

Clinical Outcomes and Safety of Immediate Sequential Bilateral Cataract Surgery Performed Under General Anesthesia: A Retrospective Case Series

Genel Anestezi Altında Uygulanan Hemen Ardışık Bilateral Katarakt Cerrahisinin Klinik Sonuçları ve Güvenliği: Retrospektif Olgu Serisi

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ABSTRACT

Objective: To evaluate the clinical outcomes and surgical safety of immediately sequential bilateral cataract surgery performed under general anesthesia. The effectiveness and safety of operating on both eyes in the same session were specifically investigated in patients requiring general anesthesia.

Material and Methods: This retrospective, single-center, non-comparative case series included 34 patients (68 eyes) who underwent immediately sequential bilateral cataract surgery under general anesthesia between January 2018 and February 2025. All surgeries were performed by the same surgeon using strict aseptic separation protocols, including separate sterile instrument sets, separate irrigation solutions, and separate intraocular lenses for each eye. Demographic characteristics, accompanying systemic diseases, intraoperative and postoperative complications were recorded. Surgical outcomes were evaluated based on best-corrected visual acuity and refractive results at postoperative 1 month. Visual and refractive success, as well as complication rates, were analyzed in detail.

Results: The mean age of the patients was 60.6±17.8 years. The intraoperative complication rate was 5.9%, with posterior capsule rupture and vitreous loss (2.9%) being the most common complication. Postoperatively, wound leakage was observed in 2.9% of cases. No endophthalmitis or serious bilateral vision-threatening complication occurred. At postoperative 1 month, the mean best-corrected visual acuity was 0.05±0.07 logMAR, and the mean spherical equivalent was 0.02±0.80 D.

Conclusion: Immediately sequential bilateral cataract surgery performed under general anesthesia is a safe and effective procedure when appropriate patient selection and meticulous surgical separation protocols are applied. Performing both surgeries in a single session may improve patient comfort, reduce anesthesia-related risks, and provide satisfactory visual and refractive outcomes, particularly in patients requiring general anesthesia.

Keywords: Cataract extraction, intraoperative complications, postoperative complications

ÖZ

Giriş: Genel anestezi altında uygulanan hemen ardışık bilateral katarakt cerrahisinin klinik sonuçlarını ve cerrahi güvenliğini değerlendirmek amaçlandı. Özellikle genel anestezi gereksinimi olan hasta grubunda aynı seansta her iki gözün opere edilmesinin etkinliği ve güvenilirliği araştırıldı.

Gereç ve Yöntemler: Bu retrospektif, tek merkezli ve karşılaştırmaz olgu serisine Ocak 2018-Şubat 2025 tarihleri arasında genel anestezi altında hemen ardışık bilateral katarakt cerrahisi uygulanan 34 hasta (68 göz) dahil edildi. Tüm cerrahiler aynı cerrah tarafından gerçekleştirildi ve her iki göz için ayrı steril setler, ayrı irrigasyon solüsyonları ve ayrı intraoküler lensler kullanılarak sıkı aseptik ayırım protokolü uygulandı. Demografik veriler, eşlik eden sistemik hastalıklar, intraoperatif ve postoperatif komplikasyonlar kaydedildi. Cerrahi sonuçların değerlendirilmesinde postoperatif 1. ay en iyi düzeltilmiş görme keskinliği ve refraktif sonuçlar analiz edildi. Görsel ve refraktif başarı ile komplikasyon oranları ayrıntılı olarak incelendi.

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Bulgular: Hastaların yaş ortalaması 60,6±17,8 yıl idi. İntraoperatif komplikasyon oranı %5,9 olup en sık arka kapsül rüptürü ve vitreus kaybı (%2,9) izlendi. Postoperatif dönemde %2,9 oranında insizyon kaçağı saptandı. Endoftalmi veya ciddi bilateral görmeyi tehdit eden komplikasyon gelişmedi. Postoperatif 1. ayda ortalama en iyi düzeltilmiş görme keskinliği 0,05±0,07 logMAR, ortalama sferik ekivalan 0,02±0,80 D olarak bulundu.

