INTRAOCULAR LENS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an intraocular lens and more particularly to an intraocular lens to be implanted in the anterior chamber of an eye.

2. Description of the Related Art

Intraocular lenses have been used for years for implantation after surgery such as extracapsular cataract extraction, ultrasonic emulsifying aspiration, and so on. Most typical intraocular lenses are those to be implanted within lens capsules in posterior chambers (hereinafter called posterior chamber lenses). However, there are some particular conditions of surgery which make it impossible to fix the intraocular lens in the posterior chamber. In such cases, the intraocular lens, after being placed in the posterior chamber, must be sutured to the ciliary sulcus; otherwise, it is placed in the anterior chamber.

Suturing an intraocular lens to a ciliary sulcus is a very difficult technique which requires a high skill and expensive equipment for removal of a front part of the vitreous body. Moreover, since this method makes a large surgical invasion, it may cause any trouble in the oculus, or some other troubles which are currently unknown but may possibly be realized after many years.

In contrast, implantation of an intraocular lens in the anterior chamber requires neither a high skill nor expensive equipment. However, intraocular lens so far available for placement in the anterior chamber (hereinafter called anterior chamber lenses) were designed to be fixed by engagement with the anterior chamber angle. Therefore, these anterior chamber lenses were liable to damage a wide area of the anterior chamber angle. Moreover, internal support of conventional anterior chamber lenses was unreliable and could not prevent their rotating or other motional displacement. These could be large factors in inflammation or other like troubles of the corneal endothelium which might further invite damage to the iris after surgery.

OBJECT OF THE INVENTION

It is therefore an object of the present invention is to provide an intraocular lens to be implanted in an anterior chamber, easy to support therein, reliably fixed in place, and remarkably safe without damaging the tissues around it.

SUMMARY OF THE INVENTION

According to the invention, there is provided an intraocular lens comprising a lens body and elongated extensions extending from an outer circumferential margin of the lens body, the elongated extensions being long enough for their distal ends to engagingly sit in grooves of a ciliary body, i.e. ciliary sulci, when the elongated extensions are inserted into and beyond fine apertures made by incision in a peripheral site of an iris.

The intraocular lens according to the invention, when used, is fixed in an anterior chamber by placing the lens body in the anterior chamber and by simultaneously inserting the elongated extensions into fine apertures made by incision in the peripheral site of the iris. Then the distal ends of the elongated extensions go beyond the fine apertures and engagingly sit in in the ciliary sulci. As a result, the lens body is fixed stationarily in place in the anterior chamber. Fine apertures can be made so small that they do not disturb the movement of the iris.

The foregoing and other objects, features and advantages of the invention will become more apparent in the light of the following description of a preferred embodiment thereof, as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front elevation of an intraocular lens taken as a preferred embodiment of the invention;

FIG. **2** is a side elevation of the same intraocular lens;

FIG. **3** is a plan view of a lens glide used for making through bores or apertures in a peripheral site of an iris; and

FIG. **4** is a diagram showing how the intraocular lens is fixed in place of an eye.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As best shown in FIG. **1**, an intraocular lens **1** taken as a preferred embodiment of the invention generally comprises a disk-shaped lens body **2** behaving as the optical portion of the lens **1**, and four support legs or extensions **3** to **6** extending from the lens body **2** to behave as support members.

The lens body **2** has a diameter of about 6 mm, which is as large as conventional anterior chamber lenses, and is made of polymethyl methacrylate or any other appropriate material so far approved for use as intraocular lenses.

The support legs **3** to **6** are made of polymethyl methacrylate or another stable material having an appropriate resiliency and hardness like those used for making support legs of conventional intraocular lenses to be placed in anterior chambers. Each of the support legs **3** to **6** is an elongated element having a diameter of about 0.2 mm, for example.

Two of the support legs, **3** and **4**, are opposed face to face to each other and extend in a first direction, i.e. upwardly in FIGS. **1** and **2**. The other support legs, **5** and **6**, are also opposed face to face to each other but extend in a second direction opposite from the first direction, i.e. downwardly in FIGS. **1** and **2**.

The support legs **3** to **6** moderately curve concavely, as best shown in FIG. **2**, such that they can engage with ciliary sulci after penetrating a peripheral site **8** of an iris when the lens **1** is inserted in an anterior chamber **7**. Moreover, distal ends of the support legs **3** to **6** are bent to form engaging portions **31**, **41**, **51** and **61**.

Two of the support legs, **3** and **4**, extending upwardly, make a first pair, while the other support legs **5** and **6**, extending downwardly, make a second pair. As best shown in FIG. **1**, the support legs in each pair curve inwardly to gradually diminish the relative distance between them. Then, their engaging portions, **31** and **41**, **51** and **61**, are bent back outwardly, to form an approximately semicircular arc.

When using the intraocular lens according to the embodiment, after surgery such as extracapsular cataract extraction and ultrasonic emulsifying aspiration, or after surgery such as intracapsular cataract extraction, fine through bores or apertures **10** as small as 0.5 to 1 mm, for example, are formed in a peripheral site of the iris **8** via the cornea **11** so that the support legs **3**, **4**, **5** and **6** can pass through the fine apertures **10**.

A lens glide plate **12** as shown in FIG. **3** will assist the operation for making the fine apertures **10** at precise positions.

The lens glide plate **12** is a plate-shaped member having guide grooves **13**, **14**, **15** and **16** along its opposite side edges