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<td>EZE, B.I</td>
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7. CATARACT EXTRACTION WITH INTRAOCULAR LENS IMPLANT: EARLY EXPERIENCE IN UNIVERSITY OF NIGERIA TEACHING HOSPITAL (U.N.T.H.), ENUGU, SOUTHEASTERN NIGERIA.
Cataract Surgery Audit - Enugu


CATARACT EXTRACTION WITH INTRAOCULAR LENS IMPLANT: EARLY EXPERIENCE IN UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL (U.N.T.H), ENUGU, SOUTH-EASTERN NIGERIA

By

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Department of Ophthalmology, University of Nigeria Teaching Hospital (U.N.T.H.), Enugu.

SUMMARY

Objective: To audit our early experiences of cataract surgery with intraocular lens implant, in the University of Nigeria Teaching Hospital (U.N.T.H.), Enugu.

Methods: In a retrospective, non-comparative, one-centre study, the records of all patients who had cataract extraction with intraocular lens implant between January 2001 and October 2002 and were followed up for at least six weeks were analyzed. Information on age, sex, type of cataract, co-existing ocular and systemic diseases, pre- and postoperative visual acuity and postoperative complications was collected.

Results: Forty-four eyes of 40 patients were studied; mean age of the patients was 52.2 years (range: 8-87 years).

Thirty-seven eyes had age-related (senile) cataract, 2 post-walter cataract and 5 traumatic cataract. Associated systemic disorders were diabetes mellitus (4), hypertension (4), anemia (1), rheumatoid arthritis (1) and diabetes and hypertension (1).

Preoperative visual acuity was 0.01 CF in all the patients.

Eight weeks post-surgery 14 eyes had no data on presenting (uncorrected) visual acuity while 9 had presenting visual acuity of 0.3 or more. With refraction done with visual acuity of 0.3 or more increased to 14 out of the 18 who had refraction (77.8%).

Cause of persistent poor visual acuity was ascertained in only 1 eye and was epiphora.

Postoperative complications included corneal oedema (9%), astigmatism (18.2%), poor wound apposition (18.2%) and endophthalmitis (2%).

Conclusions: The final visual outcome in 77.8% of patients who had refraction post-surgery was good (6/18). Confirming that Cataract surgery with IOL implant is safe and effective in restoring vision to the cataract blind in this part of the world.

Most of the cases of postoperative inflammation were corrected with refraction.

Keywords: cataract extraction, intraocular lens implant

INTRODUCTION

Cataract is the leading cause of bilateral blindness worldwide, accounting for 50% of all blindness. The prevalence of cataract blindness is on the increase due to global population growth and increased longevity resulting from improved medical care. In various studies in Nigeria, cataract was ranked the leading cause of blindness. Paul and coworkers, in a national survey of blindness in the country found that cataract accounted for 45% of blindness and 57% of low vision.

Incident cataract blindness is also on the increase because the cataract surgical rate lags behind the incidence of operable cataract blindness. However, other social, economic and cultural factors affect the cataract surgical uptake even when the services are available.

The definitive treatment for cataract blindness is surgery. As yet, there is no known efficacious medical therapy that can retard the progression or cure fully developed cataract.

Surgical intervention for vision restoration in cataract has been practiced by several and
†Intraocular lens implant for correction of surgical aphakia could be inner chamber intraocular lens (IMCL), posterior chamber intraocular lens (PCIOL) or scleral-fixated intraocular lens. Choice of implant (EJL) type and implantation technique depend on patient factors, surgeon's experience and preference and availability of appropriate equipment and consumables. The visual outcome is graded after full spectacle correction into the following categories by WHO: Good outcome: 0.6 - 0.9/1 vision; Borderline outcome: < 0.6/1 - 0.4/1 and poor outcome: < 0.4/1.

Intraocular cataract extraction with intraocular lens implant has been the method of cataract surgery of INJUTL, Ethiopia since 2001. The objective of this study is to do an audit of the initial cataract surgeries with intraocular lens implant done at INJUTL, Ethiopia, with regards to visual outcome with and without refraction eight weeks post-surgery and the associated ocular complications.

