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Original Research Article

INTRAOPERATIVE, POST OPERATIVE COMPLICATIONS AND VISUAL OUTCOME IN CASES OF COMPLICATED CATARACT DUE TO UVEITIS

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ABSTRACT

Background: Surgery for the cataract associated with uveitis is not easy. There can be a battery of complications which are difficult to predict. These complications can occur during surgery or after the surgery. Improved understanding can help overcome these complications. The objective is to study intraoperative, postoperative complications and visual outcome in complicated cataract due to uveitis.

Materials and Methods: Hospital-based, prospective study was carried out among patients diagnosed as uveitis with complicated cataract. They were followed up to 6 months. A detailed history and a complete ophthalmic examination were done. All underwent cataract Surgery. The intra operative and post-operative complications were noted down.

Results: Incidence of cataract due to uveitis having vision < 6/18 was 2.52%. Majority were 41-60 years (46.2%). It was more in males (66.5%). Most common type of cataract was Posterior subcapsular with cortical involvement in 48.7%. Majority (84.2%) underwent Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens Implantation. Most common intraoperative complication was Miosis in 49.4%. Postoperative complications were Anterior chamber reaction (43%), Hyphema (12.7%), Striate keratopathy (22.2%), Secondary glaucoma (7%) which became zero at 4-6 weeks after surgery. Majority (52.5%) had visual acuity 1/60 – 6/60 before surgery. Proportion of patients with visual acuity 6/6 – 6/12 was 13.9% at day one after surgery which increased to 39.9% at six months.

Conclusion: Age 20-40 years and males were commonly affected. Most common type of cataract was Posterior subcapsular with cortical involvement. Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens was most commonly performed surgery. Postoperative complications were common as it is a complicated cataract but with effective management of the cases, the incidence reduced drastically. Visual acuity also improved over six months after surgery.

Keywords: Uveitis, cataract, surgery, complications.

INTRODUCTION

Uveal tract consists of iris, ciliary body and choroid. Inflammation of any one of these layers or all is known as uveitis. The patients with this condition can develop cataract. Such type of cataract is known as complicated cataract. Because of inflammation, there is problem with the nutrition of the lens which can lead to complicated cataract. This can also be due to degeneration also. Opacification is seen because of anterior or posterior segment inflammation. This opacification is usually present or affects the posterior part of lens cortex. This can be seen in the axial region. It is progressive in nature. It can lead to matured cataract in the posterior cortical region. Or it can take a form of posterior subcapsular cataract. On examination of the lens with the help of slit lamp, one can see the irregular borders. They extend towards

the equator in a diffuse manner. Sometimes extend towards the nucleus in an axial manner. The lens appears as a bread crumbs. It can be seen to have rainbow pattern of color. The degenerative changes are more. There is liquefaction, deposition of the cholesterol and at the same time there can be calcification. The surgery for cataract in these cases is not easy. There are challenges like fibrosis of the capsule, miosis, posterior capsular rent etc. Within first week after the surgery, the patient may develop ocular hypotony. Some may develop glaucoma. There can be Hyphema and some other complications. In such cases, the cataract may become complicated and poses a great challenge to the operating surgeon. The incidence of the cataract in pars planitis is 57%. In Fuchs heterochromic iridocyclitis there is 78% chance of developing cataract. Surgery for the cataract associated with uveitis is not easy. There can a battery of complications which are difficult to predict. These complications can occur during surgery or after the surgery. Improved understanding can help overcome these complications.[1-3]

A variety of factors should take into consideration before surgery. These factors may include the condition of the patient, appropriate technique for the operation. There is need to control the inflammation before surgery for appropriate outcome. Use of suitable lens material is of immense importance. Skills of surgeon is also counted. All these factors contribute to the successful outcome in cataract surgery complicated by uveitis.[4,5]

With improved understanding, the ocular morbidity is decreasing day by day in the field of ophthalmology. Ocular morbidity in patients undergoing complicated cataract surgery is now limited to those cases that have pre-existing changes in the retina or optic nerve such as irreversible macular scarring, retinitis or optic nerve atrophy.[6]

Preoperative factors include proper patient selection and counselling and preoperative control of inflammation. Meticulous and careful cataract surgery in uveitis cataract is essential in optimizing the postoperative outcome. Management of postoperative complications, especially inflammation and glaucoma, both earlier and later, has also contributed to successful visual outcome.[7]

With this background, present study was carried out to study intraoperative, postoperative complications and visual outcome in complicated cataract due to uveitis.

