

# Immediate sequential bilateral cataract surgery: surgeon preferences and concerns

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## ABSTRACT •

**Objective:** We surveyed cataract surgeons to gain insight into their perceptions of and attitudes about immediate sequential bilateral cataract surgery (ISBCS).

**Design:** Cross-sectional.

**Participants:** All active cataract surgeons in Kaiser Permanente Northern California in 2016.

**Methods:** Online survey that asked cataract surgeons why they did or did not perform ISBCS, their interest in offering ISBCS, concerns about the procedure, and desired supports.

**Results:** Of the 165 active cataract surgeons, 107 (65%) participated in the survey, of whom 92 (86%) responded that they currently practiced ISBCS and 15 (14%) reported that they did not. For ISBCS surgeons, patient convenience (95%) and patient request (91%) were the top reasons for performing the procedure. For surgeons who do not perform ISBCS, the most commonly cited concerns were not having the postoperative refractive outcome from the first eye to guide intraocular lens selection in the second eye (80%) and risk of bilateral vision loss (73%). Among those who do not perform ISBCS, 9 (60%) identified the need for evidence-based patient selection criteria to support a decision to adopt the procedure. In addition, many surgeons in both groups wanted streamlined patient education materials and established protocols.

**Conclusion:** Patient centeredness is a key construct of contemporary health care delivery, and in an era of low complication risk, many patients request ISBCS; the number of these surgeries has increased. In our capitated health care system, the great majority of surgeons perform ISBCS for the convenience of their patients. Providing surgeons with guidelines and tools to support ISBCS likely would increase adoption.

Northern California Kaiser Permanente surgeons began offering immediate sequential bilateral cataract surgery (ISBCS) in 2010. ISBCS offers patients a convenient and cost-effective alternative to delayed sequential bilateral cataract surgery (DSBCS).<sup>1,2</sup> The number of perioperative appointments is reduced, requiring less travel and time off work for both the patient and caregivers.<sup>3</sup> This is particularly advantageous for patients in a rural or congested urban setting.<sup>4</sup> Technology and workflow innovations that have reduced the risk of infections and other adverse events likely have increased the acceptability of ISBCS for some cataract surgeons.<sup>5</sup> However, other cataract surgeons do not offer ISBCS, voicing concern about bilateral vision loss and the inability to adjust the second eye's intraocular lens (IOL) selection based on the first eye's refractive error in the case of refractive surprise.<sup>6,7</sup> Another potential barrier to adoption of ISBCS outside of capitated health care systems is a reduction in Medicare reimbursement for the second eye.<sup>8</sup>

We administered a survey to cataract surgeons at Kaiser Permanente Northern California to explore their perceptions of and attitudes about ISBCS. We also assessed the adoption rate of ISBCS during 2013 to 2015.

## METHODS

This cross-sectional study was approved by the local institutional review board.

### Setting

Kaiser Permanente, established in 1946, is a closed staff model, integrated health care delivery system with capitated payment that provides comprehensive care to over 4 million members in Northern California. All surgeons are employed by The Permanente Medical Group.

### Study population

The study included all surgeons who performed at least 1 cataract procedure in 2015.

### Survey measures

The study investigators designed the survey de novo to meet this project's objective to gather cataract surgeons' subjective perceptions of and attitudes related to ISBCS. Although prior surveys have been developed for cataract surgeons, they had different aims and were not relevant to this study.<sup>9–11</sup> Our survey used a skip pattern based on

whether the respondent indicated that they had or had not performed ISBCS before taking the survey. The survey asked ISBCS surgeons why they performed the procedure, what barriers to or concerns they had about performing it routinely, and what support they would like to have should they seek to increase their ISBCS practice. The survey asked surgeons who had not performed ISBCS whether they were interested in offering ISBCS, what concerns they had about it, and what would support their decision to try it. The survey asked both groups how often they used refraction data from the first eye to modify selection of the IOL in the second eye.

### Survey administration

We administered the survey electronically using SurveyMonkey (Palo Alto, Calif.) during May and June 2016. The regional chair of ophthalmology sent an initial email and 2 reminder emails inviting each cataract surgeon to participate in the survey. The invitation included an offer of a \$10 gift card as an incentive.

