

# Cataract and cataract extraction in Nigerians

## An evaluation of 567 extractions

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Cataract is the commonest cause of blindness in the adult population in Ibadan, Nigeria. In a current survey of binocular blindness in Nigerians, cataract was the cause in 35 per cent. of 1,000 blind adult Nigerians and was also the second commonest cause of blindness in Nigerian children, being surpassed only by keratitis (Olurin, 1970). It is therefore not surprising that cataract extraction is the commonest ophthalmic operation performed in the University College Hospital at Ibadan, where in 1968 it amounted to 45 per cent. of all operations. A report on the incidence and causes of cataracts and the operative complications of cataract extraction in Nigerians may be of interest to epidemiologists, and provide a useful guide for further investigation. This communication deals with cataract extraction in Nigerians in the 5-year period, 1964–1968.

### **Materials and methods**

411 patients in whom 567 cataract extractions were done form the material for this study. Clinical appraisal, backed by appropriate laboratory investigations where necessary, was made to exclude systemic diseases (such as diabetes mellitus and galactosaemia) which are known to have aetiological associations with cataracts. The parents of children suffering from congenital cataract were asked specifically about any maternal illness during the first trimester of pregnancy.

Five patients presented with posteriorly dislocated lenses. These had been caused by couching by native medicine men and there were signs of iridocyclitis and/or glaucoma present in all five patients. Young people were also asked specifically for a previous history of trauma or inflammation in the affected eye. Conjunctival swabs for bacteriological examination were taken and sensitivity tests done only in cases in which bilateral extractions were planned or conjunctival infection was suspected.

#### *Preparation*

Preoperative preparation included parenteral administration of an antibiotic, usually penicillin, as well as topical application of a broad-spectrum antibiotic, usually chloramphenicol, into the conjunctival sac. Patients were also given 500 mg. acetazolamide orally on the night before and again an hour before operation.

#### *Anaesthesia*

The operations were carried out under local anaesthesia, except in children and apprehensive young adults, in whom general anaesthesia was administered. Sedation in patients for local anaesthesia comprised a drug combination of pethidine hydrochloride 100 mg., promethazine hydrochloride 50 mg., and scopolamine hydrobromide 0.43 mg., the dosage being reduced for small patients. Surface anaes-

thetia of the conjunctival sac was effected with 1 per cent. amethocaine, and mydriasis with a combination of homatropine 1 per cent. and phenylephrine hydrochloride 10 per cent. Akinesia of the orbicularis was obtained by a facial block. A retrobulbar injection of 2 per cent. xylocaine with adrenaline 1:80,000 was also given to block the ciliary ganglion.

#### *Methods of extraction*

##### (A) CHILDREN

- (i) Simple dissection of soft cataracts followed by capsulotomy at a later date.
- (ii) Dissection and aspiration of soft lens matter at the same time (Scheie, 1960).
- (iii) Linear extraction: this was preferred where the capsule was tough and the lens matter hard-looking and obviously not aspirable.

##### (B) YOUNG ADULTS – under 25 years

Extracapsular extraction was the operation of choice.

##### (C) ADULTS OVER 25 YEARS

In uncomplicated cataracts, the intracapsular extraction with or without alpha-chymotrypsin was preferred. A limbal-based conjunctival flap was formed and the section made with a keratome or knife and completed with scissors. In the first 2 years, the section was more often made with the von Graefe knife. Iridectomy was either full or peripheral. Extraction was done with the Arruga forceps or a hand-operated erisophake. The vectis was employed when the lens was already dislocated and lying free. Three to five sutures were inserted to close the section.

#### *Postoperative care*

The first postoperative dressing was done after 24 hours and any complications were noted. Thereafter, atropine 1 per cent. drops or ointment and chloramphenicol 0.5 per cent. (drops or ointment) were instilled. The eye was padded, covered with a perforated cardboard Cartella shield, and bandaged. Further dressings were done at 24-hour intervals with daily instillation of atropine and chloramphenicol. Patients were allowed to wear dark glasses on the sixth postoperative day, when topical corticosteroids replaced chloramphenicol. The patients were usually discharged on the tenth day after operation.

## **Results**

#### *Age and sex (Table I)*

The male : female ratio of approximately 2:1 may be partly due to the fact that in Nigeria men come more readily to hospital than women.

#### *Aetiology (Table II)*

Congenital cataract developed as a result of maternal rubella infection in the first trimester of pregnancy in two children. A family history was obtained in three children and in another child galactosaemia was suspected but not proved. In thirty children no cause could be found. In three children cataract was associated with microphthalmos.

#### *Complications*

OPERATIVE AND POSTOPERATIVE (Table III, opposite).

Of the 567 extractions, 374 were elective intracapsular extractions. 78 extracapsular extractions were done electively in patients under 25 years of age: the remaining 115 extracapsular extractions were unplanned.

