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"STUDY OF INTRA OCULAR LENS POWER CALCULATION BY A-SCAN BIOMETRY – POST OPERATIVE REFRACTIVE ERROR . "

Ophthalmology

Dr.Ramdev Verma MS ophthal (Medical superintedant).
Dr. Sayalee Lahane * MS ophthal (Associate professor adhoc ophthalmology GGMC Mumbai). *Corresponding Author
Dr Ragini Parekh MS ophthal (Professor ophthalmology GGMC Mumbai).
Dr.T.P.Lahane. MS ophthal (Professor ophthalmology GGMC Mumbai).

ABSTRACT

Introduction : In today's era patient expect uncorrected acuity than best corrected visual acuity . These expectation places increased importance on accurate biometry and intraocular lens calculations in cataract surgery .
Aims and objectives: 1] The study of accuracy of intraocular lens power calculations by A scan biometry- contact technique 2] To measure post-operative refractive outcome
Materials and methods : This is a prospective study .Two hundred patients undergoing cataract surgery with posterior chamber intraocular lens implantation were selected for the study fulfilling the inclusion criteria . Patient was followed up post operatively on 1 st week on 3 rd week and then on 6 th week.
Observations and results : Frequency of refractive error was 0 in 41 patients (20.5%), 87 patients (43.5%) had refractive error in between 0 to -1 D ,18 patients (9%) had > -1 D, 46 patients (23%) had refractive error in between 0 to +1 D, very few, about 8 patients (4%) had refractive error > +1 D among 200 patients.
Conclusion : Based on the results obtained from the present study, we concluded that an unexpected anisometropia can be avoided by doing intraocular lens power calculation by using ultrasonic biometry. Biometry is definitely essential and accurate in calculating intra ocular lens power calculation.Careful selection of IOL might reduce unexpected surprise but will not eliminate them and both the patients and surgeon should be prepare for the same.

KEYWORDS

Cataract is most common curable cause of blindness in India .Cataract lens removal and intraocular lens implantation is most successful ophthalmic surgical procedure today.

In earlier era of intraocular lens implantation surgeons determined IOL power on the basis of predictions using old spectacle prescriptions or sometimes implanted a single "standard" power IOL in all patients . Today's cataract surgery occur at an earlier age and with implants for monofocal and multifocal corrections, patient now anticipate excellent 'uncorrected acuity' not just improved 'best corrected vision'. Because patient have come to view cataract surgery as both, rehabilitative and the refractive procedure, surgeons better or worse are now being judged mainly for their refractive outcomes . This expectation places increased importance on accurate biometry and intraocular lens calculations.

AIMS AND OBJECTIVES OF THE STUDY

1] The study of accuracy of intraocular lens power calculations by A scan biometry- contact technique
2] To measure post operative refractive outcome

METHODS AND MATERIALS

This is a prospective study .Two hundred patients undergoing cataract surgery with posterior chamber intraocular lens implantation were selected for the study fulfilling the inclusion criteria and written informed consent was taken .

INCLUSION CRITERIA -

1. All cataract patients with immature and mature cataracts between the age of 20 to 70 years were included in the criteria for study.

EXCLUSION CRITERIA -

1. The patients with ocular diseases like pre existing corneal opacity, complicated cataract
2. one eyed patients, previous retinal surgeries, previous corneal refractivesurgeries Patients with retinal lesions ,optic atrophy , diabetic and hypertensive retinopathy were excluded from study.

The intraocular lens power is calculated by using the SRK II formula. Patients were operated by temporal corneal tunnel phacoemul sification with foldable posterior chamber intraocular lens. IOL power was calculated and added +1.00D sphere in order to achieve post operative refractive myopia of - 1.00D sphere.

Patient was followed up post operatively on 1 st week on 3 rd week and then on 6 th week.

Post operative refraction given to all patients done by auto refraction.

