

Bilateral versus unilateral cataract extraction: advantages and complications

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SUMMARY Cataract extraction was performed on 734 patients. These were followed up postoperatively for up to 1 year. In 448 cases the extraction was performed in both eyes during 1 operating session (896 eyes) and in 1 eye in 286 cases, a total of 1182 cataract extractions. Preoperatively more than 75% of the eyes in both groups had perception of light only. Postoperatively more than 85% of eyes in both groups achieved a visual acuity of 6/30 or better. The postoperative visual performance of an eye was not influenced by the mode of operation, bilateral or unilateral.

The overall incidence of complications among the 1182 operated eyes was: accidental extracapsular cataract extraction 10.2%, vitreous loss 11.0%, hyphaema 1.4%, flat anterior chamber 0.9%, dehiscence of the wound 0.5%, uveitis 1.2%, endophthalmitis 0.3%, secondary glaucoma 0.9%, severe bullous keratopathy 1.4%, oedema of the macula 0.5%, and retinal detachment 0.3%. The complications in both groups of patients were comparable. Only in 1 case operated in both eyes vision was not restored following a bilateral endophthalmitis.

Though the advantages of performing a bilateral cataract extraction on a suitable patient during 1 operating session in a developed country are obvious (Duthie, 1955; Manschot, 1959), it is not performed routinely (Deller, 1976). In a developing country economic factors such as the shortening of the period of hospitalisation, the possibility of using only 1 suture and the same instruments for operating both eyes, and the need to dispense only 1 pair of glasses postoperatively are other advantages which must be considered. Also, the possibility that a patient operated upon in only 1 eye will disappear and not seek the operation for the other eye adds another factor favouring bilateral extraction. The main disadvantages and drawbacks to this approach have been the fear of a bilateral complication leading to blindness in both eyes.

During a period of 16 months we operated 1549 cataracts. We were able to follow-up 448 cases of bilateral extractions (896 eyes) and 286 cases of unilateral extractions (286 eyes) for a period of up to 1 year. This is a report comparing the visual results and the complications in both groups of patients.

Materials and methods

Males and females with opacities of the lens were admitted for operation. The assignment for bilateral or unilateral cataract extraction was made according to the visual acuity. Patients with a visual acuity of 6/60 or less in the better eye were usually assigned to a bilateral cataract extraction. Unilateral cataract extraction was performed in cases where a visual acuity better than 6/60 was recorded in 1 eye. Four cases with a visual acuity between 6/60 and 6/12 in the better eye were operated bilaterally because of secondary considerations. Patients referred from peripheral dispensaries and district hospitals were examined under the slit lamp, and the intraocular pressure was recorded with an applanation tonometer (BenEzra and Chirambo, 1978a). Preoperative assessment of retinal function was evaluated by the ability to percept a dim source of light in all directions of visual field.

SURGICAL PROCEDURE

General or local anaesthesia was used randomly throughout the period of study. The surgery was performed as described previously (BenEzra and Chirambo, 1978b). Briefly, a fornix-based conjunctival flap was secured and a corneal incision of 150° to 170° made at the limbus. Peripheral or

sector iridectomy was performed according to the lens status. Lens extraction was carried out with forceps or erisphake by tumbling or sliding. No chymotrypsin was used for zonulysis. In cases of accidental rupture of the capsule, lens remnants were gently washed out with saline. The surgical wound was closed with three 7-0 or six 8-0 sutures (1 of which is a preplaced suture in each case). In cases of vitreous loss conservative anterior vitrectomy was performed and the wound carefully cleaned. Post-operative treatment, follow-up, and classification of visual acuity achieved were performed as previously described (BenEzra and Chirambo, 1978b).

Results

Cataract extraction was undertaken in 1549 eyes, 1182 were available for follow-up. In 448 cases the operation was on both eyes (896 eyes) and in 286 cases on 1 eye. We believe that the loss for follow-up was at random, so that the cases available represent adequately all the eyes operated upon.

Among the eyes operated upon in bilateral operations only 0.5% had a preoperative visual acuity better than 6/60. After operation 89.4% achieved a visual acuity better than 6/60 (Table 1). The eyes in cases undergoing unilateral extraction had in general a worse preoperative visual acuity. Only 2.8% showed a visual acuity of 3/60 to 6/60 and none had a visual acuity better than 6/60. After operation 87.8% achieved a visual acuity better than 6/60 (Table 2).

