Quality of life and vision post-facectomy

Qualidade de vida e visão pós-facectomia

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Abstract

Objective: *Cataract is the leading cause of reversible blindness in the world and its treatment is based on surgery, facectomy. The evolution of the procedure has been based on several pillars, but it is in the development of new types of intraocular lenses that has been showing considerable innovations. Current lenses are capable, in addition to treating cataracts, of correcting refractive errors. The aim of this study was to evaluate the quality of life and post-facectomy vision, comparing multifocal lenses (Restor), toric, spherical monofocals (SN60AT) and aspheric monofocals.* ***Methods:*** *The study included 54 patients undergoing a facectomy with implantation of one of the lenses for at least 3 months. The patients answered questionnaire quality of life Cataract TyPE Specification on vision satisfaction, glasses dependence for various daily activities and presence of dysphothetic phenomena. For the analysis of the data, the Kolmogorov-Smirnov tests were used, regarding normality and ANOVA with Tukey's test, how much parametric. In non-parametric comparisons, the Mann-Whitney test was used. In all analyzes, the same level of significance was used (p <0.05).* ***Results:*** *On a scale of 0 to 10, the research showed that single-spherical spherical SN60AT lenses were the ones that obtained the lowest level of satisfaction among the four lenses, obtaining an average of 8.7 (SD = 1.30, CI ± 0.655), followed (mean = 8.9 - SD = 1.42, CI ± 0.721) and the toric (mean = 8.3 - SD = 1.83, CI ± 0.927), multifocal spherical (Restor) 9.1 - SD = 1.67, CI ± 0.844) as the highest level of satisfaction. Regarding the dependence of the glasses, the Restor lens showed the best performance, with less dependence on the glasses. Dysphasic phenomena were more frequent in patients who had implanted the SN60AT lens followed by Restor lens.* ***Conclusion:*** *It is concluded that the SN60AT lenses were the lenses that caused less satisfaction, and the dysphothetic phenomena were one of the main complaints, associated with the postoperative glasses dependence. Patients who had restored Restor lenses, despite the more present dysphoric symptoms than spherical monofocal and single-focal lenses, have the same level of satisfaction, and still provide greater independence of the glasses.*

Keywords: *Intraocular lenses; Cataract extraction; Quality of life; Spherical lens; Aspheric lens; Multifocal lens; Toric lens*

Resumo

Objetivo: A catarata é a principal causa de cegueira reversível no mundo e seu tratamento é baseado em cirurgia, facectomia. A evolução do procedimento tem se baseado em vários pilares, mas é no desenvolvimento de novos tipos de lentes intraoculares que vem mostrando inovações consideráveis. As lentes atuais são capazes, além de tratar a catarata, de corrigir erros refracionais. O objetivo deste estudo foi avaliar a qualidade de vida e de visão pós-facectomia, comparando as lentes multifocais (Restor), tóricas, monofocais esféricas (SN60AT) e monofocais asféricas. **Métodos:** A pesquisa abrangeu 54 pacientes submetidos a facectomia com implantação de uma das lentes há, pelo menos, 3 meses. Os pacientes responderam questionário de qualidade de vida Cataract TyPE Specification sobre satisfação de visão, dependência de óculos para diversas atividades diárias e presença de fenômenos disfóticos. Para análise dos dados foram utilizados os testes de Kolmogorov-Smirnov, quanto a normalidade e ANOVA com teste de Tukey, quanta parametria. Em comparações não paramétricas, utilizou-se o teste de Mann-Whitney. Em todas as análises foi usado o mesmo nível de significância (p<0,05). **Resultados:** Numa escala de 0 a 10, a pesquisa mostrou que as lentes SN60AT, esféricas monofocais, foram as que obtiveram menor nível de satisfação entre as 4 lentes, obtendo média de 8,7 (DP= 1,30; IC ± 0,655), seguido das esféricas monofocais (média= 8,3 – DP= 1,83; IC ± 0,927), das esféricas multifocais (Restor) (média = 8,9 – DP = 1,42; IC ± 0,721) e as tóricas (média = 9,1 – DP = 1,67; IC ± 0,844) como a de maior nível de satisfação. Em relação à dependência dos óculos, a lente Restor foi a que mostrou melhor desempenho, com menor dependência dos óculos. Fenômenos disfóticos foram mais frequentes nos pacientes que tiveram implantada a lente SN60AT seguida de lente Restor. **Conclusão:** Conclui-se que as lentes SN60AT foram as lentes que causaram menor grau de satisfação, tendo os fenômenos disfóticos umas das principais queixas, associada a dependência dos óculos pós-cirurgia. Os pacientes que tiveram as lentes Restor implantadas, apesar dos sintomas disfóticos mais presentes do que as lentes monofocais tóricas e monofocais esféricas, tem o mesmo nível de satisfação, e ainda proporciona maior independência dos óculos.

