

INSTRUMENT FOR INSERTING AND REMOVING INTRAOCULAR LENS

BACKGROUND

A wide variety of medical instruments having a pair of manipulable jaws are known. For example, see U.S. Pat. Nos. 1,085,953; 3,828,791; and 1,528,717. None of said instruments are entirely satisfactory for use in implanting and removing intraocular lenses having centering strands or support loops of the type disclosed in U.S. Pat. No. 4,159,546.

There is a need for an instrument for inserting and removing intraocular lenses having centering strands which is capable of firmly grasping the lens so that it may be placed behind the iris in one controlled movement in a manner which is safe and reliable.

SUMMARY OF THE INVENTION

The present invention is directed to an instrument for inserting and removing intraocular lens of the type having centering strands. The instrument includes first and second jaws shaped to grasp such an intraocular lens. The instrument includes a tubular member having a first jaw fixed at one end thereof. The second mating jaw is connected to one end of a rod or tube which extends through said tubular member. A base plate is secured to the other end of said tubular member. An actuator is connected to the other end of said rod or tube at a location adjacent the base plate. The base plate and actuator are arranged to facilitate cooperative manipulation by a pair of fingers to oscillate said rod or tube and thereby open or close said jaws.

It is an object of the present invention to provide an instrument for inserting and removing intraocular lenses having centering strands and which allows the lens to be placed behind the iris in one controlled movement which is safe and reliable.

It is another object of the present invention to provide an instrument for making it easier to withdraw an intraocular lens having centering strands particularly if the lens is withdrawn through a somewhat miotic pupil.

It is another object of the present invention to provide an instrument for inserting and removing intraocular lenses which is manipulable by only using the thumb and forefinger on one hand.

It is another object of the present invention to permit the opening and closing of the jaws of the distal end of the instrument without causing a widening or gaping of the wound.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIG. 1 is a perspective view of the instrument of the present invention with portions broken away for purposes of illustration.

FIG. 2 is a perspective view of an intraocular lens having centering strands.

FIG. 3 is a partial perspective view showing how the instrument may be used to grasp both the lens and one of its strands.

FIG. 4 is a sectional view taken along the line 4—4 in FIG. 1.

FIG. 5 is a sectional view taken along the line 5—5 in FIG. 1.

DETAILED DESCRIPTION

Referring to the drawings in detail, wherein like numerals indicate like elements, there is shown in FIG. 1 an instrument in accordance with the present invention designated generally as 10. The instrument 10 is adapted for inserting and removing intraocular lens 12 having centering strands 14 and 16 of the type disclosed in U.S. Pat. No. 4,159,546 or an equivalent thereof. The centering strands 14, 16 are made from any one of a wide variety of materials which are resilient and have a spring-like memory such as polypropylene. The strands 14, 16 provide support for the lens 12 and act to center the lens behind the iris.

The instrument 10 is preferably short in length. A suitable length for the instrument 10 is between 2½ and 3 inches. The instrument 10 includes a tubular member 18 which may have an enlarged diameter portion 20. Portion 20 may be knurled on its outer periphery. A jaw 22 is fixed to one end of the tubular member 18. A mating jaw 24 is adjacent to jaw 22 for cooperation therewith in grasping an intraocular lens 12 during insertion or removal of the latter.

The jaw 24 is fixed to one end of a rod or tube 26 which extends through the tubular member 18. Hence, rod or tube 26 is longer than tubular member 18. A generally flat base plate 28 is fixedly secured to the other end of tubular member 18 in any convenient manner such as by welding, brazing, etc. An actuator plate 30 is fixedly secured to the other end of rod 26 in any convenient manner such as by welding, brazing or the like. The actuator plate 30 is adjacent to and smaller than the base plate 28 as will be apparent from FIG. 1. Plate 30 is preferably curved or angled as shown more clearly in FIG. 5 with the rod or tube 26 joined thereto in a central zone thereon.

If desired, the tubular member 28 may have a flow passage 32 brazed or welded thereto. Flow passage 32 terminates in a discharge port 34 adjacent to and between the jaws 22, 24. The other end of flow passage 32 terminates at an inlet portion 38 on an angularly disposed extension 36.

By way of example and not by way of limitation, an operative embodiment of the instrument 10 has the following characteristics. The overall length of the instrument 10 is about 2½ inches long and made from stainless steel. The jaws 22, 24 are thin, flat elements having a length of about ½ inch and angularly disposed with respect to the longitudinal axis of rod 26 and tubular member 18 as shown in FIGS. 1 and 3. Rod or tube 26 has an outer diameter of about 0.015 inch while tubular member 18 has an outer diameter of about 0.3 inch. Portion 20 has a length of about 1 inch and a diameter of about ¼ inch. The base plate 28 has a height of about ⅝ inch and a width of about ½ inch. The actuator plate 30 has the same width as plate 28 but a height which is only one-half the height of plate 28. The plates 28 and 30 are made from stainless steel having a thickness of about 0.03 inch.

The instrument 10 is used as follows. With the plates 28 and 30 disposed between the thumb and forefinger, pressure may be applied by the thumb to either side of the plate 30 to thereby oscillate the rod or tube 26 about its longitudinal axis and thereby cause the jaws 22 and 24 to open or close. When the jaws are fully open, edge 42 contacts plate 28. When the jaws are closed, edge 40