METHOD AND APPARATUS FOR ACCOMPLISHING APHAKIC CORRECTION

BACKGROUND OF THE INVENTION

This invention is directed generally to aphakic correction, and particularly to method and apparatus for surgical accomplishment of aphakic correction.

The human eye is a very complex organ comprising numerous interacting elements which gather, focus, and transmit light rays to nerve endings which eventually transmit the information to the brain for image perception. The eye includes a natural crystalline lens of avascular tissue, the transparency of which depends upon the critical regularity of its fibers and the balance of its chemical constituents. Obviously, there are innumerable factors which may interfere with lens makeup and thereby affect its transparent character. No matter what the reason, a condition of opacity in the lens, commonly called cataract, reduces the visual performance of the eye. When the visual performance is reduced to an unacceptable level, surgical cataract extraction becomes a necessity.

An eye without a lens, a condition called aphakia, is obviously defective from an optical point of view inasmuch as it cannot properly refract incident light rays. Aphakic correction may be accomplished in three ways:

1. Thick eye glasses worn in front of the eye;
2. Contact lenses worn on the eye; or
3. Artificial intraocular lens implant within the eye. It is this latter procedure with which the instant invention is concerned.

The structure and procedure of installing an intraocular lens is very critical because the elements which make up the eye are extremely sensitive and subject to irrepairable damage. Numerous experimental lens designs and surgical techniques for implantation have been tried through the years with varying degrees of success. Usually, the prior art procedures have been abandoned because the lens design and surgical techniques have proved to cause corneal damage and/or other manifestations of intraocular irritation. For example, in the late 1940's and early 1950's, H. Ridely conducted clinical experiments with an artifical intraocular lens which included a lens portion having foot-like projections extending radially away therefrom. This device was placed in the posterior chamber with the feet extending between the ciliary processes and the base of the iris. The lens proved positionally unstable because there was no means for fixing the location of the implant relative to the iris, and resulted in unsatisfactory amounts of irritation.

The device and procedure disclosed in U.S. Pat. No. 3,906,551 purports to solve the positional integrity problem; however, the implant must be sutured into position. Such suturing in a confined area is, at best, extremely difficult and potentially damaging to the eye, and is very often unsatisfactorily accomplished.

U.S. Pat. No. 3,866,249 discloses a posteriorly positioned prosthetic lens which has a multiplicity of forwardly projecting prongs. During surgical implantation, the prongs are extended through the iris to anchor the lens in position. While this arrangement certainly maintains positional integrity, the great number of prongs extending through and over the iris promote undesirable irritational characteristics, and the numerous fixation points have a tendency to distort the iris by pulling on it in numerous directions.

BRIEF SUMMARY OF THE INVENTION

It is an object of this invention to provide efficient method and apparatus for surgical accomplishment of aphakic correction.

Another object of this invention is to provide method and apparatus for surgical accomplishment of aphakic correction which minimize post-operative recovery times.

Another object of this invention is to provide a novel micro staple for affixing an intraocular lens implant in an aphakic eye.

Another object of this invention is to provide a micro staple which is durable of construction, inexpensive of manufacture and extremely effective in use.

These, and other objects are obtained, according to the instant invention, by providing method and apparatus for surgical accomplishment of aphakic correction. After intracapsular cataract extraction has been successfully completed the artificial lens, held securely in the Binkhorst implant forceps, is introduced into the anterior chamber. The three posterior loops of the implant are then inserted behind the iris through the pupil with the bend of the anterior loop in front at the 12 o'clock position across the iridectomy. The posterior loop is held and stabilized through the iridectomy with a loop forceps while a specially designed micro staple positioned in a holder and locked therein is placed over the anterior loop of the implant and pressed until the ends of the micro staple clear the posterior loop. The blades of the micro staple holder are pressed firmly to close the micro staple. The forceps and micro staple holder are then removed. The anterior chamber is then formed with an air bubble and the section closed with 9.0 monofilament nylon sutures, the air is then removed and replaced with balanced salt solution. The procedure is then completed.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the invention as well as other objects and further features thereof, reference is made to the following detailed disclosure of the invention taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a partially schematic top plan view of a lens implant to be used with the instant invention;

FIG. 2 is a partially schematic, bottom plan view of the implant of FIG. 1;

FIG. 3 is a partially schematic, side elevational view of the implant of FIGS. 1 and 2 showing the relationship among the various loops;

FIG. 4A is a partially schematic view of the micro staple of the instant invention;

FIG. 4B is a partial sectional view of the micro staple taken along line B-B of FIG. 4A;

FIG. 5 is a schematic view of a micro staple holder useful with the method of the instant invention;

FIG. 6 is a perspective partial view of the blade tip of the micro staple holder of FIG. 5;

FIG. 7A is a schematic front plan view of an eye;

FIG. 7B is a schematic side sectional view of the eye of FIG. 7A;

FIG. 8 is a sectional view showing the micro staple in proper position holding the implant relative to the iris; and