Sonuç: Genel anestezi altında uygulanan hemen ardışık bilateral katarakt cerrahisi, uygun hasta seçimi ve titiz cerrahi ayırım protokolleri ile gerçekleştirildiğinde güvenli ve etkili bir yöntemdir. Özellikle genel anestezi gereksinimi olan hastalarda cerrahi sürecin tek seansta tamamlanması hasta konforunu artırmakta, anesteziye bağlı riskleri azaltmakta ve tatmin edici görsel ile refraktif sonuçlar sağlamaktadır.

Anahtar Kelimeler: Katarakt ekstraksiyonu, intraoperatif komplikasyonlar, postoperatif komplikasyonlar

INTRODUCTION

Cataract surgery is one of the most commonly performed surgical procedures in ophthalmology practice and is currently characterized by high visual success and low complication rates. In patients with bilateral cataracts, the traditional approach is delayed sequential cataract surgery, which involves operating on both eyes at different times. This approach has been accepted as the standard practice for many years, particularly to prevent refractive surprises and to reduce the risk of bilateral endophthalmitis (1).

Immediate sequential bilateral cataract surgery (ISBCS) refers to operating on both eyes in the same surgical session, and this practice has been considered to have limited acceptance due to the risk of infection (2,3). However, with advancements in phacoemulsification technology, standardization of surgical techniques, and the routine use of intracameral antibiotics, the safety of ISBCS has been re-evaluated (4). Recent studies have reported that when appropriate patient selection is made and strict asepsis-antisepsis separation is ensured for surgical procedures in both eyes, there is no significant difference in terms of serious complication rates between ISBCS and delayed sequential cataract surgery (4,5).

Among the main reported advantages of ISBCS are rapid binocular visual rehabilitation, increased patient satisfaction, reduced healthcare costs, and particularly a reduction in anesthesia-related risks (6,7). These advantages become more pronounced in patient groups with accompanying systemic diseases, limited mobility, or where repeated surgical and anesthesia procedures pose a risk. Especially in patients requiring general anesthesia, performing bilateral surgery in a single session instead of two separate surgical sessions is considered an important factor that may reduce anesthesia-related morbidity (7).

The most important concern regarding ISBCS is the risk of bilateral severe complications, particularly the development of endophthalmitis. However, retrospective studies conducted on large series have shown that the risk of bilateral endophthalmitis is extremely low, provided that separate sterile sets, separate surgical instruments, and separate medications are used for each eye (6,8). These findings demonstrate that strict aseptic separation of surgical procedures is a key determinant in the safe implementation of ISBCS (9).

This study evaluated the clinical outcomes and surgical safety of patients undergoing ISBCS under general anesthesia, and examined the effectiveness and complication profile of this approach in the appropriate patient group, in light of the literature.

MATERIALS and METHODS

Study Design

This study was planned as a retrospective, single-center, and non-comparative case series and was conducted at University of Health Sciences Türkiye, Adana City Hospital. Approval for the study was obtained from the University of Health Sciences Türkiye, Adana City Training and Research Hospital Clinical Research Ethics Committee (decision no: 401, date: 06/03/2025). The study was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was not obtained from the patients due to the retrospective design.

Patient Population

Thirty-four patients (68 eyes) aged 18 years and older who underwent ISBCS under general anesthesia between January 2018 and February 2025 were included in the study. All data were obtained by retrospectively reviewing hospital medical records. General anesthesia was indicated and preferred for patients who could not tolerate the procedure under local anesthesia, particularly those presenting with significant cooperation and communication difficulties due to cognitive conditions such as Alzheimer's disease or Down syndrome. All included patients were classified according to the American Society of Anesthesiologists (ASA) physical status classification system.

Inclusion Criteria

- Patients aged 18 years and older,
- Bilateral cataract diagnosis,
- Having undergone ISBCS under general anesthesia.

Exclusion Criteria

- Lens subluxation or iridodonesis,
- Previous ocular trauma,
- History of endophthalmitis,

- Active ocular surface or adnexal infection,
- Systemic immunosuppression or immunodeficiency.

Patients who did not attend follow-up appointments regularly or who had incomplete clinical data were excluded from the study.

