JKAU: Med. Sci., **Vol. 15** No. 4, pp: 67-82 (2008 A.D. / 1429 A.H.)

Patients' Satisfaction and Functional Visual Outcome with Multifocal Intraocular Lenses

Tarek M. Eid[1,2], MD, Wael A. el-Menawy[2], FRCS, Motaz Sabry[1], MD, and Ihab Y. el-Hawary[2], FRCS

[1]Ophthalmology Department, Tanta University, Tanta, Egypt
[2]Glaucoma & Cataract Unit, Maghrabi Eye & Ear Center, Jeddah, Saudi Arabia
tarekmeid@hotmail.com

Abstract. To assess the subjective of visual function, patients' satisfaction, and visual outcome after cataract surgery was performed with multifocal intraocular lens. The study included patients with a bilateral visually significant cataract scheduled for phacoemulsification and multifocal lens (ReSTOR) implantation. Uncorrected distance and near visual acuity, and visual symptoms were recorded. Patients were interviewed for assessment of "near", "intermediate" and "far" visual activities using a visual function index (VF-14). Patients rated their overall trouble with vision and satisfaction with visual outcome. Fifty-two eyes of 26 patients were evaluated and the mean age was 55 years. Postoperative distant acuity was 20/40 or better in 92.6% of eyes and near acuity was J3 or better in 88.9%. Five patients had transient visual symptoms; one had persistent halos around light. The overall VF-14 score was 83.9. The average score for items testing "near" visual tasks was 82.6 compared to a score of 85.8 for "intermediate" and 86.4 for "distance" visual tasks. Some patients were less satisfied with intermediate activity, especially in computer work. Most patients having cataract surgery with ReSTOR multifocal lenses were generally satisfied with their visual function for both distance and near, but not so with intermediate vision like computer work.

Keywords: Cataract, Multifocal IOL, ReSTOR lens, VF-14 questionnaire.

Introduction

The visual performance of patients after cataract surgery depended largely on the type of intraocular lens (IOL) implanted. Monofocal IOLs

Correspondence & reprint request to: Dr. Tarek M. Eid
P.O. Box 20377, Jeddah 21455, Saudi Arabia
Accepted for publication: 11 December 2008. Received: 11 October 2008.

have a single, fixed focal length unable to provide full-time spectacle independence. Multifocal IOLs, where multiple focal lengths are present within the optical zone, have been designed to provide unaided distance and near vision[1]. Multifocal IOLs are either refractive or diffractive. With multifocal refractive zones two images (far and near) are produced simultaneously and the human brain is able to adapt to near and far vision, depending on what it is looking at[2]. These lenses, however, are associated with significant reduction in contrast sensitivity and night vision problems (photic phenomenon)[2]. These drawbacks were partially overcome by changing optical design of the IOL, and with the aid of the pupil to direct different amounts of the refracted light on the different foci, thus favoring distance or near vision[3].

The multifocal AcrySof Natural ReSTOR SN60D3 (Alcon) combines the function of both apodized diffractive and refractive regions[4]. The lens has a central 3.6-mm apodized optic region, where 12 concentric diffractive zones on the anterior surface have a gradual reduction in diffractive step heights from center to periphery (1.3 to 0.2 μm), creating multifocality from near to distance (Fig. 1). The refractive

Fig. 1. The AcrySof ReSTOR with an apodized diffractive surface occupying the central 3.6 mm with precise reduction of diffractive step heights, from center to periphery where higher steps in the center, direct more light to near and lower steps in the periphery more direct light to distance.

part of the lens (outside the diffractive zone) directs light to a distance focal point for larger pupil diameter. With a 2-mm pupil, this lens design distributes approximately 40% of light at near and 40% at distance, and 20% is lost to higher diffraction orders; for a 5-mm pupil, 84% of light is distributed at distance, 10% at near, and 6% lost. The overall diameter of the lens is 13 mm with 6-mm optical diameter. The add power of the IOL is approximately 4 D, which provide 3.2 D of add at the spectacle plane (the near point is theoretically at 32 cm)[5]. The lens includes a blue-light filter, which prevents retina ultraviolet light alterations without disturbing contrast sensitivity and chromatic vision[6]. Spectacle independence for near and far vision, patient satisfaction with visual performance, and an effect on contrast sensitivity are main concerns in evaluating multifocal IOLs.

