Anterior chamber intraocular lens implantation in patients with a history of chronic uveitis: Five-year follow-up

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PURPOSE: To compare the incidence of long-term complications after cataract surgery with primary anterior chamber intraocular lens (AC IOL) implantation in uveitic patients and patients without a history of intraocular inflammation (control group).

SETTING: Single-center private practice.

DESIGN: Retrospective clinical study.

METHODS: The study comprised patients who between November 2005 and August 2010 had cataract extraction followed by AC IOL implantation because conventional placement was not possible. Outcome measures were the incidence of intraoperative and postoperative complications, preoperative corrected distance visual acuity (CDVA), and CDVA after 1 year.

RESULTS: Of the 39 patients identified through electronic medical records, 17 (17 eyes) had a history of chronic uveitis and 22 (23 eyes) had no intraocular inflammatory disease. There were no significant differences in the incidence of intraoperative and postoperative complications between the 2 groups during follow-up (range 12 to 68 months) ($P=.702$). Although uveitic eyes had a greater risk for epiretinal membrane formation, the incidence of uveitis flareups attributed to the IOL and deposits on IOL surfaces was comparable to that in the control group ($P<.001$). The CDVA improved significantly in both groups 1 year after surgery ($P<.01$ and $P<.001$, respectively).

CONCLUSION: In uveitic eyes with inadequate capsule support, AC IOL implantation restored visual function without a significant increase in long-term postoperative complications compared with eyes that had no history of uveitis.

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Uveitis continues to be a leading cause of severe visual impairment in developed countries. Chronic inflammation can lead to glaucoma, chorioretinal scarring, band keratopathy, macular edema, or cataracts, which are the most common vision-threatening complications[1] in uveitic eyes. Fortunately, medical treatment with corticosteroids and corticosteroid-sparing agents has improved perioperative control of inflammation and the visual prognosis after cataract extraction. Today, phacoemulsification with simultaneous in-the-bag placement of an intraocular lens (IOL) is the standard procedure to restore the visual function in uveitic eyes[2,3] in the absence of perioperative inflammation.[4–6]

Unfavorable postoperative outcomes occur mainly in patients with chronic low-grade inflammation.[7,8] In such cases, the decision of whether to place an IOL should be individualized.[9]

Reports evaluating the safety of anterior chamber IOL (AC IOL) implantation in uveitic patients when standard placement is not possible are sparse. In a recent study,[10] we assessed the long-term complications and visual outcomes of AC IOL implantation in cases of poor capsule support compared with standard in-the-bag implantation in a cohort of uveitic eyes. The purpose of the current study was to determine whether AC IOL implantation in uveitic eyes is associated with a higher rate of postoperative complications than in eyes with no history of uveitis and to compare the visual outcomes between the 2 cohorts after a 1-year follow-up.

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PATIENTS AND METHODS

Study Population and Data Collection

A review of the electronic database from the Massachusetts Eye Research and Surgery Institution (MERSI) from October 2005 through September 2011 was performed. Patients with a history of chronic uveitis and eyes from healthy normal patients without a history of intraocular inflammation (control group) who had primary AC IOL implantation at the time of cataract extraction were identified. All procedures were performed from November 2005 through August 2010 by the same surgeon (C.S.F.). Each patient included in this study was evaluated at MERSI, a tertiary referral center, and primary ophthalmologists referred most patients described in this article. All patients gave written informed consent in accordance to the tenets of the Declaration of Helsinki, and an institutional review board approved the study procedures.

Data were harvested at the immediate preoperative visit and at postoperative follow-up examinations at 1, 3, and 6 months and 1, 2, 3, 4, and 5 years. The data collected included baseline demographic characteristics, corrected distance visual acuity (CDVA), and postoperative ocular complications.

Inclusion criteria were cataract extraction with primary AC IOL implanted during the study time period. The exclusion criteria were cataract extraction before the age of 18 years, follow-up less than 12 months, and incomplete data.

Perioperative Management and Surgical Technique

One day before surgery, all patients were started on a combination of topical besifloxacin 0.60% (Besivance), prednisolone acetate 1.00% (Pred Forte), or difluprednate 0.05% (Durezol) and bromfenac 0.09% (Xibrom) or nepafenac 0.10% (Nevanac). No patient received oral prednisone preoperatively or postoperatively. At the time of cataract surgery, all patients in the uveitis group were free of ocular inflammation for at least 3 months.

Surgery was performed in a routine manner by phacoemulsification under peribulbar anesthesia. In both groups, the surgeon decided to implant an AC IOL at the time of surgery because of a lack of capsule support that made it impossible to implant the IOL in the bag or sulcus. Patients received an MTA3UO AC IOL (Alcon Laboratories, Inc.) or an L122UV IOL (Bausch & Lomb). The MTA3UO is a convex-plano open-loop poly(methyl methacrylate) (PMMA) IOL. The L122UV is a PMMA IOL that has a vaulted equiconvex design. Poly(methyl methacrylate) is an acrylic biomaterial made from 1 type of monomer. It contains both hydrophobic (methylene) and hydrophilic (carbonyl) groups. The surgical approach was individualized in each case.

Postoperatively, topical therapy included a steroid between 4 times and 8 times a day according to the intensity of the anterior chamber reaction, tapering gradually by 4 to 6 weeks after surgery. It also included fluoroquinolone drops 4 times a day and a topical nonsteroidal antiinflammatory drug once or twice daily.

Outcome Measures

The primary outcome in this study was the risk for a complication after cataract surgery with AC IOL implantation. The postoperative findings noted were an early increase in intraocular pressure (IOP), secondary glaucoma, epiretinal membrane formation, deposits on the IOL, uveitis flareups attributed to the IOL, worsening or new development of macular edema, choroidal detachment, retinal detachment, ocular hypotony, hyphema, need for AC IOL explantation, and bullous keratopathy (BKP). An early increase in IOP was defined by the need for adding ocular hypotensive medication (topical and/or oral) to maintain IOP below 21 mm Hg on Goldmann applanation tonometry during the first month after surgery. Epiretinal membrane formation was established by optical coherence tomography (OCT). Newly developed or worsening macular edema was determined by fluorescein angiography or by OCT using the classification of Kim et al.[11] Ocular hypotony was documented to be present when the IOP was less than 6 mm Hg for more than 3 months in the absence of other ocular surgery or concomitant retinal detachment. The presence of cell deposits on the IOL, uveitis flareups attributed to the IOL, BKP, and choroidal or retinal detachment were also noted by slitlamp examination during the follow-up.

The secondary outcome measure was postoperative Snellen CDVA. The CDVA was evaluated preoperatively and 1 year after surgery. The Snellen visual acuity was converted to logMAR units for statistical assessment.

Statistical Analysis

Descriptive statistics were used to describe the prevalence of baseline characteristics in the uveitis group and control group. Potential differences in the demographic profiles were evaluated in the 2 age groups using chi-square analysis. The odds ratio (OR) of postoperative complications in the uveitis group versus the control group was also calculated. A chi-square analysis was performed to compare the proportion of patients who had postoperative complications in the treatment groups. The Student *t* test was used to compare the mean of visual acuities. All reported *P* values are 2-sided, and a value less than .05 was considered statistically significant. Statistical data analyses were performed using SPSS for Windows software (version 15.0, SPSS, Inc.).

RESULTS

Patient Characteristics

The study recruited 39 eligible patients (40 eyes). Of the 40 eyes, 17 (17 patients) had a history of uveitis quiescent at the moment of surgery and 23 (22 patients) had no history of intraocular inflammation. Table 1 shows the baseline characteristics in both

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