Postoperative Complications of Manual Small Incision Cataract Surgery in Patients of Complicated Cataract with Uveitis in a Tertiary Health Care Centre in Western Odisha

Jagadish Prasad Rout[1], Pramod Kumar Sharma[2], Ruturaj Sahoo[3], Kulwant Lakra[4], Ravindra Kumar Chowdhury[5]

[1]Department of Ophthalmology, Veer Surendra Sai Institute of Medical Sciences and Research, Sambalpur, Odisha, India. [2]Department of Ophthalmology, Veer Surendra Sai Institute of Medical Sciences and Research, Sambalpur, Odisha, India. [3]Department of Ophthalmology, Veer Surendra Sai Institute of Medical Sciences and Research, Sambalpur, Odisha, India. [4]Department of Community Medicine, Veer Surendra Sai Institute of Medical Sciences and Research, Sambalpur, Odisha, India. [5]Department of Ophthalmology, Veer Surendra Sai Institute of Medical Sciences and Research, Sambalpur, Odisha, India.

ABSTRACT

BACKGROUND

Manual small incision cataract surgery gives good visual outcome in the management of complicated cataract. We wanted to study the common complications in patients with uveitic cataract who underwent manual small incision cataract surgery (MSICS) and assess the post-operative visual outcome after MSICS in these patients with uveitic cataract.

METHODS

In this retrospective descriptive study, which was carried out over a period of 1 year from June 2019 to June 2020 and included 45 eyes of 32 patients who underwent MSICS for complicated uveitic cataract. Postoperatively the patients were followed up and the following data were recorded - Best Corrected Visual Acuity (BCVA), intraocular pressure, ciliary congestion, KPs, iris nodules, synechiae, pigment dispersion, secondary glaucoma and macular oedema. Postoperatively, posterior segment was also evaluated with Optical Coherence Tomography (OCT) and ocular ultrasonography (B - scan). All the charts were reviewed by a single observer.

RESULTS

Among 32 patients, there were 20 males (62.5 %) and 12 females (37.5 %), most of whom were in the age group of 46 - 60 yrs. (37.7 %).The commonest intra - operative complication we encountered was posterior synechiae (51.1 %) and early post - operative complication was AC reaction (35.5 %) and late complication was posterior capsular opacity (33.3 %). The BCVA was within the range of 6 / 60 – 6 / 36 (40 %) during immediate postoperative period and 6 / 6 - 6 / 9 (35.5 %) in late postoperative period.

CONCLUSIONS

Manual small incision cataract surgery with posterior chamber intraocular lens implantation is an alternative and safe method in the management of complicated uveitic cataract and improves BCVA at 8 weeks. Preoperative inflammation should be controlled for at least 3 months. Persistent inflammation, macular oedema, posterior capsular opacification were the main causes affecting visual outcome, Small incision cataract surgery requires minimal instrumentation and the surgical time is very short and the method is performed in low budget setup where phaco emulsification facility is not available.

KEYWORDS

Complicated Cataract, BCVA, MSICS, Uveitis

Corresponding Author:
Dr. Pramod Kumar Sharma,
Veer Surendra Sai Institute of Medical Sciences and Research, Ayur Vihar, Burla, Sambalpur - 768017, Odisha, India.
E-mail: jagadishrt@gmail.com

DOI: 10.18410/jebmh/2020/433

How to Cite This Article:
Rout JP, Sharma PK, Sahoo R, et al. Postoperative complications of manual small incision cataract surgery in patients of complicated cataract with uveitis in a tertiary health care centre in western Odisha. J Evid Based Med Healthc 2020; 7(38), 2087-2091. DOI: 10.18410/jebmh/2020/433

Submission 28-06-2020,
Peer Review 27-07-2020,
Acceptance 16-08-2020,
Published 21-09-2020.

BACKGROUND

Uveitic cataract is a type of complicated cataract, usually caused by the disturbance of the lens nutrition because of inflammatory and degenerative disease of other parts of the eye. Generally in the ophthalmology outdoor we find uveitis cases very commonly and it presents in various forms. Uveitis is a chronic condition requiring long term treatment with corticosteroids or other immunosuppressive drugs.[1,2] The most common and frequent complication of blindness which is reversible in uveitis is cataract.

