ORIGINAL ARTICLE

Actual State of the One Day Simultaneous Bilateral Cataract Surgery Issue

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SUMMARY

One-day Simultaneous Bilateral Cataract Surgery (SBCS) is not common routine procedure; nevertheless many surgeons all over the world perform it. During the history, SBCS was always performed, but due to the phacoemulsification development making the small incision surgery possible, more papers in the scientific literature are appearing. Besides the SBCS indications and contraindications, the intraoperative and postoperative complications are discussed, especially the danger of bilateral postoperative endophthalmitis. In this paper, an overview of the most important publications concerning the SBCS is presented.

Key words: One-day Simultaneous Bilateral Cataract Surgery (SBCS), indications, complications, endophthalmitis

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One-Day Simultaneous Bilateral Cataract Surgery (SBCS) is also known as Sequential Bilateral Cataract Surgery, Bilateral Same-Day Cataract Extraction, Simultaneous Bilateral Cataract Extraction, Simultaneous Bilateral Cataract Surgery and others. In recent times, the term Immediate Sequential Bilateral Cataract Surgery (ISBCS) has predominated.

All these terms refer to the same content – they represent the performance of cataract surgery in both eyes simultaneously as a single procedure, even if technically the operations are separate and two procedures are performed.

The advantage of a procedure performed by this method is the logistics of the movement of the patient without the duplication of several functions before surgery, the time saving for the healthcare facility and for the doctor performing perioperative care, and especially for the patients and their family members. In countries where medical care is expensive, the economic effect of surgery performed by this method also represents a considerable benefit for the entire healthcare system.

A disadvantage is the danger of an accumulation of postoperative complications, such as severe decompensation of the cornea in both eyes, the occurrence of a refractive error and especially the danger of bilateral postoperative endophthalmitis. Although one-day simultaneous bilateral cataract surgery is performed worldwide, and can be traced from the very beginnings of cataract surgery, the danger of bilateral postoperative infection is precisely the reason why SBCS is not yet performed routinely, but only sporadically in indicated cases.

The fear of infectious complications is deeply rooted. As early as in 1930 there is a mention that Blaskovicz sharply criticised Elschnig for conducting such an "unpredictable" procedure (20).

At present the situation is no different. The majority of ophthalmic surgeons are highly conservative and refuse to perform the procedure on both eyes on a single day. On the other hand, virtually all operating surgeons, performing large numbers of operations annually, have experience also with procedures performed by this method, because they encounter patients for whom SBCS is indicated.

In 1977, Joseph and David (20) published their results of bilateral cataract surgery on 676 patients. The operations were performed over the course of 5 years, within the period from 1 January 1970 to 31 December 1974, in Malawi (Queen Elizabeth Central Hospital, Blantyre). The majority of operations were performed under general anaesthesia, with the exception of patients in whom general anaesthesia represented a high risk. Between the operations only the face cloth was changed, no sterilisation of the used instruments was performed between the first and second eye. The surgical technique was intracapsular extraction (ICE) in all patients, sometimes using chymotrypsin. If the capsule was disrupted during the removal of the lens, all the matter and also the posterior capsule were removed. In the first two years they performed general antibiotic coverage of the operation (penicillin for a period of 5 days after surgery), in the following three years they did not use general antibiotics (ATB) as a prophylaxis. Postoperative endophthalmitis occurred in 3 eyes in three different patients. In all the patients this afflicted the first operated eye, the second was not afflicted.

The work of Joseph and David was followed up by BenEzra and Chirambo (6), who describe their experiences with bilateral cataract surgery from the same workplace in Malawi in 1978. They operated on a total of 734 patients, of whom 448 underwent bilateral cataract surgery (896 eyes), whilst in 286 patients they operated only on one eye. One eye was operated on in patients who had vision better than 6/60 in the other eye. Only 4 patients with vision of 6/60-6/12 in the better eye were operated on bilaterally. All the operations were performed as intracapsular extractions, without the use of chymotrypsin. They also did not use prophylactic administration of antibiotics. They recorded the development of postoperative endophthalmitis in three cases. One patient who had undergone bilateral surgery was afflicted in one eye, another was a patient who had undergone an operation on only one eye. In these two cases, the inflammation did not respond to general or local ATB therapy. The most serious was a case of bilateral endophthalmitis following bilaterally performed cataract surgery. 24 hours after the operation, dysentery developed in the patient with general bacteraemia. Intravenous administration of massive doses of penicillin and peroral administration of chloramphenicol brought about an improvement of the patient's general condition. Although the ocular finding was alleviated, the resulting vision was only hand movement in front of the eye.