MATERIALS AND METHODS

Present study was a single centre, hospital based, prospective study carried out at regional institute of ophthalmology, S.C.B. Medical College and hospital, Cuttack, Odisha during period of October 2014 – September 2016.

All the patients attending Ophthalmology OPD in S.C.B. Medical College and hospital who were diagnosed as uveitis with complicated cataract were evaluated. Out of these patients who had given consent for a follow up to 6 months were taken for this study. Cataract Surgery of 171 patients with post uveitis cataracts were noted, but out of 171 patients, 13 patients did not turn up for follow-up. A total of 158 patients were taken up for the study.

A detailed history and a complete ophthalmic examination were done. The intra operative and post-operative complications were noted down.

Inclusion Criteria

- Patients with complicated cataract due to uveitis.
- A quite eye (without inflammation/cells in aqueous humour) for at least 3 months before surgery with treatment.

Exclusion Criteria

- Complicated cataract due to causes other than uveitis.
- Patients who had lost follow-up or failed to come for follow-up.
- Patients who had not given consent.

Detailed History of all the patients was taken and pre-operative evaluation and consent had been taken. A complete ophthalmic examination was done for all patients, which included

1. Visual acuity for distance & near using Snellen's Chart.
2. Detailed Slit-lamp bio microscopy.
3. IOP measurement by Application tonometry.
4. Gonioscopy
5. Lacrimal syringing.
6. Fundus examination by Direct and indirect ophthalmoscopy
7. Refraction and correction.
8. Keratometry and A-scan biometry.
9. B-Scan.
10. OCT when required

After the detailed examination, investigations were done for the uveitis and for pre-operative purpose. Routine blood investigations – Complete Hemogram, ESR, Blood sugar (Fasting & Postprandial) Mantoux, chest x-ray. To rule out any associated systemic disorders, opinion from other department's like rheumatology, dental and dermatology were obtained. After discussing and thoroughly counselling the patients regarding the timing of surgery, visual prognosis and risks involved in the surgery, a written consent was obtained from each patient.

Criteria for doing cataract surgery was taken when the visual acuity is less than 6/18 even after treatment and best correction.

Pre-operative medications: All patients were started on administration of topical antibiotic drops hourly 1 day before the surgery. Mydriatic homatropine 2% and NSAID Flubiprofen were given for pupillary dilatation 1 day before the surgery.

Surgery: Peribulbar block was given to adults, and general anesthesia for children. Out of 158 patients, 133 patients underwent Small Incision Cataract Surgery (SICS) with Posterior Chamber Intraocular

Lens (PCIOL) implantation, and for 25 patients Phacoemulsification with PCIOL implantation was done. First a conjunctival flap was made superiorly, tenons capsule was separated completely, bipolar cautery was done to the bleeding vessels. Anterior chamber was entered either through the limbal wound or the scleral tunnel. Visco elastics were used to maintain the anterior chamber. In cases of presence of dense posterior synechiae causing poor pupillary dilatation, was managed by synechiolysis and viscodilatation. It was done by simply injecting viscoelastic against the adherent iris, allowing the viscoelastic to separate the iris away from the anterior capsule and Synechiae can be gently lysed with a spatula placed under the iris through the pupil

Capsulotomy was done by continuous curvilinear capsulorhexis and in difficult cases can opener or envelope technique was done. Nucleus delivery was done and a thorough cortical wash was done. PCIOL was implanted in the bag. Injection of 0.5 ml subconjunctival dexamethasone with antibiotic was given to all patients.

Post-operative treatment: All patients were put on topical antibiotic steroids prednisolone acetate 1%, 6 times a day and cycloplegics atropine sulphate 1% twice daily for the 1st week along with the topical anti-inflammatory medications.

Follow-up: Slit lamp examination was done for all patients, for first 3 post operative days. Patients were asked to review on 1st day, 3rd day, at 1 week, at 4 weeks, at 6weeks, at 3rd month and 6th month. During the follow up, thorough examination was done to look for improvement in vision, any anterior chamber reaction, any synechiae, for IOP changes, fundus picture.