Descritores: Lentes intraoculares; Extração de catarata; Qualidade de vida; Lente esférica; Lente asférica; Lente multifocal; Lente tórica

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Introduction

Cataract is the loss of lens transparency due to the lens opacification caused by direct oxidative stress. Lens epithelial cells are the most metabolically active cells of the lens, undergoing oxidation, insolubilization and cross-linking. These cells migrate to the lens's equator to form fibers which are gradually compressed centrally and result in nuclear sclerosis and opacity.[1] It is estimated that 95 million people worldwide are affected by cataracts, and that it continues to be the leading cause of blindness in low- and middle-income countries.[2]

There is no known method of prevention for cataract, with surgery being one of the most cost-effective treatments. Cataract surgery evolved from an intracapsular extraction for phacoemulsification. Phacoemulsification is the procedure of choice. An anterior opening is made in the lens capsule (capsulorhexis). The lens is emulsified and then aspirated through an incision of 2.2-3.2 mm. After removal of the cataract, an intraocular lens (IOL) is implanted. Foldable IOLs that can be inserted into the capsular bag and implanted by an injector IOLs have been developed to be implanted through a small incision.[3]

The choice of IOL should be individualized, always taking into account the medical conditions associated. However, there is a big difference in the cost of different types of lenses. Although the lenses are for correcting lens opacity, they may also provide correction for some refractory pathologies. The advantages and disadvantages of each lens should be discussed by the doctor and patient altogether to decide which lens will be implanted during facectomy, taking into account efficacy, costs and patient satisfaction.

The main objective of the present study was to analyze the quality of life and vision post-facectomy, and to compare the patients operated with implant of one of the 4 (four) types of IOL lens (multifocal, toric, spherical monofocal, and aspheric monofocal) who underwent surgery at Instituto de Olhos Cristiano Mendonça (IOCM).

Methods

A prospective study of uncontrolled intervention was carried out with 70 patients diagnosed with cataract by clinical and complementary criteria and who underwent phacoemulsification at Instituto de Olhos Cristiano Mendonça in Aracaju, Sergipe, Brazil. The project is approved by the research ethics committee involving human beings of Universidade Federal de Sergipe (CEP-UFS).

Patients who underwent facectomy for more than 3 months who had a formal indication by the specialist to have facectomy between the years 2014 and 2017 were adopted as inclusion criteria. All procedures were performed by a single ophthalmologist at Instituto de Olhos Cristiano Mendonça.

The following was excluded from the study: patients with ocular diseases that may compromise VA (such as amblyopia, fundus abnormality, glaucoma, diabetic retinopathy, chronic uveitis, corneal opacity, pseudosfoliative syndrome); abnormal rainbow and pupillary deformations; intraoperative or postoperative complications (such as irido-pupillary trauma, loss of vitreous, impossibility of inserting the lens into the capsular bag) or previous ocular trauma; they were not able to answer the questionnaires; those who did not answer the phone call; and those who refused to participate in the survey. In this study, 70 individuals in need of cataract surgery were evaluated, with 54 of them complying with the inclusion criteria. Sixteen patients were excluded from the study, of which 11 did not answer the telephone, 4 were unable to answer the questions, and 1 did not want to participate in the survey. Of the patients included in the study, 15 patients were implanted with monofocal IOLs, another 15 with multifocal lenses, 15 patients had toric OL implanted, and 9 had Acrysof SN60AT.

In order to measure the subjective symptoms, the quality of life questionnaire Cataract TyPE Specification (Appendix 1) was applied in a validated Portuguese version. This questionnaire has 10 questions and evaluates parameters such as satisfaction, independence of glasses and presence of halos and glare. This questionnaire is used to evaluate the results of the cataract surgery, adopting a score of 0-10 for satisfaction level, YES/NO for independence of glasses and presence of halo.