In the Czech professional literature, Dole-

žalová and also Mašek and Janula began to deal with the theme of bilateral cataract surgery at the beginning of the 1980s.
Doležalová (12) analyses the present status and provides a very well presented, integrated overview of the historical sources of bilateral cataract surgery, including authors from socialist countries. The author does not present information about her own study group and experiences with this type of operation, concluding with the information that this is problematic and debatable.
Mašek and Janula (30) published a study of 31 patients who were operated on simultaneously in both eyes for cataracts over the course of 12 months (1980-1981) at the Department of Ophthalmology in Brno. With the exception of a single patient, who had vision of 2/60 in the better eye, all the patients had vision of light perception with correct projection of up to 1/60 before the operation. They did not encounter any postoperative infection. At the same time they are not of the opinion that simultaneous bilateral cataract extraction would be contraindicated for patients with diabetes, hypertension, myopia or glaucoma. They consider patients with vision worse than 3/60 to be indicated. Intraocular lenses were not implanted, and intracapsular cryoextraction of the lens was performed.
One of the first studies dealing with simultaneous bilateral cataract surgery (SBCS) together with the implantation of a posterior chamber intraocular lens was conducted by Beatty et al. in 1995 (5). The English authors evaluated operations on 319 patients (638 eyes), who were operated on as SCBE in the years 1985-1991 in Redditch, Great Britain. All the operations were performed under general anaesthesia, and they did not perform SBCS under local anaesthesia whatsoever. Patients with a susceptibility to ocular infections (blepharitis, atopic eczemas, trichiasis) and ocular pathologies which could lead to perioperative complications (posterior synechiae, pseudoexfoliation) were excluded. Amongst the more serious perioperative complications were rupture of the posterior chamber (RPC) in 5 eyes and loss of the vitreous body in 2 eyes. A posterior chamber intraocular lens was implanted in all patients.
The authors do not defend SBCS as a routine procedure, but with regard to the results of their own operations they did not find an increased incidence of complications. Upon good indication and strict adherence to surgical protocols, they consider the method of SBCS to be safe.
In the same year as Beatty et al., Diaper et al. published their study (10). Their study was the first to deal with bilateral cataract surgery performed by phacoemulsification. The authors themselves point to the fact that to date predominantly intracapsularly performed operations have been referred. During the period from January 1993 to November 1994 they operated on 41 patients, who underwent phacoemulsification in both eyes simultaneously, and predominantly implanted hard (PMMA) posterior chamber intraocular lenses. Of the perioperative complications they reported two ruptures of the posterior chamber, one defect of the suspensory apparatus (of the lens) and one rupture of the posterior chamber with the performance of anterior vitrectomy. Of the postoperative complications they recorded increased intraocular pressure in three cases, one case of hyphema and two edemas of the corneal epithelium. They did not record any incidence of endophthalmitis. Of the further results they report postoperative refraction and induced astigmatism, and also the average time of stabilisation of postoperative refraction, which according to their finding is 9.3 weeks after phacoemulsification, thus almost three months.
Ramsey et al. (34) pointed to the fact that little published data exists on bilateral cataract surgery. Surgeons should have the results of SBCS available in order to be better able to assess the risks and benefits. The authors themselves then present the results from the ophthalmology clinic in Glasgow. In the years 1986-1996 they operated bilaterally in a single session on 259 patients (518 eyes). The patients were indicated for SBCS only if they had a clinically significant cataract in both eyes and at the same time ocular pathologies such as uveitis, atopic eczema and untreated infections of the adnexa of the eye were not present. Surgery on the second eye was performed as if this represented a new operation. At the end of the operation a subconjunctival injection of betamethasone and gentamicin was always applied.
The authors, in accordance with the previous study by Beatty, see three categories of advantages for SBCS: medicinal, social and economic. In the medicinal category, the original advantage of a single general anaesthesia is lost because surgery is being conducted ever increasingly under local anaesthesia. However, other advantages are coming to the forefront, such as the summation of visual acuity and contrast sensitivity in patients who would otherwise wait for up to one year for an operation on the second eye. The social factors include a reduction in the number of visits to the hospital and a quicker return to normal activities. The economic factors are partially intertwined with the social factors, and are more significant for the patient in less developed countries. At the same time the authors note that endophthalmitis is treatable and need not necessarily lead to severe loss of sight.
Totan et al. (41) were amongst the first to present a report on SCBS not only in adult patients but also in children. In total they describe the procedure on 41 patients, covering 24 adults, 5 children aged 10-19 years and 17 children under the age of 10 years (of whom 12 were younger than 2 years). In all children the operation was performed in general anaesthesia, in 21 adults also in general anaesthesia and the remaining 20 adults patients were operated in retrobulbar anaesthesia. All the procedures were again performed as two separate procedures of one operation. In the children aged younger than two years, bilateral lensectomy, posterior capsulotomy and limiting anterior vitrectomy were performed. In the children aged 10-19 years and the adults, a posterior chamber intraocular lens was implanted. They did not record any pronounced perioperative or postoperative complications in any of the patients. In addition to the traditionally stated indications and contraindications for the performance of bilateral cataract surgery and the postoperative results (complications and resulting vision), the authors were the first to consider that the precision of the calculation of the intraocular lens before the operation was important in connection with SBCS. Their intended and resulting postoperative refraction did not manifest significant differences. However, at the same time they add that SBCS should not be performed by an inexperienced surgeon, and that fundamental rules must be established as to when and under what circumstances the operation on the second eye should be relinquished if the first operation is performed by a non-standard method.
One of the most detailed publications focusing on the advantages and disadvantages of SBCS is the study by the authors Smith and Liu (40). The authors themselves rather prefer the term “immediate sequential cataract surgery”, especially because during the operation on the first eye, circumstances may arise leading to the deferment of the operation on the second eye. They consider the risks in connection with SBCS to be low, providing that patients are carefully selected and that exclusive criteria are adhered to.
The study conducted by Sharma and Worstmann (39) evaluates 288 eyes of 144 patients, who underwent bilateral