In this study we evaluated the subjective aspects of visual function in terms of visual activity and patients' satisfaction, as well as distance and near visual acuity after cataract surgery with implantation of ReSTOR multifocal IOL.

Patients and Methods

The study included consecutive patients with visually significant cataract who were willing to have cataract extraction with implantation of IOL for both distance and near vision. Other inclusion criteria included visually significant cataract, less than 1 D of astigmatism, spectacle power between +4 D and -6 D, and axial length between 21 and 26 mm. Exclusion criteria included unilateral aphakia, presence of other ocular morbidity (glaucoma, retinal detachment surgery, corneal opacity, uveitis, macular degeneration, or previous corneal or intraocular surgery), professional night drivers, and patients with unrealistic expectations. The study was undertaken during the second half of 2006, where eligible patients with bilateral phacoemulsification and ReSTOR IOLs were recruited for analysis. The Institute's committee of ethics approved the study and a consent form was obtained after discussion with every patient about advantages and disadvantages, and visual expectations from the IOL type selected. Calculation of IOL power was performed by IOL Master (Zeiss) and Holladay 1 formula (for eyes with average axial length), SRK/T (for longer eyes > 25mm) or Hoffer Q formula (for short eyes < 22mm). The IOL power was chosen to produce a target postoperative refraction between 0 and 0.25 D. The first author

performed all surgeries. Topical or medial percutaneous peribulbar anesthesia was used according to patient's preference. A clear-cornea temporal 2.8 to 3.2-mm incision was constructed, followed by central 5-mm capsulorhexis and nuclear chopping and emulsification. Cortical material was aspirated, followed by in-the-bag implantation of AcrySof ReSTOR Natural IOL using single-handed Monarch II Injector. The lens was centralized in the bag (Fig. 2). The patients were followed in one day and at 1, 2, and 4 weeks postoperatively.

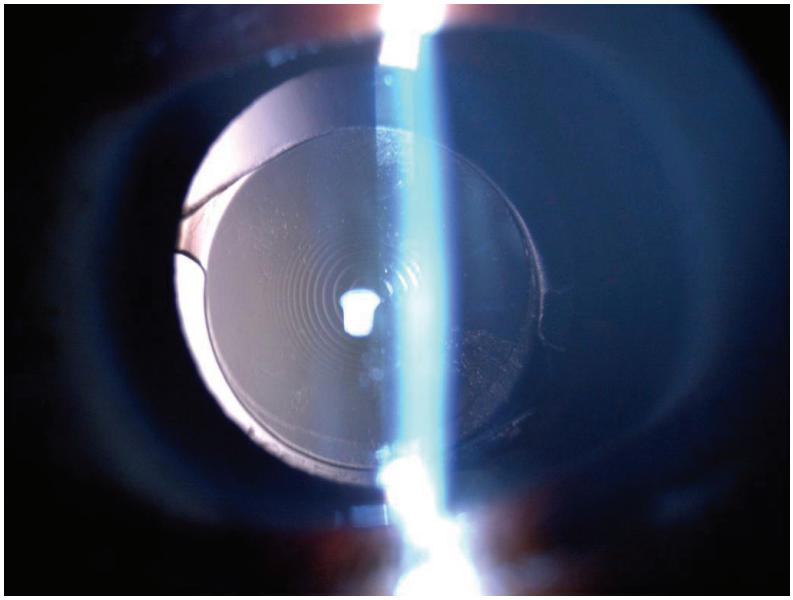

Fig. 2. ArySof ReSTOR multifocal intraocular lens centralized in the capsular bag.

