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Surgical And Visual Outcomes in Eyes with Cataract and Iris, Choroidal Coloboma

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Abstract

Objective: *To evaluate the intra-operative difficulties and postoperative visual outcome following cataract surgery and intraocular lens (IOL) implantation in eyes with cataract and a coexisting iris, choroidal coloboma.*

Materials and methods: *The study included 40 eyes of 40 patients with cataract and iris, choroidal coloboma and corrected distance visual acuity (CDVA) of less than 6/60 who had undergone cataract sugery including phacoemulisification or small incision cataract surgery (SICS) with IOL implantation by different surgeon. Intra-operative and post operative course and CDVA were evaluated.*

Results: *Twenty six (26) eyes(65%) were operated small incision cataract surgery(SICS), 9 eyes (22.5%) underwent phacoemulsification, 1 eye operated conventional extra capsular cataract extraction (ECCE) and 4 eyes (10%) underwent intra capsular cataract extraction (ICCE). A rigid posterior chamber (PC) IOL was implanted in 36 eyes, rigid anterior chamber (AC) IOL in 2 eyes and 2 eyes were left aphakic. Among 40 patients the pre-operative CDVA of less than 6/60 in 36 eyes (90%) were post-operatively reduced to 20 eyes (50%). Rest of the patients improved visual acuity to borderline (6/24-6/60) in 13 eyes (32.5%) and good (6/6-6/18) in 7 eyes (17.5%).*

Conclusions: *Cataract surgery and IOL implantation provides ambulatory and useful vision in eyes with coexisting cataract and iris, choroidal coloboma.*

Keys words: *iris coloboma, choroidal coloboma, cataract, phacoemulsification*

Introduction

The term coloboma refers to a notch, hole or fissure in any ocular structure from a congenital malformation or an acquired process. Failure of the embryonic optic fissure to close results in the typical form of congenital coloboma. Closure defects can involve the iris, ciliary body, lens, retina, choroid, optic nerve and lid. Ocular coloboma occurs in 1-2 per 10,000 live births. It may be sporadic or inherited and is associated with systemic disorders in some cases.

The lens is secondarily involved where faulty closure of the optic fissure is. There is no actual loss of lens tissue, the equator of the lens is flattened because the zonules that would normally stretch it are absent. The missing zonules may complicate cataract removal and lessen the stability of the IOL. Glaucoma may sometimes be associated and here as in other cases, a normal trabeculectomy with phacoemulsification or SICS with IOL implantation is carried out. Cataract and retinal detachment (23-42%) are the most common complication with retinochoroidal coloboma.

The anterior segment surgeon needs to be familiar with the various presentations, respective management protocols and the preoperative and technical intraoperative challenges in each situation.

Material and Methods

A retrospective chart review was performed to evaluate the data of 40 consecutive eyes of 40 patients with cataract and iris, choroidal coloboma and who were subjected to cataract surgery including phacoemulsification with rigid IOL implantation by different anterior segment surgeon.

A complete medical and ocular history was taken in all patients. The pre-operative CDVA was taken and a through ocular examination under a slit lamp was performed to obtain the details of anterior chamber and lens. Types of cataract recorded. Intraocular pressure was recorded by pulsair (intellipuff) and applanation tonometer whenever required. Fundus evaluation performed with an indirect slit lamp biomicroscopy using 90 D convex lense and indirect ophthalmoscopy using 20 D condensing lense. B-Scan ultrasonography for posterior segment evaluation were done in each case.

