

A CLINICAL STUDY OF INCIDENCE OF CYSTOID MACULAR EDEMA USING OPTICAL COHERENCE TOMOGRAPHY IN PATIENTS WHO UNDERWENT CATARACT SURGERY

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ABSTRACT

Background: Pseudophakic cystoid macular edema (CME), also known as Irvine-Gass syndrome, is one of the most common causes of visual loss after cataract surgery. **Materials and methods:** This is a hospital-based prospective interventional study. A total of 90 patients (10 lost for follow-up) who underwent cataract surgery (41 males and 49 females), ranging in age from 52 to 71 (mean age 61.5 years), were enrolled in the study in the Department of Ophthalmology, Siddhartha Medical college, Government General Hospital, Vijayawada. **Results:** In the present study, 57.78% of patients were in the age group of 60–70 years, followed by 50–60 years (40%), 45–50 years (1.11%) and 71–75 years (1.11%). Mean age of the cases was 61.578 ± 4.892 years. 54.44% of the cases are females showing a higher proportion than males. Right eye got operated on in 53.3% of cases, 53.33% had pre-operative BCVA of 6/60, 34.44% had pre-operative BCVA between 5/60 and 3/60, 12.22% had pre-operative BCVA of 6/36 with a mean LogMar value of 1.02 ± 0.013 . Post-operative BCVA at 1st-week, 4th week, 3rd month and 6th month were noted and by the end of the 6th month, 94.4% of patients achieved BCVA of 6/9 to 6/6 in which the surgery was uneventful, in whom 85 out of 90 (94.4%), the best corrected visual acuity significantly increases from pre-operative value into post-operative value. **Conclusion:** The incidence of Cystoid Macular Edema in the present study is 3.3%. Incidence is seen only in patients who underwent uneventful cataract surgery associated with posterior capsular rupture, vitreous loss, and secondary IOL implantation. No CME was noted in the patients who underwent uneventful cataract surgery. > OCT helps as a diagnostic tool in assessing sub-clinical macular thickening in case of uncertain poor visual results after cataract surgery and as a prognostic tool after treatment improvement and received posterior sub-tenon steroid injections of triamcinolone acetamide and resolution of CME was seen in all the cases.

INTRODUCTION

Irvine was the first to identify macular edema as a complication of cataract surgery that reduced central vision in 1953.

Pseudophakic cystoid macular edema (CME), also known as Irvine-Gass syndrome, is one of the most common causes of visual loss after cataract surgery

Among different surgical techniques performed for cataract, Extra Capsular Cataract

Extraction (ECCE) / Small Incision Cataract Surgery (SICS) / Phacoemulsification with posterior chamber intraocular lens implantation is the commonest one.

The prevalence of CME after cataract surgery depends upon the type of surgery, the surgeon's

experience, research design, the definition of disease, methods used for diagnosis, patient population, previous ocular surgery, coexisting ocular diseases and systemic diseases, surgical complications and follow-up.

The ability to noninvasively identify CME even before a clinically significant loss of central vision is now available because of advancements in imaging technology. In increasing order of sensitivity for detection of CME, OCT is followed by Fundus Fluorescence Angiography and clinical examination. Studies have shown an incidence of CME measured by OCT after cataract surgery of up to 41 per cent on average, while for Fundus Fluorescein Angiography, it had an average of 30 percent.

In individuals with CME, optical coherence tomography reveals macular thickening and cystic spaces in the inner nuclear layer(INL) and outer plexiform layer(OPL).

MATERIALS AND METHODS

Study Design: Hospital-based prospective interventional study.

Study Subjects: Patients who are going to undergo cataract surgery in the Department of Ophthalmology, Siddhartha Medical college, Government General Hospital, Vijayawada.

Sample Size: 100 patients

This study was performed at Government General Hospital, Vijayawada.

A total of 90 patients (10 lost for follow-up) who underwent cataract surgery (41 males and 49 females), ranging in age from 52 to 71 (mean age 61.5 years), were enrolled in the study.

