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# Simultaneous surgery in bilateral congenital cataract

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PURPOSE. *To assess the efficiency of simultaneous surgery in bilateral congenital cataract not only in patients with a high anesthesiologic risk profile.*

METHODS. *A retrospective study was carried out on 40 bilateral congenital cataract patients (80 eyes) who presented to the outpatient department of pediatric ophthalmology of the University Federico II of Naples in the period from 1990 to 2005. All patients had undergone cataract extraction from both eyes in a single surgical session. Visual rehabilitation was achieved in all patients by corneal lenses; successively 25 patients had a secondary intraocular lens implant in the posterior chamber after a period of 2.5–3 years.*

RESULTS. *The mean age at cataract surgery was 7 months (1–17 months). Visual acuity (VA) was assessed in 52 eyes: 8 eyes (15%) presented VA ≤20/200, 21 eyes (41%) showed VA 20/200 < 20/40, 23 eyes (44%) presented VA ≥20/40. Ocular motility disorders were seen in 28 patients (70%). Eight patients had postoperative complications: the formation of secondary membranes in five patients, and secondary glaucoma in three patients. There were no cases of endophthalmitis.*

CONCLUSIONS. *Simultaneous surgery in bilateral congenital cataract may be taken into consideration not only for patients with a high anesthesiologic risk profile. (Eur J Ophthalmol 2009; 19: 24-7)*

KEY WORDS. *Congenital cataract, Simultaneous surgery, Endophthalmitis*

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## INTRODUCTION

The treatment of congenital cataract poses well-known problems such as the selection of operable age, choice of surgical technique rehabilitation, and additionally in the case of bilateral congenital cataract whether to operate on both eyes at the same sitting or in separate sessions (1, 2). Some authors are against simultaneous surgery in bilateral cataract as they maintain there is an increased risk of complications such as endophthalmitis (3). However, endophthalmitis rarely presents as a complication of cataract surgery (range 0.07–0.30%) (4).

On the other hand, other authors maintain that simultaneous surgery in congenital bilateral cataract may be necessary and preferable in those patients considered at high anesthesiologic risk (premature infants, those with heart defects); in effect, the risks of possible complications following two anesthesias are reduced, as is the risk of developing deprivation amblyopia (2, 5). The aim of this study is to verify the utility of simultaneous surgery not only in high-risk patients.

## METHODS

A retrospective study was carried out on 40 patients (80 eyes) with bilateral congenital cataract who had come under our observation at the outpatient clinic of Paediatric

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Ophthalmology of the University Federico II of Napoli from 1990 to 2005. All patients had undergone cataract extraction surgery in both eyes at the same surgical sitting.
Before surgery the patients underwent an ophthalmologic examination to evaluate the possible presence of ocular infections (such as blepharitis, conjunctivitis, dacryocystitis), to minimize the risk of endophthalmitis. To reduce the risk of contamination from the first eye operated to a minimum, the second eye was prepared and operated with a second sterile surgical set and a change of operating gown and gloves.
Patients were operated under general anesthesia. The following type of operation was carried out: a sclerocorneal or corneal tunnel incision was made, high molecular weight viscoelastic material was injected into the anterior chamber, circular capsulorhexis was carried out, when anterior capsulotomy was not possible, manual or automatic extracapsular cataract extraction, posterior capsulorhexis and central anterior vitrectomy, aspiration of the viscoelastic substance, scleral or corneal suture with 10-0 nylon. In preparation for surgery 0.5 mg% cefuroxime was injected in the anterior chamber as endophthalmitis prophylaxis; during and after surgery dexamethasone and antibiotics were injected subconjunctivally.
After surgery the operated eyes were treated with topical antibiotics, corticosteroids, and mydriatic and cycloplegic agents. These patients were followed up for an average of 54 months (range 24–144). Particular attention was paid to the evaluation of ocular motility by means of the alternate cover test, Krimsky test, and in some cases Hirschberg; a deviation >10 PD was considered as strabismus. Visual acuity was evaluated by the E of Albini or Snellen linear test in cooperative patients.
Visual rehabilitation was achieved in all patients by means of corneal lens.
LAC power was evaluated by means of ecobiometric examination, retinoscopy, and keratometry; the first application was checked at 3 hours, 8 hours, and 24 hours. Successive checks took place at 3 days, 7 days, and every 15 days for 6 months, and then every 6 months a complete ophthalmologic examination was given. The following types of LAC were used: HEMA, PMMA-PVP (polymethyl methacrylate and polyvinyl pyrrolidone), Elastiphilicon A. Twenty-five patients after 2.5–3 years had a secondary IOL implant in the posterior chamber. Postoperative complications were reported.