**Table I** Age and sex of 411 patients with cataract

Age group (yrs)	Sex		Total	
	Male	Female	No.	Per cent.
0-9	19	8	27	7
10-19	11	7	18	4
20-29	13	4	17	4
30-39	19	8	27	7
40-49	27	18	45	11
50-59	55	40	95	23
60-69	101	41	142	34
70-79	22	10	32	8
80-89	3	5	8	2
Total	270	141	411	100

**Table II** Type of cataract

Aetiology	No. of Patients	Percentage of total
Congenital	36	8.8
Traumatic	18	4.4
Diabetic	5	1.2
Complicated	11	2.6
Idiopathic senile or presenile	341	83.0
Total	411	100

**Table III** Operative and postoperative complications of cataract extraction

Complication	No. of cases	Percentage of total extractions
Operative		
Vitreous loss	19	3.3
Postoperative Early		
Hyphaema	34	5.9
Striate keratitis	18	4.9
Iris prolapse	6	1.0
Iritis	34	5.9
Infection	3	0.5
Delayed re-formation of anterior chamber	16	2.8
Late		
Glaucoma	25	4.4
Retinal detachment	5	0.8
Epithelial downgrowth	1	0.1
Corneal dystrophy	1	0.1

#### DURING OPERATION

Vitreous loss was the only operative complication. This occurred in twelve intracapsular extractions and seven extracapsular extractions (3.3 per cent. of the total). Vitreous loss occurred in only one of the group of elective extracapsular extractions.

#### EARLY POSTOPERATIVE

These comprised hyphaema, striate keratitis, iris prolapse, iritis, infection, and delayed re-formation chamber.

*Hyphaema* Varying amounts of blood, not present at operation, were observed in the immediate postoperative period in 34 patients. Treatment was mainly conservative.

The patient was sedated if unduly restless. Only two eyes required washing out of the anterior chamber.

*Striate keratitis* This did not require any specific treatment as the oedema and wrinkling of the corneal endothelium gradually subsided and disappeared by the time the patient was discharged.

*Iris prolapse* This was a relatively uncommon complication. It was associated with inadvertently self-inflicted postoperative trauma, delayed wound healing, or straining at passing urine in elderly patients with urinary obstruction.

*Iritis* This complication occurred in twenty eyes (10.4 per cent.) of 193 extracapsular extractions and in fourteen (4.8 per cent.) of 374 intracapsular extractions. The difference is statistically significant ( $P < 0.05$ ). Cases of iritis responded very quickly to the subconjunctival injection of a steroid preparation (Depomedrol). In two patients with postoperative uveitis it was necessary to use systemic steroids.

*Infection* Postoperative endophthalmitis occurred in three eyes within the first 10 days. This was treated with intensive subconjunctival and systemic antibiotics. No source of infection was found and no infecting organism was isolated in any of them.

*Shallowing of anterior chamber* Most cases responded well to light padding and bandaging of the eye and oral administration of acetazolamide tablets (Duke-Elder, 1964). Two were due to choroidal detachment and were associated with ocular hypotony, and three were associated with a rise in ocular tension. In one eye, delayed wound-healing resulted in iris prolapse and a leaking wound. In four patients operative intervention was required to restore the anterior chamber.

#### LATE POSTOPERATIVE

These comprised glaucoma (25 eyes), retinal detachment (5 eyes), epithelial downgrowth (1 eye), and corneal dystrophy (1 eye).

*Glaucoma* Most cases of glaucoma in our series were encountered in the late postoperative period, although three occurred soon after the operation in association with shallowing of the anterior chamber. The late cases of aphakic glaucoma were treated with miotic drugs (pilocarpine, physostigmine, or ecothiopate iodide) and diamox tablets as required and by surgery when medical treatment failed to control the ocular tension.

*Retinal detachment* Four eyes developed retinal detachment after intracapsular extractions, and one after extracapsular extraction.

#### **Improvement in visual function after operation**

Follow-up in outpatient clinics was not very satisfactory because of a high default rate. This was due to a combination of factors.

(1) Many patients were satisfied with the improvement in vision and visual field obtained without aphakic correction, and did not bother to return for follow-up.

(2) Many patients lived many miles away and could not afford to make repeated visits to hospital.

Of these 567 extractions, only 279 eyes (49.2 per cent.) were available for refraction during follow-up. Visual acuity in these 279 eyes before operation was usually reduced to perception of light. Approximately 90 per cent. of all the eyes refracted showed an improved visual acuity of 6/18 and better, and 47 per cent. obtained a normal visual acuity of 6/6 (Table IV).

**Table IV** *Visual results after cataract extraction in 279 patients available for adequate follow-up*

<i>Visual acuity</i>	<i>No. of eyes</i>	<i>Percentage of total</i>
No perception of light	5	1.8
Less than 6/60	8	2.9
6/60-6/24	15	5.4
6/18-6/9	120	43.0
6/6 and better	131	46.9
Total	279	100.0

After operation, five eyes (1.8 per cent. of those refracted) were totally blind with no perception of light; eight eyes (2.9 per cent.) were partially blind with a corrected visual acuity of less than 6/60. The causes of persistently poor vision after surgery were infection (1 eye), secondary glaucoma (3 eyes), retinal detachment (5 eyes), optic atrophy (4 eyes), and macular degeneration.

