

capability of this material. To provide each haptic with sufficient flexibility and retain the superior stability and centration with material having plastic memory, each haptic has a diameter of approximately 0.14 millimeters with a tolerance of plus or minus 0.01 millimeters. Ends 34, 36 of haptics 12, 14, respectively, are rolled or rounded.

Most prior art intraocular lenses have an optic of six (6) millimeters in diameter. This size provides an acceptable compromise between the chord length of the incision necessary and the size of the optic area. By forming edge 20 of the optic to be extremely thin, rounded and smooth, an optic of 6.5 millimeters can be used without requiring any greater chord length incision than that for conventional six (6) millimeter diameter optics. A preferred radius for edge 20 is 0.12 millimeters with a tolerance of plus or minus 0.01 millimeters.

Optic 16 may be formed convex posterior/plano anterior, plano posterior/convex anterior or biconvex, depending upon the particular requirements of the patient and the judgment of the surgeon. For illustrative purposes, a biconvex optic is shown in FIG. 3 while a plano convex optic is illustrated in FIG. 5.

Referring jointly to FIGS. 4 and 5, the operation of and function performed by intraocular lens 10 implanted within an eyeball 40 will be described. The eyeball consists of a cornea 42 that encapsulates anterior chamber 44 and iris 46. The iris defines pupillary aperture 48. Posterior chamber 50 includes capsular bag 52 adjacent vitreous cavity 64. Through extracapsular cataract surgery, the cataract or crystalline lens is removed to leave posterior capsule 54 and an annular anterior capsule flap 56. The remaining part of capsular bag 52 is retained by zonular fibers 58 attached to ciliary muscle 60.

Intraocular lens 10 may be implanted within capsular bag 52 by known surgical procedures. As pointed out above, the thin, smooth and rounded edge 20 of optic 16 permits the use of a chord length incision for conventionally configured six (6) millimeter diameter optics even though optic 16 is approximately 6.5 millimeters in diameter. Implantation of the intraocular lens, as illustrated in FIG. 5, permits the reversed S shape configuration of haptics 12 and 14 to distribute the forces exerted along a substantial length adjacent inner circumference 62 of capsular bag 52. The haptics, being manufactured of PMMA and to have a free standing curvature of approximately six (6) millimeters radius, will tend to return to such configuration due to the plastic memory capability of the PMMA. Upon implantation, haptics 12 and 14 will be somewhat compressed to a more acute curvature than their free standing curvature. Such recurving of the haptics tends to cause them to be in contact with diametrically opposed segments of the inner circumference 62 of capsular bag 52 for a substantial distance, as illustrated in FIGS. 1 and 4. The resulting stretching imposed upon the capsular bag will tend to assist in retention of the haptics within the capsular bag and prevent undesired haptic escape or withdrawal as a result of pressure or blow imparted to eyeball 40.

The seven degree (7°) angulation of the haptics posteriorly from the plane of the iris, as illustrated in FIG. 5, reduces iris and pupil margin contact of the haptics and optic to prevent posterior iris chafe and pupillary capture. Moreover, the haptics, being of PMMA and somewhat compressed within the capsular bag, also tend to

induce a posteriorly oriented force upon optic 16. The combination of the seven degree (7°) posterior angulation in combination with the overall thirteen (13) millimeter diameter of intraocular lens 10 provides a very stable fixation and centration within the capsular bag. Additionally, the seven degree (7°) posterior angulation allows unimpeded pupillary miosis on accommodation and anterior movement on ciliary contraction with accommodative effort. Furthermore, the posterior bias placed upon optic 16 against posterior capsule 54 gently stretches the posterior capsule and the resulting contact creates a barrier to lens epithelial cell migration after implantation. The slight pressure exerted by optic 16 against the posterior capsule also tends to prevent wrinkles and stress lines in the posterior capsule. With the intimate contact between optic 16 and posterior capsule 54, there has been no pseudophakodensis and experiments have also indicated a reduction in capsular opacification. Other benefits experienced have included: a reduction in the incidence of and the need for secondary posterior capsulotomies; no problems with elevated intraocular pressure; no problems with iris bleeding, iris chafe nor pupillary block; no tenderness to the patient; rare problems with CME or retinal detachment; and, a very high level of patient satisfaction.

As particularly illustrated in FIG. 4, the approximately 6.5 millimeter diameter of optic 16 permits positioning holes 18 to be radially outwardly of the six (6) millimeter optic zone. Such relocation increases by more than fifty percent (50%) the clear optical area when compared to presently available prior art lenses having a six (6) millimeter optic with positioning holes within such diameter. As is visually evident from FIG. 4, glare or reflection from the edges of positioning holes 18 and edge 20 of optic 16 is completely precluded by the overlap provided by iris 48 even with abnormally shaped or dilated pupils.

I claim:

1. An intraocular lens for implantation in the capsular bag of an eye upon which extracapsular cataract surgery has been performed, said intraocular lens comprising in combination:

- (a) an optic, said optic including a thin, rounded, polished perimeter edge having a radius of 0.12 millimeters with a tolerance of plus or minus 0.01 millimeters;
- (b) a pair of curved haptics extending in generally opposed directions from diametrically opposed locations of said optic for contactingly engaging the inner circumference of the capsular bag;
- (c) each haptic of said pair of haptics being angled anteriorly of said optic at an angle of seven degrees (7°) and at a location outwardly of the perimeter of said optic for locating said optic adjacent the posterior capsule of said capsular bag; and
- (d) each haptic of said pair of haptics being configured of a material having plastic memory for urging said optic against the posterior capsule upon implantation.

2. The intraocular lens as set forth in claim 1 wherein each haptic of said pair of haptics extends from said optic at an angle of approximately thirty degrees (30°) from the sagittal plane of said optic.

3. The intraocular lens as set forth in claim 1 wherein each haptic, in an uncompressed state, of said pair of haptics defines a curve having a radius of six (6) millimeters.