The data collected was plotted in a spreadsheet with the program Microsoft Excel (Windows 2010). A descriptive analysis of the quantitative data (confidence interval (CI), standard deviation (SD), average) was made. All variables were tested for normality by the Kolmogorov-Smirnov test. Whenever they were parametric, the ANOVA analysis with Tukey's test was used to compare the independent groups. When they were non-parametric, the Mann-Whitney test was used in the comparison between the two groups. For correlation, the Spearmanrho test was used. The same level of significance ($p < 0.05$) was used in all analyzes.

Results

Fifty patients were evaluated: 15 patients with toric ocular lens implant, 15 patients with Acrysoft WF aspheric monofocal lenses, 15 patients with Acrydof Restor monofocal lenses, and 9 patients with Acrysoft SN60AT monofocal lenses. Of these, 21 patients were male (38.9%) and 33 female (61.1%). The average age of the patients was 67.4 years, with the ones with toric lenses implanted being those with the highest average (70.7 years), followed by the multifocal (67.7 years), aspheric monofocals (65.7 years), and spherical monofocal (65.7 years). All patients had cataract surgery at least 3 months before.

In the assessment of lens satisfaction after facectomy, patients were questioned regarding near, intermediate, and far sight, with scores ranging from 0 to 10.

The average level of satisfaction of the total of patients for the current sight was 8.8 (SD = 0.39, CI ± 1.46). Patients with ocular lenses had an average satisfaction of 9.5 (SD = 0.74, CI = 0.376); with aspheric monofocal lenses the average satisfaction was 8.3 (SD = 1.83, CI ± 0.927); with multifocal spherical lenses it was 8.9 (SD = 1.42, CI ± 0.721), whereas spherical monofocal lenses had an average satisfaction of 8.38 (SD = 1.51, CI ± 1.04). The Kruska-Wallis test was carried out to identify if there was any significant difference in the average score of this question 1, and it was concluded that current satisfaction for far sight was statistically similar in both groups.

The average level of satisfaction of the total of patients for intermediate sight was 8.6 (SD = 0.43, CI ± 1.62). Patients with toric lenses had an average satisfaction of 9.1 (SD = 1.67, CI = 0.844); with aspheric monofocal lenses it was 8.5 (SD = 1.64, CI ± 0.831); with multifocal spherical lenses it was 8.7 (SD = 1.50, CI ± 0.757), whereas spherical monofocal lenses had an average

satisfaction of 7,6 (SD = 3.31, CI ± 1.12). The Kruska-Wallis test was carried out to identify if there was any significant difference in the average score of this question, and it was concluded that current satisfaction for intermediate sight was statistically similar in the four groups.

For near sight, the average satisfaction of all patients was 8.4 (SD = 0.55, CI ± 2.05). Patients with toric lenses had an average satisfaction of 8.3 (SD = 2.02, CI = 1.024); with aspheric monofocal lenses it was 8.5 (SD = 1.81, CI ± 0.915); with multifocal spherical lenses it was 9.1 (SD = 1.16, CI ± 0.589), whereas spherical monofocal lenses had an average satisfaction of 7,1 (SD = 3.31, CI ± 1.42). There was no statistical difference in the use of the different lenses after using the Kruska-Wallis test. Patients were questioned if they would undergo surgery again, using the same score from 0 to 10. The average score of all patients for this question was 9.2 (SD = 2.15, CI ± 0.57). Patients who had toric lens implanted reported an average of 9.7 (SD = 1.29, CI ± 0.653); all patients who had Acrysoft WF monofocal lenses implanted reported score 10; with Restor the average was 9.3 (SD = 1.49, CI ± 0.725), whereas those with SN60AT spherical monofocal lenses reported an average of 6.9 (SD = 4.32, CI ± 1.49). The Kruska-Wallis test was carried out to identify if there was any significant difference in the average score of the question, and it was concluded that at least 2 groups behaved differently regarding the possibility of having surgery again if necessary. For this satisfaction item, Acrysoft WF lenses and toric lenses were better than Acrysoft SN60AT spherical lenses. There was no difference between Restor lesions and the others.

