



# Surgical Insights



**Immediate Sequential  
Bilateral Cataract Surgery**

# Immediate Sequential Bilateral Cataract Surgery

Cataract extraction with intraocular lens (IOL) implantation is the most common surgical procedure worldwide. The frequency of second-eye surgery, approximately 30% to 45% of all cataract extractions, has increased, which may partly explain the growing number of surgeries.<sup>1</sup>

Today, majority of surgeons perform delayed sequential bilateral cataract surgery (DSBCS), scheduling surgery in the two eyes approximately 4 to 6 weeks apart. An emerging trend, however, is to perform both surgeries on the same day. The use of immediate sequential bilateral cataract surgery (ISBCS) is somewhat controversial, but there are a number of surgeons who believe this may be the future of cataract surgery.<sup>2</sup>

ISBCS is being performed with increasing frequency worldwide. In 2009, 10% of responding members of the European Society of Cataract & Refractive Surgeons (ESCRS) were performing ISBCS. ISBCS is being performed with increasing frequency in Australia, Austria, China, Great Britain, Iran, Turkey, South Africa, Korea, Malaysia, India, and Poland, although exact data are unavailable.<sup>3</sup>

Considerable published evidence shows ISBCS to be at least as effective as delayed sequential bilateral cataract surgery (DSBCS), and no published articles show that the former is less safe. When carefully executed, ISBCS has many advantages worth fair-minded consideration by surgeons.<sup>4</sup>

## INDICATIONS for ISBCS<sup>5</sup>

- Patients with similar degrees of cataract development in both eyes
- Preoperative snellen decimal visual acuity between 0.1 and 0.5
- If there is a significant ametropia
- If patient requests quick vision rehabilitation

## CONTRAINDICATIONS<sup>5</sup>

- Ongoing inflammatory or infectious processes
- Glaucoma with poor control/mitotic therapy, phacodonesis/subluxated lens, chronic uveitis, severe fuchs dystrophy, diabetic retinopathy

- Any condition that might prolong or make cataract surgery more cumbersome
- In cases difficult to assess preoperatively (eg. extremely short/long eyes, eyes previously treated with corneal refractive surgery/laser, or eyes with previous trauma from injury or surgery)
- If the surgeon is unsure about postoperative compliance (eg. in patients with dementia or a history of drug abuse)
- Unwilling patients

ISBCS should be undertaken only when high-quality operating room (OR) standards and sterilization routines are met.<sup>5</sup> The surgeon must be confident that the balance of risks and benefits is to the patient's advantage and that the rate of intra- and postoperative complications is on an acceptably low level.<sup>5</sup>

#### **GUIDELINES on ISBCS<sup>4</sup>**

Following are the principles published by the International Society of Bilateral Cataract Surgeons for excellence in ISBCS:

- **Cataract or refractive lens surgery should be indicated in both eyes.**
- **Any concomitant relevant ocular/ periocular disease should be managed.**
- **Complexity of the proposed ISBCS procedure should be within the surgeon's competence.**
- **Patient should be provided with suitable informed consent for ISBCS and be free to choose ISBCS or DSBCS.**
- **Right-left eye error risks should be minimized by listing all surgical parameters (selected IOL, astigmatism, etc.) for both eyes on a board visible to all in the OR at the beginning of each ISBCS case. WHO operative checklists should also be used if possible.**
- **Errors in IOL power should be minimized by familiarizing OR personnel with the calculation methods used. The patient's original charts should be available in the OR, and everybody passing the IOL to the surgical table should confirm the IOL chosen. ISBCS nursing staff should be specifically trained and experienced.**

- Complete aseptic separation of the first and second eye surgeries is mandatory.
  - Nothing in physical contact with the first eye during surgery should be used for the second eye's surgery.
  - The separate instrument trays for the two eyes should go through complete and separate sterilization cycles with indicators.
  - There should be no crossover of instruments, drugs, or devices between the two trays for the two eyes at any time before or during the surgery of either eye.
  - Different ophthalmic viscosurgical devices and different manufacturers or lots of surgical supplies should be used whenever reasonable (where the device or drug type has ever been found to be causative of endophthalmitis or TASS) and possible (if different lots or manufacturers are available) for the right and left eyes.
  - Nothing should be changed with respect to suppliers or devices used in surgery without a thorough review by the entire surgical team to ensure the safety of the proposed changes.
  - Before the operation on the second eye, the surgeon and nurse should use acceptable sterile routines of at least re-gloving after independent preparation of the second eye's operative field.
  - Intracameral antibiotics have been shown to dramatically reduce the risk of postoperative endophthalmitis. Their use is strongly recommended for ISBCS.
- Any complication with the first eye's surgery must be resolved before proceeding. The patient's safety and benefit are paramount in deciding to proceed to the second eye.
- ISBCS patients should not be patched. Postoperative topical drops should be begun immediately postoperatively, in high doses, which can be tapered after the first few days. Other ophthalmic medications (eg, for glaucoma) should be continued uninterrupted.
- ISBCS surgeons should routinely review their cases and the international literature to be sure that they are experiencing no more than the acceptable levels of surgical and postoperative complications.