Inclusion Criteria

Patients were enrolled in the study if they satisfied the following criteria:

- a) Cataract patients allowing pre-operative OCT to be performed
- b) Patients without pre-existing retinal or macular pathology

Exclusion Criteria

Patients were excluded from the study if the following were noted:

1. Any known case of pre-existing cystoid macular edema secondary to causes other than cataract extraction like uveitis,
2. Prior intraocular surgery like trabeculectomy, retinal detachment and vitrectomy surgeries.
3. Drug-induced cystoid macular edema
4. Patients with any coexisting anterior segment or fundus pathology.
5. Patients with mature or hypermature cataracts, traumatic cataract and complicated cataracts.
6. High myopic >6D or Axial length more than 26.5mm
7. Glaucoma patient

Ethical consideration

Approval was obtained from the scientific research and the institutional ethical committee for conducting the study. The study analysed the visual outcome after manual small incision cataract surgery and the incidence of CME using Optical Coherence Tomography during the post-operative follow-up.

Discussion and Analysis: Data was entered in Microsoft Excel and was analyzed using SPSS software Version 26.0.

Statistical Tests Used: Chi Square Test, ANOVA, Repeated measures ANOVA

Materials and Methodology:

All patients selected for cataract surgery based on the above-mentioned criteria are evaluated by taking a detailed history.

Examination of the patient

A complete ocular examination was done for all patients. The examination was done pre-operatively, per-operatively and post-operatively.

a) Pre-operative examination consisted of the following:

1. Determination of best corrected visual acuity by Snellen's chart;
2. Slit lamp examination of the anterior segment;
3. Slit lamp biomicroscopy of the fundus using +90D lens;
4. Fundus photography; and
5. OCT fast macular scan, line scans through the fovea, retinal thickness analysis and retinal map analysis.

Other routine examinations included the determination of the following:

1. Intraocular pressure (IOP) by applanation tonometry;
2. Patency of the nasolacrimal duct by syringing;
3. Axial length measurement and;
4. General examination.

b) Pre-operative examination consisted of noting the following points:

1. Type of surgery, namely SICS
2. Total duration of the surgery
3. Intra-Operative surgical complications

c) Post-operative examination included the following:

1. Determination of the best corrected visual acuity;
2. Slit lamp examination of the anterior segment;
3. Slit lamp biomicroscopy of the fundus using +90D lens;
4. Fundus photography; and
5. OCT macular scan.

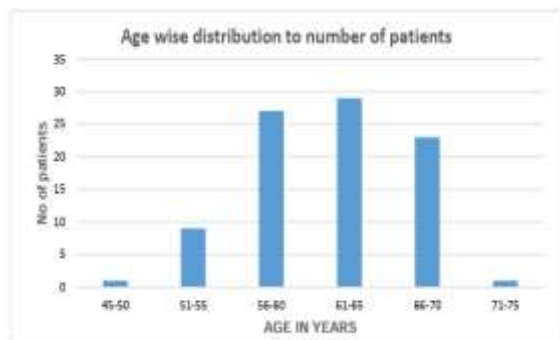
RESULTS

This study was conducted at a tertiary eye care hospital in Government General Hospital, VIJAYAWADA, over 2 years from the approval date from Dr NTR University of Health Sciences, Andhra Pradesh. Based on the defined inclusion and

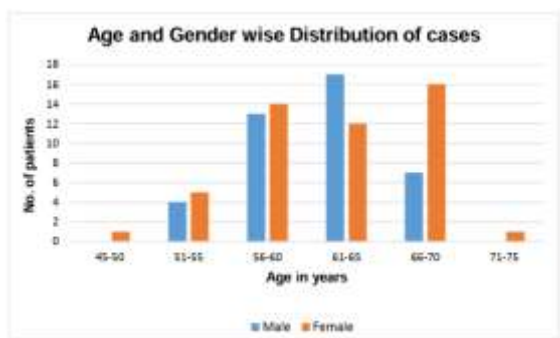
exclusion criteria, 90 out of 100(10 lost for follow-up) individuals(41 [46%] males and 49 [54%] females) were enrolled in the study. The age of the patients ranged from 52 to 71 years [mean age 61.578 ± 4.892 years]. A total of 90 individuals underwent small incision cataract surgery (SICS) in one eye with polymethacrylate intraocular lens (PMMA IOL) implantation. Four experienced surgeons performed the surgeries on these individuals.

1. Age of patients

The mean age of the 40 patients who underwent the SICS procedure was 61.578 ± 4.892 .