Incidence of Cataract seen up to 50 – 70 % of patients in uveitis, mostly due to long standing intra - ocular inflammation and prolonged use of steroid.[3,4] The early opacification of lens is a result of repeated episodic attacks of sustained intra - ocular inflammation leading to the release of free oxygen radicals, lysosomal enzymes, immune complex deposition on the lens capsule, hypoxia, and altered composition of the aqueous humour.[5] Cataract surgery is definitely beneficial in the eye in which the visual loss is mainly due to cataract. Incidence of uveitis was about 0.8% among all ophthalmic out patients.[6] Management of cataract in uveitic patients is very challenging and the outcome of surgery depends upon the various factors like duration of the disease, timing of diagnosis, proper peri - operative management and meticulous surgical approaches.

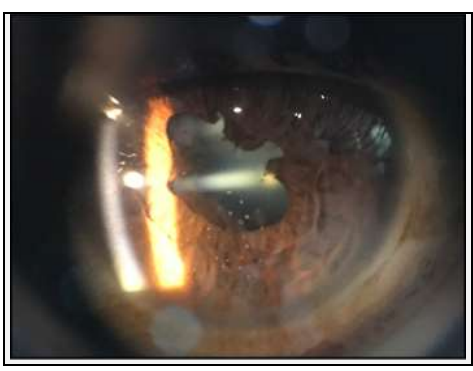

Figure 1. Uveitis with KPs and Festooned Pupil

It can present with intra-operative complications like dense posterior synechiae, conjunctival bleeding, iris bleeding, zonular dialysis, posterior capsular rent. Early post-operative complications such as AC reaction, hyphaema, corneal oedema. Late post - operative complications like PCO, pupillary capture of intraocular lens, pupillary membrane formation and cystoid macular oedema. Before the surgery, wherever possible the posterior segment examination should be done to exclude any macular and optic nerve pathologies which have an impact on the desired result.

The poor prognostic factors are chronic macular oedema, macular scar, macular hole and optic atrophy, severe cupping of disc due to secondary glaucoma. In conditions where the posterior segment evaluation cannot be done due to the advanced cataract and non - dilating pupil an ultrasound B - scan can be done to rule out any retinal detachment and an OCT should also be attempted to find any macular pathology such as epiretinal membrane, macular atrophy, oedema or macular hole.

One of the most important factor which determines the visual outcome of the surgery is to control the inflammation before planning for surgery. Generally at least 3 month of quiet eye is required before surgery. The eye is said to be quiet or there is no inflammation when there no presence of cells in the anterior chamber. The mainstay of preoperative anti-inflammatory therapy is topical corticosteroids, mainly prednisolone acetate or dexamethasone 0.1 %. Pre – operative counseling is the most important aspect and explaining the visual prognosis to the patient.

METHODS

This is a retrospective descriptive study done in the Department of Ophthalmology, VSSIMSAR, Burla of Western Odisha, Burla, over a period of one year from June 2019 to June 2020. All patients who attended the ophthalmology OPD and who were operated for uveitic cataract were included in the study. 45 eyes of 32 patients selected through consecutive sampling were studied.

Exclusion Criteria

1. The patients with posterior segment pathologies detected by B - scan and OCT during the preoperative evaluation.
2. Complicated cataract due to causes other than uveitis.

Study Tools

The cases which had come to the OPD were thoroughly enquired about the history, demographic profile, a detailed slit lamp examination was done to see for any signs of active inflammation like ciliary congestion, aqueous flare / cells, KPs. Fundus examination by direct / indirect ophthalmoscope, visual acuity was taken by Snellen's chart, IOP measurement by applanation tonometry, in cases with dense synechiae with cataract the posterior segment was examined by the B - scan and OCT scans. The routine blood reports like CBC, FBS / PPBS, ESR, HIV, HCV, HBsAg, HLAB27, ASO, RA Factor, C - reactive protein. Other investigations like Mantoux test, chest X - ray was done. One week before surgery all the patients had been given topical antibiotics with steroids and strong mydriatics like 1 % atropine eye ointment for full dilatation. All the patients had undergone manual SICS with PCIOL implantation.

Data Collection

The uveitic patients having vision loss mainly by cataract were selected for cataract surgery. The preoperative visual acuity is measured by Snellen's chart. Intraoperative complications were noted in the record. And any postoperative complications and BCVA was evaluated on Day 1 and on follow - up after 8 weeks were noted.

Statistical Analysis

The quantitative values of data analysis were expressed as mean, frequency, and percentage. Qualitative data analysis was performed by chi-square tests and Wilcoxon matched pairs signed ranked tests with the help of SPSS statistical software free version 12.0 by IBM. The p values <0.05 was considered as statistically significant.

Ethical Issues

- Prior to the study necessary permission was obtained from all the relevant participants.
- Only voluntary participants were included in the study.
- Confidentiality and anonymity was maintained throughout the study by coding data and was kept in security.
- There were no risks or adverse effects to the study population.
- No compensation (monetary or non - monetary) was given to participants.