Surgical Technique

All patients underwent blepharitis (eyelash base cleaning) for three days prior to surgery and were started on moxifloxacin as a topical antibiotic and nepafenac as a topical non-steroidal anti-inflammatory drug. All surgeries were performed by the same surgeon while the patient was under general anesthesia. In all cases, phacoemulsification was performed using the Centurion® Vision System (Alcon Laboratories, Fort Worth, TX, USA), and Sensar® (Johnson & Johnson Vision, Santa Ana, CA, USA) posterior chamber monofocal intraocular lens implantation was performed in uncomplicated cases. In cases that developed posterior capsule rupture (PCR), a three-piece intraocular lens (AcrySof® MA60AC Soft Acrylic Multipiece IOL, Alcon Laboratories Inc., Fort Worth, TX, USA) was placed in the sulcus.

Both eyes were operated on in the same session, but considered as completely independent surgeries. Prior to the operation, the intraocular lenses to be implanted in each eye were checked separately by the surgeon, assistant, and nurse, and only the intraocular lens belonging to the eye to be operated on was brought into the operating room.

The first eye was prepared and operated on using standard sterile ophthalmic methods. Following the uncomplicated completion of the surgery, intracameral cefuroxime axetil was administered to the anterior chamber. Patients with mature cataracts received subconjunctival antibiotic and steroid injections.

Prior to the second eye surgery, the surgeon and auxiliary healthcare personnel changed their gowns and gloves. A separate sterile surgical set, disposable surgical instruments, separate irrigation solutions, and a separate intraocular lens were used for the second eye. At the end of the surgery, intracameral cefuroxime axetil was administered to the anterior chamber, and subconjunctival antibiotic and steroid injections were repeated in cases with mature cataracts.

Postoperative Follow-up and Evaluation

All patients received topical antibiotic and steroid treatment in the postoperative period. Patients were followed up at 1 week, 1 month, and 3 months (or longer) postoperatively.

The following data were recorded by retrospectively reviewing patient files:

- Intraoperative complications (PCR, zonular dialysis, vitreous loss, etc.)
- Postoperative complications (corneal edema, cystoid macular edema, etc.)
- Systemic and additional ocular diseases

- Best corrected visual acuity (BCVA) at 1 month postoperatively
- Intraocular pressure
- Autorefractometer measurements
- Anterior and posterior segment examination findings.

Statistical Analysis

Statistical analyses were performed using SPSS for Windows version 20.0 (IBM Corp., Chicago, IL, USA). Descriptive statistics were used. Categorical variables were expressed as numbers and percentages [n (%)], and continuous variables were expressed as mean $\pm$ standard deviation (minimum-maximum where necessary). To prevent statistical dependence between data from two eyes, in patient-based analyses, the eye with lower postoperative visual acuity was evaluated for each patient.

RESULTS

A total of 34 patients (68 eyes) were included in the study. 20 of the patients (58.8%) were female and 14 (41.2%) were male. The mean age was 60.6 ± 17.8 years (18-86). It was determined that 38.2% (n=13) of the patients had previously tried local anesthesia, while 61.8% (n=21) had not tried local anesthesia.

29.4% (n=10) of the cases were classified as ASA II, and 70.6% (n=24) were classified as ASA III. Of the 24 patients in the ASA III group, 8 (33.3%) required mechanical ventilation in the postoperative period and were monitored in the intensive care unit.

Six patients (17.6%) had Down syndrome or congenital intellectual disability, and seven (20.6%) had Alzheimer's disease or advanced dementia. Three patients (8.8%) had additional ocular disorders. These were pseudoexfoliation (n=1), degenerative myopia (n=1), and strabismus (n=1). Thirty-one patients (91.2%) had no additional ocular disorders.

Cataract types were evaluated on an eye-by-eye basis, and the findings are presented in Table 1 as numbers and percentages based on 68 eyes. Accordingly, nuclear senile cataract was detected in 31 (45.6%) of the 68 eyes, cortical cataract in 5 (7.4%), posterior subcapsular cataract in 4 (5.9%), mixed cataract in 15 (22.1%), mature cataract in 9 (13.2%), and intumescent cataract in 4 (5.8%).