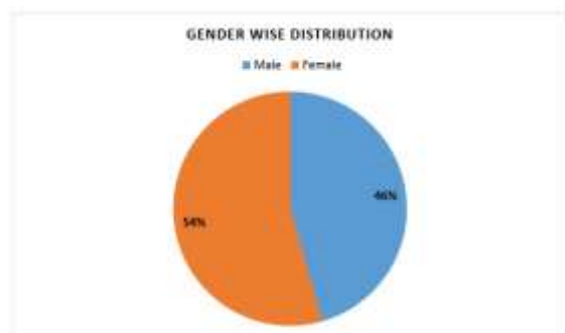


Graph 1: Age-wise distribution of the patients



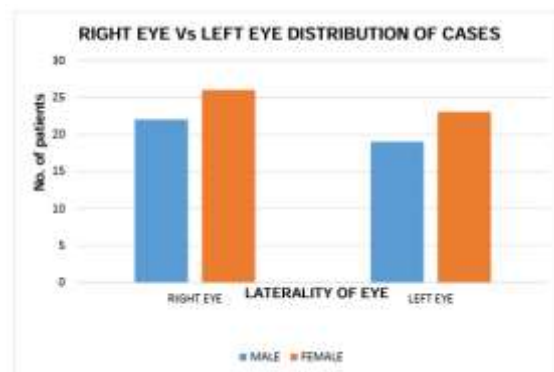
Graph 2: Age and Gender wise distribution of the cases

In the present study, majority of the patients were in the age group of 61 -65 years (32.22%), followed by 56-60 years(30%), 66-70 years(25.55%) , 51-55 years(10%) ,45-50 years(1.1%) and 71-75 years(1.1%) with mean age 61.578 ± 4.892 .



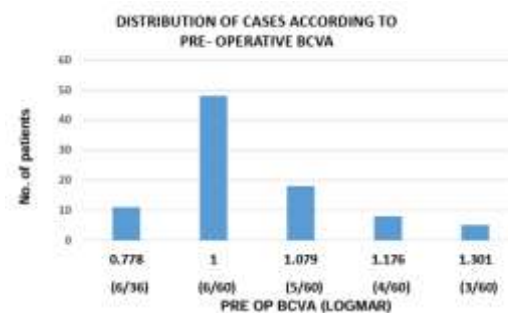
Graph 3: Gender-wise distribution of the patients

In the present study, 41 (45.55%) patients are males and 49 (54.44%) patients are females.



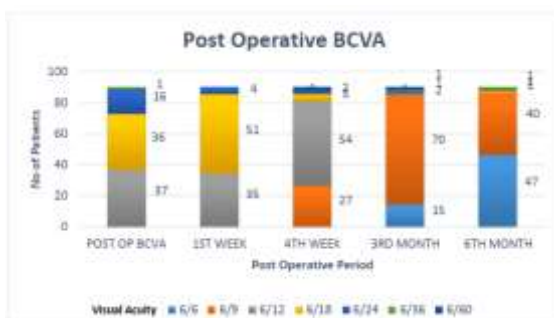
Graph 4: Right eye vs left eye distribution of cases

Among 90 patients, Right eye cataract surgery was performed in 48(53.3%) patients, and left eye cataract surgery was performed in 42(46.7%) patients.



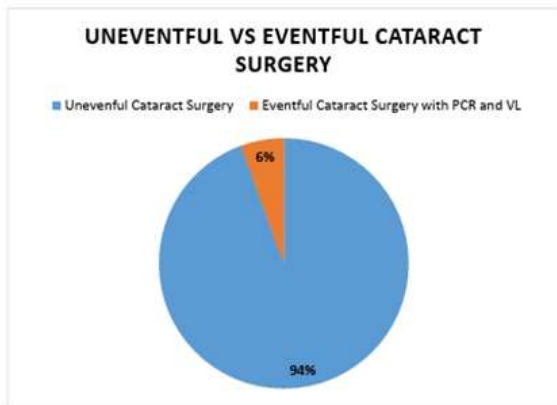
Graph 5: Distribution of cases according to pre-operative BCVA

In the present study ,48(53%) patients had BCVA 6/60 and 31(34%) patients had BCVA between 5/60 and 3/60 and 11(12%) had BCVA of 6/36 with mean of 0.097 decimals.