Patients were asked if they would have surgery again in case the reason was only to remove dependence on the glasses, regardless of the presence of the cataract. In general, patients reported an average score of 6.9 (SD = 3.79, CI ± 1.01). Patients who had toric lens implanted reported an average of 6.1 (SD = 3.77, CI ± 1.908); all patients who had Acrysoft WF monofocal lenses implanted reported average score 7.5 (SD= 3.50; CI ± 1.772); with Restor the average was 7.6 (SD = 4.03, CI ± 2.040), whereas those with SN60AT spherical monofocal lenses reported an average of 6.4 (SD = 4.24, CI ± 2.63). The Kruska-Wallis test showed no significant difference in the average score of this question regarding the implanted lenses.

It was also questioned whether patients would recommend surgery to a close friend or relative. In general, patients would recommend with an average score of 9.5 (SD = 1.66, CI ± 0.44). All patients who had toric lens implanted reported score 10; patients who had Acrysoft WF monofocal lenses implanted reported average score 9.9 (SD= 0.52; CI ± 0.261); with Restor the average was 9.0 (SD = 2.62, CI ± 1.325), whereas those with SN60AT spherical monofocal lenses reported an average of 8.63 (SD = 2.0, CI ± 1.15). The Kruska-Wallis test was carried out to identify if there was any significant difference in the average score of the question, and it was concluded that at least 2 groups behaved differently regarding the possibility of recommending surgery to a close person. For this question, Acrysoft WF lenses and toric lenses were better than Acrysoft SN60AT spherical lenses.

Analyzing the first 6 questions altogether to obtain a general satisfaction overview, the average score of 8.6 (SD = 0.89, CI ± 0.71) was obtained. Patients with ocular lenses reported an average score of 8.8 (SD = 0.77, CI ± 0.391); those with aspheric monofocal lenses obtained an average of 8.8 (SD = 0.79, CI ± 0.655); and those with Restor lenses obtained an average of 8.73 (SD = 1.30, CI ± 0.655); and those with spherical monofocal lenses (SN60AT) reported an average of 8.5 (SD = 0.89, CI ± 0.71). An ANOVA test was carried out with Tukey's test to identify whether there was any significant difference in the average score of the 6 questions, and it was concluded that 1 of the 4 groups behaved differently in terms of level of satisfaction. Patients with Acrysoft SN60AT spherical lenses were less satisfied when compared to patients with other types of lenses.

After evaluating the dependence of glasses on 9 situations, the overall average of lens dependence was 3.2 (SD = 2.91, CI ± 0.783). Patients with toric lenses presented average dependence for 5 situations (SD = 2.39; CI ± 1.210); those with aspheric monofocal lenses presented average values for 4.1 situations (SD = 2.15, CI ± 1.090), patients with multifocal spherical lenses did not complain of dependence on glasses, and patients who had spherical monofocal lenses for 5.1 (SD = 3.80, CI ± 2.637). The Kruskal-Wallis test was carried out to identify if whether there were any significant differences in glasses dependence in 9 situations (using a computer, reading books, driving, reading a newspaper, reading a restaurant menu, watching television, reading the medication, seeing photos, and looking at the time), and a difference among groups was identified. In the group-by-group comparison, a significant difference was evidenced between the Restor lens and all the other 3 lenses.

Patients were asked whether they reported glare or halo, and 9 (17%) patients complained of glare, 5 (9.34%) patients complained of halo during the day, and 12 (22.64%) complained of halo overnight.

Among patients with ocular lens implants, 1 (6.67%) presented halo overnight. Among the aspheric monofocal lenses, none presented glare, and only 1 presented halo during the day and overnight. Among patients with multifocal spherical lenses, 4 (26.67%) patients complained of glare, 2 (13.33%) patients complained of halo during the day, and 8 (53.33%) complained of halo overnight. Among patients with monofocal spherical lenses, 5 (62.5%) patients complained of glare, 2 (25.0%) patients complained of halo during the day and overnight.

Discussion

The main objective to of present study was to clarify which of the lenses mostly used in the facectomy in our environment provide a better satisfaction rate among patients. Satisfaction is directly related to medical factors and lens quality, but also social, economic and cultural factors of the population, and the findings of other countries or even different regions of the same country may be different.

In our setting, it was observed that there is a high level of satisfaction of patients undergoing facectomy with lens implants. However, it is clear that some types of lenses may provide better or worse contentment for patients.

