Infection Control and Prevention in Cataract and Refractive Surgery

Vigilance can help prevent endogenous MRSE or MRSA from causing postoperative infections in patients.

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As the incidence of colonization with methicillin-resistant Staphylococcus aureus (MRSA) and methicillin-resistant S. epidermidis (MRSE) rises in the community, it becomes increasingly important that eye care practitioners carefully screen patients at elevated risk for sight-threatening postoperative infections.1-3

Any patient with known colonization by MRSA or MRSE (Figures 1 and 2) who also exhibits signs of blepharitis warrants a culture of the lid margins, with subsequent treatment based on the results of drug-susceptibility testing. We also recommend hot compresses, increased lid hygiene, topical sterilization with disinfectants, and treatment with an appropriate antibiotic ointment. Dr. Donnenfeld prefers topical azithromycin for blepharitis and bacitracin or mupirocin for MRSA carriers. These measures must be initiated early, ideally during the screening visit. The patient should be seen before the day of surgery to ensure that his or her blepharitis has resolved. We pay particular attention to the health of the ocular surface to prevent epithelial defects. Such treatment may involve topical cyclosporine and oral nutritional supplements, and the transient use of uppreserved tears and gels such as Optive (Allergan, Inc.), Blink Tears (Abbott Medical Optics Inc.), and Theratears (Advanced Vision Research, Inc.). We observe MRSA carriers more carefully postoperatively and look toxicity associated with the use of nonsteroidal anti-inflammatory drugs.

Figure 1. MRSA infection after PRK.

OPTIONS FOR HIGH-RISK PATIENTS

Several surgical options should be considered for patients at increased risk of infection. With regard to refractive surgery, studies suggest that LASIK is associated with a lower risk of postoperative infection than PRK procedures.4,5 In addition, evidence suggests that fewer infections result with flaps created by the femtosecond laser versus those created with a mechanical microkeratome.6

For the refractive surgery patient who requires a bandage contact lens, we recommend not only loading the dry cornea with a topical antibiotic such as Zymar (gati-
floxacin; Allergan, Inc.) so it absorbs the drug like a sponge, but also placing antibiotic directly on the contact lens so that it acts as a depot for additional release.

During cataract surgery, we typically use a clear corneal incision. For general infection prevention, we recommend always placing a suture if there are any postoperative signs of leakage from the incision. When patients’ wound-healing ability is compromised, we prefer to perform scleral tunnel surgery with a conjunctival cover.7 Certainly, good wound architecture is crucial for preventing infection, especially among high-risk patients. At the conclusion of surgery, an injection of intracameral vancomycin may further reduce the risk of infection.8

With all invasive ocular procedures, we recommend 3 days of preoperative prophylaxis using a topical fluoroquinolone drop that contains benzalkonium chloride (ie, Zymar or besifloxacin (Besivance; Bausch + Lomb, Inc). Benzalkonium chloride helps kill antibiotic-resistant organisms like MRSA and will act synergistically with the antibiotic to improve the speed of killing.9 On the day of surgery, patients should be prepped with topical povidone-iodine, with a drop placed in the cul-de-sac and washed out. Similarly, meticulous prepping and draping is always crucial for preventing ocular contamination.

**FOLLOW-UP CARE**

Postoperatively, high-risk patients require close observation, with return visits every few days until healing is evident. It is also appropriate to limit the use of topical anti-inflammatory drugs in these patients, who tend to be prone to ocular surface melts and secondary infections. We recommend limiting the use of nonsteroidal anti-inflammatory drugs to 1 to 2 weeks rather than the typical course of 4 to 5 weeks for these patients.

After cataract surgery, we have patients continue using topical fluoroquinolones for 10 to 14 days rather than the traditional duration of 1 week, based on evidence showing a bimodal incidence of infections (the first mode at 3 days and another at 9 to 10 days).7 Finally, it is vital to impress upon high-risk patients the importance of applying prescribed antibiotics diligently and returning to the doctor’s office promptly should any problematic symptoms arise. We suggest that eye care practitioners take extra steps to prevent endogenous
MRSE or MRSA from causing postoperative infections in patients, even if there are no obvious risk factors.

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**POSTOPERATIVE INFECTION RISK**

Although generally asymptomatic, colonization with MRSA or MRSE raises the risk of postoperative infection in two distinct ways. First, these opportunistic organisms are less likely to be cleared by standard prophylactic antibiotics, so they are more apt to be present in the ocular area during surgery to pose a risk of contamination. Second, when these organisms do cause postoperative infection, the infection probably will not respond to conventional therapy, which worsens the prognosis and increases the chance of significant vision loss. Elevated risk of MRSA or MRSE colonization mandates heightened preoperative screening and risk-reduction measures. In some parts of the country, infection is already present in the majority of our patients.

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