ARTICLE IN PRESS

Advances in Ophthalmology and Optometry ■ (2018) ■–■

ADVANCES IN OPHTHALMOLOGY AND OPTOMETRY

Intraocular Antibiotics as Endophthalmitis Prophylaxis in Routine Cataract Surgery

Current Practices and Controversies

Kelly Williamson, MD

Department of Ophthalmology, Drexel University College of Medicine, 219 North Broad Street 3rd Floor, Philadelphia, PA 19107, USA

Keywords

• Postoperative endophthalmitis • Cataract surgery • Intracameral antibiotics • Transzonular • Cefuroxime • Moxifloxacin • Vancomycin

Key points

- Infectious endophthalmitis is one of the most devastating complications after cataract surgery. Intraocular antibiotics have grown in popularity in recent years as a way of further reducing the incidence of endophthalmitis and also of reducing the need for postoperative drops; antibiotics have been delivered as intracameral, transzonular, and intravitreal injections.
- Cefuroxime, moxifloxacin, and vancomycin all have been shown to reduce rates of endophthalmitis in observational studies and one randomized controlled trial.
- Concerns regarding preparation of antibiotic formulations that are safe for intraocular use, cost, and antibiotic resistance have led some surgeons to hesitate in adoption of this practice.
- Randomized controlled trials and the availability of commercially produced intracameral antibiotics may result in increased adoption of this technique in the United States, but questions persist about whether the elimination of postoperative drop regimens altogether is possible.

INTRODUCTION

Infectious endophthalmitis is one of the most devastating complications of cataract surgery. Although rates of infectious endophthalmitis overall are low, cataract surgery is one of the most commonly performed surgical

Disclosure Statement: The author has nothing to disclose.

E-mail address: kaw362@drexel.edu

https://doi.org/10.1016/j.yaoo.2018.05.005

procedures in the world and incidence of cataracts in the aging population is projected to increase over the coming decades. The National Eye Institute projects that the number of people in the United States with cataracts will double from 24 million to almost 50 million by 2050 [1]. Cataract surgery, therefore, will be performed with increasing frequency. Because of this, efforts to minimize the risk of infectious postoperative endophthalmitis are paramount.

Preoperative regimens to reduce ocular surface flora, including aggressive treatment of blepharitis and other ocular surface disease, are a critical component in reducing infection risk. Some surgeons prescribe a course of topical antibiotics in the days to hours immediately preoperatively to reduce the ocular surface flora before surgery; however, because of a lack of studies showing a clear benefit and concerns regarding cost and growing microbial antibiotic resistance, this practice has not become standard of care and is not universally adopted. Sterile preparation of the ocular surface and conjunctival fornices with povidone-iodine 5% at least 3 to 5 minutes before surgery has proven to be the single most important method in reducing infection risk. Meticulous draping of the eye to prevent the eyelid margins and lashes from entering the surgical field also is critical. After surgery, topical antibiotic regimens commonly are prescribed for the first postoperative week to reduce ocular surface flora while corneal wounds re-epithelialize [2].

Recent infection prevention efforts, spurred by the landmark European Society of Cataract and Refractive Surgeons (ESCRS) clinical trial in 2006, have focused on antibiotics delivered intraoperatively via intracameral, transzonular, and intravitreal delivery methods to further reduce the incidence of this complication. This large multicenter randomized placebo-controlled trial showed a nearly five-fold reduction in endophthalmitis rates when intracameral cefuroxime was administered at the time of uncomplicated cataract surgery [3,4]. The dramatic results of this study led to a sea-change in the practice of cataract surgery, and since then intracameral antibiotic prophylaxis use has steadily grown more common in clinical practice.

The American Society of Cataract and Refractive Surgeons (ASCRS) 2014 Member Survey indicated that the proportion of members using intracameral antibiotics during cataract surgery had increased by 20% during the period from 2007 to 2014 [5]. Dropless cataract surgery techniques, in which antibiotic and anti-inflammatory medications are injected intravitreally at the end of cataract surgery, has increased in popularity as a method of decreasing cost and the reliance on patient compliance with drop regimens in the postoperative period [6]. However, a recent increase in incidence of a severe retinal complication thought to be related to intravitreal vancomycin has added a sense of urgency for surgeons searching for an antibiotic regimen providing an optimum combination of efficacy and safety [7]. This article reviews recent knowledge regarding medication selection and technique of administration of intraocular antibiotics during surgery and discusses possible barriers to use of these techniques.