

IS IT TIME TO IMPLEMENT ISBCS IN ROUTINE CLINICAL PRACTICE?



Two surgeons weigh in.

BY SHRUTI AGGARWAL, MD, AND MATTHEW C. CARNAHAN, MD

CONSIDERATIONS FOR ADOPTION OF ISBCS

BY SHRUTI AGGARWAL, MD

The demand for cataract surgery in the United States is projected to increase owing to various factors, including excellent visual outcomes, a predictable recovery, an aging population, and an increasing ability to achieve freedom from glasses with refractive cataract surgery. The volume of cataract surgery is projected to increase by approximately 72% by the year 2036.¹ The ability to meet demand depends on the size of the future ophthalmologic workforce and the efficiency of the health care systems in place. Unfortunately, the US Department of Health and Human Services anticipates a shortage equivalent to 6,000 full-time ophthalmologists by 2025.²

The growing disparity between the demand for cataract surgery and the supply of cataract surgeons in the workforce threatens to create a backlog of procedures and long waitlists for surgery. One strategy to increase surgical throughput and efficiency while simultaneously improving patient outcomes and experience is immediate sequential bilateral cataract surgery (ISBCS).

THE CASE FOR ISBCS

ISBCS has traditionally been reserved for patients who are at increased risk of complications related to anesthesia. Studies of complications and visual outcomes following cataract surgery

in areas where ISBCS is performed routinely, such as Canada, India, and some European countries, however, have shown that the rate of infection and refractive outcomes were similar after ISBCS and delayed sequential bilateral cataract surgery (DSBCS). Moreover, ISBCS offered several benefits for patients and providers over traditional DSBCS.³

For patients. Perioperative logistical planning is more convenient and cost effective with ISBCS compared to DSBCS. Patients undergoing ISBCS experience fewer inconveniences—they can take less time off work and need to arrange for transportation and care in the perioperative period only once.

For providers. Efficiency for the individual surgeon and the surgery center may increase because fewer clinic visits and reduced anesthesia and surgical room turnover time are associated with ISBCS.

CONCERNS ABOUT IMPLEMENTING ISBCS

Safety protocols. The risk of bilateral endophthalmitis is perhaps the biggest concern with ISBCS. Several studies examining the rate of bilateral endophthalmitis, however, did not find it to be higher after ISBCS compared with DSBCS when strict safety protocols were followed.^{3,4}

Any surgeon who is considering implementing ISBCS must be aware of and well versed in the safety protocols.

It is imperative to assess a patient's risk of infection—particularly endogenous infection—preoperatively. Surgery on each eye should be conducted as a separate surgical procedure with separate sterile setups for the right and left eyes and scrubbing in between the procedures. Using medications from different manufactured lots can reduce the risk of bilateral infection. The intraoperative use of intracameral antibiotics has been shown to reduce the incidence of postoperative endophthalmitis.⁵

Refractive outcomes. A frequent objection to the widespread adoption of ISBCS is the inability to adjust refractive outcomes for the second eye based on outcomes in the first eye. For routine patients, however, ISBCS has not been associated with inferior refractive outcomes or anisometropia.^{3,4} In patients with significant refractive errors, ISBCS may be the best option for preventing postoperative anisometropia and restoring postoperative depth perception. DSBCS may be more appropriate for patients with unpredictable refractive outcomes, such as those with high myopia, hyperopia, or a history of refractive surgery because surgical planning for the second eye can be adjusted based on the refractive outcome in the first eye. The use of the latest IOL calculation formulas and intraoperative aberrometry, however,

could make it unnecessary to delay surgery on the second eye.

IOLs. It is important to ensure that the correct IOL is implanted. I recommend labeling the IOLs clearly and leaving the IOL for the second eye outside the OR until surgery on that eye begins.

