Knotless Scleral Fixation for Implanting a Posterior Chamber Intraocular Lens
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ABSTRACT
I describe a technique for implanting an intraocular lens by scleral fixation sutures that has the advantages of knotless fixation of the haptics and an out-in approach for passing the needle through the sclera.

Implantation of a posterior chamber intraocular lens (PC-IOL) is the best way to treat aphakia. If capsular support is inadequate, scleral fixation sutures can be used. We have modified previously described techniques of scleral fixation to minimize complications and risks.

SURGICAL TECHNIQUE
We use a monoblock polymethylmethacrylate lens with eyelets on its haptics and 10-0 polypropylene suture with a double 16-millimeter straight needle (Ethicon W1713, Somerville, NJ) or one straight and one curved needle (Alcon 304901 Pair Pac, Fort Worth, Tex). Following the peritomy, 3 × 3 × 3-millimeter triangle scleral flaps, 1 mm from the posterior limbus, are prepared at the 2 and 8 o'clock positions. First, the needle is inserted into the globe 1 mm from the limbus to make a port and then is drawn back and inserted again in reversed position. A lens dialer is used to capture and pull the suture through the corneal incision. We use two separate sutures; the one for the inferior haptic is longer than the other. The same procedure is repeated on the other port (Figs 1-6). Sutures are passed into the eyelets of the IOL and locked to the haptics as illustrated in Figures 7 to 15. Following implantation of the IOL and tightening of the sutures, the straight needles are curved using a needle-holder. In the final stage, the needles are passed through the sclera beneath the flaps and the sutures are tied. The sutures are cut long to prevent the ends from eroding the scleral flaps and conjunctiva. The scleral flaps are not sutured and the conjunctiva is closed by cautery.

DISCUSSION
Depending on the technique used, a variety of complications have been associated with implantation of an IOL. For example, with an early technique, it was found that passing a curved needle in an inside-outside fashion behind the iris could easily damage the ciliary body. To eliminate false localizations of the ciliary sulcus, Lubniewski et al. used an out-in-out technique; a 27-gauge needle was used to guide a straight needle entered 180° away from it. However, entering a hypotonous eye with a 27-gauge needle is not easy and could deform the globe. Also, the IOL haptics must be secured with knots, which can irritate the uvea. Bloomberg and Kershner described a technique involving an out-in maneuver with a 27-gauge needle designed to eliminate these complications (Ocular Surgery News, September 15, 1991). Also, in their technique, the suture is fixed to the IOL haptics without knots. However, inserting the needle into the globe could still deform the globe. Kershner later described using a vertical transscleral suturing technique, fixing the IOL by double sutures without knots. However, he also used an out-in and in-out approach to pass the needle through the sclera.

There are two major difficulties with the technique
FIGURE 1: Preparation of the flaps of the left eye.

FIGURE 2: The needle is inserted into the globe.

FIGURE 3: The needle is inserted in reversed position.

FIGURE 4: The suture is captured by a lens dialer.

FIGURE 5: The suture is pulled through the corneal incision.

FIGURE 6: The repeated procedure on the other port.

FIGURE 7: The suture is passed through the eyelet of the intraocular lens.

FIGURE 8: The suture is pulled to widen the loop.

FIGURE 9: The suture is tightened after the intraocular lens is passed through the loop.
we describe. The first is finding the entrance port while inserting the needle in reverse position. Before inserting the needle into the eye to make a port, it is helpful to use a "pre-inked marking pad" (Visitec 1057, Sarasota, Fla) to mark the entrance point. First, the needle is touched with the pad and ink covers the surface of the needle. As the needle is passed through the sclera, ink remains on the surface of the sclera, leaving a blue round zone with a hole in the center. The second difficulty, due to insufficient flexibility of the suture, is passing the two-fold 10-0 polypropylene suture through the eyelet of the lens. To solve this problem, we use a 8-0 silk suture and pass it through the eyelet and then pass it through the eyelet back again in the opposite direction, taking the 10-0 polypropylene suture inside the loop (Fig 16).

While early results obtained with this method have been encouraging, I will present a more comprehensive report after an appropriate number of procedures have been performed.

REFERENCES