ANTERIOR CHAMBER INTRAOCULAR LENS

CROSS REFERENCES TO CO-PENDING APPLICATIONS

This application relates to Ser. No. 315,714 filed on Oct. 29, 1981.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an intraocular lens and, more importantly, pertains to an anterior chamber lens for primary or secondary implantation.

2. Description of the Prior Art

Prior art anterior chamber lenses suffered from numerous deficiencies. Some prior art lenses were constructed from types of materials that caused significant implant material reactions in the eye. Other prior art lenses required large amounts of material in construction of the implant. Also, the prior art lenses did not always have smooth surfaces, which resulted in post-operative reaction.

Most importantly, the prior art lenses failed to provide flexibility in the supporting structure, thereby leading to post-operative tenderness.

Other types of prior art lenses were manufactured from two types of material where the lens optics were manufactured from a first type of material, and the supporting structure which takes many geometrical variations was manufactured from a second type of material. This type of lens led to postoperative reactions. In some instances, the materials were found to dissolve in the body after implant.

Some prior art lenses were manufactured by machining, hot pressing, or pantographing, yielding a less than flexible lens. Also, the edges of the lens were not smooth.

Finally, some types of lenses were lathe cut from types of material which resulted in uneven surfaces and edges, causing postoperative reactions.

The present invention overcomes the disadvantages of the prior art by providing a smooth, flexible, one-material anterior chamber lens.

SUMMARY OF THE INVENTION

The general purpose of the present invention is an anterior chamber lens for any type of cataract extraction, and is also excellent for secondary or exchange implantation. The lens is flexible and soft to the human touch.

According to one embodiment of the present invention, there is provided an anterior chamber lens including an optic having a planar surface, a slightly rounded edge, and a convex surface, two opposing U-shaped flexible loops of the same material as the lens optic and having a slightly greater length in each arm than at a base, the opposing arms of each loop substantially parallel and including a ramp of a slight angle, each end of each loop frictionally and mechanically engaged into each hole positioned into the side of the lens, the base which is angled and kicked up and which can be curved inwardly, whereby the lens is utilized both in primary and secondary implantations either with intracapsular or extracapsular cataract extractions and the lens support is flexible in three dimensions and to the touch. The optic and loops of the lens are manufactured from polymethylmethacrylate (PMMA) and includes less optic supporting area available for iris touch than the prior art anterior chamber lenses.

One significant aspect and feature of the anterior chamber lens of the present invention is a lens having smooth surfaces, thus eliminating post-operative reaction.

Another significant aspect and feature of the anterior chamber intraocular lens of the present invention is a lens constructed and made entirely of polymethylmethacrylate, providing for flexibility with adequate strength and rigidity. The PMMA is pure material, a single low monomer material which has a long-proved history of intraocular use. During manufacturing, the material provides that internal stress forces in the loops can be eliminated, thereby preventing warpage. PMMA was originally used in Spitfire canopies during World War II.

A further significant aspect and feature of the anterior chamber intraocular lens of the present invention is a lens of PMMA material which is of low mass by weight and surface area.

One of the most significant aspects and features of the present invention is the flexibility of the loops of the lens. The loops are flexible in all directions including side-to-side, end-to-end, up-and-down, and in three dimensions. The flexible loops are twistable as well as compressible. The loops show a finite ease of flexibility. The loops exhibit physiologic flex. As the eye blinks, the loops flex. If the eye is compressed, the loops flex. On examination of the eye by a surgeon or examining physician, the loops exhibit flex. The flexibility of the loops is such that the lens is inserted by a surgeon in one motion through a limbal as there is no torquing about the axis of the lens. The loops provide three-dimensional flexibility about the lens optic.

Having thus described the invention, it is a principal object hereof to provide an anterior chamber lens, the lens denoted in the medical profession as the "Leiske Physioflex Style 10 Anterior Chamber Intraocular Lens" with a "kicked up" base.

It is a principal object hereof to provide an anterior chamber lens which is lightweight, flexible, and manufactured of one material. The optic and loops can be an integral member.

Objects of the present invention include an anterior chamber lens which has no significant post-operative tenderness. There is also a need for only a single iridectomy because of the design; a single peripheral iridectomy inside the loop is adequate. The anterior chamber lens also provides for easier insertion in that proper technique provides for the insertion of both angles of the superior loop in one motion. There is also excellent dilability of the pupil in that there is no interference with pupil dilation thereby making retinal inspection and surgical procedures easier. The lens is excellent for primary or secondary implantation, and provides for either an intracapsular or extracapsular cataract extraction.

An additional object of the present invention is a low-mass, low-weight lens made of one material, PMMA. The material provides a low mass in aqueous humor therby reducing the possibility of reaction and internal stress due to eye movement or sudden movement. The material also provides extreme smoothness on all surfaces thereby eliminating chance of abrasion or irritation secondary to iris movement should contact occur. The PMMA provides a uniform material and longevity for least reaction. More importantly, though,