Intraocular Pressure Following Secondary Anterior Chamber Lens Implantation

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ABSTRACT
Secondary anterior chamber implantation has become relatively simple since the advent of viscoelastic materials. Still, glaucoma, cystoid macular edema, endophthalmitis, and astigmatism remain vision-threatening complications. We studied intraocular pressures (IOPs) following this surgery in 102 patients (124 eyes) over 6 years. Elevated IOP was noted in 32 eyes (25.8%), but only 14 (11.3%) needed long-term medical treatment. None, however, required laser iridectomy, trabeculoplasty, or trabeculectomy. Patients should be selected for secondary anterior chamber implantation only after more conservative measures have been exhausted.

Many aphakic patients intolerant to glasses or contact lenses may benefit from secondary anterior chamber intraocular lens (IOL) implantation. The surgical insult, in addition to the presence of an anterior chamber IOL, however, may interfere with the aqueous humor outflow through the angle of the anterior chamber. We retrospectively evaluated changes in intraocular pressure (IOP) in 102 patients who had undergone secondary anterior chamber IOL implantations.

SUBJECTS AND METHODS
All patients undergoing secondary anterior chamber IOL implantation were either intolerant to their aphakic spectacles or contact lens corrections or required removal of their posterior chamber IOLs and subsequent replacement with anterior chamber lenses. Preoperatively, they revealed no glaucoma or any other known contraindication to secondary IOL implantation. Unless general medical conditions warranted hospital admission, all surgeries since 1981 were performed on an outpatient basis.

Between January 1977 and 1985, 102 patients (124 eyes) underwent secondary IOL implantation. The majority of eyes (118) were aphakic from intracapsular cataract extractions (ICCEs) and six had previous extracapsular cataract extractions (ECCEs). The IOLs used prior to 1981 were rigid; later, flexible single-piece polymethylmethacrylate (PMMA) Multiflex™ (CILCO) lenses were used.

Surgeries were performed by one surgeon (DD), although the technique and manufacturers of IOLs varied. The procedure involved making a corneoscleral...
incision (6.5 to 7 mm) mechanical vitrectomy when indicated (69%), anterior chamber IOL insertion using plastic glide, and closure with nonabsorbable monofilament nylon suture. Since 1982, viscoelastic material (Healon®) has been used prior to IOL insertion.

Patients were discharged on the day of surgery after their vital signs had stabilized satisfactorily. They were examined on the first postoperative day and at 1 week. The clinical course dictated further follow-up. Topical antibiotics, steroids, and cycloplegic drops were prescribed depending on the outcome. These drops were gradually tapered off over a 4 to 6 week period. IOP measurements using an applanation tonometer were taken at each visit together with visual acuity, slit lamp, and fundus examination. IOP increases of 8 mm Hg or more above baseline or exceeding 23 mm Hg were treated with pilocarpine 0.5%, timolol maleate 0.5%, oral methazolamide, acetazolamide, or glycol 50%, singly or in combination, depending on the IOP rise. These patients were followed closely until IOP stabilized satisfactorily.

RESULTS
The average age of patients was 68.9 years (range 25 to 91). There were 54 women and 48 men. The preoperative simple mean IOP was 16.7 mm Hg (range 11 to 26 mm Hg). Postoperative IOP values at different intervals are shown in Table 1.

There were 32 eyes (25.8%) with first day postoperative IOP rises of 8 mm Hg above baseline or over 23 mm Hg. This is comparable to five eyes (4%) with preoperative IOP above 23 mm Hg (range 10 to 36 mm Hg). Only one eye of the latter group responded with elevated IOP postoperatively.

The mean postoperative IOP stayed lower than or equal to the mean preoperative IOP (Table 1) for the first 3 years. Fourteen eyes (11.3%) developed persistently elevated IOP and required medical treatment. None, however, required laser trabeculoplasty, iridectomy, or trabeculectomy for pressure control. Other associated complications are shown in Table 2. The follow-up period varied from 1 month to 6 years.

DISCUSSION
Secondary anterior chamber implantation is a viable alternative to spectacle and contact lens correction in aphakes. We were interested in the effect of anterior chamber secondary IOL implantation on IOP. Rises in IOP in the immediate postoperative period following cataract surgery with or without implants is well documented.1-3

The reported incidence of secondary glaucoma has ranged from 0% to 8%.4-13 This may be caused by Healon®,14 pigmented iris debris, red blood cells, inflammatory cells,14 or pupillary block.15 In 1977, Ellington described the UGH syndrome, consisting of uveitis, glaucoma, and hyphema,16 which can be caused by rough edges of the footplates or constant movement of poorly fitting lenses. The chronic trabeculitis from the impingement of the IOL on the tra-
becular meshwork also may lead to glaucoma. Some eyes already may have subclinical compromised outflow systems.

We encountered 32 eyes (25.8%) that responded with raised IOP postoperatively. Only 14 (11.3%) required antiglaucoma therapy and none needed laser or mechanical surgeries to control it. Even so, elevated IOP is a significant complication that must be considered in such patients. It is important that our patients received both rigid and flexible anterior chamber IOLs; however, the complication rate was about the same in both (eight patients developed glaucoma prior to 1981 and six after 1981).

Successful secondary IOL implantation, although gratifying to both patient and surgeon, is not without serious complications. Glaucoma and other complications may occur in 5% to 20% of patients. It is advisable to discuss this outcome with the patient and allow him or her to consider the risks.

REFERENCES