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ORIGINAL ARTICLE

Outcome of Phacoemulsification and Extracapsular Cataract Extraction

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ABSTRACT

Objective: Aim was to compare the visual results of patients who received ECCE and phacoemulsification for the treatment of age-related cataracts.

Study Design: Prospective study

Place and Duration: Conducted at Jinnah International Hospital during from Jan, 2021 to Dec, 2021.

Methods: There were 130 patients of both genders presented for cataract surgery. Patients were aged between 35-75 years.When patients signed an informed permission form, demographic information such as age and sex were recorded. Patients were equally divided in two groups. Group I received phacoemulsification (phaco) cataract surgery and group II received conventional extracapsular cataract extraction. Intraoperative and post-operative complication among cases was assessed. At last follow up best corrected visual acuity was assessed and compared among both groups. SPSS 24.0 was used to analyze complete data.

Results: Among 130 cases, majority of the cases 85 (65.4%) were males and 45 (34.6%) were females. 15 (11.5%) patients were aged between 35-45 years, 45 (34.6%) patients were aged between 46-55 years, 38 (29.2%) were aged between 56-6 years and 32 (24.6%) had age > 65years. Post-operative we found significantly good vision among patients of phaco group in 54 (83.1%) cases as compare to group II in 31 (47.7%) cases. Frequency of intraoperative complications was higher in group II 9 (13.8%) as compared to group I 3 (4.6%) cases. Post-operative complications in group I was corneal decompensation, high astigmatism and posterior capsule opacity but in group II high astigmatism and corneal decompensation were the complications.

Conclusion: We came to the conclusion that the visual outcome was considerably better in the Phaco operation compared to the ECCE technique (p = 0.003). As a result, we advocate for the provision of Phaco equipment in hospitals that have sufficient capabilities for the performance of intraocular surgery.

Keywords: PhacoemulsificationSurgery, Extracapsular cataract extraction, Complications, Vision Acuity

INTRODUCTION

An estimated one-third of all curable blindness is caused by cataracts, which are among the most commonly treated surgically according to the World Health Organization[1]. When PHACO was invented at the end of the 20th century, it revolutionised cataract surgery by enabling smaller incisions, a faster operation, and quicker recovery of vision[3-4]. Treatments were more extensive as a result of this development since the procedure was conducted at an earlier stage of cataract development and there was less time between the first and second eye operations[5]. It is still used in underdeveloped countries[6] and is still taught in medical schools[7] despite these advancements in the ECCE procedure. Cataract surgery expenses have risen as a result of better surgical results and an older population, which has led to an increase in demand. It's crucial to take into account the expenses and outcomes of these procedures[8].

As a result of ECCE and phacoemulsification surgery, around 30 percent of patients experience posterior capsule opacification (PCO).[9,10] Post-surgery cells in the anterior and equatorial regions contribute to PCO. Once the formerly cell-free posterior capsule is covered by these cells, the visual axis begins to take shape! Capsular bag wrinkles and cell aggregates are the outcome of this proliferation, resulting in severely reduced visual quality. [11] However, earlier research comparing ECCE and phacoemulsification surgery with PCO incidence were not done concurrently and hence comparisons should be evaluated with caution.[12]

Both treatments often need the use of eyeglasses for the majority of their patients. Outpatient care is required both times, as well as laser therapy for posterior capsule opacity in certain individuals. In the early stages of cataract, patients have reduced vision, but they are still able to carry on with their everyday routines. However, when the cataract develops and matures (opacification of the whole nucleus and cortex of the lens), the patient's vision gets increasingly impaired, making it impossible for them to drive or go shopping. Cataracts are the most prevalent reason for eyesight loss in the elderly. Few individuals with visual loss are seen by family doctors or general practitioners on a daily basis. They are the medical professionals that provide guidance to people with vision problems when they see the doctor. Knowledge of phaco and ECCE procedures and complications as well as visual outcomes will assist doctors persuade their patients that surgical surgery is the sole option to enhance their eyesight in cataract patients.

This research compared the risks and benefits of phaco with ECCE from a patient's perspective.

MATERIAL AND METHODS

This study was conducted at Jinnah International Hospital during from Jan, 2021 to Dec, 2021 and comprised of 130 cataract surgeries. When patients signed an informed permission form, demographic information such as age and sex were recorded. Patients <35 years of age and those did not provide any written consent were excluded from this study.

