

bifocal lens can be implanted in either the anterior or posterior chamber of the eye.

FIG. 4 shows a human eye with the lens implanted in the anterior chamber, while FIG. 5 shows implantation in the posterior chamber. In either chamber, the lens is fixed in place. It can be done so using a variety of methods. Multiple suspensory or fixation methods currently exist in a generic form that may be applied to the present invention.

Referring now to FIG. 4, the eye is shown generally by the reference numeral 10. The anterior chamber 8 is defined by the interior wall of the cornea 7 and iris 11. The pupillary aperture 9 extends from the anterior chamber 8 to the posterior chamber 9. The retina is shown generally as number 6. The central portion or near vision portion of the lens is axially aligned with the pupillary aperture 9. The central portion is aligned with the pupillary aperture when the lens is positioned in the posterior chamber, as shown in FIG. 5. Under normal lighting conditions, the pupillary aperture 9 has a diameter slightly larger than the central near vision portion of the lens. In either FIGS. 4 or 5, light passes through the pupillary aperture 9 and is focused on the retina 6. By changing the path of a portion of that light, the concentric bifocal intra-ocular lens will create bi-vision. Optimally, if the pupillary aperture is 3 mm in diameter, a bifocal intra-ocular lens will have a central near vision portion having a 2.12 mm diameter. Half of the pupillary area will be powered for near vision while the other half will be powered for far vision.

Focusing at near the central portion puts the image on the retina 6. Some pupillary constriction may clarify the image, but it is not required. When the eye 10 looks up to far objects, the near vision portion is automatically out of focus while the far vision portion becomes effective to provide clarity for far vision. This occurs because of the large light collecting area of the far vision portion of the lens.

Embodiments shown and described herein provide examples of the invention with the understanding that modifications may be made.

What we claim is:

1. An intra-ocular lens adapted to be implanted in a human eye comprising

a transparent single one-piece lens body, the transparent body having a permanently fixed centrally located, near vision optically powered first portion and a concentrically located, far vision optically powered second portion, the first portion having an average diameter of approximately 2.12 mm and the body having an average diameter of approximately 6 mm, the first portion being optically powered within the range of from +10.00 to +30.00 diopters effective power and the second portion being optically powered within the range of from +10.00 to +30.00 diopters effective power, the difference in effective power between the first and second portions averaging +2.50 diopters effective power in order to ensure distinction in focus and to provide rapid neuro-transfer between near and far vision.

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