In the patient-based analysis conducted at one month postoperatively, the mean BCVA was found to be 0.05 ± 0.07 logMAR (0.00-0.20) in 34 eyes. The mean spherical equivalent was 0.02 ± 0.80 D (-2.00-1.50). The mean corneal astigmatism was measured as -1.09 ± 0.73 D (-3.50 - -0.30). The mean astigmatism axis was $97.8 \pm 33.1^\circ$ (10-180). The mean implanted intraocular lens power was calculated as 22.1 ± 3.6 D (8.0-29.0) (Table 2).

Intraoperative and postoperative complications were evaluated on an eye-by-eye basis and presented as numbers

and percentages based on 68 eyes. Intraoperatively, PCR and vitreous loss occurred in 2 out of 68 eyes (2.9%). Zonular weakness was observed in 1 eye (1.5%), and intraoperative incision leakage in 1 eye (1.5%). These complications occurred in the second eyes of different patients (Table 3).

Incision leakage was detected in 2 eyes (2.9%) in the postoperative period, and no other serious postoperative complications were observed (Table 4).

DISCUSSION

Performing cataract surgery on both eyes in the same session is still a controversial topic in the field of ophthalmology. In a survey conducted in our country, 20.7% of the 169 ophthalmologists participating in the survey reported that they performed ISBCS, 70.9% did not, and 2.4% reported that they had performed it before but no longer preferred it. In

addition, it was shown that ophthalmologists with more than 10 years of professional experience significantly preferred ISBCS more often ($p=0.027$) (10). In this study, the visual and refractive outcomes and intraoperative and postoperative complication profile of ISBCS performed under general anesthesia were evaluated. The findings show that ISBCS is a safe and effective method when performed with appropriate patient selection and meticulous surgical precautions.

The most important point of contention regarding ISBCS is the risk of bilateral endophthalmitis and serious bilateral complications. However, large-scale studies published in recent years have reported that this risk is extremely low when both eyes are treated as completely independent surgeries, using separate surgical sets, separate irrigation fluids, and separate sterilization processes (11). The incidence of bilateral endophthalmitis reported in the literature is less than one in a million (8). In our series, no patient experienced endophthalmitis. This finding supports the reliability of the surgical protocol applied.

A study by Buchan et al. (12), published in the Royal College of Ophthalmologists National Ophthalmology Database, reported an increasing use of ISBCS in the United Kingdom, particularly in cases requiring careful patient selection. This study highlighted the advantages of ISBCS in reducing anesthesia exposure and providing faster binocular visual rehabilitation; key determining factors for safe application were treating both eyes as completely independent surgeries, applying strict surgical separation protocols, and selecting the appropriate patient (12). These findings are consistent with the principles recommended by the ISBCS and support the idea that ISBCS can be a safe surgical option in the appropriate patient group.

In our study, the intraoperative complication rate was found to be 5.9%, with the most frequent complications being PCR and vitreous loss. This rate is comparable to the complication rates reported for unilateral or delayed sequential cataract surgery (11). Previous studies have reported PCR rates ranging from 1-4% (13). Our results suggest that ISBCS does not pose an additional risk in terms of surgical difficulty.

Only 2.9% of cases experienced incision leakage in the postoperative period, and no complications leading to serious vision loss were detected. This finding indicates that the postoperative safety profile of ISBCS is also at an acceptable level. The literature reports that postoperative complication rates after ISBCS are similar to those after unilateral surgery (11,14).

In terms of visual outcomes, the mean BCVA and refractive results obtained at the first postoperative month in our study were found to be satisfactory. Previous studies have

Table 1. Types of cataracts (n=68 eyes)

Type of cataract	n (%)
NSC	31 (45.6)
CC	5 (7.4)
PSC	4 (5.9)
Mixed	15 (22.1)
Mature	9 (13.2)
Intumescent	4 (5.8)
Total	68 (100.0)
Data are presented as n (%). NSC: Nuclear senile cataract, CC: Cortical cataract, PSC: Posterior subcapsular cataract	

