Published in final edited form in: J Cataract Refract Surg, 27(10), 1607-10

Comparison of patient satisfaction after uncomplicated cataract surgery between the silicone AMO SI-30/40 and the acrylic Alcon MA30BA and MA60BA foldable intraocular lenses

Manuscript No. 815-00

Ivan P. Hwang, MD

Randall J. Olson, MD

University of Utah, Department of Ophthalmology

John A. Moran Eye Center

Corresponding Author:

Randall J. Olson, MD

Department of Ophthalmology

John A. Moran Eye Center

50 North Medical Drive

Salt Lake City, Utah 84132

Telephone: (801) 585-6866, Fax: (801) 581-3357

Presented at the symposium on Cataract, IOL and Refractive Surgery, Boston, MA, April 1997

Supported in part by a grant from Research to Prevent Blindness, Inc., New York, NY, to the Department of Ophthalmology, University of Utah.

UU IR Author Manuscript

Synopsis

A survey of 162 patients was performed to compare patient satisfaction with regard to different criteria of vision twelve months after foldable silicone (AMO SI-30/SI-40) and acrylic (Alcon MA30BA/MA60BA) intraocular lens placement.

Abstract

Purpose: A survey of 162 patients was conducted to compare patient satisfaction with regard to different criteria of vision twelve months after foldable silicone (AMO SI-30/SI-40) and acrylic (Alcon MA30BA/MA60BA) intraocular lens (IOL) placement.

Setting: John A. Moran Eye Center, University of Utah Medical Center, Salt Lake City, Utah, United States of America.

Methods: Selection criteria included patients who underwent uncomplicated cataract surgery by phacoemulsification with the temporal clear-cornea incision of the superior scleral-tunnel incision with a circular capsulorhexis and capsular-bag intraocular lens placement. One hundred and sixty-two patients surveyed had a mean follow-up time of approximately 15 months with a range between 12 and 18 months after cataract surgery. Fifty-four patients were surveyed for each of the IOL groups (AMO SI-30/40 IOL group, Alcon MA30BA IOL group, and Alcon MA60BA IOL group). The survey was conducted over the telephone with a standardized questionnaire protocol. Patients were questioned with regard to their perception of vision with best optical correction in relation to visual blurring symptoms, glare symptoms, night vision, near vision, and overall vision. Statistical analysis was performed on the collected data.

Results: With regard to blur vision symptoms and night vision, there did not appear to be any significant differences in patient satisfaction between the three IOL groups. With regard to glare symptoms, near vision, and overall satisfaction; the patients reported significantly higher satisfaction score ($P<0.0001$) with the AMO SI-30/SI-40 IOL and the Alcon MA60BA IOL group compared to the Alcon MA30BA IOL group.

UU IR Author Manuscript

Conclusion: The AMO SI-30/SI-40 IOL and the Alcon MA60BA IOL received significantly higher patient satisfaction scores than compared to the Alcon MA30BA IOL in regards to glare symptoms, near vision, and overall satisfaction.

UU IR Author Manuscript

Introduction

The introduction of small-incision cataract surgery with implantation of foldable intraocular lenses (IOL) has brought a number of advantages for the patient.[1-4] It also introduced new choices of available foldable IOLs with different material compositions to the ophthalmic surgeon. Current biomaterials available in foldable IOLs consist of silicone, acrylic, and hydrogel. In our institution, the silicone and the acrylic foldable IOLs are the most frequently used foldable IOL biomaterials.

The AMO SI-30 and SI-40 IOLs are silicone foldable IOLs with a 6.0-mm optical area and differ only in the material of the haptics--polypropylene versus poly(methylmethacrylate), respectively. The Alcon MA30BA IOL is an acrylic IOL with a 5.5-mm optical area and the Alcon MA60BA IOL is an acrylic IOL with a 6.0-mm optical area, otherwise they are similar.

From our clinical experience at the John Moran Eye Center, we have noted in several patients a strong dissatisfaction with the acrylic Alcon foldable IOLs, even with excellent objective Snellen visual acuity, to the point where some patients have demanded explantation.[5] The main complaints were not decreased visual acuity but bothersome to unacceptable symptoms of glare.

Recent scanning electron microscopic analysis have demonstrated a sharp and distinct optical edge with the Alcon MA30BA and MA60BA IOLs when compared with the optical edge of the AMO SI-30 and SI-40 IOLs.[6] Although this characteristic of the Alcon IOLs has been attributed for decreasing the formation of posterior capsular opacification after IOL implantation, it also has been ascribed as the cause of “edge glare” symptoms as related to ophthalmic

surgeons by patients.[7] Therefore, this study was performed to investigate patient satisfaction from the patient's perspective in comparing the different foldable IOL types.

