

# Combined Extraction for Co-Existing Cataract and Glaucoma; Separate Incisions Versus Single Incision Approach

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**Background:** This study was designed to evaluate the best method for the surgical treatment of co-existing cataract and glaucoma.

**Aim:** The purpose of this study was to determine if there was any significant difference between the success rates of trabeculectomy when performed through either the same incision as for cataract extraction or when performed through a separate incision.

**Method:** Prospective study of twenty-four patients requiring cataract surgery with intra-ocular lens implantation, who also underwent the filtration surgery at the same time. Twelve patients out of these had their cataract surgery performed through a clear corneal incision, while the trabeculectomy was performed through a separate limbal incision. The other twelve patients were operated upon using only one incision at the superior limbus to perform the cataract surgery and the trabeculectomy.

**Results:** The visual improvement was similar in both the groups but the success rate of trabeculectomy was better in the former group.

**Conclusion:** A single incision approach for the combined extraction is acceptable, but using two separate incisions is a better option.

**Key Word:** Combined Extraction, Cataract, Glaucoma.

## Introduction

It is not uncommon to find patients with the primary open angle glaucoma who develop cataracts at some stage. The control of primary open angle glaucoma is often achieved with topical antiglaucoma medication alone. However, some patients also require Argon laser trabeculectomy as well for a satisfactory control of their glaucoma.

We aimed our study at both of these groups of primary open angle glaucoma. All of these patients had achieved satisfactory control of intra-ocular pressure without the need for having undergone the trabeculectomy procedure for this purpose. When these patients develop cataracts, they have to undergo the surgical removal of their cataracts. At this stage it is possible to perform the additional surgical procedure of trabeculectomy at the same sitting, with very little additional effort on the part of the surgeon and very little additional stress on the part of the patient.

Our study was designed to formally record the outcome of the cataract and glaucoma surgery in our setting, and to determine if there was any advantage of performing the surgery through a single incision or through separate incisions.

## Patients and Methods

A prospective study of the combined glaucoma and cataract surgery was undertaken. We included those patients in our study who presented with the primary open angle glaucoma as their initial problem. All patients who presented between January 1999 and February 2001 were included in this study. All of these patients were initially managed with the standard protocol of topical anti-glaucoma medication. Six patients were using only one type of topical medication, either a beta-blocker, or a prostaglandin analogue. Ten patients required both. The remaining eight patients required a third topical medication as well for maintaining their intra-ocular pressures below 21 mmHg. All of our patients had satisfactory control of intra-ocular pressure. They were scheduled to have the combined extraction procedure when they developed significant cataracts. The details of the procedure were explained to the patients and informed consent was obtained from each of them.

The patients having any other significant eye problem, like uveitis, or previously failed glaucoma surgery were excluded from our study.

appropriate medicines.

A post-operative follow-up examination was arranged on the first post-operative day, after one week, two weeks, one month, two months, three months, and six months. Topical steroid and antibiotic drops were continued till the anterior chamber became free of all inflammatory activity and the conjunctival bleb was also free of inflammation.

The eye examination on each visit included the recording of the visual acuity, examination of the filtration bleb, anterior chamber activity, and intra-ocular pressure.

### **Surgical Technique**

Local anaesthesia was used in all of our patients in this series. It was achieved with topical surface anaesthetic drops and peribulbar injection of long acting injectable local anaesthetic.

Mydriasis was achieved with topical Tropicamide and phenylephrine drops. Topical non-steroidal anti-inflammatory drops were also used to maintain the mydriasis during surgery.

A bridal suture was passed under the superior rectus muscle to obtain better exposure of the superior limbus and adjoining conjunctiva and sclera.

Fornix based conjunctival flap was raised and the bleeding points were cauterized using wetfield bipolar cautery. Limbus-based, partial thickness scleral flap was raised to prepare the trabeculectomy site. At this stage, in the first group the superior rectus was released to rotate the eye back to its primary position. A partial thickness clear corneal, limbus parallel incision, about 1mm away from the limbus was given. Anterior capsulotomy was performed using the continuous curvilinear capsulotomy technique. The partial thickness clear corneal incision was converted to full thickness corneal incision. Initial entry into the anterior chamber was made using a sharp pointed No. 11 surgical blade. Corneal scissors were used to extend the incision to the required size so that the nucleus could be extracted through this incision, using a wire vectus. The residual soft matter was aspirated using manual irrigation-aspiration canula. A visco-elastic was used to maintain the anterior chamber while a PMMA lens was implanted in the bag. The corneal

incision was closed using 10/O Nylon sutures.

At this stage, the superior rectus bridal suture was tightened slightly to rotate the eye downwards and expose the previously prepared trabeculectomy site. A small piece of sclera was excised beneath the partial-thickness scleral flap. A peripheral iridectomy was performed through the trabeculectomy opening. The scleral flap was sutured back to its bed using two or three 10/O nylon sutures, to make sure that the sutures were just tight enough to allow a slow seepage of aqueous. The conjunctival flap was positioned at its original place and closed with multiple 10/O nylon suture, aiming for a watertight closure. The visco-elastic was aspirated out from the anterior chamber and replaced with balanced salt solution. The bridal suture was removed. A sub-conjunctival injection of gentamycin and dexamethasone was given and aseptic dressing done.

In our second group, the procedure remained the same to the point where the partial thickness scleral flap was made. Partial thickness limbal incisions were given from the ends of the scleral flap. Anterior capsulotomy was performed as described before. The limbal incision was completed taking care to preserve the flap. After the implantation of the intra-ocular lens, the limbal incision was closed and trabeculectomy completed in the same manner as in the previous group.

### **Results**

All of our patients in both the groups had excellent visual results from the cataract extraction.

Five patients in the first group had more than three dioptres of astigmatism. In general, the astigmatism was higher in the first group in the initial period. This difference was eliminated after three months when the corneal sutures were removed.

All patients in the first group had satisfactory intra-ocular pressures without any anti-glaucoma medication.

Two patients in the second group required topical beta-blocker drops to maintain their intra-ocular pressures within the normal range. Four patients in this group had slight peaking of their

ours, it is still quite popular for a number of reasons. One of the most common complications following planned extra capsular cataract extraction (ECCE) is opacification of the posterior capsule.<sup>1,4</sup> Early peak in the incidence of opacification within one year of ECCE, probably attributable to insufficient clean up of the posterior lens capsule.<sup>4</sup> We attempted to clean the residual cortex and polish the posterior capsule in an attempt to reduce the incidence of the posterior capsular opacification. There is an age-related tendency toward PCO formation.<sup>5</sup> In general, the older the patients, the lower the incidence of PCO.<sup>6-8</sup>

We were helped by the fact that all of our patients were from the older age group and did not have any pre-operative intra-ocular inflammation.

Early postoperative bleb leak is a common complication of trabeculectomy.<sup>9,15</sup> The most serious consequence of a bleb leak is endophthalmitis.<sup>16</sup>

We managed to avoid the infections by using strict aseptic technique and by ensuring watertight closure of the conjunctival flaps to prevent early post-operative bleb leakages. Prophylactic use of sub-conjunctival gentamycin injection given at the end of the procedure also helped.

We conclude that it is acceptable to perform the combined surgery by using either of the two techniques. However, better glaucoma control can be expected if two separate incisions are used. The only compromise is a slightly higher incidence of post-operative astigmatism in the

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