BARRIERS TO ISBCS

Risk factors. Patients at increased risk of postoperative complications include those with dense cataracts and individuals with a history of diabetic retinopathy, uveitis, or corneal endothelial dystrophy. They may develop macular or corneal edema after cataract surgery and require an extended recovery time. It may be more prudent to perform DSBCS on these patients.

Financial reimbursement. A practical barrier to ISBCS is financial reimbursement. Currently, Medicare reimburses only 50% of the facility fee for the second eye, and commercial insurance plans tend to follow CMS guidelines. This is not sustainable and disincentivizes providers and surgical centers from offering ISBCS. Integrated health systems such as Kaiser Permanente have adopted ISBCS more widely than traditional fee-for-service systems. Kaiser Permanente has been offering ISBCS since 2010 with good success.⁶

CONCLUSION

The time is ripe to consider the widespread implementation of ISBCS in

the United States to address a growing disparity between the demand for cataract surgery and surgeon supply. With appropriate and thoughtful perioperative planning and the removal of financial disincentives, ISBCS has the potential to improve patient care substantially.

1. Miller KM, Oetting TA, Tweeten JP, et al. Cataract in the adult eye preferred practice pattern. *Ophthalmology*. 2022;129(1):P1-P126.
2. Health Resources and Services Administration. National and regional projections of supply and demand for surgical specialty practitioners: 2013-2025. 2016. Accessed November 23, 2021. <https://bhwh.hrsa.gov/sites/default/files/bureau-health-workforce/data-research/surgical-specialty-report.pdf>
3. Singh G, Grzybowski A. Evolution of and developments in simultaneous bilateral cataract surgery. Update 2020. *Ann Transl Med*. 2020;8(22):1554.
4. Singh R, Dohlman TH, Sun G. Immediately sequential bilateral cataract surgery: advantages and disadvantages. *Curr Opin Ophthalmol*. 2017;28(1):81-86.
5. Herrinton LJ, Liu L, Alexeeff S, Carolan J, Shorstein NH. Immediate sequential vs. delayed sequential bilateral cataract surgery: Retrospective comparison of postoperative visual outcomes. *Ophthalmology*. 2017;124(8):1126-1135.
6. Haripriya A, Chang DF, Ravindran RD. Endophthalmitis reduction with intracameral moxifloxacin in eyes with and without surgical complications: results from 2 million consecutive cataract surgeries. *J Cataract Refract Surg*. 2019;45(9):1226-1233.

GETTING STARTED WITH ISBCS

BY MATTHEW C. CARNAHAN, MD

I still remember my first two ISBCS cases, both performed around 2009. I had heard the safety statistics for and benefits of ISBCS discussed for many years during course presentations at ASCRS annual meetings and found similar support in the literature.¹⁻⁴

REASONABLE OPPORTUNITIES

The cases that came to me that year seemed like reasonable opportunities to offer ISBCS. My first case involved a man in his 70s who had hemiplegia from a stroke. The patient required intubation for cataract surgery because he had spontaneous body spasms and difficulty managing his secretions. My second ISBCS case involved a middle-aged woman with dense posterior subcapsular cataracts and count fingers vision. She required continuous intubation, lived in the intensive care unit, and had a poor prognosis. She wanted to have cataract surgery so that she could see her children and young grandchildren before she passed away.

The decision in both situations was between ISBCS, DSBCS, operating on only one eye, and not operating at all.

Both patients could have managed the rest of their lives without surgery or with monocular surgery, but both they and their families desired bilateral surgery. For each patient, the convenience of ISBCS was desired over living with their current visual state and the delay between surgeries with DSBCS, with the understanding that protocols would be followed to ensure neither eye would be at greater individual risk of complication than had the surgeries been performed on different days, weeks, months, or years. Neither patient was concerned about a potential reduction in the accuracy of the refractive outcome.

