over the time for the management of aphakia.^[1] Open-loop anterior chamber intraocular lenses (IOLs) and scleral-fixated intraocular lenses (SFIOLs) are widely employed procedures.^[2] Former has few limitations such as corneal endothelial decompensation, occurrence of secondary glaucoma and cystoid macular edema (CME). On the other hand, SFIOLs show superior results. Non-absorbable sutures are used for suturing the SFIOL.^[3]

Suture-less scleral fixation is new technique in treatment of aphakia. This utilizes 3-piece IOL for securing the exteriorized haptics under scleral flaps.^[4] Numerous data is available describing fixing of IOL to the iris. Anterior chamber IOLs

fixing the haptics to the anterior surface of the iris such as the Binkhorst lens are of great importance.^[5] Non-absorbable sutures are also used for suturing the IOL haptics to the iris. Retropupillary fixation of the iris claw lenses show comparatively excellent results and ease of surgery.^[6] There is less chances of corneal endothelial damage with this method but complications such as pupillary distortions, glaucoma etc cannot be completely overcome. This method proved to be better in cases of aphakia. In a study by Rashad et al, it was suggested that this surgical method for iris claw IOL fixation was safest, easiest and shorter than sutured SFIOL.^[7,8] Considering this, we attempted present study to compare retropupillary iris claw and scleral-fixated intraocular lens in the management of post-cataract aphakia.

Subjects and Methods

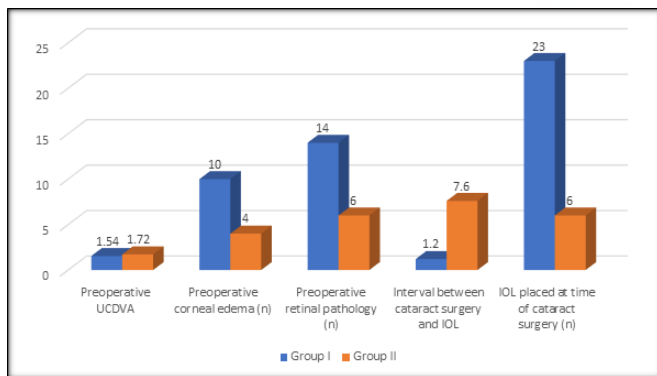
A total of eighty- four patients of aphakia of either gender were recruited in this prospective, observational study. Ethical clearance was obtained from institutional ethical and review board. All gave their written consent for the study. We excluded those patients who had pseudo-exfoliation, corneal opacity in visual axis, pre-existing glaucoma etc.

Demographic data such as patients' name, gender and age etc. were noted in case history sheet. All patients were classified into 2 groups of 42 each. Group I patients underwent retropupillary iris claw fixation and group II patients underwent scleral-fixated intraocular lens surgery. Parameters such as preoperative uncorrected distance visual acuity (UCDVA), best-corrected distance visual acuity (BCDVA), preoperative corneal edema, preoperative retinal pathology, interval between cataract surgery and IOL etc. were recorded in both groups. Intraoperative and postoperative complications were recorded. Statistical analysis was performed using Mann Whitney U tests. The level of significance was set below 0.05.

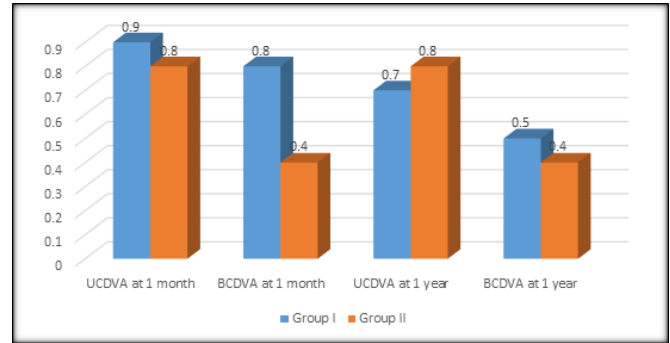
Results

There were 22 males and 20 females in group I and 18 males and 24 females in group II [Table 1].

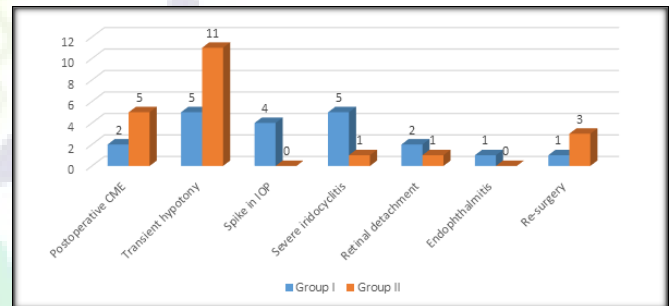
The mean preoperative UCDVA was 1.54 in group I and 1.72 in group II. Preoperative corneal edema was seen in 10 in group I and 4 in group II. Preoperative retinal pathology was seen in 14 in group I and 6 in group II. Interval between cataract surgery and IOL was 1.2 months in group I and 7.6 months in group II. IOL placed at time of cataract surgery was seen in 23 in group I and 6 in group II. The difference was significant ($P < 0.05$) [Table 2, Figure 1].



UCDVA at 1 month in group I was 0.9 and in group II was 0.8. BCDVA at 1 month was 0.8 in group I and 0.4 in group II. UCDVA at 1 year was 0.7 in group I and 0.8 in group II. BCDVA at 1 year was 0.5 in group I and 0.4 in group II. The difference was non- significant ($P < 0.05$) [Table 3, Figure 2].