surgery (SBCS) over a period of 10 years at a hospital in Staffordshire. Best corrected visual acuity was evaluated, as well as perioperative and postoperative complications. None of the patients had an intraocular infection. Decentration of the intraocular lens occurred in one patient. This is the first time we have encountered this complication in connection with SBCS in the literature.

Kontkanen and Kaipiainen (23) present a study group of 2715 patients operated on as SBCS in the years 1996-2001 (the total number of patients operated on within the stated period was 9678). In 2001 they conducted 42% of operations by this method. They operated on the second eye only if the first operation took place without complications. In addition to all the stated preventive measures, they used an infusion solution from another manufacturer in the second operation in order to prevent contamination from production. Throughout the entire period they did not encounter any bilateral postoperative infection.

With the development of phacoemulsification as a standard surgical technique, accompanied by non-suture clear corneal incision (CCI) involving a small incision and implantation of small intraocular lenses under topical anaesthesia, not only are more studies on SBCS appearing, but there is also an increasing proportion of bilaterally performed procedures in the overall number of operations. In the leading positions are ophthalmologists from Scandinavian countries – Sweden and Finland – where the proportion of SBCS is amongst the highest.

The study by Johansson and Lundh (19) covers 220 phacoemulsifications performed in one day on 110 patients between the years 1999-2001. This represents 10.5% of the total number of patients operated on within the stated period. They state regular perioperative complications. In one case the second eye was deferred due to RPC with loss of the vitreous body, and once surgery was not performed on the second eye upon the request of the patient due to general discomfort. An interesting feature is the evaluation of the postoperative results of visual acuity, where no connection was found between perioperative complications (narrow pupil with necessity of mechanical dilation, dehiscence of the suspensory apparatus (of the lens) and the resulting vision. All the patients had vision of 0.9-1.0. Similarly, postoperative complications such as residual matter or postoperative striata always led in the final phase to good vision. Of the serious complications, they describe 2 cases of postoperative endophthalmitis in two patients, in whom the second eye in the sequence was always afflicted. Functional vision in the affected eyes was not afflicted.

