Mitomycin C After Surface Ablation Reduced Haze, Improved Visual Acuity

The topical intraoperative application of 0.02% mitomycin C (MMC) may reduce haze and improve visual acuity after surface ablation for the correction of myopia, according to a study published in the Journal of Refractive Surgery.1

Researchers conducted a comprehensive literature search of Cochrane Library, MEDLINE, and EMBASE to identify relevant trials comparing surface ablation for correction of myopia with and without MMC. They then performed a meta-analysis of the results of the reports and a statistical analysis, and they identified 11 clinical trials with MMC used in 534 eyes and no mitomycin in 726 eyes.

Overall, surface ablation with MMC led to significantly less corneal haze in PRK, whereas the results were comparable in LASIK and epi-LASIK. Proportionately more eyes in the MMC group achieved an uncorrected distance visual acuity of 20/25 or better and less frequently lost two lines or more of corrected distance visual acuity.

however, the difference was not statistically significant. “Our meta-analysis suggests that the topical intraoperative application of 0.02% [mitomycin C] may reduce haze and improve visual acuity after surface ablation for correction of myopia,” the authors concluded. “However, the advantage of using [mitomycin C] in LASEK and epi-LASIK is unclear.”

Three Fluoroquinolones Not Effective Against Drug-Resistant Staphylococci

In patients undergoing uncomplicated cataract surgery, aqueous humor drug concentrations of besifloxacin (Besivance; Bausch + Lomb), moxifloxacin (Vigamox/Moxeza; Alcon Laboratories, Inc.), and gatifloxacin (Zymar/Zymaxid; Allergan, Inc.) achieved 1 hour after a single topical dose were less than 1 µg/mL, according to a study in the Journal of Cataract & Refractive Surgery. These low levels, therefore, did not indicate that these fluoroquinolones are therapeutically effective against the recent drug-resistant pathogens often identified in postoperative endophthalmitis.

In the randomized, open-label, controlled study, 105 patients undergoing uncomplicated cataract surgery were randomized to receive besifloxacin ophthalmic suspension 0.6% (n = 4), moxifloxacin ophthalmic solution 0.5% (n = 35), or gatifloxacin ophthalmic solution 0.3% (n = 36). Drug concentrations in the aqueous humor were compared 60 ±5 minutes after the instillation of one topical drop. The concentrations were then assessed relative to the minimum inhibitory concentration required to inhibit the growth of 90% of organisms (MIC90) values for each drug against relevant bacterial pathogens identified in recent cases of endophthalmitis.

Mean aqueous humor concentrations were 0.13 ±0.58 µg/mL (standard deviation), 0.67 ±0.50 µg/mL, and 0.13 ±0.08 µg/mL for besifloxacin, moxifloxacin, and gatifloxacin, respectively. Both besifloxacin and moxifloxacin achieved aqueous humor concentrations equal to or slightly higher than their respective MIC90 for methicillin-resistant and methicillin-susceptible Staphylococcus aureus and Staphylococcus epidermidis. None of the fluoroquinolones achieved concentrations above their MIC90 for ciprofloxacin-resistant strains of S aureus and S epidermidis.

“Based on the aqueous humor drug concentrations measured in this study,” the authors concluded, “it is unlikely that any of the fluoroquinolones tested would be therapeutically effective in the aqueous humor against the most frequently identified drug-resistant staphylococcal isolates from recent cases of postoperative endophthalmitis.”

Sequential Cataract Surgery: Second Procedure Rated More Painful Than First

Patients undergoing sequential bilateral cataract surgery reported a subtle increase in pain in the second surgery relative to the first, according to a study published in the Journal of Cataract & Refractive Surgery. The study included 65 consecutive adults having bilateral sequential clear corneal cataract extraction using phacoemulsification under topical anesthesia with monitored anesthesia care. The exclusion criteria included baseline eye pain, poor comprehension, and complicated cataract extraction. Patients completed four perioperative surveys with each cataract extraction. The Amsterdam Preoperative Anxiety and Information Scale and the State-Trait Anxiety Scale were administered preoperatively, and a 0-to-10 visual analog scale pain survey was completed twice after surgery. Pain and the difference in pain were the primary outcomes.

Of the study participants, 26 patients (40%) reported higher visual analog scale pain scores for the second cataract extraction. Overall, the median pain score was 0 (range, 0-6) for the first cataract extraction and 1 (range, 0-9) for the second ($P = .004$). By postoperative day 1, the pain scores were similar (median = 0; range, 0-9; $P = .58$). Both Amsterdam Preoperative Anxiety and Information Scale and State-Trait Anxiety Scale anxiety scores decreased between surgeries ($P = .003$ and $P < .001$, respectively).

"Although cataract extraction remained relatively painless under topical anesthesia with monitored anesthesia care, there was a subtle increase in pain in the second surgery relative to the first," the authors concluded. "This appears to be associated with decreased preoperative anxiety and may be related to the amnestic effects of intravenous sedation."

Penetrating Grafts for Keratoconus Exhibited Good Visual Outcomes and Survival

First penetrating corneal grafts for keratoconus exhibited significantly better survival and better visual outcomes than penetrating grafts performed for other indications, according to a study in the Archives of Ophthalmology. A large cohort study was conducted from a national register of corneal grafts in which data were recorded prospectively and analyzed retrospectively. A total of 4,834 eyes (4,060 patients) were included in the analysis. Main outcome measures were graft survival and Snellen visual acuity. Follow-up occurred up to 23 years.

