PRESBYOPIA-CORRECTING IOLS: IMPACT ON QUALITY OF LIFE



How satisfied are patients who receive multifocal lenses?

BY ELIZABETH SHEN, MD; KATE XIE, MD; AND SANJAY KEDHAR, MD

QUALITY OF LIFE RELATED VARIABLES MEASURED FOR THREE MULTIFOCAL DIFFRACTIVE INTRAOCULAR LENSES: A PROSPECTIVE RANDOMISED CLINICAL TRIAL

Alió JL, Kaymak H, Breyer D, Cochener B, Plaza-Puche AB[1]

ABSTRACT SUMMARY

Investigators assessed contrast sensitivity, subjective satisfaction, photic phenomena, spectacle independence, and quality of life (QOL) at 1 and 6 months after patients underwent bilateral implantation of one of three IOLs: AT LISA 809M (Carl Zeiss Meditec, not available in the United States, 38 eyes), AT LISA tri 839MP (Carl Zeiss Meditec, not available in the United States, 32 eyes), or AcrySof IQ Restor +3.0 D model SN6AD1 (Alcon, 34 eyes). The tested models of the AT LISA IOL (+3.75 D add) and AT LISA tri IOL (+3.33 D near add, +1.66 D intermediate add) feature a diffractive-refractive optical design, whereas this AcrySof IQ Restor IOL model features an apodized diffractive bifocal optical design with a +3.00 D add.

Binocular contrast sensitivity was measured under photopic and mesopic conditions. The researchers found no statistically significant differences between any of the three multifocal IOL groups at either postoperative timepoint.

The investigators administered a questionnaire at 1 and 6 months postoperatively to determine patients' levels of satisfaction and spectacle independence. Overall, satisfaction scores were very high for distance and near visual acuity. Patients who received the AT LISA bifocal IOLs expressed less satisfaction with their intermediate visual acuity, although the differences with the other lenses were not statistically significant. Scores for spectacle independence for distance, intermediate, and near visual acuity did not differ significantly between any of the groups.

One month after surgery, 100% of patients who received one of the bifocal IOLs and 80% of those who received a trifocal IOL stated that they would choose the same lens again. By 6 months, however, there was no significant difference between groups, suggesting that the trifocal lens may require a longer period of neural adaptation.

Patients subjectively evaluated their perception of glare and three types of halo using computer software (Halo & Glare Simulator, Eyeland Design Network). Although the type of halo perceived differed, its size and intensity did not differ significantly across the groups.

DISCUSSION

All three IOLs effectively met patients' goals for spectacle independence and provided high levels of satisfaction. The strengths of this study are its prospective, randomized design and its

STUDY IN BRIEF

- A multicenter, prospective, randomized clinical trial evaluated differences in contrast sensitivity, photopic phenomena, subjective satisfaction, and quality of life among 52 patients receiving one of three multifocal IOL models.

WHY IT MATTERS

Advances in surgical technique and technology have ushered in an era of refractive cataract surgery. Although the number of multifocal IOL designs on the market is growing, few comparative studies of these lenses have evaluated the technologies' effects on patient satisfaction, visual function, and quality of life. This study found high levels of patient satisfaction and spectacle independence with three IOL models.

ASSESSED BY THE NATIONAL EYE INSTITUTE VISUAL FUNCTION QUESTIONNAIRE-14

- Reading small print
- Reading a newspaper or a book
- Reading a large-print book or numbers on a telephone
- Recognizing people when they are nearby
- Seeing steps, stairs, or curbs
- Reading traffic, street, or store signs
- Doing fine handiwork like sewing
- Writing checks or filling out forms
- Cooking
- Watching television
- Driving during the day
- Driving at night
- Recognizing people from a distance
- Using a personal computer
- Shaving, styling hair, or putting on makeup
- Difficulty going out to see movies, theater, plays, or events

evaluation of various visual parameters. The main limitation of this study is its use of an in-house questionnaire instead of a standardized method such as the National Eye Institute Visual Function Questionnaire. The lack of a standardized questionnaire limits readers' ability to compare these results to those of other studies. Although there is no indication of bias, it should also be noted that Carl Zeiss Meditec designed, sponsored, and partially funded the trial.