Fortunately, the International Society of Bilateral Cataract Surgeons had published general principles for excellence in ISBCS,⁵ and the organization for which I was working (The Permanente Medical Group-Kaiser Permanente) had implemented the use of intracameral moxifloxacin during cataract surgery (finding the same success in endophthalmitis reduction seen by those implementing the same protocol elsewhere).⁶⁻¹³

ISBCS was successful for both patients, and the next logical question was whether to extend the option of ISBCS to other patients.

INCORPORATING ISBCS

The positive results of a colleague in a small study evaluating the safety and outcomes of 300 ISBCS procedures performed in his practice in the Bay Area (D. Kramer, MD, unpublished data, 2008), successful implementation of ISBCS by Richard K. Stiverson, MD, at the Kaiser Permanente facility in Colorado, and similarly positive results in larger datasets outside the United States inspired a grassroots movement within Kaiser Permanente to offer ISBCS.¹⁴⁻¹⁶

I incorporate the option of ISBCS into my discussions with patients during their initial evaluation for cataract surgery and, later, we incorporated it into our cataract education class. If I feel a patient is a poor candidate for ISBCS based on their eye pathology, I let them know. For suitable candidates, I ask follow-up questions regarding

their ability to be cared for in the short term after ISBCS and their ability to cooperate for a longer duration during ISBCS compared to DSBCS. Their responses guide the decision-making process.

Often, patients ask whether ISBCS is safe. I assure them that it is when the appropriate precautions are taken. I then briefly outline the steps that we take in conjunction with our operating venue partners to optimize safety, including ensuring that there is no crossover between things like instrumentation, drugs, and devices between the two eyes. Essentially, we follow the guidelines outlined by the International Society of Bilateral Cataract Surgery, informing patients that should the first eye surgery be eventful, the second eye surgery would be postponed.⁵ Kaiser Permanente and others have validated the safety and refractive outcomes of ISBCS, further confirming its efficacy and demonstrating its higher levels of patient satisfaction—an often-overlooked aspect in our data-driven world—compared to DSBCS.¹⁷⁻²³

I try to help patients understand why most practices in the United States do not offer ISBCS but do offer same-day surgeries for procedures such as refractive lens exchange, phakic IOLs, and LASIK—loss of reimbursement. I explain that, because this is not a factor in the non-fee-for-service environment of Kaiser Permanente, we can focus care on what best meets the needs of our patients, only proceeding with ISBCS when the patient and the surgeon feel it is a safe option. For suitable candidates, ISBCS eliminates the risks associated with anisometropia between eye surgeries and increases convenience and overall satisfaction for patients and their families compared with DSBCS while also providing similar refractive outcomes.

CONCLUSION

ISBCS is not a cavalier approach to cataract surgery. It is a carefully planned and performed orchestration

