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Intraocular lens implantation the Nigerian experience

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Summary

Between April 1989 and December 1990, 51 patients underwent cataract extractions with implantation of intraocular lenses. A preliminary report of encouraging results is given in spite of limitations of equipment for microsurgical procedures.

Résumé

Entre Avril 1989 et Dec 1990, anquant et-un (51) patients subit cataracte extractions avec implantation des intraocula lentilles. Un préliminaire rapport d'encourage resultat et donné inspite de limitations de equipment pour microsurgique procédures.

Introduction

At the University College Hospital, Ibadan, the first intraocular lens (IOL) was implanted in April 1989. In the next 21 months, 51 intraocular lenses were implanted, 84% for unioocular cataracts; only 9.8% of which were traumatic in origin. The largest group of patients with unioocular cataracts had mature senile cataracts (70%) with good vision in the other eye.

Postoperatively, the best aided visual acuity was 6/18 or better in 31 patients (61%) in spite of limitations of microsurgical instruments. Some patients defaulted from follow-up, presumably because their unaided visual acuity was reasonable, thereby preventing assessment of the best aided visual acuity by refraction.

Materials and method

51 patients were carefully chosen from the clinic to have cataract extraction and IOL implantation. The patients were mainly those with unioocular cataracts, 43 patients (84%), although 8 patients (16%) had bilateral cataracts who were chosen because they would not have been able to afford aphakic glasses.

The IOLs would not have cost the patients any extra expenses as these were donated to the hospital. Some of the patients had traumatic unioocular cataracts (9%) but the majority of the unioocular cataracts were senile in origin (70%) with the vision in the other eye at 6/12 or better.

All the patients had their corneal endothelium screened using the slit lamp at the highest magnification, as the specular microscope was not available. Any patient with cornea guttata or enlarged, irregular endothelial cells were excluded. Unioocular cataracts were mainly chosen because there was no other optical correction for unioocular aphakia available in Ibadan. Aphakic glasses were out of the question because of optical intolerance for unioocular aphakes and contact lenses could only be fitted in Kano and Lagos. Unfortunately, contact lenses in Nigeria are expensive, beyond the reach of most of our patients. Hygiene and understanding of sterility of the contact lenses is poor in our patients who are mainly illiterate. ECWA in Kano produces the cheapest contact lenses but the distance of over 600 miles with the cost of travelling is daunting to our patients who are generally poor. Also, the long term cost of maintaining contact lenses as regards sterilising solutions is beyond these poor patients.

Anaesthesia was mainly local (29 patients) except in young patients and older anxious patients in whom general anaesthesia was deemed necessary. A donated Welsh operating microscope was used to perform an extracapsular cataract extraction under Healon. This included washout of the soft lens matter by an irrigating aspirating method using Balanced Salt Solution (BSS) with adrenalin in the first 41 patients and Normal saline with adrenalin in the last 10 patients. The IOL was introduced under Healon into the posterior chamber and the pupil was constricted with Miochol. The Healon, BSS, Miochol and IOLs were donated to the hospital. Subconjunctival Gentamycin and Depo-Medrone (Methyl prednisolone acetate) were injected at the

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end of the procedure. Postoperatively, steroids and antibiotics were continued topically. The pupil was moved every morning for the first 4 days postoperatively with tropicamide 1% and Phenylephrine 10%, the tropicamide was continued three times daily thereafter. The power of the lenses used varied from 17-25 diopters, all were posterior chamber lenses (IOLAB Sinsky J-loop and SURGIDEV J-loop). Ultrasonic measurement of the axial length of the eye and keratometric readings were available for 26 patients using the facilities on "ORBIS", a plane fitted with ophthalmic equipments which visited Ibadan during the period under study. The remaining 25 patients who did not have biometric readings had 21 diopter lenses implanted if they had never worn distance glasses in the past. Most patients were discharged a week postoperatively, except those with severe uveitis. They were then, reviewed in clinic at 2 weeks, 6 weeks, 3 months postoperatively unless there were other reasons to see them more often. Refraction was done on each patient at 6 weeks postoperatively and then at 3 months by which time most patients were off their post operative drops. The prescription for glasses was then given at 3 months. Immediately post-operatively, topical dexamethasone was instilled every two hours for the first week and reduced to four times daily until postoperative uveitis had considerably reduced. Thereafter, topical betamethasone was instilled with decreasing frequency over the next few weeks. Most patients had to have the steroids continued until about 3 months postoperatively, by which time the antibiotics and tropicamide would have been stopped.

Results

51 IOLS were implanted, all were posterior chamber lenses. 34 were males and 17 were females, a ratio of 2:1. The age range of the patients was 11-78 years, the age groups are shown in Table 1. The youngest patient was 11 years old and only 3 patients (6%) were under the age of 30. The aetiology of the cataracts are listed in Table 2. Visual acuity was count fingers or worse in all the eyes operated upon. Visual acuity in the good eye, not operated upon, was 6/12 or better except in those 8 patients who had bi-lateral senile cataracts.

Table 1: Age groups

Age group (years)	Number
10 - 15	1
16 - 20	1
21 - 30	1
31 - 50	9
over 50	39
	51

Table 2: Type of cataract

Type of cataract	Number
Unioocular senile	30
Unioocular presenile (40 - 49 years old)	6
Unioocular traumatic	5
Unioocular developmental	2
Bilateral senile	8
	51

Table 3: Final visual acuity without correction

Visual acuity	Number
6/9 or better	7
6/12 - 6/18	10
6/24-6/36	18
6/60	6
Count fingers	8
Hand movement	1
	50

Note: One patient did not come for post operative follow-up at all.