In North America one of the largest study groups of SBCS was published in 2003 by the Canadian ophthalmologist Arshinoff (1). He presents operations on 1020 patients (2040 eyes) in the period from January 1996 to January 2002. Despite the fact that he approached the operation on the second eye as a new operation, including new instruments and solutions, the surgeon and assistant only changed their gloves and did not change their aprons.

The study by Johansson (17) is focused on resulting postoperative refraction following SBCS. They evaluated 165 consecutive patients operated on for cataracts in both eyes on one day at the Ophthalmology Clinic in Linköping during the period from January 2000 to December 2002. Initially they implanted three-piece hydrophobic acrylate intraocular lenses, and later single-piece hydrophilic acrylate IOL. In the final results there was no significant difference between the types of IOL.

A similarly oriented study was presented by Sarikkola et al. (36) in 2004. In addition to the refractive results, they also assessed subjective evaluation. The study group comprised 200 of a total of 637 patients operated on as SBCS in 2001 in North Karelia, Finland. None of the patients experienced serious complications perioperatively. Postoperatively they recorded high intraocular pressure unilaterally in 12 eyes (this always concerned patients treated for glaucoma before the operation). In 5 cases transitional unilateral corneal edema occurred.

In 2003 Doležalová once again raised the theme of simultaneous bilateral cataract surgery in the Czech literature (11). She supplemented her original study with the information that in 19th century Prague professor Fischer had operated on both eyes simultaneously for bilaterally mature cataract, and had never regretted the procedure. The author herself never operated on both eyes simultaneously, but nevertheless is of the opinion that "field ophthalmologists would like to know the opinion of our operating surgeons in order to be able to answer knowledgeably to the inquiries of their patients."

The authors Lundström et al. (28) in their study conducted a comparison of the subjective evaluation of visual functions in patients operated on as SBCS, with patients operated on first in one eye and subsequently in the second following an interval of two months (DSCS – delayed sequential cataract surgery). The study included 96 patients (50 and 46). The refractive results were identical in both groups. Two months after the operation, binocular contrast sensitivity was significantly better in the SBCS group. Subjective evaluation of daily activities, including driving motor vehicles was also significantly better in patients with SBCS. However, after four months there was no difference in visual functions between the two groups.

One-day simultaneous bilateral cataract surgery results in a more rapid return to the activities of the patient, an earlier improvement of binocular contrast sensitivity and an overall better subjective evaluation of the resulting visual functions. However, if the patient is operated on in both eyes, in the final result there is no difference between both surgical approaches.

Huang et al. (15) also present their experience of one-day simultaneous bilateral cataract surgery under general anaesthesia. In the years 1998 to 2005 they operated on 27 patients (54 eyes) from various indications as SBCS, of whom 10 were children. They did not record any serious perioperative complications. Mild postoperative complications occurred sporadically (hyphema, striata of the cornea, cystoid macular edema – CME). They did not record any postoperative infection.

A report on simultaneous bilateral surgery on congenital cataracts, not only from an indication of high risk anaesthesia, is presented by Magli et al. (29). In 2009 they published a retrospective study of 40 paediatric patients (80 eyes), on whom they performed congenital cataract surgery simultaneously in both eyes. They performed the operations at the Paediatric Ophthalmology Clinic in Naples between 1990 and 2005. The study group comprised 17 girls and 23 boys aged 1-17 months (average 7 months). After surgery, visual rehabilitation was performed with the help of contact lenses. In 25 patients they implanted posterior chamber intraocular lenses 2.5 – 3 years after the primary operation. The observation period was on average 54 months. In the postoperative period they recorded 8 patients with complications. In 5 infants a secondary membrane developed, and in 3 infants secondary glaucoma. Nine patients were operated on in the later period for strabismus.

Dave et al. (9) compare complications and results and the economic costs of congenital cataract surgery in newborns in the case of bilateral cataract surgery performed with a time interval between the two eyes (DSCS) and SBCS. The average age of the infants operated on in

the first group was 49 days (10 infants), in the second group 68 days (17 infants). The DSCS operations were performed during the period 1995-2005. A total of 27 infants were operated on. The most frequent postoperative complication was glaucoma. In the calculations of economic costs, the authors determined that SBCS is 21.9% more economical than DSCS. The authors did not determine any differences in the postoperative results or the incidence of complications.

