

Antibiotics in Premium IOL Surgery

Preventing endophthalmitis in all patients is the goal.

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With today's high rates of successful cataract surgery and patients' increased expectations, the pressure on surgeons to achieve perfection has grown. Add to that the use of premium IOLs with their additional out-of-pocket costs, and the expectations increase further. In addition to ensuring optimal refractive outcomes after the placement of a premium lens, the surgeon must also guard against the dreaded complication of endophthalmitis. Of note, all patients, regardless of the IOL being implanted, should be treated equally in terms of endophthalmitis prevention. This article examines the best techniques and therapies available for avoiding this vision-threatening complication.

PREOPERATIVE DIAGNOSIS OF RISK FACTORS

An often-overlooked source of bacterial contamination during surgery is blepharitis. Many patients have undiagnosed blepharitis. According to a study by Luchs et al, at least 59% of patients scheduled for cataract surgery have this condition.¹ The collarettes and crusting on the eyelashes from blepharitis harbor a multitude of bacteria that can easily enter the eye during intraocular surgery, and patients with blepharitis are known to have a larger bacterial load



Figure. Reduce patients' bacterial load with a thorough Betadine prep (Purdue Products) and a careful drape.

than disease-free individuals.² Although no study has shown a direct link between blepharitis and endophthalmitis, ophthalmologists should consider treating the condition before surgery.³ Treatment options may include lid scrubs, topical therapies such as azithromycin or doxycycline drops (which can be created at a compounding pharmacy), and even oral antibiotics such as doxycycline. In addition to help-

ing to optimize the ocular surface, treating blepharitis may diminish the patient's bacterial load during surgery.

PREOPERATIVE THERAPY

Many surgeons are now routinely starting patients on antibiotic drops prior to surgery. Although it has not been proven that this practice reduces the incidence of endophthalmitis, it is an important option to consider. The challenge is in deciding which type of antibiotic to use because, unfortunately, no single drug covers all bacteria. Most cases of endophthalmitis are caused by gram-positive organisms, so it is important to select an antibiotic with effective gram-positive coverage.

Many resistant strains of bacteria are appearing. A study by Olson et al found that 40% of eyes cultured prior to cataract surgery showed methicillin resistance.⁴ It is therefore important to use a generation of antibiotics that has shown the least such resistance. For example, fourth-generation fluoroquinolones (such as besifloxacin [Besivance; Bausch + Lomb], gatifloxacin, or moxifloxacin) have demonstrated less resistance than their third-generation counterparts.⁵

We have heard some surgeons are beginning to use polymyxin-trimethoprim drops. Although this antibiotic does not have as good corneal penetration as fluoroquinolones, it has broad coverage of gram-positive bacteria, especially with the resistant strains.

Another important technique for reducing patients' bacterial load before cataract surgery is to provide a thorough Betadine prep and carefully drape the surgical site to keep eyelashes (which harbor most of the bacteria) away from the sterile field (Figure). As Speaker et al discovered, the bacterial source of most cases of endophthalmitis is the patient.⁶ The take-home message is that preoperative topical antibiotics have the potential to reduce the bacterial load on the ocular surface prior to intraocular surgery.

INTRAOPERATIVE THERAPY

The use of intracameral antibiotics is a controversial topic, especially in the United States. Arshinoff et al found that there was more than a 10-fold reduction in endophthalmitis with the use of intracameral antibiotics such as moxifloxacin, vancomycin, and cefuroxime.⁷ Although intracameral antibiotics are the standard of care internationally, currently, US surgeons do not have access to FDA-approved formulations of antibiotics for this use. Obviously, this presents a significant barrier, as the only way to obtain intracameral antibiotics is through a compounding

pharmacy, a practice that lacks standardization and leads many ophthalmologists to fear the risk of toxic anterior segment syndrome.

Some surgeons use Vigamox (moxifloxacin; Alcon) directly from the bottle, even though it is not labeled for intracameral use. Of note, Moxeza (moxifloxacin; Alcon) and other preparations of moxifloxacin are not safe for intracameral use. Another option is to use compounding pharmacies that maintain very high safety standards for intraocular use. For example, Leiter's Pharmacy has an excellent track record and provides a variety of formulations of antibiotics for intracameral use. Another compounding pharmacy, Imprimis, has available two combinations of steroid-antibiotics designed for transzonular administration. The formulations include Tri-Moxi (triamcinolone and moxifloxacin) as well as Tri-Moxi-Vanc (triamcinolone, moxifloxacin, and vancomycin). The goal of providing antibiotics and steroids together in the formulation is to reduce the need for pre- and postoperative drops. Further study is needed.

CONCLUSION

Preventing endophthalmitis should be our priority for all, no matter what IOL is implanted. By decreasing patients' preexisting bacterial load before surgery and by using the best available antibiotics before and during surgery, ophthalmologists have the ability to decrease the incidence of endophthalmitis and achieve optimal outcomes for our patients. ■

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