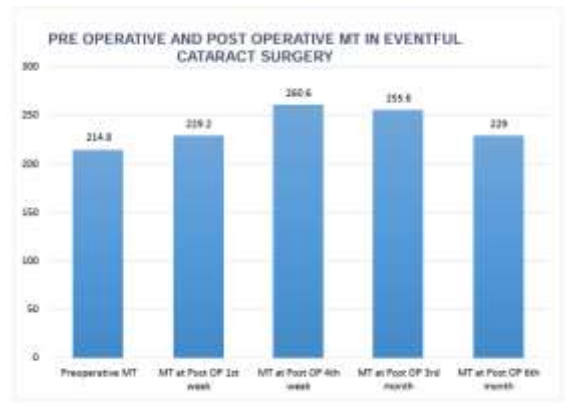


Graph 6: Distribution of cases according to Post-Operative BCVA

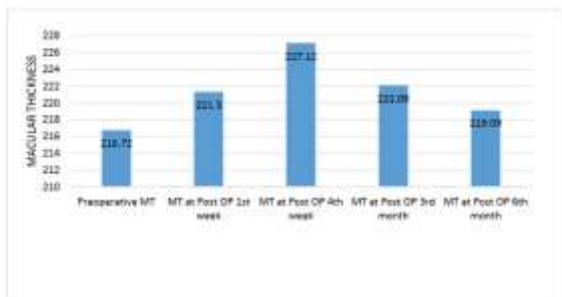
Mean post operative BCVA On post-op day 1 is 0.385, at 1st week 0.392, at 4th week 0.527 , at 3rd month 0.704 and at 6th month 0.83 showing, significance with a p-value of 0.0001.



Graph 7: Distribution of cases according to uncomplicated (uneventful) and complicated (eventful) cataract surgery



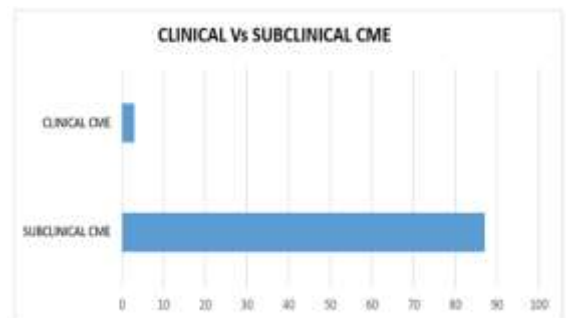
Graph 9: Pre-operative and post-operative mean macular thickness in patients who underwent eventful cataract surgery



Graph 8: Preoperative and post-operative mean macular thickness in patients who underwent uneventful cataract surgery

In our study, the post-operative mean macular thickness in eventful surgery associated with posterior capsular rent and vitreous loss with secondary IOL implantation (5 out of 90) at 1st week, 4th week, 3rd month and 6th month was documented to be $229.2 \pm 7.66 \mu\text{m}$, $260.60 \pm 46.14 \mu\text{m}$, $255.6 \pm 41.22 \mu\text{m}$ and $229 \pm 24.37 \mu\text{m}$ respectively showing a significance with P value of 0.003.

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Graph 10: Clinical VS Sub Clinical CME

Out of 90 patients, 3 (3.33%) developed clinical CME with a significant increase in macular thickness and a decrease in visual acuity whereas 87 patients (96.66%) showed a mild increase in macular thickness postoperatively with out altering the architecture of the macula and with no change in visual acuity.

Table 1: Age and gender-wise distribution of cases

Age group	Male	Female	total
45-50	0	1	1
51-55	4	5	9
56-60	13	14	27
61-65	17	12	29
66-70	7	16	23
71-75	0	1	1
TOTAL	41	49	90

Chi square test 5.867; P value 0.319 (Non-significant)

Table 2: Gender-wise distribution of the patients

GENDER	FREQUENCY	PERCENTAGE
MALE	41	46%
FEMALE	49	54%
TOTAL	90	

Table 3: Right eye vs left eye distribution of cases

	RIGHT EYE	LEFT EYE	TOTAL
MALE	22	19	41
FEMALE	26	23	49
TOTAL	48	42	90

Chi-square test 0.003; P value 0.955 (non-significant)

Table 4: Distribution of cases according to pre-operative BCVA

PRE-OPERATIVE BCVA VISUAL ACUITY	DECIMAL VALUES	LOGMAR	NO OF PATIENTS
6/36	0.16	0.778	11
6/60	0.10	1	48
5/60	0.08	1.079	18
4/60	0.06	1.176	8
3/60	0.05	1.301	5

Table 5: Distribution of cases according to post-operative BCVA

BCVA	Post-opBCVA	1ST WEEK	4TH WEEK	3RD MONTH	6TH MONTH
6/60	0	0	2	1	0
6/36	1	0	0	1	1
6/24	8	4	2	1	1
6/18	22	16	5	0	1
6/12	9	5	2	2	0
6/9	0	0	3	19	18
6/6	0	0	0	14	27