In the last three years, several authors have commented on the issue of bilateral cataract surgery. At present the preferred term for this procedure is Immediate Sequential Bilateral Cataract Surgery – ISBCS. However, in the text below, for reasons of clarity we continue to use the abbreviation SBCS.

Sarikkola (35) presents the results of a study in which 257 patients underwent SBCS and 250 had a classic operation on both eyes. The results of both groups of patients are comparable.

According to Arshinoff (2), SBCS is becoming increasingly popular worldwide. According to his information, approximately 10% of European ophthalmic surgeons perform simultaneous bilateral cataract surgery as a routine procedure, most frequently in Sweden and Finland. In Canada the rate is approximately 2.5% of operating surgeons, in the USA 5% of surgeons routinely perform cataract surgery by this method. In 2008 Arshinoff founded the International Society of Bilateral Cataract Surgeons (iSBCS, www.isbcs.org), which currently has members from several countries worldwide, including Canada, the USA, Australia, the UK, Spain, Sweden, Finland, Belgium, India, Korea, Portugal, Syria, Malaysia, Norway, Switzerland etc.

Kaufer (22) weighs up the advantages of SBCS and analyses the indication criteria. He also presents contraindications which should lead to the exclusion of patients from SBCS.

Chang (16) also focuses on the indications and contraindications. The author states that he himself operates on 20% of patients as SBCS, including implantation of premium and multifocal intraocular lenses.

Johansson (18) states that he has been performing bilateral cataract surgery since 1999. At present he operates on 25-30% of patients by this method, also including multifocal IOL. According to Johansson, SBCS should be performed only if stringent standards of operation and sterilisation are adhered to.

Claoué et al. (8) consider patients who are operated on under general anaesthesia to be the best candidates for SBCS, followed by patients with expected anisometropia following operation on the first eye, as well as patients who want an implantation of a multifocal or other premium intraocular lens.

Of the original candidates for SBCS, Liu (27) excludes primarily patients with immunosuppression, immunodeficiency, leukaemia, lymphoma and also type II diabetes on the basis of his exclusive criteria. With regard to ocular findings, he excludes patients with endothelial dystrophy, extreme axial length, previous refractive surgery etc.

Raju et al. (33) present a study on surgery on 23 paediatric patients operated on for cataract by the SBCS method in the period from 2006 to 2009. In all children aged over 2 years they implanted an intraocular lens. They compared the study group with a further 42 paediatric patients operated on by the same surgeon. The results were comparable. In paediatric cataract surgery they consider SBCS to be an advantage not only with regard to the risk of anaesthesia, but also with regard to reducing the risk of development of deprivation amblyopia following surgery on one eye.

Blaylock and Si (7) published a study on SBCS conducted on their patients who were operated on due to refractive lens exchange (RLE). In 455 of their patients in the period from June 2005 to October 2010, they implanted Restor multifocal lenses bilaterally in 70% of cases, and in the other cases monofocal toric or accommodative intraocular lenses. According to the authors there is no fundamental difference between classic cataract surgery and RLE, on the contrary, in many respects refractive lensectomy is easier to perform than cataract surgery. As a result, at their surgery they perform RLE as immediate sequential bilateral refractive lensectomy as a standard procedure.

In 2012, Serrano-Aguilar et al. (38) published the results of a multicentric study performed in 5 centres on the Canary Islands. They compared two groups of patients with SBCS and DSCS and evaluated perioperative and postoperative complications, visual acuity and subjective evaluation of patients. 807 patients were included in the study (1614 eyes); 417 patients (834 eyes) in the group with SBCS and 390 patients (780 eyes) in the DSCS group. The operative and postoperative results were comparable in both groups.

Grzybowski together with Berkowska (14) consider the definition of the general principles for SBCS which would stipulate the safety regulations and define the target groups of patients who would benefit from the performance of SBCS.

