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STUDY OF PHACOEMULSIFICATION V/S PHACOTRABECULECTOMY IN MANAGEMENT OF PRIMARY ANGLE CLOSURE GLAUCOMA

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ABSTRACT

Introduction: The study was conducted to evaluate IOP management by surgical modalities such as combined trabeculectomy and phacoemulsification and phacoemulsification surgery alone. Vision impairment is a major public health problem and the burden is increasing with increase in aged population. **Aims And Objectives:** This study was undertaken for study the IOP management by surgical modalities such as combined trabeculectomy and phacoemulsification and phacoemulsification surgery alone. A pre-designed prospective study was conducted at the OPD of upgraded Department of Ophthalmology at LLRM Medical College, Meerut. A total of 60 patients were divided in to two equal groups randomly and studied. **Observation And Result:** Majority of the patients in both the groups were aged between 61 – 70 years. Females outnumbered males in this study which was statistically significant between the two groups. The mean pre- operative intra ocular pressure was 23.3 mm Hg in combined surgery group and 23.9 mm Hg in cataract surgery alone group. Mean Intra ocular pressure decreased regularly in each follow up more in combined group than the cataract surgery alone group. The mean intra ocular pressure after 1 years follow up in combined surgery group was 10.8 mm Hg and 13.4 mm Hg in the cataract surgery alone groups which was statistically significant. Mean BCVA before the operation was 3.2 in combined surgery group and 3.8 in cataract surgery before surgery. Mean BCVA declined after 1 year of follow up in combined surgery group was 1.9 and 2.7 in cataract surgery alone group which was statistically significant. The surgery success was complete in 80.0% of the combined surgery group and 60% of the cataract alone group.

Criteria For Failure Of Surgeries

- The IOP >23 MMHG at the end of 1 year or
- The IOP not reduced by 20 % from base line at the end of 1 year

Conclusion: This study was mainly undertaken to study the efficacy of combined trabeculectomy with cataract extraction and cataract only on primary angle closure glaucoma. This study had found that, the reduction of intra ocular pressure in both the groups but more prominent in combined surgery group than cataract alone surgery group.

INTRODUCTION

Vision impairment is a major public health problem and is expected to lead higher burden as the number of aged population is increasing. Glaucoma is one of the leading cause of preventable blindness which is mainly due to chronic optic neuropathy with irreversible but preventable visual field loss and progressive optic nerve damage .[1] It has been estimated that, the glaucoma affects 60.5 million people around the world and is projected to increase to 79.6 million by the year 2020.[2] About 8 million Indians are known to be affected with glaucoma with 1:1 ratio of primary open angle glaucoma (POAG) to primary angle closure glaucoma (PACG).[3, 4] The studies available shows that, POAG accounts for 90% of all glaucoma cases[5].

This disease ranks second among the causes of incurable visual impairment in the Western world and is an important and common cause for bilateral blindness.[6,7]

POAG is a multifactorial optic neuropathy where there is characteristic atropic change of the optic nerve with associated visual filed defects.[8] Early diagnosis and treatment requires recognition of all the risk factors for POAG. It is usually diagnosed during routine examinations and often during the later course of the disease. The disease mainly manifests as visual field loss with preservation of the central vision till the end stage of disease. Irreversible visual field loss is most common feature of the disease since majority of the patients present in the later stage of the disease. Early diagnosis with prompt treatment can halt the progression of the disease and thus preserve the loss of vision.[9]

The disease etiology is multifactorial in nature. A number of risk factors are implicated in occurrence of glaucoma including age, gender, race, diabetes mellitus, systematic hypertension, diastolic perfusion pressure (DPP), myopia and family history of POAG.

A number of treatment modalities are available to treat glaucoma which mainly aims in prevention of future visual loss. They include medical, laser and surgical treatment. The evidence available in recent years show that the cataract extraction alone result in lowering the intra ocular pressure. The intra ocular pressure in primary open angle glaucoma can be lowered by Glaucoma filtering surgery such as trabeculectomy.

