

Prophylaxis With Intracameral Cefuroxime

In my experience, this drug has prevented the incidence of infectious endophthalmitis after cataract surgery.

BY RICHARD B. PACKARD, MD, FRCS, FRCOPHTH

Between December 2003 and April 2004, my colleagues and I diagnosed nine cases of infectious endophthalmitis following cataract surgery in our practice. Although we thoroughly investigated all of our procedures and the off-site facility where our instruments are sterilized, we could not determine the cause of this high number of cases in such a short period of time. The surgical cases infected were those of six surgeons of all grades of seniority. They used topical, sub-Tenon's, and peribulbar anesthesia, and they performed both temporal and superior clear corneal incisions.

This article discusses the issues we identified as possible culprits of the outbreak and how we altered our practice to prevent the incidence of infectious endophthalmitis after future cataract surgeries.

INVESTIGATION AND SOLUTIONS

The Sterilization of Instrument Trays

During our investigation, my colleagues and I found that, at the sterilization facility, our instrument trays, due to inadequate vents, would not allow sufficient drying after steam autoclaving by the recently installed, new autoclaving devices. This resulted in some trays' returning to our facility slightly damp. As a solution, we introduced new, custom-designed trays with a much greater area to allow for evaporation at the end of the autoclaving cycle.

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Disposable Instruments

We only use our phaco needles once for surgery before discarding them, as recommended by the manufacturers. In order to reduce any further problems with material trapped in lumens, however, we custom-designed disposable bimanual I/A handpieces.

Disinfecting the Wound

Although we had used 5% povidone-iodine preoperatively for each case in question, we now make sure to introduce it before applying any lignocaine gel in patients receiving topical anesthesia. This is done to avoid losing any effectiveness of the antiseptic from its mixing with the anesthetic gel. We also administer a drop of povidone iodine at the conclusion of the case to resterilize the conjunctival sac and to allow us to ensure that the eye is Seidel negative.

Preoperatively Dosed Ocular Medications

We have switched from the preoperative chloramphenicol drops we had previously given immediately

before surgery to ofloxacin. This new drug regimen is also followed while the patient is on the operating table, at the end of cataract surgery, prior to the instillation of povidone-iodine. The ofloxacin is continued on the day of surgery four times daily and for 1 week postoperatively. Fourth-generation fluoroquinolones are not yet available in the UK, but, when they do become available, they will probably be incorporated into our regime in place of the ofloxacin.

Intracameral Cefuroxime

Having been aware of the research done in Sweden with intracameral cefuroxime,¹ we decided to add this technique to our regimen at the conclusion of cataract surgery, prior to instilling a drop of ofloxacin and the povidone-iodine wash. The cefuroxime is diluted using the regimen quoted by Montan et al.¹ The nursing staff is responsible for this dilution for each cataract surgery (see *Intracameral Cefuroxime*).

CONCLUSION

All surgeons performing cataract surgery at our facility began to use the regimen described herein in May 2004. Since that time, we have had only one case of endophthalmitis after cataract surgery, despite a culture-negative vitreous biopsy. The patient recovered to 20/30 UCVA within 3 weeks of surgery.

Our training unit has five consultants and two associate specialists performing cataract surgery as well as a changing population of five residents in training. Since adopting the new regimen, there have been 15 different

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operating residents. All surgeons perform clear corneal incisions, albeit with varying skill levels and wound architecture. The incidence of posterior capsular rupture, which is often considered a risk factor for infectious endophthalmitis, has varied between 1% for consultants to 5% for the most junior trainees.

Since May 2004, my colleagues and I have performed more than 7,500 cataract procedures. Our incidence of endophthalmitis is less than 0.013%, much lower than that reported by Montan et al¹ (20 out of 32,180 patients or 0.06%). In the recently published ESCRS endophthalmitis study,² the arm using intracameral cefuroxime had an incidence of five out of 6,836 patients (0.073%). In two recent reports of surgery during which intracameral cefuroxime was not utilized, endophthalmitis occurred in 43 out of 8,736 (0.49%) patients and 44 out of 12,362 (0.36%) patients.^{3,4} Of course, my colleagues and I cannot say for certain that intracameral cefuroxime has contributed to our low incidence of endophthalmitis after cataract surgery. In light of the Swedish and ESCRS data, however, we believe that surgeons should consider intracameral cefuroxime along with the other measures mentioned herein to minimize postoperative infection. ■

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INTRACAMERAL CEFUROXIME

Use

- Dilute 0.93 mg of cefuroxime in 0.1 mL of water to be injected into the anterior chamber at the end of cataract surgery.

Reconstitution of Cefuroxime

- Add 2.5 mL of water for injection to 250 mg of cefuroxime (results in a mixture of 93.0 mg/mL or 9.3 mg/0.1 mL).
- Take 0.1 mL of this solution and add 0.9 mL of water for injection (results in a mixture of 0.93 mg in 0.1 mL).
- Discard 0.9 mL to leave 0.1 mL in the syringe.
- Inject 0.1 mL of the solution into the anterior chamber with a 1.0-mL syringe and a Rycroft cannula (Ellis Ophthalmic Technologies, Inc., Jamaica, NY).

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