Complications was postoperative CME seen in 2 in group I and 5 in group II, transient hypotony was seen 5 in group I and 11 in group II, spike in IOP was seen 4 in group I and 0 in group II, severe iridocyclitis in 5 in group I and 1 in group II, retinal detachment in 2 in group I and 1 in group II, endophthalmitis in 1 in group I and 0 in group II and re-surgery in 1 in group I and 3 in group II. The difference was non- significant ($P < 0.05$) [Table 4, Figure 3].



Discussion

The management of cases of aphakia in the absence of capsular support for ciliary sulcus posterior chamber intraocular lens (IOL) implantation demand special methods.^[9,10] Angle-supported anterior chamber IOLs, scleral fixation posterior chamber intraocular lenses and retropupillary iris-claw IOLs are among techniques commonly reveal better results in management of aphakia.^[11] It is evident that angle-supported lenses yield few complications such as corneal edema, secondary glaucoma, and cystoid macular edema (CME).^[12] Similarly, SF-PCIOL implantation is difficult procedure as the operative time is lengthy and IOL tilt, decentration, displacement into the vitreous cavity, choroidal hemorrhage, retinal detachment, CME, and conjunctival erosion are few drawbacks of the method. Iris-claw IOLs results in superior visual outcomes.^[13,14] We attempted present study to compare retropupillary iris claw and scleral-fixated intraocular lens in the management of post-cataract aphakia.

Table 1: Patients distribution

| Groups | Group I | Group II |
|--------|-----------------------------------|--|
| Method | Retropupillary iris claw fixation | Scleral-fixated intraocular lens surgery |
| M:F | 22:20 | 18:24 |

Table 2: Assessment of pre-operative parameters

| Parameters | Group I | Group II | P value |
|--|---------|----------|---------|
| Preoperative UCDVA (mean) | 1.54 | 1.72 | >0.05 |
| Preoperative corneal edema (n) | 10 | 4 | <0.05 |
| Preoperative retinal pathology (n) | 14 | 6 | <0.05 |
| Interval between cataract surgery and IOL | 1.2 | 7.6 | <0.05 |
| IOL placed at time of cataract surgery (n) | 23 | 6 | <0.05 |

Table 3: Assessment of post-operative parameters

| Parameters | Group I | Group II | P value |
|------------------|---------|----------|---------|
| UCDVA at 1 month | 0.9 | 0.8 | >0.05 |
| BCDVA at 1 month | 0.8 | 0.4 | <0.05 |
| UCDVA at 1 year | 0.7 | 0.8 | >0.05 |
| BCDVA at 1 year | 0.5 | 0.4 | >0.05 |

Table 4: Comparison of complications

| Complications | Group I | Group II | P value |
|----------------------|---------|----------|---------|
| Postoperative CME | 2 | 5 | <0.05 |
| Transient hypotony | 5 | 11 | <0.05 |
| Spike in IOP | 4 | 0 | <0.05 |
| Severe iridocyclitis | 5 | 1 | <0.05 |
| Retinal detachment | 2 | 1 | >0.05 |
| Endophthalmitis | 1 | 0 | >0.05 |
| Re-surgery | 1 | 3 | <0.05 |

Our results showed that there were 22 males and 20 females in group I and 18 males and 24 females in group II. Madhivanan et al,^[15] conducted a study in which 46% (48) eyes were fixated with retropupillary iris claw IOL method and in 56 eyes SFIOL was the treatment performed. Iris claw was done in 56% at the time of primary cataract surgery as compare to 14% in which SFIOL was done. Results showed that BCDVA was relatively better than SFIOL group at 1 month follow-up but this difference did not persist at 1 year (0.4 ± 0.4 logMAR in iris claw vs. 0.3 ± 0.2 logMAR in SFIOL, $P = 0.56$). Eyes with iris claw IOL experienced significantly more postoperative iritis seen in 17%, intraocular pressure spikes in 10% and ovalization of the pupil in 16%.

The mean preoperative UCDVA was 1.54 in group I and 1.72 in group II. Preoperative corneal edema was seen in 10 in group I and 4 in group II. Preoperative retinal pathology was

seen in 14 in group I and 6 in group II. Interval between cataract surgery and IOL was 1.2 months in group I and 7.6 months in group II. IOL placed at time of cataract surgery was seen in 23 in group I and 6 in group II. Rashad et al,^[6] compared iris claw method and scleral fixation method in 42 aphakia eyes. There was 24.77 min mean surgical time in the iris-claw group and 67.09 min in the scleral fixation group. The CDVA ranged from 0.06- 0.5 in the iris-claw group and 0.05- 0.15 in the scleral fixation group after 1 month. It was 0.25- 1.0 in the iris-claw group, and 0.15- 0.6 in the scleral fixation group at 3 months postoperatively. There was 15.62 ± 2.59 mm Hg and 19.62 mmHg of mean intraocular pressure in the iris-claw group and scleral fixation group respectively on the first postoperative day.

We observed that UCDVA at 1 month in group I was 0.9 and in group II was 0.8. BCDVA at 1 month was 0.8 in group I and

0.4 in group II. UCDVA at 1 year was 0.7 in group I and 0.8 in group II. BCDVA at 1 year was 0.5 in group I and 0.4 in group II. Our study revealed that complications was postoperative CME seen in 2 in group I and 5 in group II, transient hypotony was seen 5 in group I and 11 in group II, spike in IOP was seen 4 in group I and 0 in group II, severe iridocyclitis in 5 in group I and 1 in group II, retinal detachment in 2 in group I and 1 in group II, endophthalmitis in 1 in group I and 0 in group II and re-surgery in 1 in group I and 3 in group II. Kelkar et al,^[16] showed that using triamcinolone-assisted vitrectomy in the iris claw group reduced the incidence of CME.

Conclusion

Retropupillary iris claw IOL fixation technique is equivalent to SFIOL for visual rehabilitation of post-cataract aphakia.

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