Figure 2. Uveitic Cataract with Dense Posterior Synechiae and Festooned Pupil

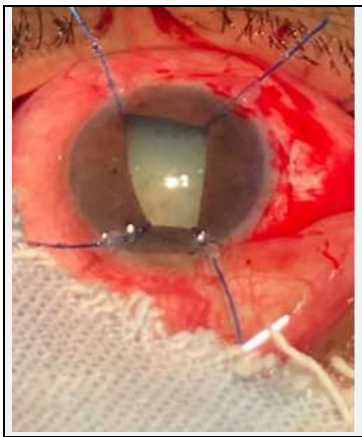

Figure 3. Dilating the Pupil by Iris Hooks

RESULTS

In our study we included 45 eyes of 32 patients. Within them, there were 20 males and 12 females. Post uveitis cataract was more in males (62.5 %).

The mean age of presentation was 52 years and maximum patients were in the age group of 46 – 60 years with about 17 cases (37.7 %). And 13 cases (28.8 %) belonged to the age group 31 - 45 years. More than 60 years there were 10 cases (20.4 %). The lowest number of cases we got was 5 cases (11.1 %) in the age group 16 – 30 years.

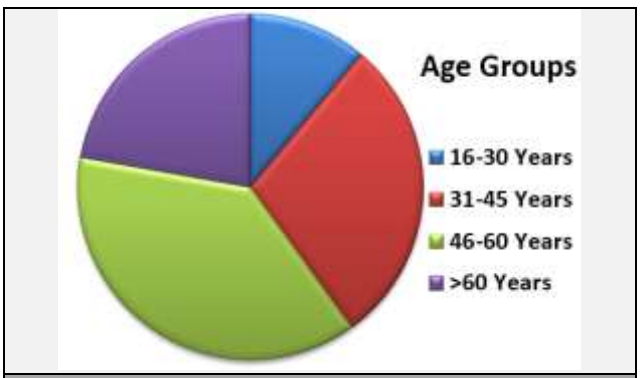

Chart 1. Incidence of Cases by Age Groups

Intra Operative Complications

All of the cases had undergone manual small incision cataract surgery following posterior chamber intraocular lens implantation. During the surgical procedure we observed these intra - ocular complication dense posterior synechiae which was the highest with 24 cases (53.3 %) it was managed by synechiolysis and viscodilation and we found excessive conjunctival bleeding in 9 cases (20.0 %) and the bleeding was controlled by bipolar cautery. Rest of the complications were iris bleeding 4 cases (8.8 %), zonular dialysis 5 cases (11.1 %) and posterior capsular rent in 3 cases (6.6 %).

Early Postoperative Complications

Earliest post-operative complications we found was AC reaction which presented as mild iritis to severe uveitis in 16 cases (35.5 %), other complications were corneal oedema 13 cases (28.8 %), macular oedema 10 cases (22.2 %), hyphaema in 6 cases (13.3 %).

Complication	Incidence	Percentage
Ac Reaction	16	35.5
Corneal Oedema	13	28.8
Cystoid Macular Oedema	10	22.2
Hyphaema	6	13.3

Table 1. Early Post-Operative Complications

Late Post-Operative Complications

The late post-operative complications after 8 weeks, we observed posterior capsular opacity in 15 cases (33 %), cystoid macular oedema in 13 cases (28.8 %), pupillary capture in 8 cases (17.7 %) and pupillary membrane in 6 cases (13.3 %) and secondary glaucoma in 3 cases (6.6 %).

Complication	Incidence	Percentage
Cystoid Macular Oedema	13	28.8
Pupillary Capture	8	17.7
Posterior Capsule Opacity	15	33.3
Pupillary Membrane	6	13.3
Secondary Glaucoma	3	6.6

Table 2. Late Post-Operative Complications

Preoperative Visual Acuity

Before the surgery all the cases chosen for surgery the visual acuity of 18 cases was 6 / 60 – 1 / 60, hand movement was positive in 16 patients and the rest 11 cases had only perception of light.

Immediate Postoperative Visual Acuity

The immediate post-operative BCVA on first postoperative day was taken by the help of the Snellen's chart was categorized as 6 / 9 – 6 / 12 in 1 case (2.2 %), 6 / 18 – 6 / 24 in 9 cases (20 %), 6 / 36 – 6 / 60 in 16 cases (35.5 %), 5 / 60 – 2 / 60 in 15 cases (33.3 %) and <2 / 60 in 4 cases (8.8 %). Postoperative anterior chamber reaction was the most common cause of decreased vision.