Statistical analysis: The data was entered in the Microsoft Excel worksheet and expressed in terms of proportions and means.

RESULTS

During the study period, a total of 6782 cases of cataract were admitted in the hospital. In that 171 (2.52%) were complicated cataract due to uveitis having vision <6/18. Thus, the incidence of cataract due to uveitis having vision < 6/18 in the present hospital during the given study period was 2.52%. [Table 1]

Table 1: Incidence of complicated cataract due to uveitis.

	Number	%
Total no of cataract cases admitted	6782	100
Complicated cataract due to uveitis having vision < 6/18	171	2.52

Table 2: Age incidence age group incidence.

Age (years)	Incidence	%
1-20	2	1.3
21-40	41	25.9
41-60	73	46.2
61-80	33	20.9
> 80	9	5.7
Total	158	100

Out of 171 cases 13 lost to follow up. In remaining 158, majority belonged to the age group of 41-60 years (46.2%) followed by 21-40 years (25.9%). Only two cases were seen in the age group of 1-20 years. [Table 2]

Table 3: Sex Predilection

Sex	Incidence	%
Male	105	66.5
Female	53	33.5

The incidence of cataract due to uveitis having vision < 6/18 was more in males (66.5%) compared to females (33.5%). It was almost double. [Table 3]

Table 4: Type Of Cataract

Type of cataract	Incidence	%
Posterior subcapsular cataract	58	36.7
Posterior subcapsular with cortical involvement	77	48.7
Mature cataract	23	14.6

The most common type of cataract seen was Posterior subcapsular with cortical involvement in 48.7% of the cases followed by Posterior subcapsular cataract in 36.7% of the cases. [Table 4]

Table 5: type of cataract surgery

Type of surgery	Number	%
Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens	133	84.2
Phacoemulsification With Posterior Chamber Intraocular Lens	25	15.8

84.2% of the cases underwent Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens and only 15.8% of the cases underwent Phacoemulsification with Posterior Chamber Intraocular Lens. [Table 5]

Table 6: intra operative complications

Complications	Incidence	%
Conjunctival bleeding	34	21.5
Miosis	78	49.4
Hyphema	21	13.3
Iris Pigment dispersion	26	16.5
Iridodialysis	10	6.3
Posterior Capsule rent	8	5.1
Vitreous Loss	5	3.1

Most common intraoperative complication was Miosis in 49.4% of the cases followed by Conjunctival bleeding in 21.5% of the cases. [Table 6]

Table 7: post operative complications

Postoperative complications	Day 1	Day 3	One week	Four weeks	Six weeks	3-months	6-months
Anterior chamber reaction	68 (43%)	57 (36.1%)	43 (27.2%)	7 (4.4%)	00	00	00
Striate keratopathy	35 (22.2%)	17 (10.7%)	9 (5.6%)	00	00	00	00
Hyphema	20 (12.7%)	13 (8.2%)	7 (4.4%)	00	00	00	00
Pigment over Intra-ocular lens	50 (31.6%)	39 (24.6%)	31 (19.6%)	31 (19.6%)	31 (19.6%)	31 (19.6%)	31 (19.6%)
Secondary glaucoma	11 (7%)	6 (3.7%)	3 (1.8%)	00	00		
Posterior capsule opacification	00	00	00	00	14 (8.8%)	53 (33.5%)	42 (26.7%)
Cystoid macular edema	00	00	00	00	00	13 (8.2%)	9 (5.6%)
Pupillary capture	00	00	00	00	00	11 (7%)	11 (7%)
Pupillary membrane	00	00	00	00	00	8 (5.1%)	8 (5.1%)

Anterior chamber reaction was present in 43%, Hyphema in 12.7%, Striate keratopathy in 22.2%, secondary glaucoma in 7% of the cases postoperatively which became zero at 4-6 weeks after surgery. Pigment over Intra-ocular lens reduced from 31.6% at day one to 19.6% at six months after surgery. Posterior capsule opacification was not there but appeared at six weeks (8.8%) which increased to 26.7% at six months. Cystoid macular edema, pupillary capture and pupillary membrane also appeared at 3 months. [Table 7]