Surgeons new to ISBCS should strictly follow the above recommendations.

## BENEFITS<sup>4</sup>

- Immediate visual rehabilitation as compared to DSBCS patients who suffer full binocularity until considerably after their second operation.
- Greater convenience for patients & their families (fewer clinical evaluations, hospital visits)
- Higher productivity of the surgical facility, allowing faster OR turnover, shorter hospital waiting lists
- Low risks of simultaneous bilateral endophthalmitis (1:100 million patients)
- Surgeons frequently practising ISBCS are usually willing to operate on amblyopic/previously injured eye often yielding surprisingly good results.

## TAKING A LOOK AT CONTROVERSIES<sup>6,7</sup>

1. **The preferred practice documents of many countries do not recognize ISBCS as a standard form of practice.**

Preferred practice documents recount the current state of practice; however, they are written about 1 year before they are published, hence cannot encompass a new procedure as accepted standard practice. For example, IOLs and, more recently, intravitreal antiangiogenic injections for retinal disorders were not accepted just before they became standards of practice.

2. **Unacceptable risk of ISBCS- Postoperative bilateral retinal detachment**

Retinal detachment generally occurs months or years after cataract surgery. The timing of postoperative detachments makes it irrelevant whether the patient's two operations occur 3 minutes or 3 months apart. Fact that the population most at risk is identifiable enables pre- and postoperative retinal assessments for prophylactic treatment of the high-risk group, if needed.

3. **Other significant risks: Bilateral cystoid macular edema (CME), diabetic macular edema, and corneal decompensation (in eyes with Fuchs dystrophy)**

Each of these entities is a specific relative contraindication for ISBCS. Of these, only CME can be unpredictable, and most ISBCS surgeons give perioperative NSAIDs to minimize that risk.



#### **4. Bilateral toxic anterior segment syndrome (TASS) cited as a possible risk**

TASS has not been reported with ISBCS to date. In a recent study of almost 100,000 ISBCS cases, there were no reports of TASS.

#### **5. The largest issue with respect to ISBCS: potential of simultaneous bilateral endophthalmitis (SBE)**

The risk for SBE in ISBCS can be assigned a best estimate of approximately 1:70 million.

In the most complete study of infection after ISBCS, in 95,606 eyes undergoing ISBCS, the infection rate was 1:5,759 for all cases, 1:1,987 for cases not receiving intracameral antibiotic prophylaxis (IC), and 1:14,352 for cases receiving IC with cefuroxime, vancomycin, or moxifloxacin. These infection rates are dramatically lower than the infection rate reported in ESCRS study of endophthalmitis (1:1,621).<sup>3,6</sup>

**Choosing an intracameral antibiotic is a challenge. There are a number of reasons to prefer moxifloxacin. Moxifloxacin has a broader spectrum of activity against common endophthalmitis pathogens and less reported resistance than cefuroxime. Unlike the others, moxifloxacin demonstrates dose-dependent rather than time-dependent kinetics in bacterial killing, and antinuclear rather than anti cell-wall efficacy. It has a low risk of allergy (especially compared with the cephalosporins) and is the simplest to prepare, making dilution errors unlikely.<sup>6</sup> It is microbiologically more logical to use an agent (like moxifloxacin) for prophylaxis that is unrelated chemically and by mechanism of action to the current endophthalmitis drugs of choice, vancomycin and ceftazidime, reserving them for rare failures, than to use agents of last resort, vancomycin or cefuroxime (chemically and microbiologically similar to ceftazidime) as primary prophylactic agents. Finally, even dilute moxifloxacin has a faint yellow colour, making administration of the wrong syringe from the nurse's table unlikely.<sup>6</sup>**

## CONCLUSION:

ISBCS is an effective surgical technique that, with proper patient selection, can yield excellent outcomes after surgery.<sup>2</sup> There is no evidence that ISBCS is unsafe.<sup>6</sup> It has not been shown to have any demonstrable downside but it does treat the visual system, restoring binocularity as well as monocular clarity simultaneously.<sup>6,7</sup> Careful preoperative evaluation of indications & contraindications is necessary for each case of ISBCS.<sup>5</sup> When performing ISBCS, surgeons must make every effort to carefully follow the International Society of Bilateral Cataract Surgeons' principles and use intracameral antibiotics, which have been demonstrated to dramatically reduce the risk of endophthalmitis<sup>4</sup>.

### ***Adapted from:***

1. *Cataract Refract Surg* 2011; 37:992–1002
2. *Cataract & refractive surgery today Europe* September 2011; 57-56
3. *Cataract Refract Surg* 2011; 37:2105–2114
4. *Advanced ocular care* March 2011; 37-39
5. *Cataract & refractive surgery today Europe* September 2011; 75-78
6. *Cataract & refractive surgery today Europe* September 2011; 59-64
7. *Surv Ophthalmol* 2012; 57: 574-579

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1. As per IMS ORG Dec'12
2. Cipla data on file

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