Visual Acuity after 8 Weeks

The post-operative BCVA after 8 weeks was 6 / 6 – 6 / 9 in 16 cases (35.5 %), 6 / 12 – 6 / 18 in 9 cases (20 %), 6 / 24 – 6 / 36 in 14 cases (31.1 %) and 6 / 60 in 6 cases (13.3 %). The patients were put on corticosteroids aggressively, which showed definite improvement in the visual acuity.

On statistical analysis, with cross tabulation by chi square test between the early post-operative complications and visual acuity after 8 weeks. Among 43.7 % of cases with AC reaction had improved visual acuity 6 / 6 – 6 / 9 and 31.2 % had visual acuity between 6 / 12 – 6 / 18. With 46.1 % cases with Corneal oedema had vision 6 / 6 – 6 / 9 while 60 % of cases with macular oedema had vision within 6 / 24 – 6 / 36. The cases which presented as hyphema 50 % had 6 / 6 - 6 / 9 vision and 33.3 % cases had vision of 6 / 12 – 6 / 18. With the Pearson chi square value of 30.379 with degree of freedom 9 there is significant p value <0.05.

		Visual Acuity after 8 Weeks			
		6/6-6/9	6/12-6/18	6/24-6/36	6/60
Early Post Operative Complications	AC Reaction	7	5	4	0
	Corneal Oedema	6	2	5	0
	Cystoid Macular Oedema	0	0	4	6
	Hyphema	3	2	1	0
	Total	**16**	**9**	**14**	**6**

Table 3. Comparison between Early Post-Operative Complications and Visual Acuity after 8 Weeks

		Visual Acuity after 8 Weeks				
		6/6-6/9	6/12-6/18	6/24-6/36	6/60	Total
Late Post Operative Complications	**Cystoid macular oedema**	1	0	7	5	13
	Pupillary capture	6	0	1	1	8
	Posterior capsular opacity	3	8	4	0	15
	Pupillary membrane	4	1	1	0	6
	Secondary glaucoma	2	0	1	0	3

Table 4. Comparison between Late Post-Operative Complications and Visual Acuity after 8 Weeks

Comparing late post-operative complications and visual acuity by chi square test we got the Pearson chi square value 35.890 with degree of freedom 12 and p value was significant <0.05. Complication like cystoid macular oedema 53.8 % had vision 6 / 24 – 6 / 36. In 75 % of cases with pupillary capture had vision 6 / 6 – 6 / 9 and 53.3 % cases with posterior capsular opacity had vision within 6 / 12 - 6 / 18. There was a vision of 6 / 6 – 6 / 9 in 66.6 % of cases with pupillary capture and also the same result with secondary glaucoma.

We also used the Wilcoxon matched pairs signed rank test as these are categorical data and not continuous data to compare between the immediate visual acuity and the visual acuity after 8 weeks, we got a Z value of -4.906 and the p value was significant <0.05

Visual Acuity	Immediate Visual Acuity	Visual Acuity after 8 Wks.
6/6-6/9	1	16
6/12-6/18	9	9
6/24-6/36	16	14
6/60	17	6
>6/60	2	0

Table 5. Comparison between Immediate Postoperative Visual Acuity and Visual Acuity after 8 Weeks

DISCUSSION

The most common complication in patients with uveitis is cataract which can lead to severe visual impairment. Inflammation is the most important factor determining the visual outcome of the surgery. In our study, as shown in chart 1 patient presenting with uveitic cataract were more among male (62.5 %) in comparison to females (37.5 %) as similar to the study by Das D, Bhattacharya H et.al.[7] This was more in the age group falling between 31 – 45 years which is about 36.7 % cases which is represented in chart 2 pie-chart form.

All cases undergoing MSICS, the most common intra - operative complication was found to be posterior synechia that was around 51.1 % and conjunctival bleeding was around 22.2 %. The posterior synechia was tackled by the help of pupil dilating techniques such as iris hook and sphincterotomy as in figure 3 which helped us to do adequate capsulorrhexis thereby reducing our chances of post-operative complications like zonulolysis and posterior capsular rent. All patients underwent PMMA rigid IOL implantation in bag. On first post - operative day, the commonest complication we encountered was anterior chamber reaction in around 35.5 % in immediate post-operative days and our results were similar to the study done by Harari and Sangwan Virender et al done at the L V Prasad eye institute, Hyderabad.[8] Before the surgery the visual outcome of the patients cannot be predicted as in some cases the posterior segment examination could not be done preoperatively but in our study we found that there was immediate improvement of vision after surgery. The post-operative BCVA showed promising results as among all our patients in 35.5 % cases showed visual acuity with a range in between 6 / 36 – 6 / 60 and 22.2 % cases had visual acuity within 6 / 6 – 6 / 24.

