

Combined Cataract and Glaucoma Surgery: An assessment of 68 eyes in an eye hospital in Lagos, Nigeria

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SUMMARY

Objective: To assess the best corrected visual acuity and average intraocular pressure at 6 months and one (1) year in patients with cataracts in glaucoma that had combined trabeculectomy and cataract surgery with lens implantation.

Methods: A retrospective review of the case notes of patients who underwent combined glaucoma and cataract surgery with lens implantation in a private eye centre, The Eye Foundation Hospital, was carried out, using the following parameters: age, pre-operative intraocular pressure (IOP), post-operative intraocular pressure preoperative and postoperative visual acuity, the number of preoperative antiglaucoma medications, and the number of postoperative antiglaucoma medications at one (1) year or more.

Results: 68 eyes of 67 patients were assessed during the study. Thirty-one (44.93%) had preoperative visual acuity (VA) of light perception (LP) -6/60 (very poor). At 6 months post operatively, 50 patients were followed up, 40% (n=20) had a visual acuity of 6/12-6/5 (very good). At one year, 37 patients followed up, of those, 48.65% (n=18) maintained a visual acuity of 6/12-6/5 (very good). Mean preoperative intraocular pressure was 18.96 ± 7.38 mmHg. At 6 months, mean IOP was 11.77 ± 3.61 mmHg; one (1) year postoperatively IOP was 13.93 ± 3.21 mmHg. There was a statistically significant improvement in VA ($p < 0.05$) and intraocular pressure ($p = 0.05$).

Conclusion: Combined trabeculectomy and cataract surgery should be considered as a good operative choice in elderly patients who present with significant cataracts in glaucoma and who require two or more antiglaucoma drugs to maintain a normal intraocular pressure.

Though a more difficult operation than either procedure alone, good results can be achieved in experienced hands with significant improvement in VA ($p < 0.05$) and Intraocular pressure ($p = 0.05$).

Key words: combined cataract / glaucoma surgery, intraocular pressure, visual acuity

INTRODUCTION

Combined cataract and glaucoma surgery has had a long and controversial history, however recent advancements in surgical techniques have made it more attractive, especially to elderly patients with limited ability to tolerate two surgeries, or those on two or more medications to control IOP. Combined surgery is also recommended in patients who need immediate pressure reduction – eg, in monocular patients with visually significant cataracts and advanced glaucoma.^{1,2}

In Nigeria, where patients often present with visually significant cataracts and fairly advanced glaucoma, combined surgery is also a cost-effective.^{3,4,5} Distance to the eye hospital and the cost of travelling among elderly people can be serious constraint. Combined surgery diminishes the likelihood of a post operative IOP spike with subsequent visual field (VF) loss or vein occlusion which can occur when cataract surgery is carried out alone. In fact IOPs as high as 30mmHg or more⁶ have been found to occur in about 55% of non-glaucomatous eyes and 77% of glaucomatous eyes on the first postoperative day.

Combined surgery was not popular before microsurgery because of the complications encountered in full thickness glaucoma surgery where a flat anterior chamber was common.

In addition to microsurgery techniques, fine sharp needles which are now available enabling good wound closure. With an improvement in surgical techniques – guarded filtration, utilizing a superior scleral flap and posterior chamber intraocular lens – the flat anterior chamber is an unusual event. The risk of endothelial touch is greatly reduced with the use of posterior chamber intraocular lenses.⁷

Even though combined surgery results in a slower visual recovery than cataract surgery alone, the potential for visual rehabilitation is excellent in patients with severe glaucomatous damage.⁸

There is a lower occurrence of a bleb than when filtration surgery is done alone. Even though the procedure does not allow the patient to be completely weaned off medications

entirely, most patients achieve improved IOP control after surgery.^{9,10,11,12}

This study was carried out to determine the best visual acuity and IOP at 6 months and one year (or more) postoperatively.

METHODOLOGY

The case notes of patients who underwent combined cataract and glaucoma surgery from 1997 to January 2003 were obtained from the operation register of the Eye Foundation Hospital, Ikeja (EFH), a private eye centre in Lagos.

One hundred cases were obtained from EFH operation register; 68 eyes of 67 patients were selected for the study. The surgeries were carried out by five surgeons.

The following parameters were recorded: Age at time of the operation, right or left eye, gender, preoperative IOP, preoperative VA, the number of preoperative medications, the method of lens extraction – phacoemulsification or nucleus extraction – use of antimetabolites, postoperative IOP and VA at 1 day, 1 week, 4 weeks, 3 months, 6 months 1 year, and >1 year <=5 years, number of postoperative medications. Case notes with incomplete data were eliminated from the study. The results were analysed using Epi info statistical software.

RESULTS

Number of surgeries – Sixty-eight (68) eyes, 35(51.47%) right eyes and 33(48.53%) left eyes were operated.

Gender – Male to female ratio was 1.7 : 1, 42 male (62.69%) and 25 female (37.31%) patients.