This is our first survey of patient satisfaction with regard to vision after noncomplicated small-incision cataract surgery using the following IOL groups: AMO SI-30/40 IOL, Alcon MA30BA IOL, and the Alcon MA60BA IOL. It predates our recently published study and is the foundation upon which this study was based.[8] Our goal is to determine the differences, if any, of patient satisfaction between these three IOL groups with regard to visual blurring symptoms, glare symptoms, night vision, near vision, and overall vision.

Materials and Methods

A total of 162 patients were surveyed for this study. Fifty-four patients were surveyed in each of the three IOL groups: the AMO SI-30/40 IOL group, the Alcon MA30BA IOL group, and the Alcon MA60BA IOL group.

All of the patients underwent uncomplicated cataract surgery by phacoemulsification with the temporal or superior clear-cornea incision with a circular capsulorhexis and capsular bag intraocular lens placement. Mean follow-up time after cataract surgery was approximately 15 months with a range of 12 to 18 months. Patients were surveyed by telephone after their consent. They were selected in a consecutive fashion starting with the first patient with a minimum of 12 months' follow-up. The interviewer was not masked as to the lens type.

Each patient was interviewed for approximately 10 to 15 minutes. A standardized script was used in asking the patients: What is your satisfaction with regard to visual blurring symptoms; glare symptoms; night vision; near vision; and overall vision? The scale for patient

UU IR Author Manuscript

satisfaction ranged from one to four and were described to the patients as: One (1): the patient was very unsatisfied; Two (2): the patient was somewhat unsatisfied; Three (3): the patient was generally satisfied; and Four (4): the patient was very satisfied. Attention was taken to insure that the patient understood the scale prior to answering the questions. The scale was repeated to the patient if there was any uncertainty.

The data collected was analyzed using the analysis of variance (ANOVA) method for comparison of continuous variables. The patients were not examined, so we have no accurate assessment of posterior capsular status.

Results

With regard to blur vision symptoms and night vision (Table 1), there did not appear to be any significant differences in patient satisfaction scores between the three IOLs surveyed. With regards to glare symptoms, near vision, and overall satisfaction (Table 1), there was a significantly higher satisfaction score ($P<0.0001$) with the AMO SI-30/SI-40 IOL and the Alcon MA60BA IOL than compared to the Alcon MA30BA IOL.

Discussion

This work was the foundation upon which our recent publication[8] on dysphotopsia was based. From this present outcomes survey, we were impressed that many patients have unwanted symptoms that affect their satisfaction. Previous work by us[5] has shown that this dissatisfaction can be so strong that the patients will not be happy unless the offending lens is removed and replaced with a lens that eliminates the problem. In regard to our concern about

UU IR Author Manuscript

excellence in cataract surgery, unwanted images after surgery is still a frontier that we have not conquered!

From a purely theoretical basis, the smaller the optic, the greater the likelihood that the edge will be visible and the less room for error in regard to IOL decentration. It is, therefore, not surprising that the 5.5-mm optic caused greater difficulty than either of the other two lenses that had a 6.0-mm optic.

Interestingly, in our recently published study[8] which was a detailed review of actual unwanted visual phenomenon not general complaints, we did not find a difference between the 5.5- and 6.0- mm AcrySof IOLs and found that both AcrySof lenses had very specific complaints in association with flashes of light centrally even though the patient did not look directly at the offending light at night. This has been shown by Jack Holladay[7] to be a mirror effect due to the flattened IOL edge. Surprisingly, in the present study patients did not describe a difference in regard to night vision between the SI-40 and MA-60 or MA-30 AcrySof IOLs. Glare and near vision produced the greatest concern. We recently documented that many of our patients stop driving at night, even after successful cataract surgery.[8] It is therefore probable that lifestyle during the evening and night time plays a major role in patient response. This same study[8] documented that more SI-40 patients drove at night than with any other IOL tested.

Glare is a non-specific complaint that we tried to evaluate more specifically in our previous study. We assume our present patients were presenting their reaction to bright lights in front of them. Clearly, for this non-specific question optic size had the biggest impact on their responses as it did on their overall satisfaction. Others have shown optic size to have significant impact on patient satisfaction, especially oval IOLs.[9] Near vision complaints were probably the same problem with bright light bouncing off of white paper.