Chi-square test 387.21; P value 0.001 (significant)

Table 6: Distribution of cases according to uncomplicated (uneventful) and complicated (eventful) cataract

CATARACT SURGERY	FREQUENCY	PERCENTAGE
Uneventful Cataract Surgery	85	94.44%
Eventful Cataract Surgery with PCR and VL	5	5.55%

Table 7: Pre-operative and post-operative mean macular thickness in patients who underwent uneventful cataract surgery

Pre-operative Macular thickness	Post- Operative Macular thickness at 1 st week	Post- Operative Macular thickness 4 th week	Post -Operative Macular thickness at 3 rd month	Post -Operative Macular thickness at 6 th month
216.72 ± 4.57	221.30 ± 4.40	227.12 ± 3.94	222.09 ± 4.85	219.09 ± 4.15

P value 0.021 (significant)

Table 8: Pre-operative and post operative mean macular thickness in patients who underwent eventful cataract surgery

Pre- operative Macular thickness	Post -Operative Macular thickness at 1 st week	Post-Operative Macular thickness 4 th week	Post-Operative Macular thickness at 3 rd month	Post-Operative Macular thickness at 6 th month
214.8 ± 4.55	229.2 ± 7.66	260.60 ± 46.14	255.6 ± 41.22	229 ± 24.37

P value 0.042 (Significant)

Table 9: Clinical vs sub clinical CME

TYPE OF CME	FREQUENCY	PERCENTAGE
SUB-CLINICAL CME	87	96.66%
CLINICAL CME	3	3.33%

Table 10: Pre-operative and post-operative mean macular thickness in patients with sub-clinical CME

Pre-operative Macular thickness	Post -Operative Macular thickness at 1 st week	Post-Operative Macular thickness 4 th week	Post-Operative Macular thickness at 3 rd month	Post-Operative Macular thickness at 6 th month
216.56 ± 4.61	221.43 ± 4.46	227.17 ± 3.93	222.02 ± 4.82	218.99 ± 4.16

P-value: 0.049(SIGNIFICANT)

Table 11: Pre-operative and post-operative mean macular thickness in patients with clinical CME

Pre-operative Macular thickness	Post -Operative Macular thickness at 1 st week	Post-Operative Macular thickness 4 th week	Post-Operative Macular thickness at 3 rd month	Post-Operative Macular thickness at 6 th month
217.66 ± 3.21	231 ± 9.64	281.33 ± 51.39	280 ± 34.11	238.66 ± 28.94

P-Value :0.027(significant)

Table 12: Duration from Cataract Surgery CME Got Diagnosed

Duration from cataract surgery CME got diagnosed	Frequency
4-6 weeks	2
7-12 weeks	1
13-24 weeks	0
>24 weeks	0

Out of 3 clinically evident CME, 2 cases were diagnosed between 4 and 6 weeks, and 1 patient was diagnosed between 7 and 10 weeks.

Table 13: Types of IOLs

TYPE	FREQUENCY
PCIOL	85
Secondary IOLs (Retro pupillary Iris-claw lens)	5
TOTAL	90

In our study,90 patients underwent small incision cataract surgery, in which 85 cases were uneventful with PCIOL implantation, while in5 patients, retro

pupillary Iris claw lens were implanted due to surgical complications of posterior capsular rent/rupture and vitreous loss.

Table 14: Pre-Existing Systemic Illness

SYSTEMIC ILLNESS	FREQUENCY	PERCENTAGE
DM	9	10%
HTN	16	18%
DM AND HTN	9	10%
NIL	56	62%
TOTAL	90	100

In the study group of 90 patients, 9(10%) were type II diabetes mellitus patients, 16 patients (18%) were systemic hypertensives, and 9 patients (10%) were

both diabetics and hypertensives without any pre-operative retinopathy changes. The remaining 56 patients (62%) had no systemic illness.

Table 15: Treatment Modalities

TREATMENT MODALITIES	FREQUENCY	PERCENTAGE
Topical NSAIDs and Steroids	87	96.66%
Posterior sub-tenon steroid injections	3	3.33%

In the present study,96.66% were given routine post operative treatment with Topical Steroids and NSAIDs ,3.33% were given with posterior sub-tenon injections to treat CME.