A number of patients may also present with concomitant cataract especially those who are aged. The cataract surgery alone can lower the IOP in eyes than who do not have glaucoma.

But very few studies have compared the effect of cataract with trabeculectomy and cataract alone in this part of the country. Hence this study was undertaken to compare the effect of cataract with trabeculectomy and cataract alone.

AIMS AND OBJECTIVE

Study of IOP management by surgical modalities such as combined trabeculectomy and phacoemulsification surgery and phaco-emulsification surgery alone.

MATERIAL AND METHODS

A pre-designed prospective study was conducted at the OPD of upgraded Department of Ophthalmology at LLRM Medical College, Meerut.

Patients were randomly selected from the routine OPD over the period of June 2019 to June 2020 and diagnosed as a case of primary angle closure glaucoma with cataract. Among these, patients having intra ocular pressure between 22 – 27 mm Hg with cataract were subjected randomly to either a combined trabeculectomy and cataract surgery or b) cataract surgery alone.

Patients diagnosed on the basis of shallow anterior chamber, gonioscopy, slit lamp examination and IOP.

A total of 60 patients were divided in to two equal groups randomly.

Inclusion Criteria

- Glaucomatous patients uncontrolled IOP with cataract on maximum medications.
- Any patient having glaucoma and cataract with controlled IOP with medications ,with mild to moderate disc damage

Exclusion Criteria

- Cataract with controlled IOP with medications with normal disc and visual field damage.
- Cataract and glaucoma with bacterial, viral or fungal infection.
- Non willing patient.
- PL +ve but PR inaccurate or inconsistent patient.
- Corneal decompensation
- Previous trabeculectomy was done

All the patients were subjected to complete ophthalmologic evaluation at baseline and 1 months including best corrected visual acquity (BVCA), IOP (mm Hg) measured with a calibrated Goldmann applanation tonometer.

All thirty patients in the first group underwent phaco-trabeculectomy, standard phacoemulsification was performed by using 3 mm clear corneal incision, after a foldable IOL implantation and removal of viscelastic material the pupil was contracted intracameral carbachol.

Conjunctival flap (width: 5 mm) was used for trabeculectomy. A partial thickness (approximately 50% depth) triangular sclera flap was prepared, measuring approximately 3 mm at the limbus. Descemet's puch. The fornix based conjunctival flap was close with continuous suture.

In the second group, 30 patients underwent phacoemulsification, 2.2 – mm, 3 step clear conreal incision fashioned in the upper temporal quadrant of the limbus , followed by two angled side ports, and AC was inflated with viscoelastic material (Healon). Continuous curvilinear capsulorhexis (CCC) was conducted using a cystotome followed by hydro – dissection and hydrodelineation, in the bag phacoemulsification using the divide and conquer technique, cortical aspiration, and insertion of the foldable IOL in the capsular bag were performed.

All the patients were given adequate post- operative care involving a topical antibiotic four times daily for one week and a topical corticosteroid four times daily which was them tapered over a period of 2 weeks.
The success was defined as IOP ≥ 6 mm Hg and ≤ 21 mm Hg without any anti glaucoma medications or further glaucoma surgery, partial success was defined as IOP < 21 mm Hg with topical antiglaucoma medications or additional surgical treatment was needed to control IOP. The pre- operative IOP was determined as the average of three measurements before operation.

OBSERVATION AND RESULTS

Table 1. Distribution of study group according to pre-operative IOP

IOP (Mean ± SD)	Combined surgery	Cataract surgery alone	T Value	P value, Sig
Pre- operative	23.3 ± 5.6	23.9 ± 5.8	0.384	0.702, NS

The mean pre- operative intra ocular pressure was 23.3 mm Hg in combined surgery group and 23.9 mm Hg in cataract surgery alone group. (P value= 0.702)

Table 2.Distribution of study group according to no of preop medication

No. of pre op antiglaucoma medication	No. Preoperative cases (out of 60)	Percent(%)
Three	00	0
Two	04	6.67
One	06	10.0

This study had shown that, none of the patients were on three drug anti glaucoma medication, 6.7% were on two drugs and 10% were on one drug medication.