Uncorrected visual acuity for distance and near was checked after one month. By that time all patients were interviewed for assessment of their visual function using a visual function index (VF-14)[7]. The test measures the functional capacity related to vision based on 14 vision-dependent activities performed in everyday life that can be affected by cataract and were expected to improve after cataract surgery (Table 1). An Arabic translation of the English version was introduced by 2 bilingual authors independently; it was discussed and approved by all authors. All patients were interviewed in the clinic by one of the authors. His rule was to explain to patients why we are doing the test and how to answer each question. Both the English and Arabic versions were

included in the same page. Patients either filled out forms or interviewed on their satisfaction level for 14 different near, intermediate and far visual activities. "Near" activities included: reading small prints, reading newspaper or a book, writing checks or filling out forms, reading a large-print book or numbers on a telephone. "Intermediate" activities covered: seeing steps, stairs or curbs, fine household work like sewing and carpentry, playing games like dominos or card games, and finally cooking. "Distance" visual activities included: recognizing people when they are close to you, reading traffic street signs, taking part in sports, watching TV, daytime driving, and nighttime driving. Patients were asked if they had difficulty in doing each of the activities. Patients responding by "yes" were asked to rate the amount of difficulty as 4 = No Difficulty, 3 = A Little, 2 = Moderate Amount, 1 = Great Deal of Difficulty, and 0 = Unable to do the Activity at All because of His Vision[8]. A score was obtained by averaging the responses of all activities answered by every patient, then multiplied by 25 to get a final score. Non-applicable items for some patients are not considered and the score was calculated from the answered items only; for example, if a patient does not drive, items 13 and 14 will not be applicable for him and the score will be considered for the remaining 12 items. The VF-14 score can range from 0 (unable to perform all applicable activities) to 100 (able to perform all applicable activities without difficulties). The validity and internal consistency of the VF-14 have been documented[7,9].

In addition, 4 supplementary questions were asked and rated on 4-point scale (Table 2): (1) to rate the overall amount of trouble with vision; (2) to evaluate whether vision and visual function had changed as expected; (3) to rate satisfaction with the medical outcome after the operation; (4) to mention if there is a change in patient's quality of life[10]. The score for each of the supplementary questions was calculated in the same way applied for VF-14 questionnaire, but their values were not included in the overall score of the VF-14.

Main outcome measures included the mean score of visual activities utilized at near, intermediate, and distance as rated by VF-14, unaided visual acuity at distance and near, and visual complaints reported by the patients.

Table 1. English version and Arabic translation of the VF-14 questionnaire.

1. Reading small prints such as labels on medicine and telephone directory	١. قراءة النصوص الصغيرة مثل نشرات الادويه و دليل التليفون
2. Reading newspapers or books	٢. قراءة الكتب او الجرائد
3. Reading large print books	٣. قراءة النصوص الكبيرة فى الكتب
4. Recognizing people when they are close to you	٤. التعرف على الأشخاص عند اقترابهم منك
5. Seeing steps & stairs	٥. رؤية درجات السلم، عتبات البيوت
6. Reading traffic signs, street names, and store signs	٦. رؤية علامات المرور، وأسماء الشوارع والمحلات
7. Doing fine handwork like sewing and carpentry	٧. القيام بأعمال يدوية دقيقة مثل الخياطة،والتطريز وأعمال النجارة
8. Writing checks or filling out forms	٨. كتابة الشيكات أو ملء الاستمارات أو كتابة الخطابات
9. Playing card, games, dominos	٩. ممارسة ألعاب الورق،الدومينو
10. Taking part in sports like handball	١٠. ممارسة الرياضة
11. Cooking	١١. الطهو
12. Watching TV	١٢. مشاهدة التليفزيون
13. Driving during day	١٣. القيادة أثناء النهار
14. Driving at night	١٥. القيادة فى الليل

Table 2. Patients' and eye characteristics.

