

Simultaneous Bilateral Cataract Surgery

There are good reasons for experienced surgeons to consider the procedure in appropriate patients.

BY STEVE A. ARSHINOFF, MD, FRCSC

Simultaneous bilateral cataract surgery, also referred to as *immediately sequential cataract surgery*,¹ is controversial, but surgeons in developed countries are performing this procedure with increasing frequency.²⁻⁹ Part of their motivation derives from the marked advances in microsurgical techniques over the past 2 decades that have relaxed patients' attitudes about cataract surgery while also increasing their expectations of the procedure. It is no longer unusual for patients to request bilateral surgery in order to avoid the delayed recovery, intervening anisometropia, repeated visits, and prolonged follow-up that occur when each eye is treated individually.

Nevertheless, many ophthalmologists remain reluctant to perform simultaneous bilateral cataract surgery, because they are concerned about possible bilateral, postoperative, sight-threatening, adverse events such as endophthalmitis and retinal detachment. I agree that these risks must be addressed and minimized before a surgeon considers performing the procedure. Some surgeons also claim that an unexpected refractive error might frequently occur in both eyes, whereas it could be avoided by re-evaluating biometry after an unexpected result in the patient's first eye.¹⁰ This concern may be less significant than the potential adverse events described earlier, and the problem never occurred in my series of 1,020 consecutive simultaneous bilateral cataract surgery patients,¹¹ in my subsequent hundreds of cases, or in other large, reported series.⁹ Moreover, the advent of the IOLMaster (Carl Zeiss Meditec Inc., Dublin, CA) and newer biometric equations such as the Haigis formula further reduce the likelihood of significant biometric errors.

WHY AND WHEN I SWITCHED

I have performed routine simultaneous bilateral cataract surgery upon request since 1996. The patient that prompted the change in my practice was a 35-year-old

white female racecar driver who lived in remote Northern Ontario, where she was engaged in the wintertime testing of production automobiles during the racing off-season. She asked me why Canadian ophthalmologists routinely performed bilateral PRK but not simultaneous bilateral cataract surgery—historically, a much more established procedure. The only believable answer I could offer was



Figure 1. The nurse on the right arranges the tray for the eye on which the author will operate first. When that procedure begins, the nurse on the left prepares the table at left for the second eye. Once the author completes cataract surgery on the patient's first eye, the first nurse removes the used tray from the room. Meanwhile, the author changes his gloves, prepares and redrapes the second eye, and commences surgery with the assistance of the second nurse. With experience, one nurse on the author's staff was able to prepare and process both trays in approximately 1 to 2 minutes with the aid of the circulator. After assisting with surgery on the patient's first eye, the nurse changed her gloves and prepared the second tray, while the author removed the speculum from the patient's first eye and prepared his second eye. The nurse then assisted with surgery on the patient's second eye.

tradition. I had been performing small-incision cataract surgery since 1980 and had a cumulative experience of more than 5,000 cases. The complication rate in my cataract surgery was, if anything, lower than that of my PRK experience at that time.

ADDRESSING SURGEONS' CONCERNS

Endophthalmitis

One of the reasons surgeons cite most frequently against simultaneous bilateral cataract surgery is the risk of bilateral simultaneous endophthalmitis. The importance of this risk, of course, cannot be minimized. I have seen no published reports of bilateral endophthalmitis after simultaneous bilateral cataract surgery, but, during my travels when lecturing, a physician told me anecdotally of a single case with disastrous results.

Several precautions should be undertaken to minimize this risk. First, only experienced surgeons with a documented low complication rate should undertake performing simultaneous bilateral cataract surgery. Second, they should approach the procedure as two operations and change all solutions, instrumentation, and medications between the treatment of each eye, including the surgeon's and nurses' gloves (Figure 1). Although we do not use two different autoclaves, each separate surgical tray includes test tape when autoclaved, and it is removed separately from the other. Additionally, different lot numbers or, preferably, different manufacturers' ophthalmic viscoelastic devices and other supplies should be used for each eye. Third, surgeons should routinely inject 1 mg of routine vancomycin (or its equivalent) in 0.1 cc of BSS (Alcon Laboratories, Inc., Fort Worth, TX) into the capsular bag as the last step of the surgical procedure.¹²

Cystoid Macular Edema

Postoperative inflammation in the form of either mild iritis or cystoid macular edema was the most common complication in my series of 1,020 consecutive patients. The problem was no longer observed in our series after we added Acular (Allergan, Inc., Irvine, CA) q.i.d. for 3 weeks postoperatively to our routine regimen. Even so, diabetic patients with bilateral background maculopathy and others (eg, history of uveitis or inherited retinal degeneration) at high risk for postoperative macular edema should undergo unilateral cataract surgery, depending upon their individual circumstances.