Table 3. Distribution of study group according to IOP at follow up – 1 day

IOP (Mean ± SD)	Combined surgery	Cataract surgery alone	T Value	P value, Sig
Follow up – 1 day	21.5±5.18	22.07± 5.3	0.418	(0.677)NS
Follow up – 1 week	17.5± 3.4	19.6± 3.0	2.578	(0.012) Sig
Follow up – 3 months	15.5± 2.7	15.9± 2.4	0.555	(0.581),NS
Follow up – 6 months	15.2±1.86	17.4± 2.9	3.407	(0.001) Sig
Follow up – 1 year	10.8± 3.2	13.4± 2.2	3.624	(0.001), Sig

Mean Intraocular pressure in the combined surgery group was 21.5 mm Hg and 22.07 mm Hg in cataract surgery alone groups on day 1 after surgery.(P value= 0.677)

Mean intra ocular pressure 1 week after surgery in combined surgery group was 17.5 mm Hg and 19.6 mm Hg in cataract surgery alone group which was statistically significant.(P value=0.012)

The mean intra ocular pressure 3 months after surgery in combined surgery group was 15.5 mm Hg and 15.9 mm Hg in cataract surgery alone group.(P value=0.581)

The mean intraocular pressure 6 months after surgery was 15.2 mm Hg in combined surgery group and 17.4 mm Hg in cataract alone group. This difference was statistically significant between the combined surgery and cataract surgery alone groups.(P value=0.001)

Mean intra ocular pressure after 1 years follow up in combined surgery group was 10.8 mm Hg and 13.4 mm Hg in the cataract surgery alone groups which was statistically significant between the two groups.(P value=0.001)

Table 4 : Distribution of study group according to no. of post-op antiglaucoma medications

No. of post op antiglaucoma medication	Follow up	Combined surgery group(out of 30)	Cataract surgery alone group (out of 30)	$\chi 2$ value	P value
Three	3 month	00	00	0.0	1.0
Two	6 month	00	01	1.017	0.313
One	1 year	02	04	0.741	0.389

None of the patients in this study belonging to both the groups were using three drugs at 3 months follow up. About 3.3% of the patients in the cataract alone group were using two drugs. About 6.7% patients in combined group and 13.3% patients

in cataract surgery alone group were using one anti glaucoma medication at the end of one year of follow up

Table 5. Distribution of study group according to Follow up BCVA – 1 year

BCVA (Mean ± SD)	Combined surgery	Cataract surgery alone	T Value	P value, Sig
Follow up – 1 year	1.9 ± 0.74	2.7 ± 0.9	3.568	(0.001), Sig

Mean BCVA after 1 year of follow up in combined surgery group was 1.9 and 2.7 in cataract surgery alone group. This difference was statistically significant between the two groups. (P value=0.001)

Table 6. Distribution of study group according to Success of treatment

Success	Combined surgery n (%)	Cataract surgery alone n (%)	Total n (%)
Complete	24 (80.0)	18 (60.0)	42 (70.0)
Failure	6 (20.0)	12 (40.0)	18 (30.0)
Total	30 (100)	30 (100)	60 (100)

χ^2 value=7.071 df=2 p value, sig=(0.091), NS

The surgery success was complete in 80.0% of the combined surgery group and 60% of the cataract alone group. (P=0.091)

CONCLUSION

This study was mainly undertaken to study the efficacy of combined trabeculectomy with cataract extraction and cataract only on primary angle closure glaucoma. This study had found that, the reduction of intra ocular pressure in both the groups but more prominent in combined surgery group than cataract alone surgery group. The best corrected visual acuity was also better in combined surgery group than cataract alone surgery group. The rate complications was more in combined surgery group than cataract surgery alone group. But this study is not without limitations. The sample size was small to generalize the results. The time of follow up was also small to refute the results. Hence a study with elegant methodology is required to bring out more facts about the role surgeries in treatment of Primary angle closure glaucoma.

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