Table 2. Postoperative visual acuity and refractive outcomes

Parameter	Mean $\pm$ SD (min-max)
BCVA (logMAR)	0.05 $\pm$ 0.07 (0.00-0.20)
SE (D)	0.02 $\pm$ 0.80 (-2.00-1.50)
Astigmatism (D)	-1.09 $\pm$ 0.73 (-3.50 - -0.30)
Axis (°)	97.8 $\pm$ 33.1 (10-180)
IOL power (D)	22.1 $\pm$ 3.6 (8.0-29.0)
Data are presented as mean $\pm$ standard deviation (SD) (minimum-maximum). SD: Standard deviation, BCVA: Best corrected visual acuity, SE: Spherical equivalent, IOL: Intraocular lens	

Table 3. Intraoperative complications

Complication	n (%)
PCR and vitreous loss	2 (2.9)
Zonular weakness	1 (1.5)
Incision leakage	1 (1.5)
Total	4 (5.9)
Data are presented as n (%). PCR: Posterior capsule rupture	

Table 4. Postoperative complications

Complication	n (%)
Incision leakage	2 (2.9)
Total	2 (2.9)
Data are presented as n (%)	

shown that significant improvement in visual acuity and high achievement of refractive targets are obtained after ISBCS (6,15). Our findings are also consistent with the literature. Key advantages of ISBCS include reducing anesthesia-related risks, especially in elderly patients, those with systemic comorbidities, and those requiring general anesthesia, thanks to the operation of both eyes in a single session (7). Other important advantages of ISBCS include shorter hospital stays, reduced healthcare costs, and faster functional rehabilitation for patients (16). In our specific case series, performing ISBCS provided significant clinical and socioeconomic advantages. Because our patient population consisted of individuals with severe cooperation difficulties (such as Down syndrome and Alzheimer's disease), a second surgical session would have required a second exposure to general anesthesia. By completing the procedure in a single session, we minimized cumulative anesthesia-related systemic risks for these vulnerable patients. Furthermore, this approach reduced the overall healthcare costs, shortened hospital stays, and significantly decreased the logistical and emotional burden on caregivers, who would otherwise have to manage multiple hospital visits for uncooperative patients.

Study Limitations

There are several limitations to our study that should be acknowledged. First, the study was conducted with a relatively small sample size consisting of 34 patients (68 eyes), and its retrospective, single-center design without a comparative control group may have introduced selection bias. Second, our follow-up period was limited to one month; while this duration is sufficient to evaluate early postoperative outcomes, a longer follow-up period is essential to assess long-term visual stability and to detect extremely rare complications, such as delayed endophthalmitis. Consequently, the lack of long-term follow-up data limits the comprehensive evaluation of late outcomes and the generalizability of our findings to a broader population. Therefore, future prospective, randomized, multi-center controlled trials with larger cohorts and extended follow-up periods are warranted to confirm our results.

CONCLUSION

ISBCS performed under general anesthesia is a safe and effective method when performed with appropriate patient selection and meticulous surgical separation protocols. This approach provides predictable visual and refractive outcomes with acceptable complication rates, especially in patients requiring general anesthesia.

Ethics

Ethics Committee Approval: Approval for the study was obtained from the University of Health Sciences Türkiye, Adana City Training and Research Hospital Clinical Research Ethics Committee (decision no: 401, date: 06/03/2025).

Informed Consent: Due to the retrospective nature of the study, the requirement for informed consent was not required/applicable by the ethics committee.

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Footnotes

This study was presented as an oral presentation at the 59th National Congress of the Turkish Ophthalmological Association (TOD), held on November 20, 2025.

Authorship Contributions

Concept: D.T.E., E.Ç., E.Ş., Design: D.T.E., E.Ç., E.Ş., Data Collection or Processing: D.T.E., E.Ç., E.Ş., Analysis or Interpretation: D.T.E., E.Ç., E.Ş., Literature Search: D.T.E., E.Ç., E.Ş., Writing: D.T.E., E.Ç., E.Ş.