All the surgeries were performed under peribulbar lidocaine (Xylocaine 2%,) anaesthesia. Pre-operative preparation include use of tropicamide 1% three to four times for maximum dilatation and instillation of povidine-iodine (betadine) 5% eye drops and clean the skin around eye with betadine. Frown incision (about 7-8 mm) is made behind 2mm from the limbus by blade knife and tunnel is constructed in half thickness of sclera and extend upto 1-2 mm of clear cornea by crescent knife and entry to anterior chamber is done by keratome. Anterior linear capsulotomy is made in upper one third by keratome and multiple sphincterotomics were perfomed whenever indicated. After through hydrodissection nucleus is mobilize, the viscoelastic is injected in front and behind nucleus. Fishhook niddle is gently inserted behind nucleus and extracted. Remaining cortex is removed by using simcoe cannula by irrigation and aspiration process. Viscoelastic is injected into capsular bag and A/C, gently rigid Polymethylmethacrylate (PMMA) IOL (Biovision , India or Fred Hollows, Nepal) is placed into bag with fine forceps, second haptic is hold gently than rotate and placed at 3 o'clock in the bag so that IOL position will be horizontally at 3 -9 o'clock, which may help to reduced risk of drop IOL.

Residual viscoelastic is removed and formed A/C with hydro and injected intracameral cefuroxime o.1ml at the end of surgery. In phacoemulsification technique frequent viscoelastic was injected in A/C. capsulorrhexis was perfomed with bent 26 G neddle or utrata forceps. After good hydrodissection and hydrodelineation a primary chop nucleotomy was performed followed by standard phacoemulsification. Rest of the process are similar as SICS.

Post-operatively, patients received ciprofloxacin 0.3% and dexamethasone 0.1% combination eye drops (Microflox-Dx, Microvision) 1-2 hourly, cycloplegics three times were given to all and timolol maleate (Iotim, FDC) 0.5% eye drops were added whenever required.

Results

The mean age of the patients with cataract and iris, choroid coloboma was 42 years (range15- 75 years, males-19, females-21). Most patients 30 had iris, choroid coloboma followed by choroidal coloboma, iris, lens, choroid coloboma and iris coloboma. Glaucoma was associated in 2 patients.

Types of Coloboma	Frequency
Iris, choroid	30
Choroid	6
Iris, lens, choroid	3
Iris	1

Table 1 Types of coloboma

Twenty six eyes (65%) were operated SICS, 9 eyes (22.5%) underwent phacoemulsification, 1 eye operated ECCE and 4 eyes (10%) underwent ICCE. A rigid PCIOL was implanted in 36 eyes, rigid ACIOL in 2 eyes and 2 eyes were left aphakic. Among 40 patients the pre-operative CDVA of less than 6/60 in 36 eyes (90%) were post-operatively reduced to 20 eyes (50%). Rest of the patients improved visual acuity to borderline (6/24-6/60) in 13 eyes (32.5%) and good (6/6-6/18) in 7 eyes (17.5%).