Table 3 illustrates the complications encountered during the bilateral cataract extractions. The commonest was vitreous loss in 10.7% of the eyes. Vitreous was lost in both eyes in 23 cases (5.1%), that is, 47.7% of the vitreous losses in this group occurred in both eyes. An accidental extracapsular cataract extraction occurred in 9.9% of the eyes; 3.6% were bilateral. However, vitreous loss and extracapsular cataract extraction occurred bilaterally only in 2 cases. Hyphaema persisting for more

Table 1 Pre- and postoperative visual performance among the 448 cases operated bilaterally (896 eyes)

	Before operation		After operation	
	No.	%	No.	%
LP-HM	691	77.1	25	2.8
1/60-2/60	148	16.5	22	2.5
3/60-6/60	53	5.9	48	5.4
6/30-6/12	4	0.5	606	67.6
6/9-6/6	0	0	195	21.8
Total	896	100	896	100.1

Table 2 Pre- and postoperative visual performance among 286 cases operated unilaterally

	Before operation		After operation	
	No.	%	No.	%
LP-HM	225	78.7	5	1.7
1/60-2/60	53	18.5	16	5.6
3/60-6/60	8	2.8	14	4.9
6/30-6/12	0	0	189	66.1
6/9-6/6	0	0	62	21.7
Total	286	100.0	286	100.0

Table 3 Complications after bilateral cataract extraction

Complication	Right eyes		Left eyes		Both eyes		Total eyes	
	No.	%	No.	%	No.	%	No.	%
ECCE*	27	3.0	30	3.3	16	3.6	89	9.9
Vitreous loss	23	2.6	27	3.0	23	5.1	96	10.7
Hyphaema	6	0.7	2	0.2	3	0.7	14	1.6
Flat AC†	4	0.4	3	0.3	—	—	7	0.7
Dehiscence of wound	2	0.2	3	0.3	—	—	5	0.6
Uveitis	5	0.6	4	0.4	1	0.2	11	1.2
Endophthalmitis	—	—	1	0.1	1	0.2	3	0.3
Secondary glaucoma	6	0.7	1	0.1	—	—	7	0.8
Bullous keratopathy	5	0.6	6	0.7	—	—	12	1.3
Oedema of macula‡	2	0.2	2	0.2	—	—	4	0.4
Retinal detachment	1	0.1	1	0.1	—	—	2	0.2

* ECCE = Extracapsular cataract extraction (accidental). † AC = Anterior chamber. ‡ Recorded when obvious oedema was observed ophthalmoscopically and vision was markedly impaired

than 72 hours after operation was observed in 1.6% of cases; in 0.7% it occurred in both eyes. Uveitis was observed in 1.2% of the cases and only in 1 case bilaterally (0.2%). Endophthalmitis occurred in 3 eyes (0.3%), 1 bilateral case (Table 3). Other complications such as flat anterior chamber persisting for more than 48 hours, dehiscence of the wound, secondary glaucoma, severe bullous keratopathy, oedema of the macula, or retinal detachment occurred in 0.2 to 1.3% of the operated eyes in this group. None of these occurred in both eyes of the same patient (Table 3).

Among the cases operated upon unilaterally accidental extracapsular cataract extraction occurred in 11.0% of the cases and vitreous loss in 11.9%. These seemed to occur at a higher frequency in left than in right eyes (Table 4). All other complications were observed in an incidence ranging from

Table 4 Complications after unilateral cataract extraction

Complication	Right eyes		Left eyes		Total eyes	
	No.	%	No.	%	No.	%
ECCE*	14	4.8	18	6.2	32	11.0
Vitreous loss	13	4.5	21	7.3	34	11.9
Hyphaema	—	—	3	1.0	3	1.0
Flat AC†	2	0.7	2	0.7	4	1.4
Dehiscence of wound	1	0.3	—	—	1	0.3
Uveitis	1	0.3	2	0.7	3	1.0
Endophthalmitis	1	0.3	—	—	1	0.3
Secondary glaucoma	2	0.7	2	0.7	4	1.4
Bullous keratopathy	3	1.0	1	0.3	4	1.4
Oedema of macula‡	1	0.3	1	0.3	2	0.7
Retinal detachment	—	—	1	0.3	1	0.3

* ECCE = Extracapsular cataract extraction (accidental). † AC = Anterior chamber. ‡ Recorded when obvious oedema was observed ophthalmoscopically and vision was markedly impaired

0.3 to 1.4% similarly to the group operated bilaterally.

Discussion

The postoperative visual performance among the cases operated upon bilaterally and those operated upon unilaterally was strikingly similar. Among the cases operated on bilaterally 89.4% achieved a visual acuity of 6/30 or better (21.8% achieved a visual acuity of 6/9 or better). Among the cases operated on unilaterally 87.8% achieved a visual acuity of 6/30 or better (21.7% showed a visual acuity of 6/9 or better). The relatively low incidence of eyes achieving a very good postoperative vision in both groups was due to the approximative refractive correction and the frequent senile macular changes. However, owing to the specific conditions of living, a visual acuity of 6/30 was considered reasonable because it enabled these patients to live a normal life in their community. The percentage of eyes with a poor or very poor visual acuity after operation was also similar in both groups.