OBSERVATIONS AND RESULTS

GRAPH 1 : AGEWISE DISTRIBUTION

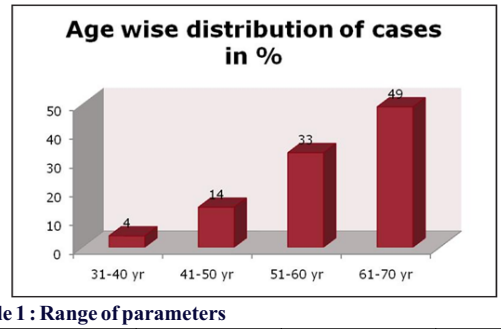
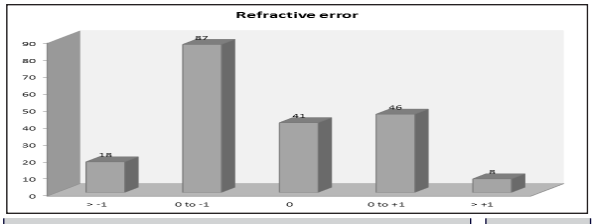


Table 1 : Range of parameters

Parameter	Minimum	Maximum	Mean
K	37.75	49	43.99
AL	20.48	25.54	22.904
IOL power	13	29.5	21.818

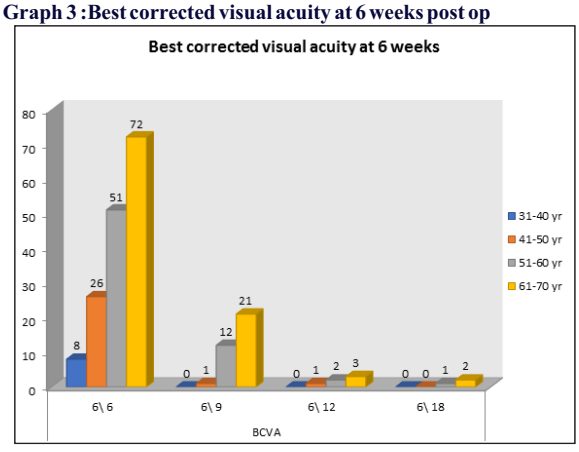
Above table shows in our study minimum keratometry of was 37.75 and maximum was 49 and the mean keratometric value was 43.99 . Minimum axial length of included cases was 20.48 mm and maximum was 25.54 mm with average reading was 22.904 mm.Minimum IOL power was+ 13 D and maximum was +29.5 D.

Graph 2 : Post operative refractive error



This graph shows frequency of refractive error. It was 0 in 41 patients (20.5%), 87 patients (43.5%) had refractive error in between 0 to -1 D ,18 patients (9%) had > -1 D, 46 patients (23%) had refractive error in between 0 to +1 D, very few, about 8 patients (4%) had refractive error >+1 D among 200 patients.

Graph 3 : Best corrected visual acuity at 6 weeks post op



Majority of the patients,(157) had BCVA 6/6 at 6 weeks .
Very few patients (3) had BCVA 6/18 at 6 weeks post operatively.

Summary

Calculation of IOL power pre operatively helps to achieve a desired post operative refraction and avoid unexpected post operative ametropia.Careful keratometry and biometry will reduce the error in calculating the IOL power. In all the patients +1 D addition done in IOL power ,hence there is tendency towards the myopia for achievement of good near vision.

Unexpected high post operative refractive error was not found in this study. The maximum refractive error obtained in this study was +/- 2.5.

Significant number of cases have refractive error between or less than -1 to +1 with good near vision. Similar observations have been reported by other studies conducted in the past. This data showed that margin of refractive error can be significantly reduced by pre operatively determination of intraocular lens power using ultrasound biometry.

CONCLUSION

Based on the results obtained from the present study, we concluded that an unexpected anisometropia can be avoided by doing intraocular lens power calculation by using ultrasonic biometry. Biometry is definitely essential and accurate in calculating intra ocular lens power calculation.

Careful selection of IOL might reduce unexpected surprise but will not eliminate them and both the patients and surgeon should be prepare for the same.

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