

THE LITERATURE

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IMMEDIATE SEQUENTIAL BILATERAL CATARACT SURGERY: A SYSTEMATIC REVIEW AND META-ANALYSIS

Kessel L, Andresen J, Erngaard D, et al¹

ABSTRACT SUMMARY

Kessel et al performed a systematic literature review and meta-analysis using the Cochrane Review Manager software to examine the safety and efficacy of immediate sequential bilateral cataract surgery (ISBCS) versus bilateral cataract surgery performed on 2 different days. The investigators reviewed the rate of complications, postoperative anisometropia, and subjective visual function to formulate evidence-based national Danish guidelines for cataract surgery. They identified three randomized controlled trials comparing the outcomes of 1,900 patients randomized to ISBCS or to bilateral cataract surgery on 2 separate days. All three studies only included patients without competing eye diseases and with a limited range of axial lengths. The authors reported no difference in the risk of complications or visual outcome in patients randomized to ISBCS or bilateral cataract surgery on two different dates.

Kessel et al also assessed the quality of evidence for each outcome across the studies with the Grading of Recommendation, Assessment, Development, and Evaluation method. They rated the quality of evidence regarding the risks and benefits of ISBCS in all the studies from very low to moderate. The investigators concluded that they could not provide evidence-based national guidelines on the use of ISBCS due to the lack of high-quality evidence. The outcome assessments were not blind, the type and reported number of complications were inconsistent, and ISBCS surgical procedures were not optimized. Also, there were too few patients across the three trials to evaluate serious postoperative complications such as endophthalmitis with any certainty. None of the studies reported the prevalence of postoperative anisometropia. Kessel et al recommended the decision to perform ISBCS be made after a careful discussion of the risks and benefits between the surgeon and patient, that ISBCS be performed on each eye as two independent and standard surgical procedures, and that intracameral antibiotics be used to significantly lower the risk of endophthalmitis.

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PROSPECTIVE ANALYSIS OF OUTCOMES AND ECONOMIC FACTORS OF SAME-DAY BILATERAL CATARACT SURGERY IN THE UNITED STATES

Rush SW, Gerald AE, Smith JC, et al²

ABSTRACT SUMMARY

Rush et al compared the clinical and economic outcomes for the patient, physician, ambulatory surgery center (ASC), and third-party payer for cohorts of patients who either underwent same-day bilateral cataract surgery or the standard, separate-day bilateral cataract surgery.

Each cohort for this prospective, case-controlled clinical trial included 42 age-matched patients ranging from 30 to 100 years of age who had visually significant bilateral cataracts that met Medicare criteria. Both cohorts underwent bilateral phacoemulsification with IOL implantation during the period of August 2, 2013, through January 27, 2014, by one of two cataract surgeons at a single ASC. The surgical protocol was standardized and based on guidelines from the International Society of Bilateral Cataract Surgeons. Patients with certain significant comorbidities or special



AT A GLANCE

- Based on their meta-analysis, Kessler et al reported no difference in the risk of complications or visual outcome in patients randomized to ISBCS or bilateral cataract surgery on two different dates.
- Rush et al found that ISBCS and separate-day bilateral cataract surgery both improve visual function in patients but that ISBCS offers additional benefits, including faster visual rehabilitation and an improvement in quality of life, fewer clinic and hospital visits, and no anisometropia between surgeries.
- Reasons cited against ISBCS include the never-reported risk of potentially blinding the patient with a devastating bilateral complication, the surgeon's inability to learn from refractive outcomes of the first eye for preoperative planning on the second eye, and the financial disincentives to physicians and ASCs due to the current reimbursement policy.

requests that necessitated deviation from the treatment protocol were excluded from enrollment.

The researchers found no significant differences in any preoperative baseline or demographic feature or in any postoperative clinical outcome between the two cohorts of patients. Both groups achieved a significant improvement in corrected distance visual acuity after cataract surgery ($P < .0001$). There were no cases of endophthalmitis or toxic anterior segment syndrome in either group. The researchers noted that, due to the small number of patients in the study, it was not possible to make generalizations about the overall safety of same-day bilateral cataract surgery in the United States.

The same-day cohort traveled less total distance for care ($P = .0039$ and $P < .0001$ for residents from in town and out of town, respectively), spent less total time traveling for care ($P = .0008$ and $P < .0001$ for residents from in town and out of town, respectively), required on average 3.8 fewer visits for care ($P < .0001$), and required less total recovery time ($P < .0001$) than the control cohort.

On average, separate-day patients from out of town travelled an additional 447 miles more than same-day patients also from out of town. The mean total recovery time was 3.3 weeks for same-day patients and 5.9 weeks for separate-day patients ($P < .0001$). Patients in the same-day cohort also experienced functional benefits such as quicker visual depth perception recovery. Twenty-nine percent of patients in the separate-day cohort and none in the same-day group noted anisometropia between surgery on the first and second eyes.

The total time physicians spent in surgery for both eyes was not different for the two groups ($P = .7310$). The total ASC time spent caring for both eyes was less for the same-day group ($P < .0001$) by an average of 27 minutes, which was noted to be purely administrative in nature. The separate-day surgery patients had two episodes of checking in, filling out consent forms and paperwork, and waiting for a surgical bed to become available.