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REFERENCES

1. Singh R, Dohlman TH, Sun G. Immediately sequential bilateral cataract surgery: advantages and disadvantages. *Curr Opin Ophthalmol*. 2017;28(1):81-6. doi: 10.1097/ICU.0000000000000327.
2. Olsen T. Use of fellow eye data in the calculation of intraocular lens power for the second eye. *Ophthalmology*. 2011;118(9):1710-5. doi: 10.1016/j.opthta.2011.04.030.
3. Amsden LB, Shorstein NH, Fevrier H, Liu L, Carolan J, Herrinton LJ. Immediate sequential bilateral cataract surgery: surgeon preferences and concerns. *Can J Ophthalmol*. 2018;53(4):337-41. doi: 10.1016/j.jcjo.2017.10.034.
4. Sarikkola AU, Uusitalo RJ, Hellstedt T, Ess SL, Leivo T, Kivelä T. Simultaneous bilateral versus sequential bilateral cataract surgery: Helsinki Simultaneous Bilateral Cataract Surgery Study Report 1. *J Cataract Refract Surg*. 2011;37(6):992-1002. doi: 10.1016/j.jcrs.2011.01.019.
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):1126-35. doi: 10.1016/j.opthta.2017.03.034.
6. Malvankar-Mehta MS, Chen YN, Patel S, Leung APK, Merchea MM, Hodge WG. Immediate versus delayed sequential bilateral cataract surgery: a systematic review and meta-analysis. *PLoS One*. 2015;10(6):e0131857. doi: 10.1371/journal.pone.0131857.
7. Grzybowski A, Wasinska-Borowiec W, Claoué C. Pros and cons of immediate sequential bilateral cataract surgery. *Saudi J Ophthalmol*. 2016;30(4):244-9. doi: 10.1016/j.sjopt.2016.09.001.
8. Arshinoff SA, Bastianelli PA. Incidence of postoperative endophthalmitis after immediate sequential bilateral cataract surgery. *J Cataract Refract Surg*. 2011;37(12):2105-14. doi: 10.1016/j.jcrs.2011.06.036.

9. International Society of Bilateral Cataract Surgeons (ISBCS). General principles for excellence in ISBCS. iSBCS Guidelines; 2018.
10. Ece B, Yozgat Z, Işık M, Yüksel E. Ophthalmologists' opinions and practices in Türkiye regarding immediate sequential bilateral cataract surgery: a survey study: cross sectional study. *Türkiye Klinikleri J Ophthalmol.* 2025;34(1):1-11 doi: 10.5336/ophthal.2024-104173.
11. Kessel L, Andresen J, Erngaard D, Flesner P, Tendal B, Hjortdal J. Immediate sequential bilateral cataract surgery: a systematic review and meta-analysis. *J Ophthalmol.* 2015;2015:912481. doi: 10.1155/2015/912481.
12. Buchan JC, Donachie PH, Cassels-Brown A, Liu C, Pyott A, Yip JLY, et al. The Royal College of Ophthalmologists' National Ophthalmology Database study of cataract surgery: report 7, immediate sequential bilateral cataract surgery in the UK: current practice and patient selection. *Eye.* 2020;34(10):1866-74. doi: 10.1038/s41433-019-0761-z.
13. Narendran N, Jaycock P, Johnston RL, Taylor H, Adams M, Tole DM, et al. The cataract national dataset electronic multicentre audit of 55,567 operations: risk stratification for posterior capsule rupture and vitreous loss. *Eye.* 2009;23(1):63-70. doi: 10.1038/sj.eye.6703049.
14. Rush SW, Gerald AE, Smith JC, Rush JA, Rush RB. Immediate sequential bilateral cataract surgery: outcomes and complications. *J Cataract Refract Surg.* 2015;41(1):176-83. doi: 10.1016/j.jcrs.2014.07.034.
15. Serrano-Aguilar P, Ramallo-Fariña Y, Cabrera-Hernández JM, Perez-Silguero D, Perez-Silguero MA, Perestelo-Pérez L, et al. Immediate versus delayed sequential bilateral cataract surgery: safety and effectiveness. *J Cataract Refract Surg.* 2012;119(2):221-8. doi: 10.1016/j.jcrs.2012.05.024.
16. Lansingh VC, Eckert KA, Strauss G. Benefits and risks of immediately sequential bilateral cataract surgery: a literature review. *Clin Exp Ophthalmol.* 2015;122(1):199-205. doi: /10.1111/ceo.12527.