### Analysis of electronic medical record data

We used data from the physician resource file and patient procedure file to characterize surgeons who did not respond to the survey. We also used these data to estimate the adoption of ISBCS, which we defined in 2 ways: first, as the proportion of surgeons who perform ISBCS and, second, as the proportion of patients who received ISBCS. ISBCS was defined using procedure codes (bilateral cataract surgery, Current Procedural Terminology [CPT] codes 66984; International Classification of Diseases [ICD]-9 codes 13.41, 13.71). This analysis excluded complex phacoemulsification cases and cases performed by glaucoma, oculoplastic, or retinal specialists, as well as procedures by any surgeon combined with corneal transplant (ICD-9 11.6, CPT4 codes 65710e65715) or glaucoma surgery (ICD-9 12.54, 12.64, 12.66, 12.69, 12.7; CPT4 codes 65850, 66170, 66172, 66180, 66185).

## RESULTS

We identified 165 cataract surgeons operating in 22 surgery centers. Of these, 107 (65%) participated in the survey, of whom 92 (86%) stated that they currently perform ISBCS. Of the 57 who did not respond to the survey, 28 (49%) performed at least 1 ISBCS in 2015.

Among surgeons performing ISBCS who took the survey, the most common reasons for performing ISBCS were patient convenience and patient request (Table 1). Among all surgeons, regardless of whether they offer ISBCS to patients, the most common concern about performing ISBCS was not having the refraction results from the first eye to select the second IOL (ISBCS, 24%; DSBCS, 80%). DSBCS surgeons indicated other important concerns, including risk of bilateral vision loss (73%), lack of good patient candidates (33%), lack of established patient

selection criteria (27%), and lack of time to interview patients to understand preferences (27%). To increase adoption of ISBCS, both types of surgeons wanted streamlined patient education materials, established protocols, and established patient selection criteria. Surgeons who do not offer ISBCS were concerned that prior keratorefractive surgery, extremes of axial length, glaucoma, and other factors might affect patients having ISBCS. They were ambivalent about trying the procedure. The majority of surgeons, irrespective of whether they offer ISBCS, responded that they used refraction data from the first eye to modify IOL selection in the second eye less than 25% of the time.

### ISBCS adoption

The proportion of surgeons performing ISBCS nearly doubled from 2013 to 2014, but it increased only slightly in 2015. The proportion of surgeries that were ISBCS increased 130% from 2013 to 2014 and increased another 39% from 2014 to 2015 (Table 2).

Respondents to the survey skewed toward cataract surgeons who reported performing ISBCS (74% from electronic medical record data compared with 86% self-report).

Of the 92 survey respondents who reported performing ISBCS, 85 (92%) provided their name or email address. Of these 85, we were able to confirm that 30 (35%), 51 (60%), and 53 (62%) performed at least 1 ISBCS in 2013, 2014, and 2015, respectively.

## DISCUSSION

To our knowledge, this report is the first to describe a survey evaluating the concerns and preferences of cataract surgeons regarding ISBCS. Patient convenience and patient request were the most commonly cited reasons for performing ISBCS. Among the surgeons who do not perform ISBCS, the most commonly cited concerns were a preference for waiting to obtain a final refraction of the first eye before operating on the second eye and fear/risk of bilateral vision loss. For the question regarding the percentage of cases in which refraction data from the first eye modifies IOL selection in the second eye, the response option was limited, with only 4 options presented. Thus, we only know that the majority of both types of surgeons indicated that refraction data from the first eye was used less than 25% of the time; we do not know how many would have chosen a much smaller percentage of time if given the option.

The question of refractive surprise and modification of the IOL for the second eye is controversial. We recently published a comparative effectiveness analysis of this question using late generation IOL formulae and biometry equipment in a cohort of 12 630 DSBCS and 3220 ISBCS patients with refractive error measurements. For DSBCS patients, we found that refractive error in the second eye was no different than in the first. Emmetropia was achieved in 61% of both DSBCS first eyes and second eyes and in 63% of both ISBCS right and left eyes; and

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