

## February 2009



### **Do gender differences affect patient satisfaction after implantation of multifocal IOLs?**

**By Magda Rau, MD**

Some behavioral scientists speculate that certain gender-based behavioral patterns are largely unchanged since the Ice Age. As hunters men were required to search for wild animals, which required clear distance vision. As the gatherers women spent their time collecting berries, sewing and cooking meals – tasks that require good near vision.

After prescribing reading glasses for thousands of patients, I have observed that men and women continue to demonstrate different requirements. On average women tend to request prescriptions that are between +0.25 and +0.50 higher than men of the same age group.

We compared the optimum distance for reading books or magazines favored by women aged 28 to 50, with the distance preferred by men of the same age group. We examined the optimal desired reading distance of 100 men (average age 38 years) and 100 women (average age 36 years).

For men, the result was 43 cm (17 inches), and for women it was 38 cm (15 inches), a statistically significant difference. What accounts for the 5 cm (2 inch) difference? Younger women have a tendency to hold reading materials closer to their face, and as a rule women are generally smaller than men, with shorter arms.

Our theory that gender affects multifocal IOL (MFIOL) satisfaction is not strictly based upon assumptions about prehistoric populations, but on valid data. From 1999 to 2007, we evaluated and compared the satisfaction rates of men and women after implantation of various multifocal IOLs.

#### **MF4® IOL**

In 2002, we published post-implantation results for the MF4 IOL (Carl Zeiss Meditec AG). From 2000 to 2001, MF4 lenses were bilaterally implanted in 40 patients, with a mean age of 72.

The MF4 is a refractive multifocal lens with four optical zones. It is a single-piece, foldable acrylic IOL, and the central zone is for near vision with a 6-mm optic and a total near add of +4.00 D.

The mean UCVA for distance was 0.63 and 0.82 for near.

- 30 percent of all MF4 patients were very happy with the results (all women)
- 64 percent of the surveyed patients were satisfied with the implantation
- 6 percent (men) were not satisfied, complaining of inadequate distance vision (4 percent), and halos and glare (2 percent)

The results of this study confirm the importance of excellent visual acuity at near distance for women who also appreciate independence from reading glasses.

From 1999-2003, I implanted 230 multifocal MF4 lenses. Four required explantation. In all cases the patients were men who complained about poor distance vision, blurred, hazy, indistinct vision, considerable glare sensitivity and annoying rings around the light source. Subsequently all four patients received monofocal IOLs.

### **AMO Array®**

In my experience, male patients prefer attaining good distance vision and are less tolerant of halos and glare. To maximize patient satisfaction, without abandoning multifocal lens use, I prefer to implant an AMO (Advanced Medical Optics, Inc.) Array IOL. The Array is a three-piece, foldable, silicon refractive MF IOL with five optical zones, with a central zone for far vision and addition of 3.5 D.

From 1999 to 2001, we implanted 80 Array IOLs in 40 patients bilaterally, with a mean age of 64. The study included 22 men and 18 women. The mean UCVA was 0.72 for distance as well as for near.

- 45 patients were very satisfied with the results
- 10 percent were not satisfied - 6 percent cited poor near vision as the reason (all women) and 4 percent complained of halos and glare (all men)

Of the 280 Array IOLs implanted, a total of three required explantation due to glare and halos as well as insufficient near vision. All of these patients were men.

### **AMO Array and MF4 Combined**

Because some of the male patients opted for better near vision, I first implanted the Array (refractive IOL with central zone for distance), followed by the MF 4 (refractive IOL with central zone for near) in the second eye. First I implanted male patients with the Array, and due to dissatisfaction with near vision, we implanted the MF4 in the second eye.

### **AMO Array and ReZoom™ IOLs**

In conjunction with a prospective study conducted between December 1999 and January 2001, we compared a group of AMO Array silicon patients to patients fitted with the ReZoom, a second-generation multifocal IOL, and found that results were comparable. The average visual acuity obtained with the Array was 0.72 at distance, while the ReZoom achieved 0.73. Average near vision was 0.72 in the Array silicon group, and 0.68 in the ReZoom group, with comparable contrast sensitivity.