Retinal Detachment

Although rare, retinal detachment is a feared complication of cataract surgery. Risk factors reported to predispose patients to a retinal detachment after cataract surgery include male sex, white race, younger age (<60 years), myopia with an axial length of greater than 24 mm,¹³ a prior retinal detachment,¹⁴ prior Nd:YAG capsulotomy,¹⁵ vitreous loss during surgery,^{16,17} and Marfan's syndrome.¹⁸

Many of these risk factors were originally proposed based on older cataract surgery techniques such as extracapsular and intracapsular cataract extraction, however, and they may not be as applicable to the modern endolenticular phacoemulsification surgeons currently perform. For example, some researchers have argued

that an Nd:YAG capsulotomy is not a significant risk factor for a retinal detachment.^{13,19} One of my four retinal detachment patients had undergone an Nd:YAG capsulotomy 1 year after undergoing cataract surgery

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and 2 years prior to experiencing a retinal detachment. The four patients in my series who developed a retinal detachment were all male, white, and moderately myopic. All the affected eyes possessed axial lengths greater than 24 mm, and two of the patients were younger than 60 years. The retinal detachments occurred between 3 months and 4 years postoperatively despite a thorough pre- and postoperative retinal assessment. In all cases, by the time the detachments became apparent, the patient's second eye would already have undergone cataract surgery if treated individually.

Greed

Some physicians assert that surgeons only favor simultaneous bilateral cataract surgery as a means by which to make more money. Every improvement in cataract surgery over the past 20 years has been accused of the same motive. As it turns out, in most jurisdictions, simultaneous bilateral cataract surgery costs less for the patient and hospital. Generally, however, the doctor also receives a reduced fee for operating on the second eye during the same sitting. For instance, in Ontario, simultaneous bilateral cataract surgery costs the hospital \$500 less, and the physician's fee is reduced by 15% for the second eye.

Conflict With Guidelines

Simultaneous bilateral cataract surgery is inconsistent with the AAO's *Preferred Practice Patterns* published in 1996. If we never carefully depart from current practice and

study the results of new surgical ideas, however, then progress will grind to a halt with every publication of a preferred practice pattern document. The AAO's most recent *Preferred Practice Patterns* still does not support routine bilateral cataract surgery, although the inclusion of some indications for it reflects an attitude shift in favor of this procedure.²⁰ In the UK, the Royal College of Ophthalmologists' Cataract Surgery Guidelines also includes indications for bilateral cataract surgery and, unlike the AAO's *Preferred Practice Patterns*, does not argue against the procedure.²¹

BENEFITS OF BILATERAL CATARACT SURGERY

Decreased Morbidity

Combining two cataract procedures decreases the risk of morbidity by eliminating duplicated workups and anaesthesia, the postoperative anisometropia that exists in the interim between the two operations, and the potential dangers associated with the increased travelling risk necessary for extra medical visits. The issue of anisometropia is more significant than often acknowledged. Patients whom I see on postoperative day 1 after unilateral surgery are always somewhat unhappy and experience difficulty adjusting to their unbalanced vision, whereas bilateral surgery patients are almost uniformly ecstatic with their new vision. Moreover, one researcher calculated that the risk of dying in a motor vehicle accident while traveling to the extra office visits is much higher than the risk of bilateral endophthalmitis after simultaneous bilateral cataract surgery.²²

In my experience, once aware of the possibility of undergoing bilateral surgery, the majority of patients request this option in order to resume a normal life more quickly. Rarely, patients express apprehension about undergoing surgery on both eyes during the same sitting, and I offer these individuals unilateral, sequential procedures that occur approximately 1 month apart.

Quality of Life

Bilateral cataract surgery aids patients who reside far from the surgical facility or for whom there are other issues rendering access difficult (eg, a dependence on others for transportation).

Additionally, if a patient suffers a severely deleterious outcome such as endophthalmitis or retinal detachment in one of his bilaterally operated eyes, he will already have achieved a good result in his other eye and will not dread surgery on his second eye. This situation has occurred with my own

patients who have experienced a retinal detachment or another problem, and they all expressed satisfaction at already having undergone surgery in one eye and seeing well.