Patients were aged between 35-75 years. Patients were equally divided in two groups. Group I received phacoemulsification (phaco) cataract surgery and group II received conventional extracapsular cataract extraction.The foldable poly hydroxy ethyl methacrylate (pHEMA) posterior chamber intraocular lens was used in the phacoemulsification group, whereas the rigid polymethyl methacrylate (PMMA) posterior chamber intraocular lens was used in the traditional ECCE group. Both groups had their patients' characteristics, intraoperative and postoperative events, and preoperative and postoperative ocular acuities examined. It's used to figure out how cataract surgery is done, the results and factors that influence them, and the occurrence of problems including posterior capsule rupture, endophthalmitis, and poor vision. More significantly, the information is utilised to promote cataract research.SPSS 24.0 was used to analyze complete data.

RESULTS

In this study 15 (11.5%) patients were aged between 35-45 years, 45 (34.6%) patients were aged between 46-55 years, 38 (29.2%) were aged between 56-65 years and 32 (24.6%) had age > 65years.(fig 1)

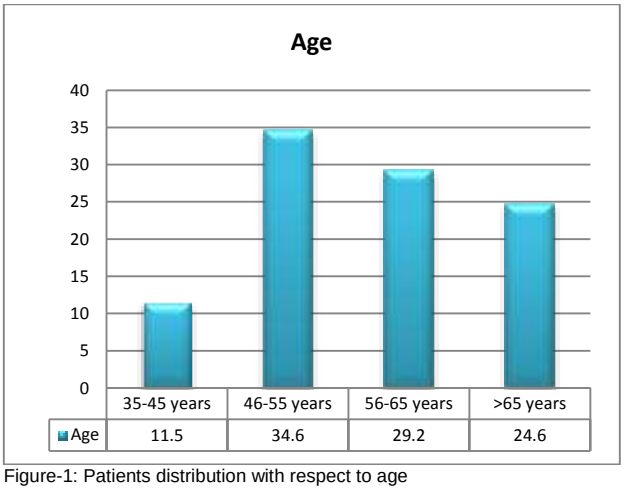

Figure-1: Patients distribution with respect to age

Among 130 cases, majority of the cases 85 (65.4%) were males and 45 (34.6%) were females.Undergoing surgery, frequency of posterior capsule rupture in group I was 2 (3.1%) and in group II was 7 (10.8%) cases, Zonular dehiscence in group I was 3 (4.6%) and in group II 2 (3.1%), central corneal oedema was 3 (4.6%) in group I and 1 (1.5%) in group II and frequency of vitreous loss in group I and II was 1 (1.5%) and 5 (7.7%).(table 1)

Table-1: Gender distribution and complications undergoing suergery

Variables	Group I	Group II
Gender		
Male	42 (32.3%)	43 (33.1%)
Female	23 (17.7%)	22 (16.9%)
Complications		
Zonular dehiscence	3 (4.6%)	2 (3.1%)
central corneal oedema	3 (4.6%)	1 (1.5%)
posterior capsule rupture	2 (3.1%)	7 (10.8%)
vitreous loss	1 (1.5%)	5 (7.7%)

Post-operative we found significantly good vision among patients of phaco group in 54 (83.1%) cases as compare to group II in 31 (47.7%) case, moderate vision in group I was 10 (15.4%) and in group II was 30 (46.2%) and poor vision in group I was (1.5%) and in group II was 4 (6.2%).(table 2)

Table-2: Post-operative comparison of vision among both groups

Variables	Group I	Group II
Vision		
Good	54 (83.1%)	31 (47.7%)
Moderate	10 (15.4%)	30 (46.2%)
Poor	(1.5%)	4 (6.2%)
Total	65 (100)	65 (100)

Table-3: Comparison of intra and post-operative complications among both groups

Complications	Group I	Group II
Intra-operative		
Yes	3 (4.6%)	9 (13.8%)
No	62 (95.4%)	56 (86.2%)
Post-operative		
corneal decompensation	2 (3.1%)	0
high astigmatism	1 (1.5%)	1 (1.5%)
posterior capsule opacity	2 (3.1%)	1 (1.5%)
Total	5 (7.7%)	2 (3.1%)

Frequency of intraoperative complications was higher in group II 9 (13.8%) as compared to group I 3 (4.6%) cases. Post-operative complications in group I was corneal decompensation, high astigmatism and posterior capsule opacity but in group II high astigmatism and corneal decompensation were the complications.(table 3)