**TABLE I -** VISUAL ACUITY IN 52 EYES

| Visual acuity | No. of eyes | % |
|---|---|---|
| ≥20/40 | 23/52 | 44 |
| 20/200<20/40 | 21/52 | 41 |
| ≤20/200 | 8/52 | 15 |

**TABLE II -** ANOMALIES OF OCULAR MOTILITY

| Anomalies of ocular motility | No. of patients | % |
|---|---|---|
| Strabismus | 27/40 | 67.5 |
| Esotropia | 21/27 | 78 |
| Exotropia | 6/27 | 22 |
| Nystagmus | 8/40 | 20 |

**TABLE III -** INCIDENCE OF ENDOPHTHALMITIS AFTER CATARACT SURGERY

| Author | No. of cases | Incidence % |
|---|---|---|
| **Adults** | | |
| Javitt et al (13) | 338,141 | 0.12 |
| Kattan et al (4) | 23,625 | 0.07 |
| Beatty et al (9) | 319 | 0.15 |
| Ramsay et al (6) | 259 | 0.19 |
| Sandvig et al (15) | 71,190 | 0.16 |
| Wong et al (14) | 44,803 | 0.076 |
| **Children** | | |
| Good et al (3) | 671 | 0.45 |
| Wheeler et al (7) | 24,000 | 0.07 |

## RESULTS

Of the 40 patients operated, 17 were female (42.5%) and 23 male (57.5%). The average age at diagnosis was 3 months (0–10 months). Twelve patients were at higher anesthesiologic risk due to the presence of associated factors (2 prematurity, 1 aniridia, 3 microphthalmos, 1 microcephaly with psychomotor retardation, 1 respiratory distress, 1 ocular hypertension, 1 microcornea, 2 cardiac defects of which one with Down syndrome).
Visual acuity was evaluated in 52 eyes, of which 8 eyes (15%) presented VA <20/200, 21 eyes (41%) had VA 20/200 < 20/40, and 23 eyes (44%) presented VA ≥20/40 (Tab. I).

Eye movement abnormalities were seen in 28 patients (70%), of which 21 patients presented esotropia, 6 patients exotropia, and 8 patients nystagmus (1 patient nystagmus alone, 3 combined with esotropia and 4 with exotropia) (Tab. II).
Subsequently, 9 of these strabismic patients were successfully operated for strabismus. Eight patients had postoperative complications, 5 patients the formation of secondary membranes, and 3 patients secondary glaucoma.
There were no cases of endophthalmitis.

## DISCUSSION

Simultaneous surgery for bilateral congenital cataracts is a controversial subject. Some authors (2, 5, 6) maintained that simultaneous surgery is preferable to deferred surgery, because it both reduces anesthesiologic risk in high-risk patients and decreases the risk of deprivation amblyopia. However, other authors are reluctant to employ it as they maintain there is a greater risk of endophthalmitis due to a high probability of infection from one eye to another in the same surgical setting (3).
Various studies have been carried out on the insurgence of endophthalmitis following cataract surgery in adult patients, whereas very few concern pediatric patients. Good et al report three cases of endophthalmitis following 671 cataract extractions in pediatric patients (3). Wheeler and colleagues, in a postoperative follow-up program carried out by 500 ophthalmologists, reported 17 (0.07%) cases of endophthalmitis out of a total of 2400 eyes operated for cataracts and congenital glaucoma (7). Some studies confirm that simultaneous bilateral cataract surgery does not increase the risk of intraoperative and postoperative complications and moreover that good visual results are obtained. Sharma and Worstmann, in a study on 144 patients (288 eyes) >10 years, reported intraoperative complications in 2.42% of patients but did not observe any cases of endophthalmitis; moreover, it is noteworthy that in 87% of the eyes the visual acuity was ≥6/9 (8). Beatty et al, in a study on 291 patients (638 eyes), observed only one case of endophthalmitis in a single eye (0.15%); furthermore, 82% of the eyes presented VA ≥6/12 (9). Huang et al, in a study on 27 patients undergoing simultaneous bilateral cataract surgery, observed no cases of endophthalmitis (10). Ramsay et al, in a study conducted on 259 patients (518 eyes), observed one case of endophthalmitis in a single eye (0.19%); furthermore, over 75% of the eyes presented a visual acuity ≥6/12 (6).
Very few studies regard simultaneous bilateral cataract surgery in pediatric patients. Guo et al reported results on 16 patients, Yagasaki et al on 10 patients, Zwaan on 9 patients, Totan et al on 17 patients, and none of these reported cases of endophthalmitis (1, 2, 5, 11). No cases of endophthalmitis occurred in our 40 patients. On comparing data obtained from adult patients with those from pediatric patients, it is clear that the onset of mono- or bilateral postoperative endophthalmitis is essentially the same for the two age groups, and thus there is no reason to believe that the incidence of this complication which is rarely observed in adults is greater than in infants (Tab. III). However, regarding the risks of general anesthesia, the mortality rate for pediatric patients subjected to general anesthesia ranges between 0.2 and 12.8 per 10,000, thus the risks connected to anesthesia are not to be underestimated (12). Guo et al have estimated that the execution of simultaneous surgery actually reduces the onset of anesthesia-related complications by 50% with respect to double surgery, particularly in high-risk patients such as premature infants or patients with heart defects. Some authors claim that simultaneous surgery decreases the risk of deprivation amblyopia (2, 5); others, however, have not observed substantial differences regarding postoperative visus recovery between the two methods (1). The results obtained in our patients were very satisfactory; 44% presented VA ≥20/40. Simultaneous bilateral cataract surgery can be considered not only in high risk anesthesia patients.

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