All patients were treated with steroids aggressively. On follow up after 8 weeks of post operatively as shown in table - 3 the BCVA of 35.5 % of cases was between 6 / 6 – 6 / 9. Okhraviet al.[9] found improvement in 90 % eyes, 6 months post-operatively (ECCE) in patients with uveitic cataract. Ram et al. found improvement in 91.6% patients (phacoemulsification) which is comparable to our study as 88.8 % cases have improved vision.

The commonest late complication we observed were PCO in about 33.3 %of cases depicted in table - 2 and the results is similar to the study done by Dana MR et al.[10] In the study by Dana MR et al they found 54 % of the patients developed posterior capsular opacification. And another study done by Rahman and N P Jones in United Kingdom there 96 % of patients had developed posterior capsular opacification. Posterior capsular opacity can be prevented by controlling the postoperative inflammation. Usually the chronic intra ocular inflammation leads to macular oedema which is responsible for decreased vision in the post-operative period. IOL placement in bag with good control of post - operative inflammation results good visual outcome. In our study we encountered 28.8 % cases with macular oedema. Other studies like Ram et al. reported an 21.3 % incidence of macular oedema and Estafanouset al.[11] reported 33%, but it was following phacoemulsification which was comparable with our study.

Qualitative data analysis by chi square tests showed a significant p value of <0.05 for visual acuity in the early and late post-operative (after 8 weeks) complications these respective periods. By using the Wilcoxon matched pairs signed rank test when we compare visual acuity improvement during immediate and 8 weeks after surgery; we got a Z score -4.906 and p value <0.05. There is significant improvement of visual acuity and reduction of inflammation on aggressive treatment using steroids.

CONCLUSIONS

In any type of uveitis, due to the chronic intraocular inflammation with frequent relapses and long-term use of topical corticosteroids, development of cataract is very common. Prevalence of cataract in those patients usually ranges from 50 % to 70 %. Uveitic cataract develops at an early age, usually in young adults, as compared to normal cataract. In a developing country like India, manual SICS can be performed in a low budget ophthalmic setup with limited instruments and equipment that reduces the financial burden to the patients while providing visual rehabilitation. Result of the surgery depends upon duration of the disease processes, other ocular and associated systematic illnesses of the patient, and adequate pre- and post-operative control of ocular inflammation. The post-surgical visual outcome of each and every complicated uveitis cataract depends upon careful selection of cases, proper timing of the surgery, diligent surgical approach, close observation with regular follow up and proper handling of the postoperative complications with appropriate control of inflammation which is of paramount importance.

Financial or Other Competing Interests: None.

REFERENCES

[1] Foster CS, Fong LP, Singh G. Cataract surgery and intraocular lens implantation in patients with uveitis. Ophthalmology 1989;96(3):281-288.
[2] Jancevski M, Foster CS. Cataracts and uveitis. Curr Opin Ophthalmol 2010;21(1):10-14.
[3] Okhravi N, Lightman SL, Towler HMA. Assessment of visual outcome after cataract surgery in patients with uveitis. Ophthalmology 1999;106(4):710-722.
[4] Kump LI, Cervantes-Castaneda RA, Androudi SN, et al. Analysis of pediatric uveitis cases at a tertiary referral center. Ophthalmology 2005;112(7):1287-1292.
[5] Hooper PL, Rao NA, Smith RE. Cataract extraction in uveitis patients. Survey of Ophthalmology 1990;35(2):120-144.
[6] Rathinam SR, Namperumalsamy P. Global variation and pattern changes in epidemiology of uveitis. Indian Journal of Ophthalmology 2007;55(3):173-183.
[7] Das D, Bhattacharjee H, Das K, et al. The changing patterns of uveitis in a tertiary institute of Northeast India. Indian J Ophthalmol 2015;63(9):735-737.
[8] Harari A, Sangwan VS. Cataract surgery in uveitis. Indian Journal of Ophthalmology 2002;50(2):103-107.
[9] Dana MR, Chatzistefanou K, Schaumberg DA, et al. Posterior capsular opacificaton after cataract surgery in patients with uveitis. Ophthalmology 1997;104(9):1387-1394.
[10] Rahman I, Jones NP. Long - term results of cataract extraction with intraocular lens implantation in patients with uveitis. Eye (Lond) 2004;19(2):191-197.
[11] Estafanous MF, Lowder CY, Meisler DM, et al. Phacoemulsification cataract extraction and posterior chamber lens implantation in patients with uveitis. AM J Optholmology 2001;131(5):620-625.