There was a nearly similar incidence of accidental extracapsular cataract extraction among both groups of patients. Most of these were due to intumescent lenses. Vitreous loss has been considered as a major complication during cataract surgery (Jaffee, 1972) and a serious threat for postoperative vision (Dunphy, 1927; Vail, 1965). In a previous study (BenEzra and Chirambo, 1978b) it was shown that although vitreous loss during cataract extraction may comprise the chances of an eye to have very

good postoperative vision, it was not a disaster. The relatively good vision achieved by the eyes with vitreous loss might be attributed to better treatment and/or to the fact that in most cases the vitreous was fluid and easy to manage (BenEzra and Chirambo, 1978b). These results are in line with those reported by Krasner (1973) on a small number of patients.

Hyphaema persisting for more than 72 hours after the operation, flat anterior chamber persisting for more than 48 hours, or dehiscence of the wound were observed in few cases, and their incidence was similar in both groups of patients. These complications were treated successfully by conservative measures in most cases. In 3 cases of dehiscence of the wound iridectomy and resuturing were performed under general anaesthesia. Secondary glaucoma with an intraocular pressure ranging from 28 to 55 mmHg occurred in 0.8% of the eyes after a bilateral extraction procedure. None of these had secondary glaucoma in both eyes. Among the group operated upon in 1 eye the incidence of secondary glaucoma was 1.4%. All eyes with secondary glaucoma were initially treated medically with a poor response. Surgery was performed at a later stage in all those eyes.

The most serious complication encountered was the postoperative endophthalmitis. Prophylactic antibiotic treatment before surgery has very little effect (Chalkley and Shoch, 1967) or no influence (Allen and Mangiaracine, 1973) on the incidence of postoperative endophthalmitis. More recently a drastic lowering of bacterial endophthalmitis from an incidence of 3.6 to 0.37% after cataract extraction in the eye camps of South India has been achieved by the prophylactic intracameral injection of 50 µg gentamicin (Peyman *et al.*, 1977). It should be stressed, however, that the comparisons in the latter study have been made between heterogeneous groups operated on by different surgeons. Therefore, although possibly real, the seeming effectiveness of intracameral gentamicin in abolishing 99% of the endophthalmitis in these camps should be more carefully analysed. In our series no prophylactic antibiotics were used, and an overall incidence of 0.3% has been encountered. Two eyes were affected in 1 case. The bilateral endophthalmitis in this case was observed along with a general bacteraemia and dysentery developing 24 hours after the operation. Intensive therapy with intravenous penicillin and oral chloramphenicol improved the general condition of the patient within 10 days. However, the ocular condition did not improve, and both eyes remained with a perception of hand movements only. The other 2 eyes with endophthalmitis (1 eye in the bilateral group and the only eye affected in

the unilateral group) did not respond to systemic and topical treatment with antibiotics. No useful vision was retained in the affected eyes. The visual acuity in the fellow eye of the bilateral case was 6/9. Late aseptic endophthalmitis, although reported by others (Gleicher and Welch, 1973), was not observed in our series during the 1-year follow-up.

Postaphakic retinal detachment was observed in 2 eyes (0.2%) in different patients operated on bilaterally, and in 1 eye of the unilateral group (0.3%). This incidence is much lower than the incidence observed in Caucasians (Roussos and Polychroniadis, 1973). The low frequency of spontaneous or primary retinal detachment as observed in this study may be due to congenital factors. It is tempting to postulate that the lower frequency of primary retinal detachment (AvShalom *et al.*, 1967a, b) and the very low incidence of postaphakic retinal detachment in Africans is connected with the higher fundal pigmentation and a tighter adhesion between pigment epithelium and neuroretina. A very low incidence of primary retinal detachment was also observed among blacks in the United States (Brown and Thomas, 1965). These investigators also reported a lack of postaphakic retinal detachment among their black patients, whereas 44% of the white patients with retinal detachment were aphakic.

Severe uveitis in 1.2 and 1% of the bilateral and unilateral groups respectively was observed in all cases on the second or third month after operation. Most of these eyes responded well to combined treatment with topical antibiotics and topical or systemic steroids.

Severe bullous keratopathy was observed in few cases; all resulted in a very poor visual performance. This complication was closely correlated with vitreous loss and accidental extracapsular cataract extraction occurring in the same eye. However, bullous keratopathy was not observed in both eyes of the same patient, although vitreous loss and extracapsular cataract extraction occurred bilaterally in 2 cases.

These data clearly indicate that the complications encountered during a bilateral cataract extraction are comparable to those observed when 1 eye is operated. Only in 1 unfortunate case was vision lost in both eyes due to endophthalmitis. The possibility of a complication occurring during a 'delayed' operation of 1 of the eyes in this case cannot be ruled out. However, it is undeniable that if the operation had been deferred in 1 of the eyes, the chances are that vision could have been kept in 1 eye. Such an argument is of colossal psychological influence on the surgeon's decision, and the obvious advantages of the bilateral approach in controlled

conditions and adequate patients should be strongly considered against it.

In a developing country the socioeconomic factors are so important that the slender possibility of a complication in both eyes is a calculated risk which should not interfere with the routine performance of a bilateral cataract extraction during one operating session.

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