PATIENTS AND METHODS

We retrospectively studied all the 40 patients who had cataract extraction with intraocular lens implant between January 2001 and October 2002. They were all followed up for a minimum of eight weeks postoperatively.

Data relating to age, sex, types of cataract, coexisting medical and systemic disease, pre- and postoperative visual acuity and postoperative complications were collected. Limitations of cough, constipation, bladder and rectal obstruction were sought for as appropriate for patient's sex and age.

Prophylactic evaluation of each patient included visual acuity measurement using the Snellen's Chart; light projection with test; tonometry using the Goldmann application tonometer; fundoscopy through dilated pupils using the direct ophthalmoscope; ultrasonic biomicroscopy; systemic blood pressure measurement and urinalysis. Ultrasonic pre-operative determination of required intraocular lens (IOL) power was not done.

Each patient was admitted at 24 hours before surgery. Pre-operative medications included tabs Acetaminamide 500mg the night before surgery repeated on the morning of surgery; g-DDT chloraamphenicol or Gentamicin. When necessary some patient received either bronchoconus Lmg or diprivicom 10mg tablet the night before surgery to allergy anxiety. Postoperative dilatation was achieved with either gDDT cyclosporine 1% or imipramine or phenylephrine 2.5%.

Anesthesia was local in all but two patients. Routes of administration were retrobulbar and facial nerve block using either plain xylocaine 2% or xylcaine 2% mixed with Ephedrine 0.5%. The addition of hyaluronidase was optional.

Two very young patients had their cataract surgery under general anesthesia. All the operations were performed using the SO 111 standard coaxial operating microscope with coaxia-illuminatation and zoom magnification (Scannipics: Austria-Australia).

The standard procedure for extracapsular cataract extraction was followed. However, while five eyes had centred suture the rest had finled suture. The anterior capsulotomy was done using the can-opener technique in 17 eyes and Fred Hollows Foundation technique in the rest. In the former, IOL was inserted under a visco-elastic and under air in the latter.

Mochol is not available in the centre and therefore, was not used. Where construction of the pupil was required preoperatively gauze Plasterine 4% was used. Irrigation was with normal saline.
The isolated or concomitant isolation was closed either with continuous or interrupted 900

After surgery all concomitant postoperative infections and decubitus ulcers were given topical antibiotics (rifampicin or clindamycin) and VS growth (maximal dosage of betamethasone) were modified before the eye was patched. The eye was usually left unpatched until the next day.

Postoperative medications included systemic antibiotics administered 6 hourly, 2 hourly topical steroids for 4-7 days then 6 hourly for the next 8 weeks and systemic antibiotics 3 times night. The use of Non-
Steroidal anti-inflammatory agents (NSAIDs) and analgesics postoperatively was decided on
surgery. The surgeons who used NSAIDs used piroxicam. Some surgeons did not routinely
view pain relievers postoperatively. Where a patient complained of same form of discomfort
such surgeons placed the patient on paracetamol tablet as required.

On each postoperative day, each patient had a detailed examination which included visual
record measurements using the Slit-Lamp biology and ophthalmoscopic assessment. Central clarity, depth of the activity in anterior chamber, type and size of retinal and posterior of IOL; and fundoscopy using the direct ophthalmoscope. Discharge was usually on the 2nd to 4th postoperative day in uncomplicated cases.

After discharge, patients were seen 2
weeks later and thereafter followed-up every 4 weeks. On the 8th week post-surgery they were recontacted and discharged from the clinic.

However, in the presence of any prospective complication they were seen more frequently.

Postoperative

A total of 44 eyes of 44 patients had cataract surgery with intraocular lens implant during the study period. Follow-up of all the patients, was for at least 8 weeks.

Twenty three (57.7%) were females while 26 (42.3%) were males (M:F=1:1.15). The age range was 50.87 years with a mean of 50.2

years. The pre-invasive activity in all the patients was 0.01 counting fingers (C0).