As it is a more common disease among the elderly, the average age of patients in the present study was greater than 65 years (67.4 years), with a predominance of women (61.1%). This fact is similar to what most of the literature identifies. The increase in the prevalence in female patients is probably due to the greater demand for medical care by women, in addition to the greater number of elderly women than elderly men across the planet, which increases the exposure to risk factors for development of cataract.[4]

The study also showed that intraocular lenses show no difference in relation to vision satisfaction, whether near, intermediate or far sight among the lenses studied. Despite this, patients who had the Restor lenses implanted are those who need eyeglasses the least in their daily activities. Although we do not have the objective data of visual acuity for far and near sight of these patients, these data corroborate with the data that are expressed in several studies in the literature, since Restor is a multifocal lens with advantages like the resolution mainly of near and intermediate sight associated.(5-9)

The present study suggests that patients who had the Acrysoft SN60AT lenses implanted during facectomy to treat cataract were the ones who would rarely indicate the surgery to close family members and friends, and those who were less prone to undergo surgery again if necessary, when compared to Acrysoft WF lenses and toric lenses. This shows that, globally, the spherical lenses (Acrysoft SN60AT) are the ones satisfying patients the least among the lenses studied. This is probably because the Acrysoft SN60AT lens is spherical, and does not correct refractive changes, keeping the patient dependent on the glasses.(9)

The evaluation of the dysphothetic phenomena showed results in this research similar to those of the literature, showing a higher prevalence of these in patients with Acrysoft SN60AT spherical lenses, followed by the Restor spherical lenses, by the Accrysoft WF lens, and finally by the toric with no dysphothetic phenomenon. This information shows that patients who had spherical lenses chosen for the facectomy complain more of dysphasic symptoms. In addition, patients who have Restor lenses have an important prevalence of dysphasic effects compared to other lenses, according to the literature.(10, 11)

The current work, despite concluding several important points according to its pre-determined objectives, has some limitations. It is possible that with a greater number of patients more robust conclusions can be reached regarding the subject. As it was a retrospective study, some parameters were not evaluated, such as pre and postoperative visual acuity. Assessment of new variables in a prospective way may bring more information about the lenses that would be beneficial, and would better help the ophthalmologist and the patient to choose the lenses.

Conclusion

O estudo demonstrou que pacientes que foram submetidos a facThe study showed that, among patients who underwent facectomy with IOL implant, the spherical monofocal lenses are the ones causing less patient satisfaction and more dysphothetic effects. Multifocal spherical lenses tend to provide more independence from the glasses.

The study reinforces that the choice of IOL should depend on medical criteria, such as refractory disease, and on the patient choice, especially with regard to desiring to be independent of the glasses. This choice brings great repercussions on the quality of life of these patients.

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Appendix 1

Modified Type Questionare

How do you evaluate your post-surgery vision without glasses on a scale of 0 to 10, where 0 means very dissatisfied, 5 means neutral and ten means very satisfied (both eyes)

Level of satisfaction	Score[1]										
1. What is your evaluation for the satisfaction of your current FAR sight?	0	1	2	3	4	5	6	7	8	9	10
2. What is your evaluation for the satisfaction of your current INTERMEDIATE sight?	0	1	2	3	4	5	6	7	8	9	10
3. What is your evaluation for the satisfaction of your current NEAR sight?	0	1	2	3	4	5	6	7	8	9	10
4. Would you have surgery again?	0	1	2	3	4	5	6	7	8	9	10
5. Would you have this surgery again just be free from the dependence of glasses, regardless of the presence of cataract?	0	1	2	3	4	5	6	7	8	9	10
6. Would you recommend this surgery to a close friend or relative?	0	1	2	3	4	5	6	7	8	9	10

Independence of glasses		X		X	
7. Do you wear glasses to:	Use the computer		Watch TV		
	Read books		Read the medication		
	Dirigir à noite		See fotos		
	Read a newspaper		Look the time		
	Read menu				
Halo	**Yes**	**X**	**No**	**X**	
8. Have you been seing ring around the light during the day?	No difficult				
	Moderate				
	Severe				
9. Have you been seing ring around the light at night?	No difficult				
	Moderate				
	Severe				

* 0 means very dissatisfied, 5 means neutral and ten means very satisfied

Source: Hida WT, Nakano CT, Yamane I, Motta AF, Tzeliks PF, Guimaraes AS, et al. Elaboração e validação do questionário de satisfação dos pacientes pseudofácicos em português. Rev Bras Oftalmol. 2013;72(6), 388-95.