Variable		Count	%
Number of Patients		26	100
Number of Eyes		52	100
Sex	Male	17	65.4
	Female	9	34.6
Preoperative V/A	20/20 to 20/40	12	23.1
	20/50 to 20/100	30	57.7
	20/200 to CF	10	19.2
Type of Cataract	Posterior subcapsular cataract	34	65.4
	Cortical	10	19.2
	Nuclear	6	11.5
	White	2	3.8
Anesthesia	Topical	34	65.4
	Peribulbar block	18	34.6
Operative Complications		None	

Results

The study included 52 eyes of 26 patients; all had been operated for visually significant cataract. All patients were willing to have cataract surgery with implantation of multifocal IOL (AcrySof ReSTOR lens). Thirty-four patients had posterior subcapsular cataract and 40 patients had visual acuity of 20/50 or worse (Table 2). All surgeries were performed under topical or medial percutaneous peribulbar anesthesia. No reported intra- or post-operative complications. An average preoperative spherical equivalent of refraction was 2.0 D with less then 1.0 D of astigmatism and the mean postoperative target refraction was 0.1 D (Table 3).

Table 3. Continuous variables in the study eyes.

Variable	Mean	Standard deviation
Age (years)	55.1	9.9
Preoperative Refraction (D)	+2.0	0.9
Intraocular Lens Power (D)	20.0	2.2
K1 reading (D)	42.8	1.5
K2 reading (D)	43.6	1.4
Axial Length (mm)	23.9	0.9
Target Postoperative Refraction	0.1	0.1
Phaco Time (Seconds)	0.2	0.03
Percent of Phaco Power	7.4	4.1
Preoperative IOP (mmHg)	14.1	2.4
Postoperative IOP (mmHg)	12.6	3.1

Ninety-two percent of the eyes had postoperative UCDVA of 20/40 or better and 88.5% of eyes can read J3 or better without distance or near correction (Table 4). Postoperative visual complaints included seeing arc of shadow either temporally or nasally (2 patients), transient halos (3 patients), persistent halos for 3 months (one patient), delay in focusing on shift from far to near (one patient), and apparent dimness of light in the first eye operated compared to the other eye.

All patients answered at least 9 items of the VF-14 questionnaire and the mean number of applicable items was 11.5 ± 1.5. The overall mean score of the VF-14 for all patients was 83.9. The mean score for individual test items ranges between 75 (reading small prints such as

labels on medicine and telephone directory) and 94.5 (reading large prints and recognize people when they are close to you) (Table 5). The average score for items testing activities related to "near" visual tasks was 82.6, compared to a score of 85.8 for "intermediate" visual activities and 86.4 for "distance" visual activities. No specific items in the VF-14 were related to computer work; an activity utilizing intermediate vision at distances between 60 cm and 90 cm. In our study, 9 patients (34.6%) complained of trouble seeing a computer screen or keyboard. As regards to the supplementary questions rating, the overall satisfaction with medical outcome, patient satisfaction with their visual outcome had a score of 94.5, an improvement in the quality of life 69.5%, and overall absence of trouble with vision 83.3.

Table 4. Unaided distance and near visual acuity one month after surgery.

Variable		Count	%
Postoperative unaided distance visual acuity	20/20 to 20/40 <20/40	48 4	92.3 7.7
Postoperative unaided near visual acuity	J1:J3 <J3	46 6	88.5 11.5

Table 5. Average score of each test of the visual function questionnaire (VF-14).

Test items	Score	Score × 25
Reading small prints	3.0	75
Reading newspaper or books	3.1	77.8
Reading large prints	3.78	94.5
Recognize people when close	3.78	94.5
Seeing steps & stairs	3.44	86.0
Traffic, street, store signs	3.44	86.0
Doing fine work like sewing & carpentry	3.14	78.5
Writing checks or filling forms	3.33	83.3
Playing card , games , dominos	3.4	85.0
Taking part in sports	3.14	78.5
Cooking	3.75	93.8
Watching TV	3.33	83.3
Driving during day	3.67	91.8
Driving at night	3.38	84.5
Overall trouble with vision	3.33	83.3
Visual function change	2.0	50.0
Satisfaction with medical outcome	3.78	94.5
Quality of life	2.78	69.5