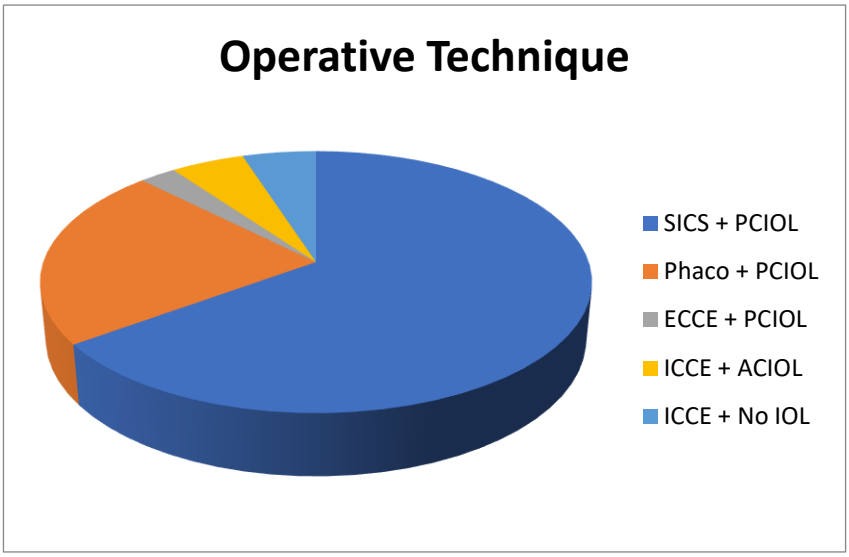

Figure 1: Pie chart showing different surgical technique

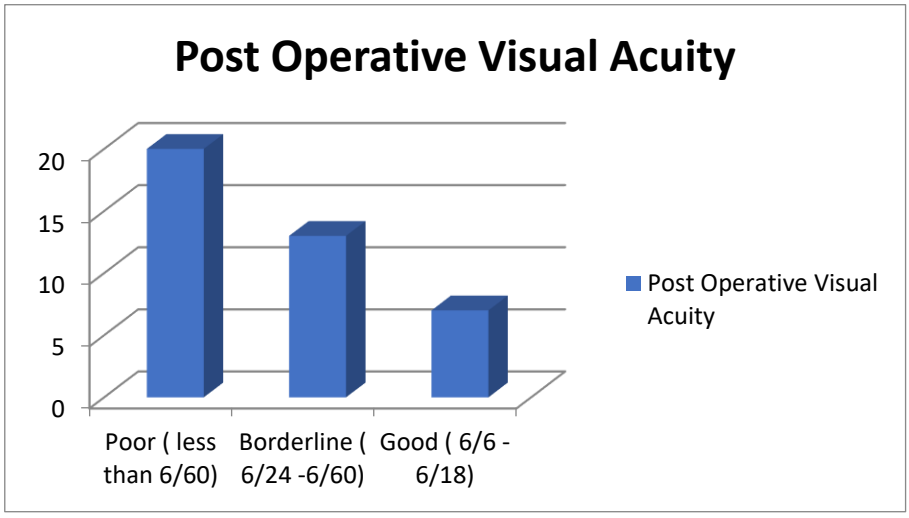

Figure 2: Column chart showing postoperative visual acuity

Posterior capsule rent (PCR) occurred in 2 patients (5%) and subluxation of bag in 1 eye. Anterior vitrectomy were performed in 7 cases (17.5%). In post-operative complication; corneal oedema occurred in 4 patients (10%) followed by iris trauma or sectoral peripheral iridotomy done in 3 eyes, hyphema occurred in 1 eye and uveitis in 1 eye. In one case IOL was dropped in vitreous in 1st post-operative day and later done pars plana vitrectomy with ACIOL and vision was improved to 6/60. No infection or retinal detachment was observed in any of the eye.

	Vitrectomy	PCR	Subluxated bag
Intra Operative Complication	7	2	1

Table 2 Intra Operative Complications

	Corneal edema	Iris trauma or sectoral iridotomy	Hyphema	Uveitis	IOL dropped
Post Operative Complication	4	3	1	1	1

Table 3 Post Operative Complications

Discussion

While modern cataract surgery is safe, effective and provides excellent visual outcome, this outcome may not necessarily be achieved in eyes with associated ocular problems or following complicated cataract surgery. In these cases, there is an increased risk of surgical complications and reduced visual outcome.

In modern era, phacoemulsification is the preferred technique of cataract surgery as it allows for early visual rehabilitation. However, successful phacoemulsification may be difficult in eyes with coloboma of iris, choroid because these individuals frequently have small anterior segment, zonular absence or weakness in the region of the coloboma. So we should use frequent viscoelastic for protection of the corneal endothelium, to prevent intraoperative malignant glaucoma or anterior vitreous migration through the zonular coloboma. Pre-operative tablet diamox 250mg three times a day can reduced the risk of vitreous gel's prolapsing around the inferior zonular defect. Pars plana vitreous tap may be required to reduced intra-operative positive pressure and to deepen the anterior chamber for enhanced safety during surgery especially during phacoemulsification.

Post-operative IOL edge glare syndrome, monocular diplopia can be managed by pupilloplasty technique. Iris defect can be simply opposed and sutured and relaxing incisions must therefore be made in the mid-periphery so that, when the margins of the defect are opposed the pupil will be centered properly. Most likely, this patient's pre-cataract visual acuity could be restored by cataract surgery and combining the procedure with pupilloplasty could simultaneously address any photophobia and cosmetic concerns.

Conclusion

Cataract surgery in cases of iris, choroidal coloboma with cataract is safe and feasible and provides useful vision.

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