of two consecutive but independent surgeries. ■

1. Arshinoff SA, Strube YN, Yagev R. Simultaneous bilateral cataract surgery. *J Cataract Refract Surg.* 2003;29:1281-1291.
2. Lundstrom M, Albrecht S, Nilsson M, Astrom B. Benefit to patients of bilateral same-day cataract extraction: randomized clinical study. *J Cataract Refract Surg.* 2006;32:826-830.
3. Arshinoff SA, Odorcic S. Same-day sequential cataract surgery. *Curr Opin Ophthalmol.* 2009;20:3-12.
4. Snyder A, Omulecki W. Simultaneous bilateral cataract surgery with PC IOL implantation. *Klin Oczna.* 2002;104:96-98.
5. ISBCS general principles for excellence in ISBCS 2009. International Society of Bilateral Cataract Surgeons. September 14, 2009. Accessed January 17, 2022. <https://valeandarou.com/files.dl/2010-07-20-FINAL-ISBCS-SBCS-suggestions-from-ESCRS-Barcelona.pdf>
6. O'Brien T, Arshinoff S, Mah F. Perspectives on antibiotics for postoperative endophthalmitis prophylaxis: potential role of moxifloxacin. *J Cataract Refract Surg.* 2007;33(10):1790-1800.
7. Lane SS, Osher RH, Masket S, Belani S. Evaluation of the safety of prophylactic intracameral moxifloxacin in cataract surgery. *J Cataract Refract Surg.* 2008;34(7):1451-1459.
8. Arbisser LB. Safety of intracameral moxifloxacin for prophylaxis of endophthalmitis after cataract surgery. *J Cataract Refract Surg.* 2008;34(7):1114-1120.
9. Kowalski RP, Romanowski EG, Mah FS, Yates KA, Gordon JY. Intracameral Vigamox (moxifloxacin 0.5%) is non-toxic and effective in preventing endophthalmitis in a rabbit model. *Am J Ophthalmol.* 2005;140:497-504.
10. Kernt M, Neubauer AS, Liegl RG, et al. Intracameral moxifloxacin: in vitro safety on human ocular cells. *Cornea.* 2009;28(5):553-561.
11. Espiritu CR, Caparas VL, Bolinao JG. Safety of prophylactic intracameral moxifloxacin 0.5% ophthalmic solution in cataract surgery patients. *J Cataract Refract Surg.* 2007;33(1):63-66.
12. Arshinoff SA. Advantages and use of intracameral moxifloxacin for bacterial prophylaxis in cataract surgery. Poster presented at: ACSRS Annual Meeting; April 27-May 2, 2007; San Diego, CA.
13. ESCRS Endophthalmitis Study Group. ESCRS study of prophylaxis of postoperative endophthalmitis after cataract surgery: Preliminary report of principal results from a European multicenter study. *J Cataract Refract Surg.* 2006;32(3):407-410.
14. Shorstein NH, Lucido C, Carolan J, Liu L, Slean G, Herrington LJ. Failure modes and effects analysis of bilateral same day cataract surgery. *J Cataract Refract Surg.* 2017;43(3):318-323.
15. Amsden LB, Shorstein NH, Frevier H, Liu L, Carolan J, Herrington LJ. Immediate sequential bilateral cataract surgery: surgeon preferences and concerns. *Can J Ophthalmol.* 2018;53(4):337-341.
16. Herrington LJ, Liu L, Alexeeff S, Carolan J, Shorstein NH. Immediate sequential vs. delayed sequential bilateral cataract surgery: retrospective comparison of postoperative visual outcomes. *Ophthalmology.* 2017;124(8):1126-1135.
17. Carnahan M, Chun M, Peng P, Quang L, Tran E. Comparison of the refractive outcome versus target refraction between immediate sequential same day bilateral cataract surgery and delayed sequential cataract surgery. Paper presented at: ACSRS Annual Meeting; May 3-7, 2019; San Diego, CA.
18. Lacy M, Kung TPH, Owen JP, et al. Endophthalmitis rate in immediately sequential versus delayed sequential bilateral cataract surgery within the Intelligent Research in Sight (IRIS) Registry data. Published online July 13, 2021. *Ophthalmology.* doi: 10.1016/j.ophtha.2021.07.008.
19. Arshinoff SA. Same-day cataract surgery should be the standard of care for patients with bilateral visually significant cataract. *Surv Ophthalmol.* 2012;57(6):574-579.
20. Ahmed IK, Hill WE, Arshinoff SA. Bilateral same-day cataract surgery: an idea whose time has come #COVID-19. *Ophthalmology.* 2021;128(1):13-14.
21. Arshinoff SA, Bastianelli P. Incidence of postoperative endophthalmitis after immediate sequential bilateral cataract surgery. *J Cataract Refract Surg.* 2011;37(12):2105-2114.
22. Woreta FA, Schein OD. Immediate sequential bilateral cataract surgery—the patient perspective should prevail. *JAMA Ophthalmol.* 2021;139(8):885-886.
23. Carolan JA, Amsden LB, Lin A, et al. Patient experience and satisfaction with immediate sequential and delayed sequential bilateral cataract surgery. *Am J Ophthalmol.* 2021;235:241-248.

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