Discussion

Intraocular lenses correct presbyopia after cataract surgery; reduce spectacle dependence for both distance and near, plus they are gaining acceptance by many patients. Monovision principle was adopted to improve reading ability with monofocal lenses, it may be helpful, but binocularity is sacrificed. Accommodating IOLs depend upon modification of the optic-haptic junction or dual optic technology to allow movement, or change in the position or the shape of the optic in response to an accommodative effort. Multifocal IOLs are designed to distribute energy between distance and near foci on the retina, but the first generation of these lenses were associated with high rate of glare and halos. The introduction of apodized diffractive multifocal lenses (AcrySof ReSTOR, Alcon) was aimed to minimize the photic phenomenon commonly seen with old version of refractive multifocal IOLs. The design of the optical portion of the ReSTOR IOL (combining an apodized diffractive portion centrally and a refractive portion peripherally); and the effect of the pupil size create different amounts of light on different foci for near, intermediate and distant vision; and the patient adapts to near and far vision depending on brain selection for the in-focus image and suppression of out-of-focus one[3,11].

In our study, 92% of eyes had postoperative UCDVA of 20/40 or better and 88.5% UCNVA of J3 or better. These results are comparable to other reports in the literature[4,12-15]. Although, the apodized diffractive principle of the ReSTOR lens was designed to minimize photic phenomenon compared with previous versions of multifocal IOLs, some patients in this study complained of halos and glare. Kohnen *et al.*[16] in the European multicenter study of the AcrySof ReSTOR lens reported 20-25% associated halos and glare. Some of our patients adapted neutrally to the photic phenomenon, although one patient had persistent halos after 3 months.

Many quality-of-life studies used validated questionnaires to assess functional visual outcome and patients' satisfaction after cataract surgery with monofocal IOLs[7,8,17,18]. On the contrary, most studies assessing visual function in patients with multifocal IOLs are using simple forms of questionnaire mainly to address near visual activities and patient satisfaction with the outcomes[4,12-15]. We applied a validated, broadly tested, quality-of-life visual index (VF-14) for subjective assessment of

visual function, and patient satisfaction after cataract surgery with implantation of AcrySof ReSTOR multifocal IOL. We arbitrarily classified the 14 items of VF-14 to assess near, intermediate, and distance visual activity separately. The score of VF-14 for individual items postoperatively, without optical correction, ranged between 75 and 94.5 for "near" visual activities, 78.5-93.8 for "intermediate" visual tasks, and 78-94.5 for "distance" visual activities. Almost 95% of patients were satisfied with their visual outcome, 83% had no troubles with their vision, and 70% noted an improvement of their quality of life. The mean overall VF-14 score was 83.9% for all patients in the study (a score of 100 would indicate that patients had no difficulty with any of the 14 items in questioned). The mean number of applicable items was 11.5 $\pm$ 1.5 where some items were not applicable for some patients (*e.g.*, day and night driving for women and old men, some types of sport activities, *etc*). Steinberg *et al.*[7] reported a mean VF-14 score of 75 for cataract patients with monofocal IOLs, whereas Nijkamp and associates[10] reported a mean score of 86 for postoperative visual function on the Dutch version of the VF-14 with same type of lenses. Alonso and associates[8] compared the mean score of VF-14 in non-American and American patients with cataract and after one eye surgery. They reported a mean score of 71 and 75 preoperatively and 85 and 89 postoperatively.

The mean score for items related to "near" visual activities was 82.6 compared with 85.8 for items addressing "intermediate" visual activities and 86.4 for "distance" visual tasks. In spite of the high average score for activities utilizing intermediate vision, a significant number of patients (9 patients, 34.6%) had low level of satisfaction for intermediate visual tasks, in particular computer work. Unfortunately, this activity is not addressed in the VF-14. Computer use is an important activity, even for the older population. This necessitates a thorough patient interview prior to IOL choice, if spectacle independence for intermediate vision is a priority.

This study is limited by the lack of a control group of patients with either monofocal IOLs or another type of multifocal IOLs, and the lack of objective assessment of contrast sensitivity changes or high order aberrations that may be associated these types of lenses.

