

POSTERIOR LENS IMPLANT TOOL

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an improved prepupillary lens which may be surgically implanted into the posterior chamber of the human eye and more particularly to an implant tool for implanting the lens into the posterior chamber.

2. Description of the Prior Art

In the prior art prepupillary lenses have been used in an operation for surgically implanting a lens on the iris of a human eye. Cornelius D. Binkhorst, M.D., who has performed this operation since 1958, has used a two-loop lens and a four-loop lens. He has described both of these lenses in an article entitled, "The Iridocapsular (Two-loop) Lens and the Iris-clip (Four-loop) Lens in Pseudophakia", which he wrote for the 1973 September-October edition of Transactions of the American Academy of Ophthalmology and Otolaryngology. These lenses are made from a plastic material, polymethyl methacrylate, which is commonly used to make contact lenses. The lenses are in the shape of a plano convex lens and have a diameter of 5.0 millimeters and a central thickness of from 0.5 millimeters to 0.6 millimeters depending on the required lens strength.

U.S. Pat. No. 3,994,027, entitled Prepupillary Lens for Implanting in a Human Eye, issued to Ronald P. Jensen and James Fetz on Nov. 30, 1976 teaches a two-loop lens which has its loops buried in the posterior chamber of the human eye, but which rests within the anterior chamber of the human eye. The difficulty with this position of the two-loop lens is that this is not the normal position of the original lens. The placement of the lens in the anterior chamber of the human eye is unnatural and creates a problem in the restoration of accurate binocular vision. Further the lens in the anterior chamber is not adjacent to the hyloid membrane for supporting the vitreous humor thereby making instances of forward displacement of the vitreous humor and retinal detachment more likely to occur.

U.S. Pat. No. 3,866,249, entitled Posterior Chamber Artificial Intraocular Lens, issued to Leonard Flom on Feb. 18, 1975, teaches an artificial intraocular lens for implantation in the posterior chamber of an eye which includes an optical zone portion fabricated of transparent material and shaped similar to a natural lens and a plurality of prongs attached to the optical zone portion near its periphery. The prongs protrude forwardly therefrom for insertion through the iris of the eye to hold and position the lens therein. The difficulty with this lens is that it is affixed to the iris of the eye and therefore it is not rigidly anchored thereby allowing the lens to move with eye movement. Subsequently, the iris may erode and the fixation of the lens may be lost. It would be far better to anchor the intraocular lens within the posterior chamber to the capsular membrane which is a very firm, non-viable tissue and which provides firm, secure and permanent fixation of the lens.

U.S. Pat. No. 3,711,870, entitled Artificial Lens Implant, issued to Rollin E. Deitrick on Jan. 23, 1973, teaches a lens for implantation in the eye which has a resilient flange that is sutured to the ciliary muscle of the eye to position and to retain the lens in the same position as the original lens. This lens irritates the ciliary body so that inflammation is likely to occur. The fixation of the lens to the ciliary body is not only a difficult

surgical procedure, but also does not provide a firm, secure or permanent fixation of the lens.

U.S. Pat. No. 3,913,148, entitled Intraocular Lens Apparatus, issued to Ernst W. Pothast on Oct. 21, 1975, U.S. Pat. No. 3,991,426, entitled Posterior Chamber Artificial Intraocular Lens with Retaining Means and Instruments for Use Therewith, issued to Leonard Flom and Kenneth J. Rodgerson on Nov. 16, 1976, and U.S. Pat. No. 4,104,049, entitled Artificial Intraocular Lens and Supporting System Therefor, all teach intraocular lenses that are positioned in the posterior chamber of the eye and that are fixated to the iris of the eye.

The eye surgeon generally uses a pair of surgical forceps to grasp the supporting member of the intraocular lens as he is placing it into the eye. A standard pair of surgical forceps is efficient in placing intraocular lenses into the anterior chamber of the eye, but has been proven to be inefficient in placing the intraocular lenses into the posterior chamber of the eye.

One of the coinventors, Ronald P. Jensen, has already filed a patent application, entitled An Intraocular Lens for Implantation in the Posterior Chamber of a Human Eye, filed May 6, 1977, having Ser. No. 794,467 in which he taught an intraocular lens for implantation into the posterior chamber of a human eye.

Other embodiments of the intraocular lens may be made by substituting metal wire or supramid wire and by attaching the wire to the plano-convex lens by the methods taught in U.S. Pat. No. 3,994,027.

The difficulty with the insertion in the eyes of these intraocular lenses is that it is very difficult because the loops of the lenses cannot be grasped on their outside surfaces without injuring the eyes.

SUMMARY OF THE INVENTION

In view of the foregoing factors and conditions characteristic of the prior art it is a primary object of the present invention to provide a posterior lens implant tool for implanting an intraocular lens into the posterior chamber of a human eye.

It is another object of the present invention to provide a posterior lens implant tool that not only firmly secures the loops of the intraocular lens during implantation thereof, but which also easily disengages therefrom.

It is still another object of the present invention to provide a posterior lens implant tool that grasps the loops of the intraocular lens from within and not from without in order to minimize trauma to the eye during implantation therein.

It is yet another object of the present invention to provide a posterior lens implant tool to secure the intraocular lens in all degrees of freedom during insertion thereof.

It is yet still another object of the present invention to provide a posterior lens implant tool that may be inserted into a slit in the cornea at an angle that minimizes trauma to the eye during implantation of the intraocular lens.

In accordance with an embodiment of the present invention, a posterior lens implant tool for use in combination with an intraocular lens for implantation in the posterior chamber of the human eye is described. The intraocular lens includes a plano-convex lens, which is formed from an optical material that is suitable for an implantable lens. The plano-convex lens is adapted to be inserted into the posterior chamber of the human eye