The most surprising finding was that the trifocal lens did not provide significantly better intermediate visual acuity than the AcrySof bifocal lens. The investigators stated that this finding was consistent with prior studies that have suggested that the SN6AD1 provides acceptable intermediate visual acuity.[2,3] Earlier research by Alió and colleagues used the National Eye Institute Visual Function Questionnaire-25 to compare model SN6AD3 of the bifocal AcrySof IQ Restor IOL with the aspheric bifocal biconvex refractive-diffractive Acri.LISA IOL (now AT LISA) and monofocal Acri.Smart lens (Acri.Tec, no longer available) and found positive QOL outcomes for tasks at near and intermediate distances with both multifocal IOLs.[4,5]

Although this study showed a trend toward limited intermediate visual acuity with the AT LISA 809M bifocal lens, this was not reflected in patient satisfaction scores or spectacle independence scores. Similarly, Gil et al demonstrated that patient satisfaction and QOL were not statistically different even if outcomes for uncorrected near visual acuity differed significantly among various multifocal IOLs.[6] This suggests that patients are highly subjective when grading their level of satisfaction with their vision at various distances. Many studies have demonstrated that patient satisfaction is very high with various types of multifocal IOL,[2-6] but satisfaction may not be the most sensitive measure by which to differentiate the actual performance of these lenses. As new multifocal IOLs come to market, studies should assess both patients' subjective satisfaction and objective measures of visual function to compare the effects of multifocal technology on patients' QOL.

EVALUATION OF QUALITY OF LIFE AFTER IMPLANTATION OF A NEW TRIFOCAL INTRAOCULAR LENS

Akman A, Asena L, Ozturk C, Gür Güngör S[7]

ABSTRACT SUMMARY

Investigators evaluated 48 consecutive patients who underwent bilateral implantation of the AcrySof IQ PanOptix IOL (Alcon). First, they evaluated patients' QOL 3 months after surgery with the National Eye Institute Visual Function Questionnaire-14 (VF-14 QOL; see *Assessed by the National Eye Institute Visual Function Questionnaire-14*). Second, they compared vision-related QOL in the monocular versus the binocular state in a subgroup of 14 patients for whom IOL implantation in their second eye was delayed by 3 months or longer. Third, the researchers evaluated uncorrected distance visual acuity, uncorrected intermediate visual acuity, and uncorrected near visual acuity at 3 months after bilateral implantation.

The VF-14 QOL was administered 3 months after patients received an IOL in their second eye. The mean value score for each item of the questionnaire was 1.00 or less, indicating that patients had little to no difficulty performing those tasks. They reported the most difficulty reading small print, driving at night, and doing fine handiwork.

For the subgroup of patients for whom IOL implantation in their second eye was delayed, investigators administered the VF-14 QOL questionnaire 3 months after surgery on the first eye and again 3 months after surgery on the second eye. Patients reported a significant improvement in vision-related QOL—specifically for fine handiwork such as sewing and for using a personal computer—after binocular implantation.

The researchers reported an average binocular postoperative logMAR UCVA of 0.05 at distance, 0.11 at 60 cm, and 0.09 at 40 cm, all of which were significant improvements from preoperative levels.

DISCUSSION

With the addition of intermediate focus, trifocal IOLs offer a theoretical advantage over the bifocal models currently available in the United States, but medical interventions must ultimately be judged by their effect on patients' QOL. The results of this study indicate high patient satisfaction and

STUDY IN BRIEF

▶ A prospective study evaluated vision-related quality of life (QOL) in 48 patients who underwent bilateral implantation of a diffractive trifocal IOL.

WHY IT MATTERS

Although multifocal IOLs currently available in the United States may enable patients to achieve spectacle independence for tasks at distance and near, patients encounter difficulty with tasks requiring intermediate visual acuity such as the use of computers and smartphones. Additionally, many patients who receive these IOLs experience photic phenomena that make them dissatisfied with their quality of vision. Trifocal IOLs have wide, flat defocus curves and are associated with fewer visual side effects,[8-10] which may result in better QOL and quality of vision. This study used a standardized vision-related QOL questionnaire to demonstrate high patient satisfaction and vision-related QOL after bilateral implantation of a trifocal IOL.

vision-related QOL with the AcrySof IQ PanOptix IOL. Limitations of this study include the lack of a comparison to a monofocal or bifocal IOL and a short follow-up period, which might have negatively affected results owing to incomplete neural adaptation. In addition, objective measures of contrast sensitivity and glare were not used. The incidence of photopsias was not directly evaluated, although the researchers reported that all patients experienced a subjective improvement in halos and glare at their last follow-up visit.

The results of this study may help guide the informed consent process and suggest lifestyle considerations that should be addressed during patient selection for the PanOptix and other trifocal IOLs. ■

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