In summary, most cataract patients receiving the AcrySof ReSTOR apodized diffractive IOL were satisfied with their unaided visual

outcome, although some claimed their intermediate vision fell short of their expectation. The ReSTOR lens is more likely to benefit patients in which intermediate visual activities, like computer work, play a lesser role. Careful patient selection is the determining factor to achieve better proper functional visual outcome and patient satisfaction.

References

[1] **Gimbel HV, Sanders DR, Raanan MG,** Visual and refractive results of multifocal intraocular lenses, *Ophthalmology*, 1991; **98**(6): 881-887.

[2] **Steinert RF**, **Aker BL**, **Trentacost DJ**, **Smith PJ**, **Tarantino N**, A prospective comparative study of the AMO ARRAY zonal-progressive multifocal silicone intraocular lens and a monofocal intraocular lens, *Ophthalmology*, 1999; **106**(7): 1243-1255.

[3] **Hayashi K, Hayashi H, Nakao F, Hayashi F,** Correlation between pupillary size and intraocular lens decentration and visual acuity of a zonal-progressive multifocal lens and a monofocal lens, *Ophthalmology*, 2001; **108**(11): 2011-2017.

[4] **Alfonso JF**, **Fernández-Vega L**, **Baamonde MB**, **Montés-Micó R**, Prospective visual evaluation of apodized diffractive intraocular lenses, *J Cataract Refract Surg*, 2007; **33**(7): 1235-1243.

[5] **Davison JA, Simpson MJ,** History and development of the apodized diffractive intraocular lens, *J Cataract Refract Surg*, 2006; **32**(5): 849-858.

[6] **Rodríguez-Galietero A**, **Montés-Micó R**, **Muñoz G**, **Albarrán-Diego C**, Comparison of contrast sensitivity and color discrimination after clear and yellow intraocular lens implantation, *J Cataract Refract Surg*, 2005; **31**(9): 1736-1740.

[7] **Steinberg EP**, **Tielsch JM**, **Schein OD**, **Javitt JC**, **Sharkey P**, **Cassard SD**, **Legro MW**, **Diener-West M**, **Bass EB**, **Damiano AM, *et al.***, The VF-14. An index of functional impairment in patients with cataract, *Arch Ophthalmol*, 1994; **112**(5): 630-638.

[8] **Alonso J**, **Espallargues M**, **Andersen TF**, **Cassard SD**, **Dunn E**, **Bernth-Petersen P**, **Norregaard JC**, **Black C**, **Steinberg EP**, **Anderson GF**, International applicability of the VF-14. An index of visual function in patients with cataract, *Ophthalmology*, 1997; **104**(5): 799-807.

[9] **Cassard SD**, **Patrick DL**, **Damiano AM**, **Legro MW**, **Tielsch JM**, **Diener-West M**, **Schein OD**, **Javitt JC**, **Bass EB**, **Steinberg EP**, Reproducibility and responsivenss of the VF-14. An index of functional impairment in patients with cataract, *Arch Ophthalmol*, 1995; **113**(12): 1508-1513.

[10] **Nijkamp MD**, **Nuijts RM**, **Borne B**, **Webers CA**, **van der Horst F**, **Hendrikse F**, Determinants of patient satisfaction after cataract surgery in 3 settings, *J Cataract Refract Surg*, 2000; **26**(9): 1379-1388.

[11] **Montés-Micó R, España E, Bueno I, Charman WN, Menezo JL,** Visual performance with multifocal intraocular lenses; mesopic contrast sensitivity under distance and near condition, *Ophthalmology*, 2004; **111**(1): 85-96.

[12] **Pepose JS**, **Qazi MA**, **Davies J**, **Doane JF**, **Loden JC**, **Sivalingham V**, **Mahmoud AM**, Visual performance of patients with bilateral vs combination Crystalens, ReZoom, and ReSTOR intraocular lens implants, *Am J Ophthalmol*, 2007; **144**(3): 347-357.