DISCUSSION

Visual acuity, overall quality of life, and economic rehabilitation are some of the several metrics that may be used to assess the success of cataract surgery in terms of its effect on a patient's vision. When it comes to these, visual acuity is the one that is probably most suited for routine usage by the ophthalmologist to monitor performance and the quality of service provided.[13]

In our study 130 patients were presented. Among 130 cases, majority of the cases 85 (65.4%) were males and 45 (34.6%) were females. 15 (11.5%) patients were aged between 35-45 years, 45 (34.6%) patients were aged between 46-55 years, 38 (29.2%) were aged between 56-6 years and 32 (24.6%) had age > 65years. These findings were similar to the study conducted in Kuwait.[14]Intraoperative complications after cataract surgery include posterior capsule rupture (PCR), which is the most common complication. There was a statistically significant correlation between the kind of operation and the PCR consequence (p = 0.015). Our investigation found that PCR was more common in ECCE 10.8% than in Phaco (3.1%). As a result, this study may have been impacted by the varying degrees and seniority of surgeons engaged. Specialists do the majority of phaco operations, although younger surgeons (medical officers) undertake the majority of ECCE treatments. In addition, patients with mature/hypermature cataracts were treated to ECCE in comparison to individuals with immature cataracts with lower degrees of nuclear sclerosis for phaco surgery. Studies at Aravind Eye Hospital show that the greater complication rate is supported by correlations between surgical competence and experience. There was a substantial difference in intraoperative complications between staff and trainee cataract surgeons, each of whom performed both phaco and manual small incision cataract surgery.[15]

The incidence of PCR in ECCE was reported to be identical to that of Phaco in a study of pesudo-exfoliation, small pupil, and phacodonesis.[16] (4.2 percent). In contrast, Neekhra et al.[17] discovered a greater rate of PCR in Phaco (9.54 percent) than in ECCE (6.5 percent). PCR was shown to be greater in Phaco (7.7 percent) than in ECCE in a research conducted in Hong Kong by Tso et al.[18] (3.0 percent). An interesting finding shown by NED data spanning the years 2002 to 2011 was a correlation between the prevalence of PCR in phaco (3.9 percent) and that of PCR in ECCE (4.1 percent). [19]Zonular dehiscence in group I was 3 (4.6%) and in group II 2 (3.1%), central corneal oedema was 3 (4.6%) in group I and 1 (1.5%) in group II and frequency of vitreous loss in group I and II was 1 (1.5%) and 5 (7.7%).[18-19]

Frequency of intraoperative complications was higher in group II 9 (13.8%) as compared to group I 3 (4.6%) cases. Loo et al. conducted a Malaysian research identical to this one. [20] Phacoemulsification and ECCE had similar rates of intraoperative complications, according to his findings (14 percent). Phaco (2.5 percent) and ECCE (4.1 percent) were shown to have no significant differences in the incidence of complications, according to Meeks et al.[21]. Complications were more prevalent in ICCE and ECCE than in Phaco in a 22-year analysis of problems in Australia by Clark et al.[22], while complications were only 0.98 percent in Phaco

Post-operative complications in group I was corneal decompensation, high astigmatism and posterior capsule opacity but in group II high astigmatism and corneal decompensation were the complications. It was also discovered by Minassian et al. [23] that all of the substantially inferior results in the ECCE were related to a greater amount of astigmatism following surgery. Phacos had 0.7 percent posterior capsule opacification (PCO) compared to

ECCE (p = 0.634). PCO is more common in ECCE than in Phaco, according to previous research. Also, Castells et al.[24] reported that ECCE had a greater incidence of posterior capsule opacity than phasco. There was a lower rate of ocular swelling in Phaco (3.6 percent vs. 7.4 percent) than in ECCE (7.4 percent), as reported by Castells et al.

Post-operative we found significantly good vision among patients of phaco group in 54 (83.1%) cases as compare to group II in 31 (47.7%) case, moderate vision in group I was 10 (15.4%) and in group II was 30 (46.2%) and poor vision in group I was (1.5%) and in group II was 4 (6.2%). Results of our study was comparable to the previous several studies.[25-27] Compared to the ECCE technique, phacoemulsification was shown to be more cost-effective since patients needed fewer follow-up visits and the health care system spent less money overall.[28]

CONCLUSION

We came to the conclusion that the visual outcome was considerably better in the Phaco operation compared to the ECCE technique (p = 0.003). As a result, we advocate for the provision of Phaco equipment in hospitals that have sufficient capabilities for the performance of intraocular surgery.

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