Age – The 61-70 age group accounted for the highest number of eyes 46.27 % (n = 31); this was followed by the 71-80 age group, which had 26 eyes (38.80 %); the 51-60 age group made up 7.46 % of the study (n = 5). Those <50 years 2.99 % (n=2), and those between 81-90 years 4.48% (n= 3) represented the smallest segment of the study (see figure 1).

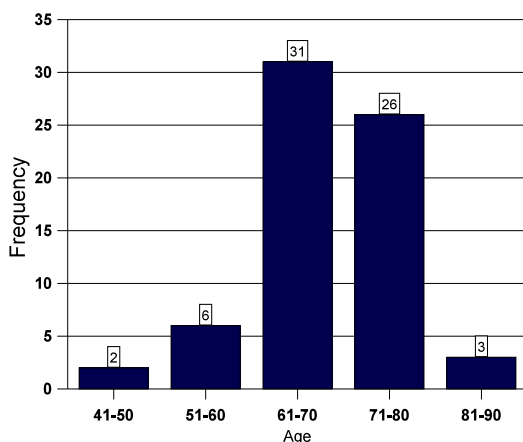


Figure 1. Frequency of age in study cohort

Pre operative medication. 47.06 % (n = 32) of the eyes were on two antiglaucoma medications; 25 % (n = 17) were on 3; while 19.12 % (n = 13) were on 1. Only 5.88 % (n = 4) were not on any medication; 2.94 % (n = 2) were on 4 medications.

Post operative medication. At one (1) year post op, 37 eyes were examined: 17 eyes (45%) were on one medication; 8 eyes (21.62%) were on two medications, 5 eyes (13.51%) were on 3; and 7 eyes (18.92%) were not on any medication.

Visual acuity (VA) was categorized into blind (no perception of light), very poor (perception of light, (PL - 3/60); poor (6/60-6/36); limited (6/36- 6/18); very good (6/12 - 6/5).

Pre operatively. 31 eyes (44.93%) had very poor (PL-3/60) VA; 18 eyes (26.09%) had poor VA; 13 eyes (18.84%) had limited (6/36 - 6/18); and 7(10.14%) had very good (6/12- 6/5) VA. No one was blind.

Post operatively, at 3 months. 60 cases were reviewed. Of these, 1(1.67%) was blind; 29(48.33%) had very good (6/12 - 6/5) VA; 13(21.67%) had limited (6/36 - 6/18); 4 (6.67%) had poor (6/60 - 6/36); and 13 (21.67%) had very poor (PL - 3/60) VA. (see table 1, figure 1)

At 6 months post op. 50 cases were seen. The highest number, 20 (40%) had very good VA (6/12 - 6/5); 15 (30%) recorded very poor (PL-3/60); 5 had poor VA (6/60 -6/36); 8 (16%) had limited VA; and 2 (4%) were blind. This result was statistically significant ($X^2=19.84$ df4 p=0.0004) (see table 1).

At 1 year post op, 37 cases were seen. 18 (48.64%) maintained very good VA with (6/12-6/5); 7 (18.92%) maintained limited VA (6/36 - 6/18); 3 (8.11%) had poor and 7 (18.92%) had very poor (PL-3/60) VA. This result was also statistically significant. ($X^2=27.34$ df4 p=0.0000) (table 1).

Table 1. Range of visual acuity in study cohort

VA	Pre Op (n)	Post Op 6 mths (n)	Post Op 1 year (n)
Blind	0	2	2
V. poor	31	15	7
Poor	18	5	3
Limited	13	8	7
V. good	7	20	18

Preoperative IOP. Mean preoperative IOP was 18.95 ± 7.38 mmHg (table 2).

Postoperatively – Intraocular pressures were not routinely measured on the first post operative day. Patients were

routinely placed on carbonic anhydrase inhibitors, either Oratrol (dichlorphenamide) or Diamox (acetazolamide) during this period.

- Mean IOP at one week was 10.25 ± 6.24 mmHg
- At three months the mean IOP was 13.07 ± 8.23 mmHg
- At six months, the mean IOP was 11.77 ± 3.61 mmHg, (statistically significant $\chi^2 = 50.24$ df7 $p = 0.0000$)
- At one year mean IOP was 13.93 ± 3.21 mmHg (statistically significant $\chi^2 = 17.48$ df7 $p = 0.014$)
- At >1 year =<5 years was mean IOP was 13.12 ± 6.65 mmHg
- There was a statistically significant difference between the preoperative IOP and the post op IOP.