Patients rapidly regain normal binocular summation of visual acuity, including stereopsis and contrast sensitivity, after simultaneous bilateral cataract surgery. By contrast, after unilateral cataract surgery, a cataract remains in the patient's contralateral eye, which continues to have hazy visual acuity and may also have a very different refractive error.²³ A number of studies have demonstrated that second-eye cataract surgery improves patients' visual function and vision-related quality of life significantly more than first-eye cataract surgery.²³⁻²⁷ Five-year data collected by the Swedish National Cataract Register found that patients' self-assessed visual outcomes and satisfaction with vision were significantly higher after second- versus first-eye cataract surgery.²⁸ Furthermore, patients with moderately impaired vision in one eye (20/30 to 20/80) and good vision in the other had

"Complication rates reported with simultaneous bilateral cataract surgery are generally lower than with unilateral surgery."

a higher risk for hip fracture.²⁹

Simultaneous bilateral cataract surgery also allows surgeons to plan better a patient's postoperative refractive state, particularly in cases of higher myopia and hyperopia. Operating on both eyes in the same sitting prevents disabling postoperative anisometropia. Further, the procedure minimizes rehabilitation time by shortening patients' period of adjustment to their new vision. Most bilateral surgery patients recommence driving and return to a normal lifestyle immediately after the 1-day postoperative early-morning visit. They miss fewer working days and need only purchase one pair of glasses, usually readers.

Improved Comprehension of Monovision

I have found discussing and managing monovision much easier with bilateral surgery patients, because the result should be immediate. My unilateral surgical patients tend to postpone their decision until after surgery on their first eye, at which time, monovision may not remain a viable option if their nondominant eye was already corrected for distance (I usually treat the worse cataract first, not necessarily the dominant eye).

Fewer Complications

The complication rates reported with simultaneous bilateral cataract surgery are generally lower than with unilateral surgery, a finding mirrored in my own series of consecutive simultaneous bilateral cataract surgery cases.^{11,30} In ad-

dition, a retrospective study of 319 patients who underwent simultaneous bilateral cataract surgery in the UK described complication rates and visual results that compared favorably with those in reports of unilateral surgery.⁴ More recently, investigators found comparable outcomes with simultaneous bilateral cataract surgery to those of unilateral surgery in a series of 144 patients over the course of 10 years in the UK.⁸

Several reasons may account for the lower complication rates I achieved. First, I did not perform the procedure in high-risk patients. Second, I found that the hospital staff paid special attention to these cases, and the staff members and patient relaxed after the procedure in the first eye was complete. Third, bilateral cataract surgery forced my surgical team to analyze every step of the procedure. The nurses began discussing how to optimize the sterility of the cases and minimize patient risks, and their already excellent work improved as a result of their concern and effort. The biometrist placed renewed emphasis on carefully monitoring every patient's results postoperatively, as well as rechecking tables, A-constants, and so forth. Finally, we studied these cases carefully because we recognized that our team was breaking new ground. We made numerous small adjustments to our routine practices and reduced our complication rate as we gained experience. Our unilateral cases benefited from these improvements as well.

That stated, I deferred operating on the second eye of two patients due to a problem that occurred in the first eye. In the first case, the patient spoke only Punjabi and became agitated during the operation. With the assistance of a hospital-hired translator, I was able to perform uneventful surgery on the patient's second eye. In the second case, pseudoexfoliation and the need for implanting a capsular tension ring slightly lengthened the operating time on the patient's first eye. Because she suffered chronic back problems, she asked that I defer operating on her second eye and returned a few weeks later for that procedure.

CONCLUSION

Simultaneous bilateral cataract surgery does not seem to be associated with a greater risk of complications than uneventful unilateral cataract surgery, provided the surgical staff takes the proper precautions to reduce risks unique to the bilateral procedure. These safety measures include assuring that all solutions, medications, and instruments are selected from different lots in order to reduce the potential for bilateral infections. In addition, almost any serious preoperative ophthalmic disorder—including blepharitis, glaucoma, lenticular subluxation, unusually dense or expected difficult cataract, and significant diabetic retinopathy or other retinal pathology—should precipitate a careful evaluation of the patient's particular status and any potential

additional risks prior to bilateral surgery. Any significant intraoperative complication with the first eye is a signal that the surgeon should defer operating on the second eye.

Bilateral cataract surgery is not an appropriate choice for all surgeons. It is best suited for confident, experienced surgeons who are aware of their complication rates and biometric accuracy. ■

Steve A. Arshinoff, MD, FRCSC, is a partner at York Finch Eye Associates in Toronto. He holds no financial interest in any products or companies mentioned herein. Dr. Arshinoff may be reached at (416) 745-6969; saaeys@idirect.com.

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