- 70 percent of the patients in the AMO group observed halos, compared to 36 percent of the ReZoom group
- 35 percent of all subjects in the AMO Array group complained about glare, while only 11 percent of patients in the ReZoom group had similar reports
- 88 percent of all AMO Array subjects were satisfied with their vision compared with 92 percent of all ReZoom patients
- 8 percent of Array patients were dissatisfied: 4 percent complained of poor reading

- vision, and 4 percent (all male subjects) complained about glare and halos
- 7 percent of dissatisfied ReZoom complained of inferior near visual acuity, while only 1 percent of patients complained about glare and halos. Male satisfaction after ReZoom implantation was higher due to fewer incidences of glare and halos.

### **ReZoom IOL**

Between August 2005 and June 2007, we implanted the multifocal refractive IOL ReZoom into 160 eyes of 80 patients.

The mean UCVA for distance was 0.78, 0.68 for intermediate and 0.72 for near vision. The ReZoom IOL is a hydrophobic, foldable acrylic distance dominant lens with five concentric refractive zones. Aspheric transition between zones provides balanced intermediate vision.

- Of the 45 percent who were very satisfied, 15 percent were women and 30 percent were men.
- 8 percent were dissatisfied, of which 6 percent (women) cited poor near vision, and 2 percent (men) complained of glare and halos.

After implanting approximately 500 ReZoom multifocal IOLs, only one patient (woman) requested explantation due to complaints of poor near vision and unsatisfactory distance vision. This patient had a cerebral ischemia and pursued the implantation of a multifocal IOL against our recommendation.

### **Tecnis® IOL**

Between September 2004 and February 2006, 40 patients (average age was 56) were bilaterally implanted with the Tecnis multifocal lens. The Tecnis is a multifocal, diffractive three-piece silicon lens with a prolate anterior surface that compensates for the spherical aberration of the cornea. The diffractive principle creates two focal points with slight scattering, is pupil-independent and presents advantages in the near area. Uncorrected distance vision was 0.92 and near was 0.88.

- 8 percent of patients were not satisfied with the results
- 1 percent of unsatisfied patients were women who complained of poor intermediate vision
- 7 percent were men: 6 percent of whom reported poor intermediate vision and 1 percent complained of halos and glare.

Female satisfaction after implantation of the diffractive multifocal Tecnis lens was very high. Male patients occasionally complained about shorter reading distances, which was also an issue for patients engaged in computer work. Two male patients needed a prescription for glasses.

Although this patient population also included younger professional women, satisfaction after implantation of these refractive multifocal IOLs was very high.

In my opinion, higher patient satisfaction may be achieved among female patients by implanting diffractive (Tecnis, ReStor) and refractive multifocal IOLs with a central zone for near vision. The refractive IOL with a central zone for distance provides vision in the far range, and the second-generation refractive ReZoom IOL scores high on satisfaction especially among male patients.

## **Our Approach**

We always use a two-phase approach (staged implantation), with implantation in the second eye performed four to eight weeks after implantation in the first eye.

When male patients request a clear lens exchange, I initially implant the refractive MF IOL ReZoom into the dominant eye, followed by an exam four to eight weeks later, and an in-depth discussion about options.

If the patient is satisfied with the MF IOL, I continue with the same type of lens. The calculation is optimized based on available data. If the patient is only interested in a slight improvement in near vision, I calculate the refractive MF IOL slightly in the minus range of -0.5.

For clear lens exchange in female patients, I begin with the non-dominant eye and implant a diffractive Tecnis IOL, or refractive lens with a central zone for near vision (MF45 Zeiss). If the patient is still satisfied four to eight weeks later, I continue with the same IOL or if the patient prefers better visual acuity in the medium to far range, I combine this with a refractive ReZoom lens.

Women and men obviously have different requirements regarding multifocal lenses. Is this surprising? With smaller size and stature, women tend to hold reading materials closer to the eye and sit closer to computers. Women often attach greater importance to near vision and wish to be independent of reading glasses. Men, on the other hand, are more demanding about clear distance vision, and appear to be more troubled by glare and halos.

In my experience, dissatisfaction after MF IOL implantation is highest among male patients, therefore I suggest that male patients be counseled more carefully, the desired reading distance should be discussed, and potential glare and halos must be explained in great detail.

Taking gender differences into account as a factor for patient acceptance allows you to optimize IOL mixing and matching and results in greater patient satisfaction.

I believe our results make sense from an anthropological perspective. We may question if women are more patient and willing to adapt to a new optical system like the multifocal lens. Are women better able to adapt to changing conditions? Are women more concerned with vanity, trying at all costs to avoid reading glasses which may make them appear older? Or is it really still prehistoric behavior that affects differences in satisfaction?

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