Table 8: Visual acuity pre-operative

Visual acuity	Number	%
6/36 – 6/24	37	23.4
1/60 – 6/60	83	52.5
Counting fingers close to face	12	7.6
Hand motion	20	12.7
Perception of lights	6	3.8

Majority i.e. 52.5% had visual acuity of 1/60 – 6/60 before surgery followed by a visual acuity of 6/36 – 6/24 in 23.4% of the cases before surgery. [Table 8]

Table 9: visual acuity postoperatively

Visual acuity	Day 1	Day 3	One week	Four weeks	Six weeks	3-months	6-months
6/6 – 6/12	22 (13.9%)	32 (20.3%)	51 (32.3%)	80 (50.6%)	89 (56.3%)	50 (31.6%)	63 (39.9%)
6/18 – 6/24	43 (27.2%)	46 (29.1%)	66 (41.8%)	61 (38.6%)	57 (36.1%)	45 (28.5%)	59 (37.3%)
6/36 – 6/60	69 (43.7%)	64 (40.8%)	27 (17.1%)	12 (7.6%)	9 (5.7%)	51 (32.3%)	17 (10.8%)
2/60 – 5/60	20 (12.7%)	15 (9.5%)	13 (8.2%)	5 (3.2%)	3 (1.9%)	12 (7.6%)	14 (8.9%)
< 2/60	4 (2.5%)	1 (0.6%)	1 (0.6%)	00	00	00	5 (3.2%)

The proportion of patients with visual acuity of 6/6 – 6/12 was 13.9% at day one after surgery which increased to 39.9% at six months. Similarly, proportion of those with visual acuity of 6/18 – 6/24 also increased from 27.2% to 37.3%. Proportion of those with visual acuity of 6/36 – 6/60 decreased from 43.7% at day one after surgery to 10.8% at six months. Similarly, those with 2/60 – 5/60 decreased from 12.7% at day one to 8.9% at six months. There were only four cases with visual acuity of <2/60 at day one which became zero at four weeks but at six months five patients had this problem. [Table 9]

DISCUSSION

In the present study, during the study period, a total of 6782 cases of cataract were admitted in the hospital. In that 171 (2.52%) were complicated cataract due to uveitis having vision <6/18. Thus, the incidence of cataract due to uveitis having vision <

6/18 in the present hospital during the given study period was 2.52%. Out of 171 cases 13 lost to follow up. In remaining 158, majority belonged to the age group of 41-60 years (46.2%) followed by 21-40 years (25.9%). Only two cases were seen in the age group of 1-20 years. The incidence of cataract due to uveitis having vision < 6/18 was more in males (66.5%) compared to females (33.5%). It was almost double. The most common type of cataract seen was Posterior subcapsular with cortical involvement in 48.7% of the cases followed by Posterior subcapsular cataract in 36.7% of the cases. 84.2% of the cases underwent Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens and only 15.8% of the cases underwent Phacoemulsification with Posterior Chamber Intraocular Lens. Most common intraoperative complication was Miosis in 49.4% of the cases followed by Conjunctival bleeding in 21.5% of the cases. Anterior chamber reaction was present in 43%, Hyphema in 12.7%, Striate keratopathy in 22.2%, secondary glaucoma in 7% of the cases postoperatively which became zero at 4-6 weeks after surgery. Pigment over Intra-ocular lens reduced from 31.6% at day one to 19.6% at six months after surgery. Posterior capsule opacification was not there but appeared at six weeks (8.8%) which increased to 26.7% at six months. Cystoid macular edema, pupillary capture and pupillary membrane also appeared at 3 months. Majority i.e. 52.5% had visual acuity of 1/60 – 6/60 before surgery followed by a visual acuity of 6/36 – 6/24 in 23.4% of the cases before surgery. The proportion of patients with visual acuity of 6/6 – 6/12 was 13.9% at day one after surgery which increased to 39.9% at six months. Similarly, proportion of those with visual acuity of 6/18 – 6/24 also increased from 27.2% to 37.3%. Proportion of those with visual acuity of 6/36 – 6/60 decreased from 43.7% at day one after surgery to 10.8% at six months. Similarly, those with 2/60 – 5/60 decreased from 12.7% at day one to 8.9% at six months. There were only four cases with visual acuity of <2/60 at day one which became zero at four weeks but at six months five patients had this problem.

