

characteristics. By properly orienting lens 34 in the eye 10, the optical differences in the vertical and horizontal meridians "c" and "e" can effectively offset the astigmatism induced by the surgery. More particularly, the surgeon can select a lens having a vertical meridian strength which is weaker than the horizontal meridian strength by an amount calculated to offset the astigmatism which his or her surgical hand typically induces. Additionally, it should be noted that some patients have a pre-existing astigmatism. This condition, of course, should be accounted for in determining the relative strengths of the meridians of lens 34.

To ensure that the lens 34 is properly aligned in the eye 10, the haptics 36 and 38 are positioned in line with the vertical meridian. Thus by vertically aligning the haptics 36 and 38, the surgeon is assured that the weaker vertical meridian of the lens 34 is aligned to offset the astigmatism that will be induced by the surgery. It is recognized that some surgeons will intentionally rotate lens 34 so that the haptics 36 and 38 are aligned horizontally. These surgeons would have to clearly specify the respective meridian strengths with reference to their preferred haptic alignment when ordering lenses.

As an example, if a surgeon knew that in most instances he induced two diopters of post-surgery astigmatism in the vertical meridian, he would select an intraocular lens with two diopters less power in the vertical plane. Thus, in that surgeon's typical operation, the two diopters of toricity in the intraocular lens would offset the two diopters of astigmatism, and the result would be spherical postoperative vision.

With reference to the same example, assume that the surgeon averages 2.0 diopters of induced astigmatism, but actually may vary within plus or minus 25% of that average in any particular operation. Thus, if the induced astigmatism is 25% less than anticipated, there would only be 1.5 diopters of astigmatism induced by the surgery. Since the surgeon would be unable to predict the variation from his average induced astigmatism prior to surgery, he would already have implanted his standard intraocular lens with two diopters less power in the vertical plane. Consequently, even with the toric lens there would be 0.5 diopters of postoperative astigmatism. Although this is less than desirable it can easily be corrected by eyeglasses, and is substantially better than the astigmatism that would have resulted had a spherical lens been used.

If the surgeon had varied from his average 25% in the opposite direction, and had actually induced an astigmatism of 2.5 diopters, the implanted toric lens would not quite offset the induced astigmatism, and there would be a resultant 0.5 diopters of postoperative astigmatism. As noted previously, this magnitude of astigmatism readily can be corrected with eyeglasses and the

patient would be much better off than if a spherical lens had been used.

In summary, an improved intraocular lens is provided to eliminate or reduce the postoperative astigmatism that is induced during eye surgery, such as surgery to replace cataract lenses with intraocular lenses. The invention takes advantage of the facts that the postoperative induced astigmatism always is along the vertical meridian and that each surgeon can reasonably predict the degree of astigmatism which he or she is likely to induce. To take advantage of these facts, the subject invention is directed to a lens of toric configuration rather than the typical intraocular lens having spherical refracting surfaces. More particularly, the subject invention is directed to a lens finally placed within the eye having a vertical meridian which is optically weaker than the horizontal meridian by an amount sufficient to offset the average astigmatism induced by the particular surgeon. To ensure that the subject toric intraocular lens is properly inserted, the lens is appropriately marked to identify the vertical meridian. Preferably this marking of the vertical meridian is provided by the alignment, configuration, and/or color of the haptics.

While the preferred embodiment of the subject invention has been described and illustrated, it is obvious that various changes and modifications can be made therein without departing from the spirit of the present invention which should be limited only by the scope of the appended claims. More particularly, the preceding detailed description shows a circular plano-convex intraocular lens having two haptics. The invention however covers double convex intraocular lenses, convex-concave intraocular lenses, non-circular intraocular lenses, and intraocular lenses having either more or fewer than two haptics.

What is claimed is:

1. A method for offsetting postoperative astigmatism induced by a surgeon as a result of cataract surgery, wherein the surgeon has estimated the induced astigmatism based on previous cataract surgery performed by said surgeon, said method comprising the steps of:

making an incision at the upper part of the juncture between the cornea and the sclera;

removing the cataract lens;

providing a toric lens having two transverse meridians of unequal power, with the difference in power being sufficient to offset the astigmatism anticipated to be induced by the surgery;

inserting the lens in the eye such that the weaker power meridian is vertically aligned; and

suturing the incision in the eye, whereby the toric lens offsets the astigmatism induced by the surgery.

2. A method as claim 1 wherein the lens is placed in the posterior chamber of the eye.

3. A method as in claim 1 wherein the lens is placed in the anterior chamber of the eye.

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