### **Comment**

In this series, the majority of cases of cataract in the Nigerians were presumably idiopathic in origin and since the peak incidence occurred in the later decades of life, most of these were presumably senile cataracts. The association between cataract and diabetes mellitus is well established, and lens opacities tend to mature more rapidly in diabetics than in non-diabetics (Caird, Pirie, and Ramsell, 1969). In contrast to Caucasian groups, cataract was not a common presentation of diabetes mellitus in our study. Caird, Hutchinson, and Pirie (1964) found that 10.7 per cent. of patients in a British hospital having first operation for cataract were diabetics and that diabetes mellitus was diagnosed as a result of cataract in 28 per cent. of diabetic patients. Osuntokun, Akinkugbe, Francis, Reddy, Osuntokun, and Taylor (1971) reported that, during follow-up of 832 Nigerian diabetics, 8.7 per cent. developed cataracts, but many of them have not been treated surgically. It was also suggested that the high prevalence of cataract in treated Nigerian diabetics was due to poor control of the diabetic state, a factor which is known to predispose to the development of cataracts (Beckett and Hobbs, 1961; McGuinness, 1967). The development of lens opacities before the age of 40 (enough to interfere with vision) is said to be uncommon in most Caucasian races (Caird and others, 1969), but Lerman (1964) commented on the increasing frequency of presenile development of cataract in tropical countries. This study suggests that presenile cataracts are common in Nigerians but are

not necessarily due to diabetes mellitus. Rodger (1959) suggested that the high prevalence of senile cataract in comparatively young West Africans may be due to malnutrition and nutritional deficiencies.

Couching, an ancient method of treating cataracts first practised by Indian physicians (Sood and Ratnaraj, 1968), in which the lens is dislocated by inserting a sharp instrument into the eye, is still being practised in Nigeria by the native medicine man and was responsible for dislocation of the cataract in five eyes in this series. It is hoped as people become more aware of the therapeutic and curative facilities that can be provided by modern ophthalmological methods, there will be fewer of such cases.

Cataracts developing as a result of chronic uveal inflammation were found in eleven patients, and the investigation of such patients rarely yields positive results. Chronic onchocercal ocular infection was thought to be of aetiological significance when microfilariae of *Onchocerca volvulus* were identified by microscopy in preparations of skin snips of patients.

The complications encountered in this series are at first glance more severe than one might expect; but when one takes into account the fact that the study includes a mixed group of uncomplicated and complicated cataracts, the results are not unexpected. The percentage incidence of vitreous loss, 3.3 per cent. of all eyes is the same as that reported by Caird, Hutchinson, and Pirie (1965). In our series, the percentage incidence of 5.9 per cent. for both hyphaemia and iritis falls within the wide variation reported in several series of 6 to 24 per cent. for hyphaemia and 4 to 17 per cent. for iritis (Beckett and Hobbs, 1961; Greaves, 1962; Caird and others, 1965; Kirmani, 1964). Whiston (1967) reported an incidence of 0.57 per cent. of postoperative infection in cataract patients who had preoperative topical prophylactic antibiotics. Our results compare favourably with his study, with an incidence of 0.5 per cent. after topical and systemic prophylaxis. The incidence of postoperative glaucoma in our series is high at 4.4 per cent., compared with other series; for example, Caird and others (1965) recorded 0.9 per cent. in patients with senile cataracts.

It is encouraging and satisfying to note that ophthalmic surgery successfully reduced the blindness or the morbidity of blindness in this African population as is shown in the marked improvement in visual acuity in Nigerian patients after cataract extraction. Our impression is that the incidence of cataract is greater than is at present accepted in the Nigerian population. Osuntokun (1971) found prevalence rates of 1.3, 1.5, and 2 per cent. in the adult population in a randomized survey of three rural villages in Southern Nigeria.

### Summary

A study was made of the operative and postoperative complications of 567 cataract extractions in 411 patients, which made up 45 per cent. of all ophthalmic operations at University College Hospital, Ibadan, Nigeria, in 1968. The male to female ratio was 2 to 1. The cataracts were idiopathic presenile and senile (83.0 per cent.), congenital (8.8 per cent.), traumatic (4.4 per cent.), complicated (2.6 per cent.), and diabetic (1.2 per cent.).

Vitreous loss (3.3 per cent.) was the only complication during operation. Early postoperative complications included hyphaemia (5.9 per cent.), iritis (5.9 per cent.), striate keratitis (4.9 per cent.), shallowing of the anterior chamber (2.8 per cent.), iris

prolapse (1.0 per cent., and infection (0.5 per cent.). Late postoperative complications were glaucoma (4.4 per cent.), retinal detachment (0.8 per cent.), epithelial downgrowth (0.1 per cent.), and corneal dystrophy (0.1 per cent.).

Improvement in visual acuity was satisfactory and adequate in 90 per cent. of the eyes available for refraction during follow-up.

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