Of the 44 eyes, 37 (84.1%) had corneal related (endo) cataract, 3 (6.8%), post-sclerotic cataract and 3 (6.8%), traumatic cataract. Four patients had bilateral cataract extraction. A +2.00D posterior chamber intraocular lens (ICOL) was implanted in each of 42 (95.4%) eyes and a +1.00 posterior lamellar intraocular lens (ICOR) in each of 2 (4.6%) other eyes. Primary ACOL implantation was restricted to following large posterior capsular tear with vitreous loss during extracapsular cataract extraction.

TABLE 1: ASSOCIATED SYSTEMIC DISEASES IN THE PATIENTS

<table>
<thead>
<tr>
<th>Associated Disease</th>
<th>Number of Patients</th>
<th>% of Total Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Mellitus</td>
<td>4</td>
<td>9.1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Atherosia</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Thrombosis</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Both Diabetes And Hypertension</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>No Link</td>
<td>29</td>
<td>67.9</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Considering systemic disease was documented in eleven patients. The commonest occlusive systemic diseases were hypertension and diabetes (table 1). Only 3 eyes were recorded to have overt anginal coronary disease and these were plaques in the 45 years and old veteran (2 eyes).
**TABLE 2a**: POST-REFRACTION VISUAL ACUITY FOLLOWING CATARACT SURGERY WITH IOL IMPLANT.

<table>
<thead>
<tr>
<th>Visual Acuity</th>
<th>Pre-refraction</th>
<th>Post-refraction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6/6E</strong></td>
<td>0.6 (60)</td>
<td>2.8 (4.5)</td>
</tr>
<tr>
<td><strong>6/12-6/30</strong></td>
<td>0.2 (60)</td>
<td>5.2 (38.5)</td>
</tr>
<tr>
<td><strong>6/30-6/60</strong></td>
<td>2.7 (60)</td>
<td>10 (56.5)</td>
</tr>
<tr>
<td><strong>&lt;6/60</strong></td>
<td>5.7 (44.7)</td>
<td>15 (40.5)</td>
</tr>
<tr>
<td><strong>Ne O.D.</strong></td>
<td>4.8 (50)</td>
<td>5 (50)</td>
</tr>
<tr>
<td><strong>Ne O.S.</strong></td>
<td>4.9 (54)</td>
<td>5 (54)</td>
</tr>
</tbody>
</table>

**TOTAL**: 44 (100.0) | 54 (100.0) | 44 (100.0) | 44 (100.0)

**Notes**: Figures in parentheses are percentages.

Post-operatively, the uncorrected visual acuity steadily improved over time (table 2a). Refraction outcome improved the visual outcome. Only one of the 50 eyes that were retracted had a corrected visual acuity of <6/60. Twenty six eyes had no postoperative refraction data.

The only intraoperative complication in this series was posterior capsular rent. The commonest postoperative complication (table 3) was capsule colliombinu (91%).

**TABLE 3b**: POSTOPERATIVE COMPLICATIONS

<table>
<thead>
<tr>
<th>Time of Presentation</th>
<th>Complication</th>
<th>Number of Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early (&lt; 1 Week)</td>
<td>Corneal Edema</td>
<td>19</td>
<td>91.96</td>
</tr>
<tr>
<td></td>
<td>Posterior Vitreous Detachment</td>
<td>8</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>Epiretinal Membrane</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>Vitreous Cut</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Irregular Pupil</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Late (1-6 Weeks)</td>
<td>Pseudophakic Astigmatism</td>
<td>8</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>Endothelial Dystrophy</td>
<td>2</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>Cortical Dystrophy</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>Endothelial Dystrophy</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>Uveal Trabeculoplasty</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>Wound Gape</td>
<td>1</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Some of these complications were more than one complication.

**Postoperative Iduetasia was the order of 120 µm and all but one was regular.**

**DISCUSSION**

Cataract extraction with intraocular lens implant is a relatively new technique in tropical Africa compared with Europe and America where it has been the standard for many decades. The local experience with IOL implantation surgery is yet unfolding with only six reported case-series in Nigeria. The present study of 40 patients is the fourth largest case series reported locally. Bekhite had 61 patients, Agbegbe and Adejir had 66. This is in sharp contrast with the size of case-series reported in developed countries. Inadequacy of surgical manpower, lack of awareness, fear of cost and surgical complications are major barriers to high cataract surgical uptake and output in third world countries.