It is apparent that outcomes study results are very much dependent upon what questions are asked and how they specifically prompt patient memory. We had many patients who said they have had no problems until specific questions of symptoms would raise in their mind an issue of concern that, indeed, was problematic; however, when taken in the context of the overall improvement in vision from cataract surgery was not felt to be of any significance. Standardized outcomes studies, therefore, are going to be extremely important in order to have reproducible results in that even the way the questions are asked can certainly have an impact upon the response of our patients.

One criticism of our study was the lack of capsular assessment. The capsulotomy rate for both lenses has been shown to be very low, especially in the 12-18 month time frame.[11] All we can say with any certainty is that the capsulotomy rate was below 10% for all three lenses and unlikely to have had much effect on our results.

This present study demonstrates that satisfaction was much greater with both 6.0-mm IOLs when compared to the 5.5-mm AcrySof IOL. Certainly our review of AcrySof explantation rates has shown the preponderance of these were the 5.5-mm and not the 6.0-mm optic lens when explanted for unwanted images.[10] When patients are specifically asked about a visual phenomenon, the edge configuration was more important than optic size per our previous study.[8] Normal controls also had visual complaints that were often similar in incidence.[8] Therefore, ascertaining what is just normal night glare and what is an unwanted image that is directly a result of the offending IOL deserves further work. We look forward to working with others to develop better means of ascertaining and understanding this important aspect of patient satisfaction.

UU IR Author Manuscript

References

1. Olson RJ, Crandall AS. Prospective randomized comparison of phacoemulsification cataract surgery with a 3.2-mm vs a 5.5-mm sutureless incision. J Cataract Refract Surg 1998; 125: 612-620.
2. Fine IH. Corneal tunnel incision with a temporal approach. In: Fine IH, Fichman RA, Grabow HB, eds, *Clear Corneal Cataract Surgery and Topical Anesthesia.* Thorofare, NJ, Slack, 1993; 5-26.
3. Kohnen T, Dick B, Jacobi KW. Comparison of the induced astigmatism after temporal clear corneal tunnel incisions of different sizes. J Cataract Refract Surg 1995; 21: 417-424.
4. Oshika T, Suzuki Y, Kizaki H, Yaguchi S. Two year clinical study of a soft acrylic intraocular lens. J Cataract Refract Surg 1996; 22: 104-109.
5. Farbowitz MA, Zabriskie NA, Crandall AS. Olson RJ, Miller KM. Visual complaints of patients with AcrySof™ acrylic intraocular lenses. Accepted by J Cataract Refract Surg.
6. Osama O, Mamalis N, Vega, J, et al. Scanning electron microscopic characteristic of small-incision intraocular lenses. Ophthalmology 1996; 103: 1124-1129.
7. Holladay JT, Lang A, Portney V. Analysis of edge glare phenomena in intraocular lens edge designs. J Cataract Refract Surg 1999;25(6):748-752.
8. Tester R, Olson RJ, Pace NL, Samore M. Dysphotopsia in phakic and pseudophakic patients--incidence and relation to intraocular lens type. J Cataract Refract Surg 2000;26:987-991.
9. Masket S, Garaghty E, Crandall AS, et al: Undesired light images associated with ovoid intraocular lenses. J Cataract Refract Surg 1993;19:690-694

10. Mamalis N. ASCRS Survey on foldable IOLs requiring explantation or secondary intervention: 1999 update. ASCRS meeting, Saturday, May 20, 2000, Boston, MA.

11. Hayashi H, Hayashi K, Nakuo F. Quantitative comparison of posterior capsule opacification after polymethylmethacrylate, silicone and soft acrylic intraocular lens implantation. Arch Ophthalmol 1998;116:1579-1582.

UU IR Author Manuscript

Table: Patient mean satisfaction scores with regard to symptoms of blur, glare, night vision, near vision, and overall satisfaction (1 *is very unsatisfied and* 4 *is very satisfied).*

Symptoms	**AMO SI-30/40 IOL Group**	**Alcon MA 30/BA IOL Group**	**Alcon MA60/BA IOL Group**
Blur	3.2	3.2	3.1
Glare	3.1	**2.3** (P<0.0001)	3.3
Night Vision	3.1	3.0	3.1
Near Vision	3.2	**2.8** (P<0.0001)	3.1
Overall Satisfaction	3.3	**2.9** (P<0.0001)	3.1