The Centers for Medicare & Medicaid Services as well as most health insurance policies in the United States mandate a 50% reduction in reimbursement for the contralateral eye on all same-day bilateral surgeries. As such, the total cost to the third-party payer for both eyes, the total reimbursement to physicians for surgery, including postoperative care for both eyes, and the total reimbursement to the ambulatory surgery center for both eyes were significantly lower for the same-day group ($P < .0001$, $P = .0028$, and $P = .0016$, respectively). The total ASC expenses for both eyes were higher for the same-day group ($P < .0001$), which was accounted for because the anesthesia services required for the second eye were not reimbursed at all to the ASC. The second eye resulted in an average net loss of \$407 for the ASC on each Medicare patient.

Rush et al reported that, although the third-party payer

(both public and private) benefitted from substantial cost reductions in the same-day group, the current third-party payment structure, with the 50% rate cut for the second eye to both the physician and ASC when surgery was performed bilaterally on the same day, explicitly discourages surgeons from performing same-day bilateral cataract surgery. The authors noted population studies that showed that 60% of cataract surgery patients had the fellow eye operated on within 3 months and 86% by the end of 2 years. Medicare spent approximately \$3.4 billion in 2010 on 1.82 million cataract surgeries for Medicare beneficiaries in 2010.

Rush et al argued for a change in the same-day bilateral cataract surgery reimbursement policy to reflect 100% ASC reimbursement for each cataract surgery performed and 90% physician reimbursement for the second eye in same-day bilateral cataract surgery. Their recommendation for a 10% reduced physician reimbursement on the second eye in same-day bilateral surgery is based on the current designation that 20% of the cost of the cataract surgery fee is allocated for postoperative care, and according to their study, about one-half as many postoperative visits were required by the patient when same-day bilateral cataract surgery was performed. With these recommended reimbursement changes, the authors calculated a net savings for Medicare of approximately \$144.58 per patient or \$72 million annually—a 2% total savings in the \$3.4 billion spent by Medicare on cataract surgery each year.

DISCUSSION

Cataract is responsible for 51% of world blindness, and as people live longer, the number of people in need of surgery for this treatable leading cause of blindness both in the United States and abroad is expected to increase.³ There is a growing debate among ophthalmologists across the world about the risks and benefits of performing same-day bilateral cataract surgery or ISBCS.

ISBCS and separate-day bilateral cataract surgery both improve visual function in patients, but ISBCS offers additional benefits, including faster visual rehabilitation and improvement in quality of life, reduced number of clinic and hospital visits and less distance travelled and time spent in seeking care, no anisometropia between surgeries, only one application for patients requiring general anesthesia, and lower costs for the health care system and for patients and their families or caretakers.⁴

Reasons cited against ISBCS and in favor of maintaining the common practice of separate-day or delayed sequential bilateral cataract surgery include the never-reported risk of potentially blinding the patient with a devastating bilateral complication, the surgeon's inability to learn from refractive outcomes of the first eye for preoperative planning on the second eye, and the financial disincentives for physicians and ASCs due to the current reimbursement policy.⁵

The most feared potential bilateral complication of ISBCS is bilateral simultaneous endophthalmitis. Arshinoff and Bastianelli performed a cohort study of 95,606 ISBCS cases and found no cases of bilateral simultaneous endophthalmitis. The overall rate of postoperative endophthalmitis after ISBCS was one in 5,759, with infection rates significantly reduced with intracameral antibiotics to one in 14,352 cases.⁶ Another feared bilateral complication is the risk of toxic anterior segment syndrome, but no cases have ever been reported after ISBCS.⁷ In their meta-analysis, Kessel et al attempted to evaluate postoperative complications in ISBCS but found the evidence presented by the three trials was too low in quality to provide evidence-based recommendations.¹

Proponents of ISBCS recommend performing the surgery after careful patient selection. They also advise avoiding ISBCS in patients with a significantly increased risk of infection; with significant corneal, lenticular, or retinal abnormalities; or with tremor, personality issues, or dementia. They recommend complete sterile separation of the cataracts. The International Society of Bilateral Cataract Surgeons suggests surgeons list the details of the procedure (eg, IOL type and power, astigmatic axis for each eye) on an OR board so that it is visible to the entire operating team. Proponents also recommend postponing surgery on the second eye if there is a significant complication during surgery on the first eye.⁷

Another argument against ISBCS is the surgeon's not being able to apply lessons from the refractive outcomes of surgery on the first eye to surgery on the second eye. Optimizing preoperative IOL power calculation methodology and technologies may help mitigate this concern.⁸ Further, given that refractive outcome is often not fully known until several weeks after surgery and that patients frequently request minimal time between the two eyes to minimize how long they endure mismatched images and depth perception, this concern seems to be a red herring. Refractive outcome analysis may be necessary in patients with a history of refractive surgery or who have scarred corneas, but it is likely not necessary in the vast majority of cataract patients.

A cost-minimization analysis comparing same-day and separate-day bilateral cataract surgery performed by Neel⁹ presented findings similar to those of Rush et al. Barring contraindications and adopting standardized protocols to ensure complete sterile separation of surgeries, payers and patients would benefit from an economic standpoint by switching from ISBCS to separate-day bilateral cataract surgery.¹⁰ Neel performed a cost analysis to evaluate the effect on US physicians to transition from delayed sequential bilateral cataract surgery to ISBCS and found that physicians stood to lose financially under the current reimbursement system.¹⁰

The revision of the Bilateral Surgery Indicator 50 policy proposed by Rush et al would offer Medicare a potential 2% total savings in its spending on cataracts while ameliorating much of the current financial disincentive to physicians and ASCs.² With Medicare spending on the rise, policy recommendations to improve efficiency, incentives, and clinical and economic outcomes in cataract surgery deserve serious consideration. ■

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