The age range of our patients of 8-87 years is comparable with that reported by Nwosu and Bekhite that have differed from that in studies by Agbegbe and Adejir whose patients were younger. However, this study recorded the youngest age to receive IOL, typically 9 years, younger than that reported in Nwosu’s case-series (79 years) at the inception of IOL therapy. The very young eyes were lined as unsuitable for this form of treatment but these young days young age is no longer a barrier to IOL implantation. As evidence, though, the elderly (50 years and above) who are universally more at risk of cataract, constituted the bulk (65%) of the patients in our series.

There were more female patients in our series; M: F = 1:1.35. Nwosu and Adejir made similar observations. McCollin et al. in a large series of 1000 patients, found that 61.2% were females with 94.2% of the aged above 60 years. Bekhite found same sex and age distribution similar to our statistics.
age distribution as in our series. This is possibly because there are more women of that age group in the Nigerian population. It is also possible that the women have a better health service seeking habit and are easier to convince to accept eye surgery from the men.

However, Dowdell et al. observed a sex ratio M:F = 3:2 with mean age of 57.9 ± 14.29 years. Associated systemic disease was present in 11 (25.6%) patients in our series compared with 53.3% reported by Nwosu in an Ogunilha study. Such diseases do not seem to have affected the surgical outcome in our patients.

Nwosu11 recorded co-existing cardiac stenosis involving the aorta, cyanosis (cyanotic Erys) and diabetes mellitus (1 eye), while Dowdell et al.12 reported cases of smooth degeneration, 3rd, 4th phalangeal (3), hypertrophic cardiomyopathy (1), diabetic retinopathy (1) and cerebral aneurysm among others.

Co-existing ocular diseases could explain the persistent reduced postoperative visual acuity in some of the patients. It is therefore necessary to search for them preoperatively in order to ensure adequate patient counseling and prognosis.

Postoperative visual acuity was ≤ CF in all our patients compared with ≤ 6/36 in Nwosu's series and ≤ 6/24 in the Kaduna7 report. Dowdell et al.12 however reported a similar pattern of postoperative visual acuity of ≤ 6/36 in all their patients.

In our institution only those actively blinded by cataracts (VA < 6/30) are offered cataract surgery with (C) implant.

Postoperatively, presenting visual acuity postoperatively steadily improved over time. This is similar to the findings in other series.11,12. Reduction made this eye better. If all calculations are based on the total number of eyes with available data only, then 30% of such eyes had uncorrected visual acuity of ≤ 6/60 at 6 months postoperatively, while 77.9% had postoperative corrected visual acuity of > 6/18. Ageeba11 reported uncorrected and corrected visual acuity of ≤ 6/60 in 11% and 33.3% of the patients respectively; Heldbrunner7 8.8% and 36.1%. While Adegoke12 reported that 16.7% had uncorrected visual acuity of ≤ 6/12, Nwosu11 reported 26.6% using the same cut-off visual acuity at the 6th postoperative week.

The visual acuity findings in these studies may not be compared with those in our series because of the differences in the cut-off values for visual acuity and the duration of follow-up.

In Nwosu11, at the 6th postoperative week 54.6% of patients had uncorrected visual acuity of ≤ 6/18 while 77.1% had corrected visual acuity of ≥ 6/18. Heldbrunner7 reported 55% of corrected visual acuity of ≥ 6/18.

In some other studies corrected postoperative visual outcome were recorded in ways similar and comparable to ours. These include: VIA ≥ 6/18 (Miduburwa7 80.1%; Nwosu11 80.5%; Ageeba11 75.0%); VIA < 6/20 (Miduburwa7 60.6%; Nwosu11 1.2%).

The better results observed in the Miduburwa and Nwosu studies as compared to those in our series could be due to surgeon's experience, better surgical skills, better patient selection and availability of equipment for pre-operative biopsy which enabled surgeon implant IOL of relatively more accurate power. Our centre has no equipment for preoperative biopsy.

