

move or vault in a predetermined direction and assume a predetermined degree of angulation.

When haptics or portions thereof have a non-symmetrical cross-section as exemplified by FIGS. 15-18 it has been found that a sufficient torque results after compression to cause the predetermined direction of vaulting. Other cross-sections may also be suitable, as can be determined by a simple testing procedure. So can for instance the model showed in FIG. 18 be modified by removing material at the corner, for instance as defined by a quarter-circle concentric with the quarter-circle shown in the figure. It appears that as long as a portion of a haptic has a cross-section that is not symmetrical with respect to a plane passing through the center of both the lens and haptics (P-P in FIGS. 15-18) a torque force will be generated when the haptic is subjected to a compressive force, such torque force causing the lens to vault in only one predetermined direction and angulation.

In another embodiment of the invention the loops are each composed of two different materials having different stiffness. This is illustrated in FIG. 19 which shows the cross-section of such a haptic. In the specific case illustrated in FIG. 19 the thickness of both materials is the same but the thickness could of course be different depending on the two materials used. The material are chosen so that a compressive force applied as described above gives a resultant torque which makes the lens vault in a desired way.

In still another embodiment of the invention (FIG. 20) each of the haptics has one or more recess which can also result in an overall torque not equal to zero and hence the lens vaults when compressed under conditions similar to implantation.

It is readily appreciated that a great number of variations are available for utilising the basic concept of the present invention. So can for instance the length of the various haptic sections be varied as well.

A lens according to the invention has been found to make the insertion through a tunnel/valve more safe and easy to carry on than does a conventional IOL such as shown in FIG. 5.

Although the IOL according to our invention has about a zero degree of angulation, we feel that an IOL having even a small negative degree of angulation would also have advantages over an IOL having a positive degree of angulation (i.e. shown in FIG. 5).

Intraocular lenses with haptics having a non-symmetrical cross-section as described above have been found to have an additional advantage in that such haptics are much easier to see during implantation. It need not to be said that it is essential that, when the surgeon manoeuvres the lens into the bag behind iris, he can see the haptics to be able to put them into the correct position in the capsular bag. For this reason there are lenses having coloured haptics, a characteristic which is easy to achieve when making three-piece lenses, but much more difficult when the whole lens is prepared in one piece from a lens blank.

A prior art one-piece lens has haptics with substantially rectangular or quadratic cross-sections which are difficult to see during surgery. The optical characteristics (reflection/refraction) of a haptic with non-symmetrical cross-sections as described above are different which makes the haptic easy to see and to follow during insertion into the capsule. This characteristic accordingly makes the implantation much more convenient and safe.

This advantage can be utilized also in cases when it is not required that the lens should vault in response to a compressive force acting on the haptics. So can a lens with angulated haptics be provided with haptic segments having a non-symmetrical cross-section which makes the haptics easy to see in the eye. In this case vaulting is not required or even desirable and said segments should then be designed to give an overall torque equal to zero. This can for instance be achieved by one segment having a torque in direction X followed by one segment having an equal torque in the opposite direction Y (compare FIG. 11). The number of segment can of course be increased but the overall torque should be zero.

I claim:

1. Intraocular lens that includes an optical lens body defined by a plane and haptics extending outwardly from said optical lens body the improvement comprising that when said haptics are not under compression they extend at about a zero degree of angulation with respect to said plane of the lens body and that at least one of said haptics has at least one segment which is formed so that upon compression of the haptics under conditions similar to implantation said at least one segment will convert said compression to a torque which causes the lens to vault in only one predetermined direction and to a predetermined angulation greater than zero.

2. An intraocular lens according to claim 1 wherein said segment has a non-symmetrical cross-section.

3. An intraocular lens according to claim 2 wherein said segment has a triangular cross-section.

4. An intraocular lens according to claim 2 wherein said segment has a L-shaped cross-section.

5. An intraocular lens according to claim 2 wherein said segment has a cross-section corresponding to a quarter-circle.

6. An intraocular lens according to claim 1 wherein said segment is composed of two materials having different stiffness.

7. An intraocular lens that includes an optical body and at least two haptics for fixation of the lens in the eye wherein at least one of said haptics comprises a connecting member to the lens having a rectangular cross-section, an adjoining section in which the cross-section gradually changes from rectangular to triangular, a next adjoining section of triangular cross-section and a next adjoining section in which the triangular cross-section gradually changes to a rectangular cross-section that evolves into a rounded form at the end of the haptic.

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