Table 2. Range of intraocular pressure in study cohort

IOP	Pre Op (n)	Post Op 6 mths (n)	Post Op 1 year (n)
6 - 10	2	29	7
11 - 15	21	15	20
16 - 20	28	7	12
21 - 25	10	1	1
26 - 30	4	–	–
31 - 35	1	–	–
36 - 40	1	–	–
56 - 60	1	–	–

DISCUSSION

Combined cataract and glaucoma surgery has been suggested in patients with visually significant cataracts and advanced progressive glaucoma who have not stabilized on medical treatment or where medical treatment is not well tolerated.^{1,13}

Advanced age has been found by Tantino et al. to be a favourable prognostic factor for successful control of IOP after combined surgery.¹⁴ In our study, the 61-70 and the 71-80 year age group accounted for 47.6% and 35.7% of cases, respectively. Those less than 50 yrs accounted for only 3% of the study cases.

Even though combined surgery has been observed to have a slower visual recovery than cataract surgery alone, the potential for visual rehabilitation is excellent. This fact can be seen in the results obtained in this study; in which pre-operatively, 31 eyes (44.93%) had very poor (PL-3/60) VA, whereas at 6 months, 20 of 50 eyes (40%) recorded very good (6/12-6/5) VA and one year postoperatively, 18 of 37 eyes (48.64%) maintained very good VA. These results compare favourably with other studies carried out by Chen et al,⁽¹⁵⁾ in which they obtained a 46.13% improvement in VA. Rockwood et al,⁽¹¹⁾ found that 82.2% of their cases had

improved VA. The improvement in VA at 6 months ($\chi^2=19.83$ df4 $p=0.0004$) and 1 year ($\chi^2 = 27.34$ df4 $p = 0.0000$) was statistically significant.

Combined surgery is known to have a lower occurrence of bleb than filtration surgery alone, moreover, it has been found to have a long-term lowering of IOP, than if cataract surgery is done alone.¹² In this study, the mean pre-operative IOP was 18.96 ± 7.38 mmHg, but at six months and one year post-operatively, mean IOP was 11.77 ± 3.61 mmHg ($\chi^2=50.23$ df7 $p=0.0010$) and 13.55 mmHg ($\chi^2=17.48$ df7 $p=0.0140$). These results were statistically significant. Our results compared favourably with Chen et al.,⁽¹⁵⁾ who achieved a mean post-operative IOP of 12.72 ± 6.66 mmHg ($p<0.01$). Tantino et al⁽¹⁶⁾ concluded in their study of 141 eyes, that combined surgery normalizes IOP and improves VA in adults with co-existing glaucoma and cataract. Rockwood¹¹ reported a post-operative mean reduction of 5.5mmHg in IOP from the pre-operative values. Bubrow et al.¹⁷ also reported that combined surgery reduced IOP by 7.2 ± 4.6 mmHg compared with a reduction by 4.4 ± 3.3 mmHg when cataract surgery is carried out alone.

It has been found that most patients could not be completely weaned off their medication. Many however, achieved improved IOP control post-operatively, and required fewer medications. In this study, pre-operatively, 32 eyes (47.06%) were on at least two medications. Post-operatively, at one year, 45% (17 out of 37 eyes) needed only one medication. The difference was statistically significant ($\chi^2 = 12.86$ df3 $p = 0.005$). Other studies^{9,10,11,12,15,17} also confirmed a reduction in post operative medications.

Combined surgery has a great risk of intraoperative and postoperative complications than either operation performed alone. The most frequently reported complications are associated with ocular hypotony such as shallow anterior chamber, choroidal effusion and choroidal haemorrhage. Hypotony can be minimized by careful attention to secure scleral flap wound closure. With respect to the blind eyes in this study, one had a retinal detachment; the other developed malignant glaucoma and had a vitrectomy and then developed a large choroidal detachment. Initial VA was PL, this improved to hand movements before deteriorating from post-operative complications to total blindness. In combined surgery, there is a higher incidence of postoperative inflammation; this can be controlled with the meticulous use of topical steroids.

Although combined cataract and glaucoma surgery is a more difficult operation than either procedure alone, good results can be achieved in experienced hands. Each patient must be carefully assessed, a review of the patient’s glaucoma history must be undertaken – the extent of glaucomatous damage, status of glaucoma control and risk of postoperative nerve damage after surgery.^{2, 6, 18}

In summary, a significant improvement in visual acuity and IOP control and a reduction in the number of

antiglaucoma medications after combined cataract and glaucoma surgery was observed in this study. Reducing the number of antiglaucoma medications in the elderly, besides the considerable savings in the cost of medicine, has improved their vision and will definitely improve on the quality of life in this group of people.¹⁹

CONCLUSION

Combined surgery is beneficial in the long term control of IOP and in the prevention of visual field loss and thus should be considered for patients in whom long term pressure control at a lower level is desired to prevent further optic nerve damage.¹⁷ Where there is a paucity of resources as in a developing country like Nigeria, combined surgery is likely to be cost effective especially when cataracts present together with advanced glaucoma. Our results have shown a significant improvement in visual acuity and better IOP control with a reduction in the number of antiglaucoma medications.

Combined surgery should thus be considered as an operative choice in elderly patients who present with cataracts in glaucoma and who require two or more antiglaucoma drugs to maintain normal intraocular pressure.

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