Sen HN et al,[8] assessed outcomes in terms of visual acuity in those who underwent cataract operation. The outcome was noted at 3, 6 and 9 months postoperatively. They used the logarithmic visual acuity charts. Mixed effects model was used to assess the change in the visual acuity over a period of time. At the end of three months after the surgery, there was an increase in the visual acuity by 23 letters and remained so till nine months. Those with severe grade of cataract also benefited by having 42 extra letters in their visual acuity. The significant factors associated with the worst outcome were being hypotony and prolonged duration of the uveitis. They concluded that the outcome was similar and there was no difference in two groups.

Bajraktari G et al,[9] carried out a retrospective study. The cases had cataract complicated due to uveitis. They studied 105 such cases. Idiopathic uveitis was the most common type. Visual acuity improved significantly after operation. Improvement was seen in the 90% of the cases. Over a period of time, there was a decrease in the intra ocular pressure. Thickness at the central macular region increased over a period of three months. 52.4% of the cases had early complications and 63.8% of the cases had late postoperative complications. Common postoperative complications were posterior capsular opacification in 53.3% of the cases followed by macular edema in 26.6% of the case. Being elderly, early age of at uveitis, type of uveitis was significantly associated with complications.

Estafanous MF et al,[10] reviewed 32 cases retrospectively. In them 39 eyes had uveitis. They underwent cataract surgery and were followed for three months. Idiopathic uveitis was most common. 95% of the cases showed good improvement in the visual acuity. Loss of vision was observed in one eye. One eye showed no improvement due to retinal pigment. 62% of the cases had posterior capsule opacification. The authors concluded that the surgery was safe. Compared to the previous literature, the incidence of postoperative complications was lower in their study.

Chiu H et al,[11] studied 98 cases of cataract complicated by uveitis. After the surgery, 84% of the cases had only grade 0-0.5 anterior uveitis. 77% of them remained so at one year follow up. There were no cases of active intermediate uveitis. The mean BCVA was 0.71 after the surgery which improved to 0.30 at the end of one year. 30% of the cases presented with complications before the surgery. After the surgery, posterior capsule opacification was observed in 18% of the cases. They concluded that the surgery was useful and there was improvement in the visual acuity.

Bhargava R et al,[12] evaluated 283 eyes in 264 cases retrospectively those cases who underwent cataract surgery. 11.2 min was the average time taken for the surgery. Anterior uveitis was seen in 60.8% of the cases. Posterior uveitis was seen in 27.5% of the cases. Visual acuity improved significantly after the surgery. Better visual acuity was seen among those who were given the steroids before the surgery compared to those who were not given the steroids before the surgery. The most common complication after the surgery was recurrent uveitis in 43.8% of the cases followed by posterior capsule opacification in 19.4% of the cases.

Shekhar M et al,[13] in their study included 191 eyes of the 191 cases. Mean age was 51.7 years. Most common surgery performed was phacoemulsification (134 eyes) and MSICS (74 eyes). The rate of complications was similar in two surgical techniques. But, the incidence of posterior capsule opacification was significantly more in those who underwent MSICS compared to those who underwent phacoemulsification. The authors concluded that phacoemulsification surgery can be preferred over the MSICS.

Riaz Y et al,[14] compared MSICS with that of phacoemulsification type of cataract surgery. In their

systematic review and meta-analysis, they included eight trials. Thus, a total of 1708 cases were included. Most of the studies had minimum 6-8 weeks of follow up. Out of eight studies, seven reported that best corrected visual acuity of more than or equal to 6/18 at 6-8 weeks after the surgery. They indicated that both the surgical techniques were equally good in terms of best corrected visual acuity. The analysis suggested that phacoemulsification was better than MSICS, the confidence intervals was wide giving rise to uncertainty. Both the surgeries had a very low rate of complications. One study spoke about the cost indicating that phacoemulsification was four times more costly than MSICS.

CONCLUSION

Age 20-40 years and males were commonly affected. Most common type of cataract was Posterior subcapsular with cortical involvement. Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens was most commonly performed surgery. Postoperative complications were common as it is a complicated cataract but with effective management of the cases, the incidence reduced drastically. Visual acuity also improved over six months after surgery.

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