A common feature of all studies in the recent period is their agreement on the indication and exclusion criteria applied upon selection of patients suitable for SBCS. Similarly, an agreement predominates concerning the further conditions of performance of this method, such as stringent adherence to the surgical protocol, sterility of the operating theatre, the approach of the personnel, performance of both operations as separate procedures and the use of antibiotics. The operation should be performed by an experienced surgeon. However, this term is somewhat abstract. In the mid 20th century a surgeon who had performed a total of 1000 operations (12) was considered to be an experienced surgeon. Other opinions rather focus on the number of procedures performed annually (7), in which the optimum number is considered to be 500 or more cataract operations performed by the surgeon in one year.

The term “experienced” surgeon is therefore not precisely defined, despite the fact that it is considered one of the main prerequisites for embarking on such a procedure as SBCS.

The main argument presented by opponents of performance of cataract surgery by the SBCS method is the danger of incidence of complications in both eyes, with consequences for the final postoperative visual functions. We have to take into consideration the possibility of refractive error, decompensation of the endothelium and other complications, but especially the danger of the occurrence of bilateral postoperative endophthalmitis.

In today’s age of modern biometers, refractive error is rather an exception, but nevertheless cannot be entirely excluded. Even modern methods of measurement of the calculation of the dioptric power of the implanted intraocular lens cannot entirely prevent isolated occurrences of refractive shock following surgery.

Endothelial dystrophy of the cornea is one of the exclusion factors for the performance of SBCS, and as a result severe bilateral decompensation of the endothelium should not occur if the protocol for classification of patients for one-day bilateral cataract surgery is adhered to. Arshinoff (1) presents one case of severe endothelial decompensation following SBCS in one eye, which subsequently had to be resolved by means of the performance of perforating keratoplasty. Bilateral decompensation of the corneal endothelium following SBCS is described by Taygi and McDonnell (42).

The strongest argument against the

performance of SBCS is the danger of the incidence of bilateral postoperative endophthalmitis.

In the literature we have found four hitherto published cases of bilateral endophthalmitis following SBCS (6, 21, 31, 32). BenEzra and Chirambo (6) present a case from 1978. Dysentery with general bacteraemia developed in the patient 24 hours after bilateral cataract surgery. Intravenous administration of massive doses of penicillin and peroral administration of chloramphenicol brought about an improvement of the patient's overall condition. Although the ocular finding was alleviated, the resulting vision in both eyes was only hand movement in front of the eye. In 2005, Özdek et al. (31) referred to a patient, a seventy year old man who underwent SBCS under general anaesthesia at another workplace. On the second postoperative day, vision was movement in front of the eye. The patient was treated locally, intravitreally and with general administration of antibiotics, the resulting vision in the right eye was 0.4, in the left eye 0.5. Kashkouli et al. (21) describe a case of bilateral endophthlmitis in a seventy seven year old man. The surgeon did not change the instruments between the operation on the first and second eye. On the second postoperative day, bilateral endophthalmitis developed, the patient was treated at the original workplace locally, intravitreally and with general administration of antibiotics. On the third postoperative day, the condition deteriorated further, and it was only at this point that the patient was sent to the workplace of the authors. Vision in the right eye was without light sensitivity, in the left eye light sensitivity with defective projection. Pars plana vitrectomy (PPV) was performed immediately in both eyes, with explantation of the IOL. The cultivation was demonstrated to be the infectious pathogen Pseudomonas aeruginosa. One week after the operation with patient was without light sensitivity bilaterally. The last published case of bilateral endophthalmitis is an article by Puvanachandra et al. (32) from 2008. The patient was an 81 year old woman. The operation took place without complications in both eyes. On the fourth postoperative day there was a sudden deterioration of vision in both eyes, in the right eye vision was movement in front of the eye, in the left 0.25. Intensive ATB therapy was commenced locally, intravitreally and generally. The cultivation from the vitreous body demonstrated Staphylococcus epidermidis sensitive to gentamicin, ciprofloxacin and vancomycin. The resulting postoperative visual acuity 2 months after the operation was 0.67 bilaterally.

Over a period of 40 years we therefore have information about 4 cases of bilateral endophthalmitis following SBCS. The result was adverse in the patient with general bacteraemia (6) and in the patient who was operated on bilaterally using the same set of instruments (21). In the other two patients relatively good resulting vision was achieved (31, 32).