Table 4: Final visual acuity with correction

Visual acuity	Number
6/9 or better	18
6/12 - 6/18	13
Handmovement	1
	32

31 i.e. 61% of all patients operated

Note: 19 patients did not come to the refraction clinic for their post-operative refraction.

The final visual acuity is shown in Table 3 without correction and Table 4 with correction. Final corrected visual acuity was 6/18 or better in 31 patients (61%). 19 of the 51 patients did not come to the clinic to obtain their best corrected visual acuity and so they were excluded from Table 4. The patient with hand movement vision had developed corneal decompensation.

Table 5: Complications

Complications	Number
Difficult insertion of IOL	1
Inferior zonular tear	1
Positive vitreous pressure	2
Large posterior capsule opacity	1
Small hole in posterior capsule (from previous gunshot)	1
Small tear in posterior capsule	1
Small iridodialysis	1
Post operative severe uveitis	26
Post operative increase IOP	2
IOL dislocation	7
Striae or mild corneal oedma	13
Corneal decompensation	1

Table 6: Causes of poor vision

Causes of poor vision	Number
Thickened posterior capsule	3
Marked astigmatism	3
Corneal decompensation	1
Fibrous band in front of IOL	1
Moderate optic atrophy	1
Diabetic maculopathy	1

The intraoperative and postoperative complications are listed in Table 5 and some of the causes of poor vision are listed in Table 6. Of the complications, 2 out of the 7 IOL dislocations were resolved by intensive dilatation and then constriction with the patient lying supine on a flat bed, as the dislocations occurred 2-3 days operatively. 5 had the edge of the optic in front of the iris nasally or temporally, several weeks postoperatively. These were left alone as the lenses were stable although there was an increase in astigmatism.

Follow-up of patients was reasonable, only one patient did not turn up for any follow-up appointment and 18 others turned up for follow-up but did not keep their refraction appointments. They have since not turned up for other appointments and we suspect that due to the fact that their vision has been tremendously improved (10 of them has unaided visual acuity of 6/24 or better), they may be satisfied with their level of unaided vision.

Discussion

The first intraocular lens to be inserted into a human eye was done by Ridley in 1949[1]. This was a posterior chamber lens, as Ridley felt that "the correct place for an intraocular lens is where nature intended, behind the iris"[2]. Because of multiple postoperative complications, this lens design was abandoned[3]. In 1953, Strampelli introduced an angle — supported anterior chamber lens[4], and in 1957, Binkhorst introduced an iris — supported anterior chamber lens (four loop Binkhorst lens)[5].

Intraocular lenses are the best answer for the unioocular cataract patient in our setting as aphakic glasses cannot be prescribed in view of the diplopia that results from the high degree of anisometropia. Contact lenses, the other option for unioocular aphakia

are expensive and can only be fitted in two cities in Nigeria, Kano and Lagos. Solutions for contact lenses are not readily available and simple hygiene and sterility are still a problem in our setting. However, IOLs are still a luxury, so far, we have depended on donated lenses from philanthropic organisations. Also, the procedure is more time consuming and requires more equipment and surgical expertise. The initial cost of setting up an Ophthalmic microsurgical unit in most of our hospitals is beyond the existing budget of the hospitals. The hospital where this study took place was fortunate enough to have had donations of the Welsh microscope and other consumables used during the period of the study.

Sixty-one per cent of our patients had an aided visual acuity of 6/18 or better[6]. Our results may have been better than what we obtained if all the patients turned up for the refraction clinic. 19 patients did not turn up for refraction and one of the patients did not turn up for any follow-up appointment after discharge from the ward. Unfortunately, one patient ended up worse off postoperatively, he is the only patient that has developed corneal decompensation to date. He had corneal oedema immediately after surgery, which later proceeded to a full blown corneal decompensation. He was the first patient to have an IOL implanted here and we had a lot of problems improvising with non-microsurgical instruments thereby increasing manipulation that resulted in intra-operative corneal endothelial damage. We have since obtained some micro-surgical instruments. Mild corneal oedema and striae appeared in 13 patients (25%) immediately postoperatively but these cleared completely after a few days.

Corneal decompensation is decreasing in incidence after IOLs due to better microsurgical techniques but it is still a well recognised complication of IOL implantation[7]. Postoperative severe uveitis occurred in 26 patients (51%) even though at surgery, no soft lens matter was seen to be left behind. It is a well documented fact that the African eye develops a more severe postoperative uveitis than the Caucasian eye[6], probably due to the increased pigmentation of the iris. The use of some non-microsurgical instruments in our cases may also have been a reason for the increased uveitis. This aspect could be improved by the use of micro-surgical instruments only and little intraoperative manipulation to reduce iris touch.

In 5 out of the 7 dislocated IOLs, the iris got stuck to the anterior capsule remnant to the dilated position. On pupillary constriction, the optic of the IOL became partially dislocated in front of the iris, but fortunately, this occurred nasally and temporally. The IOLs therefore remained stable although there was an increase in astigmatism. Dislocation of the IOL is also a well documented complication of IOL implantation[8]. None of our patients developed any degree of endophthalmitis as reported in other series[9,10].

In conclusion, intraocular lens implant are the best means of optically correcting unocular cataracts in the African setting. Although we had a few problems at the initial stage, we, as well as the patients who have had the opportunity of an IOL implantation have found the results sufficiently encouraging to continue with IOL implantation in selected patients.

The constraints of using IOLs still remain. These include the cost of equipment (operating microscope and microsurgical instruments), as well as the training of personnel. In our environment, non attendance at post-operative follow-up clinics is still a problem and so the patients would need to be educated regarding the type of complications that could occur if they fail to attend clinic appointments.

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