[13] **Chiam PJ**, **Chan JH**, **Haider SI**, **Karia N**, **Kasaby H**, **Aggarwal RK**, Functional vision with bilateral ReZoom and ReSTOR intraocular lenses 6 months after cataract surgery, *J Cataract Refract Surg*, 2007; **33**(12): 2057-2061

[14] **Vingolo EM, Grenga P, Iacobelli L, Grenga R,** Visual acuity and contrast sensitivity: AcrySof ReSTOR apodized diffractive versus AcrySof SA60AT monofocal intraocular lenses, *J Cataract Refract Surg*, 2007; **33**(7): 1244-1247.

[15] **Chiam PJ, Chan JH, Aggarwal RK, Kasaby S,** ReSTOR intraocular lens implantation in cataract surgery: quality of vision, *J Cataract Refract Surg*, 2006; **32**(9): 1459-1463.

[16] **Kohnen T**, **Allen D**, **Boureau C**, **Dublineau P**, **Hartmann C**, **Mehdorn E**, **Rozot P**, **Tassinari G**, European multicenter study of the AcrySof ReSTOR aposdized diffractive intraocular lens, *Ophthalmology*, 2006; **113**(4): 578-584.

[17] **Mangione CM, Phillips RS, Seddon JM, Lawrence MG, Cook EF, Dailey R, Goldman L,** Development of the "Activities of Daily Vision Scale": a measure of visual functional status, *Med Care*, 1992; **30**(12): 1111-1126.

[18] **Mangione CM**, **Lee PP**, **Pitts J**, **Gutierrez P**, **Berry S**, **Hays RD**, Psychometric properties of the National Eye Institute Visual Function Questionnaire (NEI-VFQ). NEI-VFQ Field Test Investigators, *Arch Ophthalmol*, 1998; **116**(11): 1496-1504.

تقييم مدى ارتياح المرضى والمردود البصري الوظيفي بعد زراعة العدسة "ريستور" متعددة البؤر

طارق عيد[١،٢]، و وائل عبدالرحمن المناوي[٢]، و معتز صبري[١]، و إيهاب يسري الهواري[٢]

[١]قسم طب و جراحة العيون، كليه الطب، جامعة طنطا، طنطا، مصر

[٢]وحده المياه البيضاء والزرقاء، مركز مغربي للعيون والأذن جـــــدة – المملكة العربية السعودية

المستخلص. تقييم مدى ارتياح المريض، والمحصلة النهائية لوظائف الإبصار بعد عمليات إزالة المياه البيضاء وزراعة العدسات "ريستور" ذات البؤر المتعددة. اشتملت الدراسة على مرضى يعانون من مياه بيضاء بالعينين، وقد تم قياس حدة الأبصار للبعيد والقريب وتقيم المشاكل البصرية قبل وبعد إجراء العمليات. وبعد العملية قام المرضى بملء استبيان تقييم الوظائف البصرية (VF-14) للنظر البعيد و المتوسط والقريب، وكذلك تقييم النتيجة العامة من حيث المشاكل البصرية ودرجة الارتياح لنتيجة العملية. تم تقييم ٥٢ عين لعدد ٢٦ مريض، متوسط أعمارهم ٥٥ عام، ووصلت درجة الإبصار للبعد ٢٠/٤٠ أو أفضل عند ٨٨،٩٪ وللقرب. ٩٢,٦٪، وقد أظهر خمسة مرضى عوارض بصرية مؤقتة, بينما عانى مريض واحد من وجود هالات دائمة حول الضوء. وكانت النتيجة العامة لاستجواب (VF-14) ٨٣,٩، بينما كان متوسط نتيجة تقييم مردود النظر "القريب" هي ٦,٨٢ و"المتوسط" ٨٥,٨. و"البعيد" ٨٦,٤، وقد صرح بعض المرضى بأنهم يعانون بعض المتاعب المتعلقة بالنظر المتوسط، خاصة مع

استعمال الكمبيوتر. بعد زراعة عدسة "ريستور" المتعددة البؤر لمرضى المياه البيضاء، أظهر معظم المرضى ارتياحًا عامًا للمردود البصري البعيد والقريب مع بعض التحفظ على وظائف النظر المتوسط مثل أنشطة الكمبيوتر.