CLINICAL PICTURES

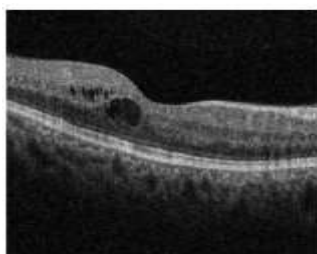


FIGURE 2:
OCT Macular Cube Grey Scale image of Pseudophakic Cystoid Macular Edema in 60 years Female patient at 6th week post-operatively.

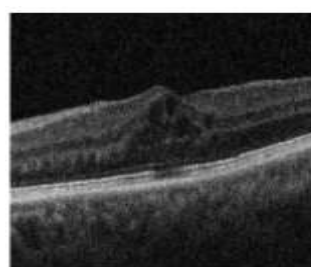


Figure 3
OCT Macular Cube Grey Scale image of Pseudophakic Cystoid Macular edema with intraretinal cystic areas of low reflectivity at 7th week post-operatively.

DISCUSSION

Following cataract surgery, sub-clinical changes may occur in macular thickness with or without the visual acuity being affected. However, PCME is a known complication of cataract surgery, manifesting as the effusion of the fluid from the capillaries. The definition of Cystoid Macular Edema (CME), the diagnostic test to evaluate CME (with Fundus fluorescein angiography or OCT), and the total sample size in the study was the important variables

that led to variability in incidences in studies reported. Because of the heterogeneity of definitions and diagnostic criteria, its incidence has been reported to be between 1% and 30%. However, an incidence of 1%–2% of clinically significant PCME has been reported in patients with no risk factors. However, the incidence of sub-clinical macular edema after uneventful cataract surgeries has become an issue of safety because studies have found Fundus fluorescence angiography (FFA) leakage in 19% to 88% of patients post-operatively, even when visual acuity is not affected.

The Macular thickness increased even after uneventful cataract surgeries, and the increase in macular thickness was sub-clinical and did not affect the final visual outcome in any patient.

AGE DISTRIBUTION:

In our study of 90 patients, the age ranged from 52 to 71 years with a mean age of 61.578 ± 4.892 years, and most of the study group patients were in the age group between 61–65 (32.22%) in our study. It was observed that 57.8% of patients were in the age group of 60–70 years, followed by 40% in the age group of 50–60 years which was similar to the studies conducted by Anand AF et al., Dr Vimal J. Vyas et al., and Dr Shreya Bhargava et al.

GENDER DISTRIBUTION:

Out of 90 patients, 41 (45.55%) patients are males and 49 (54.44%) patients are females. A small proportion was higher in females than males in our study, similar to a study by Anand AF et al., Dabas et al., Salwan A et al.,

PRE-OPERATIVE BCVA

48 (53%) patients had BCVA 6/60 and 31 (34%) patients had BCVA between 5/60 and 3/60 and 11 (12%) had BCVA of 6/36. BCVA was recorded 53 by Snellen's chart and was converted into Log Mar decimal value. In the 90 patients, the mean pre-operative visual acuity was 1.02 ± 0.013 decimals (approximately). In the study conducted by Anand AF et al., 41 the mean Best corrected visual acuity (BCVA) by LogMar was 0.96 ± 0.24 before cataract surgery. In a study conducted by Dabas et al., 45 and Shreya Bhargava et al., 43 the pre-operative mean BCVA was found to be 0.05 ± 0.04 decimals and 0.15 ± 0.11 , respectively.

PRE-OPERATIVE MACULAR THICKNESS

In 90 patients who underwent cataract surgery in our study, the preoperative macular thickness noted was $216.61 \pm 4.56 \mu\text{m}$ like Dabas et al., 45 which was $217 \pm 7.97 \mu\text{m}$, but Salwan A et al., 44 and Bhargava et al., 43 documented pre-operative macular thicknesses of $223.38 \pm 12.61 \mu\text{m}$ and $230.49 \pm 14.42 \mu\text{m}$, respectively, in their studies. The study by Sharma S 46 reported that the mean macular thickness was $189.34 \mu\text{m}$, which was quite less than our study.