Kaplan-Meier survival rates of first grafts for keratoconus were 89%, 49%, and 17% at 10, 20, and 23 years, respectively. After 15 years, the graft survival rate was no better than that of all other penetrating grafts ($P = .36$). Multivariate risk factors that influenced failure of first grafts for keratoconus included the time to the suture’s removal, postgraft uveitis or microbial keratitis, corneal vascularization prior to or after grafting, geographic location of surgery and follow-up, the recipient’s age at grafting, occurrence of rejection episodes, the graft’s size, and the surgeon’s workload. The timing of bilateral grafts made no difference in the risk of rejection. At the most recent follow-up, a Snellen visual acuity of 20/40 or better was recorded in 74% of the patients.

"Penetrating grafts performed for keratoconus exhibited better visual outcomes and graft survival than grafts performed for other indications," the authors concluded. "However, the Kaplan-Meier survival rate of first penetrating grafts for keratoconus was 17% at 23 years after graft and had not plateaued at this time, indicating that young patients are likely to need one or more repeated grafts during their lifetime."

Study Identifies Early Life Influences on Myopia

Excessive growth in myopic eyes may be associated with general growth and thus influenced by biological and social factors early in life, according to a study in Ophthalmology. The study examined data from 2,487 randomly selected members of the 1958 British birth cohort who had undergone refraction at 44 years of age. A life-course epidemiologic approach, based on four sequential multivariable life-stage models (prenatal, perinatal, childhood, and adult), was used to examine the influence of an individual’s early life such as biological, social, and lifestyle factors, growth patterns, and eye-specific factors on myopia.

"Myopia is strongly heritable, but the marked increase in frequency that some populations have experienced in the past few decades must be driven by environmental factors acting during childhood and adolescence," the authors concluded. "This may be due to the increased use of near work or to reduced time spent outdoors, where children have the opportunity to play in natural light."


risk factors,” the lead author Jugnoo S. Rahi, PhD, FRCophth, of the Institute of Child Health, University College London, wrote in an e-mail to Cataract & Refractive Surgery Today. “Therefore, we were interested in understanding whether the development of myopia may be linked to factors that influence general growth in humans, as opposed to eye-specific factors that influence ocular growth alone.”

A total of 1,214 individuals (49%; 95% confidence interval, 48.8-50.8) were myopic, 80.6% of whom had late-onset myopia (ie, after the age of 16 years). Myopia was positively associated with a low birthweight for gestational age, gender, greater maternal age, higher paternal occupational social class, and maternal smoking in early pregnancy. Myopia was independently associated with proxy markers of near work and educational performance, with some differences by onset and severity. In adults, greater height, higher educational attainment, and higher socioeconomic status were associated with myopia.

According to the investigators, trends in the key influences on children’s health and growth identified as novel putative risk factors in this study are consistent with global trends of increasing myopia. These are increasing births to older mothers, rising rates of intrauterine growth retardation and the survival of affected children, increasing persistence of smoking in pregnancy, and changing socioeconomic status.

“As such, we suggest that there is a need for a paradigm shift in research on myopia, and we call for research that integrates consideration of both genetic and environmental influences in order to inform strategies for prevention or treatment,” Dr. Rahi said.


Technolas Perfect Vision’s Supracor Receives CE Mark for Presbyopia Treatment

The Supracor (Technolas Perfect Vision GmbH, Munich, Germany) excimer-based laser treatment for presbyopia has received CE Mark approval, according to a company news release.

Supracor, a LASIK-based procedure that is performed using the Technolas 217P excimer laser, can treat a wide range of presbyopic patients and may also be suitable for patients who have previously undergone a LASIK procedure, according to the company.

In a multicenter European clinical evaluation performed by Jean-Jacques Chaubard, MD; Jorge Castanera, MD; Dominique Pietrini, MD; and Antoine Roure, MD, the Supracor procedure was found to provide a significant improvement in uncorrected near vision while maintaining good distance vision, with a high level of satisfaction among patients.

Supracor is not approved for use in the United States.

FDA Grants Orphan Drug Designation to Mobius’ Mitosol

Mobius Therapeutics LLC will be able to enter the refractive surgery market after receiving a third Orphan Drug Designation from the FDA for its primary drug Mitosol (optimized mitomycin). This indication will be for the prevention of corneal haze following surface ablation laser keratectomy.

The designation will provide surgeons and patients with enhanced convenience, safety, and consistency following surface ablation procedures, according to a company news release. Mitosol now has three Orphan Drug Designations for glaucoma, pterygium, and refractive indications.

VEGF Trap-Eye Receives Recommendation for Approval

Regeneron Pharmaceuticals, Inc., announced that the Dermatologic and Ophthalmic Drugs Advisory Committee of the FDA has voted unanimously to recommend that the FDA approve VEGF Trap-Eye. The agent, which will be marketed as Eylea, is being considered for the treatment of neovascular age-related macular degeneration at a dose of 2 mg every 8 weeks, following three initial doses given every 4 weeks.

The committee’s recommendation will be considered by the FDA in its review of the Biologics License Application for Eylea, but the committee’s recommendation is not binding on the FDA.

“The positive recommendation by the advisory committee is an important step toward providing wet age-related macular degeneration patients with a new treatment option that could potentially reduce the burden that exists with current therapies,” said George D. Yancopoulos, MD, PhD, president of Regeneron Research Laboratories, in a news release.

News was compiled by Stephen Daily, Jennifer Kreatsoulas, PhD, Malaika David, and Callan Navistky.