We have more information about the incidence of unilateral postoperative endophthalmitis in patients operated on simultaneously in both eyes (3, 6, 5, 19, 20, 34). From the published studies it ensues that the incidence of postoperative endophthalmitis in one eye upon SBCS is entirely comparable with the incidence of endophthalmitis in patients operated on in one eye.

Li et al. (24) attempted to clarify the risk of functional blindness following one-day simultaneous bilateral cataract surgery in their publication. They draw attention to the fact that in studies with cefuroxime, the incidence of postoperative endophthalmitis is 0.007% - 0.029% (3, 13). This means that the theoretical incidence of bilateral endophthalmitis is one case in 11.9 million bilateral operations in the case of the upper limit value of incidence. Upon a calculation of 0.007% this represents one case in 206 million bilaterally performed operations. At the same time, the authors note that endophthalmitis and functional blindness are not synonymous, approximately one third of eyes with endophthalmitis attain vision of 0.5 and better. Upon a calculation of 3 million cataract operations in the USA per year, this would mean that 59 patients over 1030 years will have vision worse than 0.5 for bilateral postoperative endophthalmitis.

The advantages of SBCS are defended by a range of authors (1, 4, 5, 8, 15, 16, 17, 22, 23, 24, 25, 28, 34, 36, 37, 40). These advantages are partially medicinal and partially socio-economic. The patient benefits from more rapid visual rehabilitation, an earlier return of binocular functions and better contrast sensitivity. The patient is also not exposed to potential anisometropia between operations. The stress in connection with the procedure is reduced to a single, short period. From the patient's perspective, anxieties before the operation represent one of the main reasons why they wish to have surgery on both eyes simultaneously if they are given the choice. Reduction of the number of visits is a further considerable advantage of SBCS. Attending follow-up visits may cause considerable inconvenience to the patient both practically and economically.

For the healthcare facility an advantage is the single contact with the patient. The preoperative examination and measurement is conducted once, it is not necessary to repeat this upon a further visit for the operation on the second eye. The work deployment of the personnel is more efficient, taking care of two eyes whilst saving time on a single patient. This results amongst other factors in increasing the through flow of patients and more efficient utilisation of the operating theatre with better logistics of the entire procedure. Today the time of the actual procedure is considerably shorter than the preparation of the patient for the operation. The total time for the preparation of both eyes of one patient is approximately one half of that necessary for the preparation of two eyes of two patients. On the other hand, the time which the patient spends in the operating theatre is longer if surgery is performed on both eyes. In this manner the preparation and the actual operation are synchronised into a better accordance. At the same time there is more efficient utilisation of expensive operating time, because the performance of surgery on both eyes is shorter in the final phase than an operation on two eyes of two patients, despite the fact that the second operation on the same patient is always approached as a new procedure, with the exchange of all surgical instruments, operating linen, gloves and solutions.

Leivo et al (24) conducted an economic analysis, in which they came to the conclusion that the costs for a one-day operation on both eyes are on average 232 to 443 Euro cheaper for the healthcare system than the costs for the performance of two operations on the same patients with a time interval.

According to the various authors, the indications for the performance of SBCS are very similar (2, 8, 16, 18, 27, 40), mostly differing only in the details. However, no clear indication for the performance of one-day bilateral cataract surgery exists. Indication is similarly flexible as indication for cataract surgery itself, where a decisive factor is the subjective perception of the patient as to the degree to which the cataract represents a limiting factor in everyday life.

On the basis of the experience of our workplace with the performance of one-day bilateral cataract surgery, we indicate the performance of SBCS upon the following preconditions:

1. a cataract is indicated for surgery in both eyes,
2. the patient himself/herself prefers SBCS over a classically performed operation,

3. the patient does not have a local or general finding excluding the performance of SBCS and simultaneously meets the criteria of the workplace for the performance of SBCS.

From a surgical perspective, the performance of bilateral cataract surgery is not difficult. Both the benefits and the risks of the procedure are well known. The risks are the reason why SBCS is not yet performed routinely.

However, just as outpatient cataract surgery was entirely inconceivable until recently, whereas today it has become an everyday reality, the same may well occur also in the case of the performance of SBCS. The time has not yet arrived when SBCS is established in routine clinical practice, but perhaps now is precisely the time for a wider discussion concerning this method, and for gathering of data which would help and enable us to compile criteria for the performance of this method and its standardisation.

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