Post-operative macular thickness in EVENTFUL Vs UNEVENTFUL CATARACT SURGERIES:

In our study, the post-operative mean macular thickness in uneventful cataract surgery (85 out of 90) at the 1st week, 4th week, 3rd month, and 12th

month was documented to be $221.30 \pm 4.40 \mu\text{m}$, $227.12 \pm 3.94 \mu\text{m}$, $222.09 \pm 4.85 \mu\text{m}$ and $219.09 \pm 4.15 \mu\text{m}$, respectively

DURATION FROM CATARACT SURGERY CME GOT DIAGNOSED:

In our study sample of 90 patients who underwent cataract surgery, 87 (96.66%) patients showed an increase in macular thickness postoperatively in the 4th week and 3rd month. They came to near normal by the 6th month with no change in visual acuity. But 3 (3.33%) cases developed CME, which is clinically evident by a considerable decrease in vision and increase in macular thickness, diagnosed after 4 weeks of the post-operative period. Out of 3 clinically evident CME, 2 cases were diagnosed between 4 and 6 weeks, and 1 patient was diagnosed between 7 and 10 weeks.

TYPES OF IOLs

In our study, 90 patients underwent small incision cataract surgery, in which 85 cases were uneventful with PCIOL implantation, while in 5 patients, there were surgical complications of posterior capsular rent/rupture and vitreous loss and implanted with secondary IOLs, i.e., retro pupillary Iris claw lens on the same day of surgery after performing an anterior vitrectomy.

PSEUDOPHAKIC CME Vs PREEXISTING SYSTEMIC ILLNESS:

In the study group of 90 patients, 9 (10%) were type II diabetes mellitus patients, 16 patients (18%) were systemic hypertensives, and 9 patients (10%) were both diabetics and hypertensives without any pre-operative retinopathy changes. The remaining 56 patients (62%) had no systemic illness.

It is important to distinguish macular edema, a common cause of poor visual outcome following cataract surgery in diabetic patients, from diabetic macular edema. Pre-existing diabetic macular edema worsens considerably after surgery. Microaneurysms, intraretinal haemorrhages, and lipid deposits accompany the clinical presentation of diabetic macular edema. FA is helpful for differential diagnosis.

In our study, out of 3 clinically diagnosed cystoid macular edema, 1 had diabetics with no diabetic retinopathy changes pre-operatively and developed CME post-operatively due to surgical complications associated with posterior capsular rent and vitreous loss with iris claw placement. By the end of 4th week, the patients presented with decreased visual acuity, and there was a significant increase in mean macular thickness with cystoid spaces and subretinal fluid.

In the present study diabetes did not significantly influence macular thickness after uncomplicated cataract surgery. Out of 2 diabetic patients with a complicated surgery, 1 developed Pseudophakic cystoid macular edema. CME also occurs as a component of hypertensive retinopathy.

In our study, out of 3 clinically diagnosed CME, 1 patient suffered from hypertension and was diagnosed as clinical CME at the end of the 4th

week with no hypertensive retinopathy changes pre-operatively

TREATMENT MODALITIES

Angiographic CME does not necessarily portend a poor visual outcome. Most cases of post-operative CME resolve spontaneously, with only a 1–3% incidence of clinical persistence, i.e., angiographic CME with visual acuity of 20/40 or less, 6 or more months after cataract surgery. Prophylaxis with Topical NSAIDs.

In our study, topical NSAID Ketorolac tromethamine 0.5% Three times a day was given pre-operatively for 1 day prophylactically.

Steroids: Significant improvement of BCVA in the ketorolac group Stern et al.⁶⁶ described a series of 49 patients who developed CME following intracapsular cataract extraction with iris-fixated IOL. They showed a positive response to systemic corticosteroids.

COMBINATION THERAPY: Heier et al.⁶⁷ found that combining topical ketorolac and prednisolone for acute CME is superior to either treatment alone. Patients in the ketorolac group improved by 1.6 Snellen lines, the prednisolone group by 1.1 lines, and patients administered a combination treatment by 3.8 lines with a quicker response.

In our study, all the 90 patients who underwent cataract surgery, both uneventful and patients with surgical complications like posterior capsule rent/rupture and vitreous loss, received routine post-operative treatment with the combination of steroid and NSAID eye drops for 6 weeks, i.e., Prednisolone acetate 1% eye drops starting from 8 times per day to tapering doses till 6 weeks. Ketorolac tromethamine of 0.5% was given four times a day for 6 weeks, along with moxifloxacin 6 times a day for 4 weeks and cyclopentolate 1% two times a day for 1 week.