Generally, however, reduced visual acuity even after refraction resulted from either surgical complications or pre-existing ocular diseases in some of our cases where data was available.

Twenty six (59.1%) eyes had no refraction data in our series. This percentage of refraction non-conversion is higher than the 30% in a Ogunilha study9 and 14.3% in an Abja-Eyewa series.12

It was not possible to ascertain the reasons for this unavailability of refraction data. From our experience however, the patients could include patients default from follow-up because of dissatisfaction with the visual outcome after surgery.

Contrary, Nwosu11 reported refraction of 100% in Ogunilha study which he
attributed to excellent patient compliance to follow-up following adequate motivation.

The postoperative complications of posterior capsular rent and vitreous loss occurred in 2 eyes (4.5%). This complication necessitated the use of ACDIOL. This finding is similar to that by other workers (Nwosu et al., 1996; Behbehani, 1996). Posterior capsular rent occurred in 1 case and 2 cases of Kadara and Fisdah patients respectively.

In Npaf, only a case of posterior capsular tear with vitreous loss was reported out of 207 cataract extractions with IOL.

Postoperative astigmatism was the second most common complication in our series as it also was in Nwosu's; although the latter author appeared to have found more postoperative astigmatism (34.1%). Post-operative astigmatism following extracapsular extracapsular extraction with posterior chamber IOL implant is often due to retorting technique and slitting of the IOI secondary to one haptic being in the capsular bag while the other is in the sulcus. Although Behbehani reported that in spite of the postoperative refraction, 5 out of 7 of his patients with astigmatism still had astigmatism which ranged from 0.25D - 3.50D; post-operative astigmatism usually improves with resection.

Poor wound apposition, which complicated the surgery in 2 (18.25%) patients in our series (unaided first postoperative day), was not severe enough to require a return to theatre for re-suturing. This complication may account for some of the postoperative astigmatism reported in the IOL in the late postoperative period (4-6 weeks).

The commonest postoperative complication encountered in this study was corneal edema. Seen in 91% of the patients on the first postoperative day. It is probably due to the use of normal saline as irrigating fluid secondly to handling of the cornea, including mechanical damage to the endothelium during intracocular manipulations. The series by Darnold et al. also had transient corneal edema in the postoperative complications. However, Nwosu, Rajkumar, and McClellan reported astenous events as the commonest postoperative complication in their studies. While Nwosu had postoperative astigmatism (31.5%) as the second commonest complication in his series, Rajkumar had raised IOP and corneal endothelial (7.3%).

Corneal edema was easily treated with topical steroids and it resolved within 48-72 hours. In took days to weeks to completely resolve.

The Kadara experience showed a different picture of complications with pigment deposit on IOL consisting (40%) and iridocyclitis 4%. The early postoperative complications (1 week) reported in our series are similar to the report of the Agency for Health care Policy and research and the American Academy of Ophthalmology. There are often sufficient significant complications at one week to justify a routine postoperative follow-up within this period.

In the late postoperative period we recorded one (2.3%) case of posterior capsular opacification (PCO) while Nwosu recorded 3 (3.5%) and Adeja 4%. These differences could be explained by variation in the duration of follow-up.

The raised IOP recorded in the 2 eyes of our patients in the late postoperative period was controlled with Timolol 0.5% eye drops and acetazolamide tablets.

The only case of endophthalmitis reported in this series eventually lost vision in spite of intensive intravenous, oral, subconjunctival and topical antibiotics (Ciprofloxacin, Gentamicin, Chloramphenicol, and Nalidixic acid). Currently, the mainstay of treatment of postoperative endophthalmitis is intravitreal antibiotics alone or in conjunction with percutaneous vitrectomy.

CONCLUSION
The final visual outcome in 71.8% of patients who had reconstruction post cataract surgery with intracorneal lens implantation was good (6/18). Severe complications were few and
most postoperative antibiotic not needed
were correlated with resolution.
We can summarize that the surgery is
safe and effective and we recommend the
procedure to all cataract surgeons.

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37