Periocular corticosteroids have been proposed for CME resistant to topical medication. In our study, 3 cases with clinically diagnosed CME, all supplemented with topical steroids and NSAIDs routinely but had no improvement and received posterior sub-tenon steroid injections of triamcinolone acetonide and resolution of CME was seen in all the cases.

Best Sequential Management:

- (1) Topical NSAIDs × 4/d + topical corticosteroids × 4/day (+acetazolamide?).
- (2) periocular corticosteroid.
- (3) intravitreal triamcinolone (possibly intra-venous antiangiogenic agents).
- (4) vitreous incarceration → consider surgery.
- (5) persistent inflammatory reaction → consider IOL removal or vitrectomy.

CONCLUSION

The current study is a hospital-based prospective interventional study on 90 patients attending the

Department of ophthalmology at the government general hospital, Siddhartha medical college, Vijayawada.

The patients met the inclusion and exclusion criteria of the study. Following approval and consent from the Institutional ethics committee and with the patient's consent, the study was conducted on patients who came for cataract surgery which included a detailed examination preoperatively and post-operatively with particular attention paid to the patient's visual acuity, OCT evaluated macular thickness and changes in visual acuity and macular thickness with appropriate treatment postoperatively.

➤ In the present study, 57.78% of patients were in the age group of 60–70 years, followed by 50–60 years (40%), 45–50 years (1.11%) and 71–75 years (1.11%).

➤ Mean age of the cases was 61.578 ± 4.892 years.

➤ 54.44% of the cases are females showing a higher proportion than males ➤ Right eye got operated on in 53.3% of cases

➤ In the present study, 53.33% had pre-operative BCVA of 6/60, 34.44% had pre-operative BCVA between 5/60 and 3/60, 12.22% had pre-operative BCVA of 6/36 with a mean LogMar value of 1.02 ± 0.013

➤ Post-operative BCVA at 1st-week, 4th week, 3rd month and 6th month were noted and by the end of the 6th month, 94.4% of patients achieved BCVA of 6/9 to 6/6 in which the surgery was uneventful.

➤ In the present study, in patients who underwent uneventful cataract surgery 85 out of 90 (94.4%), the best corrected visual acuity significantly increases from pre-operative value into post-operative value. There was increase in macular thickness in all quadrants in all post-operative visits, with its peak at 4th week and decrease to near normal values in 3 to 6 months. There was no correlation found between the change in macular thickness and BCVA at the sub-clinical level. OCT showed sub-clinical macular edema without altering the architecture of the macula.

➤ In the present study, patients who underwent uneventful cataract surgery showed a significant increase in macular thickness post-operatively, maximum at 4th week of about 260.60 ± 46.14 .

➤ The incidence of CME is 60% in complicated cataract surgeries and no case of CME is seen in uneventful cataract surgeries.

➤ In the present study, all cases were given a combination of topical steroids (Prednisolone acetate 1%) in tapered doses along with topical NSAIDs (Ketorolac tromethamine 0.5%) for 6 weeks post-operatively and observed for macular thickness in repetitive visits, and BCVA was assessed.

➤ In the present study, in all cases in which the cataract surgery was uneventful, and two complicated cataract cases, the macular thickness

has reduced to the near baseline by six months, and the visual acuity was unaffected.

➤ All CME patients have shown no improvement with topical steroids and NSAIDs and were given periocular steroids of Triamcinolone acetonide 30mg by the posterior sub-tenons route and observed monthly for improvement. All 3 cases got improved in 1st month itself.

➤ The incidence of Cystoid Macular Edema in the present study is 3.3%

➤ Incidence is seen only in patients who underwent uneventful cataract surgery associated with posterior capsular rupture, vitreous loss, and secondary IOL implantation.

➤ No CME was noted in the patients who underwent uneventful cataract surgery.

➤ In the present study, diabetes did not significantly influence macular thickness after an uncomplicated cataract surgery.

➤ Prevention of post-surgical CME starts with a thorough pre-operative evaluation of the patient to identify treatable risk factors and pre-existing anatomic conditions that can complicate cataract surgery. Patients with known pre-existing conditions or complicated surgery should be followed up closely post-operatively for early detection of CME.

➤ OCT helps as a diagnostic tool in assessing sub-clinical macular thickening in case of uncertain poor visual results after cataract surgery and as a prognostic tool after treatment improvement and received posterior sub-tenon steroid injections of triamcinolone acetonide and resolution of CME was seen in all the cases.

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