# MORE ON COMBINING OR NOT COMBINING ...

*A. GALAND**

At the XVIII Congress of the European Society of Cataract and Refractive Surgeons (ESCRS) in Brussels, September 2nd - 6th 2000, I was in charge of organizing a symposium on combined cataract and glaucoma surgery. Abstracts of presenters in this session are reported here.

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# NON PERFORATING TRABECULAR SURGERY AND PHACOEMULSIFICATION: ONE OR TWO ENTRIES, SAME RESULTS

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*Purpose:* The aim of this presentation is to show the evolution of a surgery technique, in particular the deep sclerectomy and phacoemulsification as a combined procedure for patients with both pathologies. The results indicate that the use of one incision for both procedures or separated incisions for each one of the procedures lead to the same results.

*Setting/Venue:* Section of Ophthalmology, CEMIC, Buenos Aires, Argentina.
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*Methods:* Between June 1998 and January 2000 we operated 69 cases of cataract and glaucoma, 40 of them (group A) with non perforant trabecular surgery and phacoemulsification in clear cornea and 29 (group B) with non-perforant trabecular surgery and phacoemulsification with scleral tunnel incision between the two scleral flaps. No 5-FU or implants were used to enhance the results. Controls of sclerocorneal space were performed by UBM. Follow-up at regular intervals, goes from 2 to 20 months, since the date of surgery.

*Results:* Mean follow-up was 10.97 months ± 4.87 for both groups. Mean pre-operative intraocular pressure (IOP) was similar in both groups (22.4 ± 4.9 mmHg). The success rate defined as an IOP lower than 21.0 mmHg with or without medication, was 100 %. The IOP mean value without a treatment was 16 mmHg for the 84 % of the cases (taking 16 mmHg as an ideal value) and equal or inferior to 21 mmHg for the 88 % of the cases. There is no difference between the values obtained by both groups A and B. The visual outcome was 0.74 ± 0.25 (1-0) for both groups. Low rates of complications were found (6 micro-perforations and 1 choroidal detachment).

*Conclusions:* Deep sclerectomy combined with cataract surgery performed either with one incision for both procedures or two separate incisions for each one resulted in an IOP reduction, predictable visual outcome and an important decrease of post-operative complications. Nevertheless, the deep sclerectomy is an exigent surgery and the IOP results must be confirmed in the long term.

# THE RESULTS OF COMBINED MININUC CATARACT EXTRACTION AND TRABECULECTOMY

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*Purpose:* To evaluate the results of combined Mininuc extracapsular cataract extraction and trabeculectomy in glaucoma patients.

*Setting/Venue:* Ein Tal Eye Center, Tel Aviv, Israel.

*Methods:* 129 eyes had undergone combined Mininuc cataract extraction, posterior chamber intra-ocular lens implantation with a scleral tunnel incision and fornix based glaucoma surgery with posterior lip sclerectomy at the tunnel floor. Each eye was evaluated for visual acuity, corneal astigmatism and intra-ocular pressure before and after surgery and for the existence of filtering bleb and complications.

*Results:* Pre- and post-operative IOP's were 23 ± 3 and 15 ± 4 mmHg respectively. Post-operative induced astigmatism was 0.4D. Forty-seven percent of the patients had well functioning filtering blebs. Complication rate was 2%.

*Conclusions:* This simple technique results in IOP reduction and induced astigmatism similar to that reported with phacoemulsification procedures.

# SHORT-TERM AND LONG-TERM BENEFITS OF NON-PENETRATING GLAUCOMA SURGERY (NPGS) COMBINED WITH CATARACT EXTRACTION.

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Non-penetrating glaucoma surgery (NPGS) can safely be combined with cataract extraction in elderly glaucoma patients. The immediate advantages are inherent to the increased safety of NPGS. The rate of complications such as hypotony, choroidal detachment and hyphema are markedly reduced and loss of anterior chamber is practically non-existent in NPGS. Removing the crystalline lens opens the angle and deepens the anterior chamber. As a result, the immediate postoperative complications are reduced and filtration improves markedly. The short-term and the long-term outcomes in combined procedures are far superior to NPGS alone. In NPGS alone, the rate of successful filtration without medications diminishes from 80% in the first year to 11% in the seventh year. In combined procedures, the rate of successful filtration is 93% in the first year and after seven years, 63% of the patients are still well controlled without medications. An added reward in combined procedures is the possibility of correcting refractive errors. Therefore, it is worthwhile to expand the indications for NPGS combined with cataract extraction in elderly patients who need glaucoma surgery.

## Introduction

Many glaucoma patients are elderly and present with various degrees of cataract formation. When these patients need surgery, either for glaucoma or for cataract (or for both), the surgeon hesitates between two strategies: The combined approach and the separate operations. The ongoing controversy between the proponents of combined procedures for glaucoma and cataract and the proponents of separate operations can be reviewed in the context of NonPenetrating Glaucoma Surgery (NPGS). On the one hand, NPGS is safer than classical full thickness glaucoma surgery. On the other hand, some authors claim that NPGS is not as effective as trabeculectomies and its longevity is shorter. Two categories of patients can be analysed to elucidate the controversy: The first group consists of elderly patients who need glaucoma surgery and have minimal lens changes. The second group consists of elderly patients who need cataract surgery and have mild glaucoma. For the first group, some surgeons would advocate to perform NPGS first whereas others would prefer to offer a one-step approach performing a combined procedure. For the second group, it is probable that most surgeons would agree to perform cataract extraction first because of the intraocular pressure (IOP) lowering effect of cataract surgery. But some glaucoma experts indicate that the IOP lowering effect of cataract surgery is temporary, therefore a combined procedure might be indicated even in this second group in order to provide a long term solution to the glaucoma.
This paper will review and compare the outcomes in two groups of glaucoma patients who underwent NPGS either alone or combined with cataract extraction between February 1992 and February 2000 by the same surgeon.

## Patients and results

First group: NPGS alone. 138 eyes of 87 patients were operated for Open Angle Glaucoma by NPGS between February 1992 and February 2000. The mean age was 52.6 years. The mean

preoperative IOP without medications was 30.4mmHg. The mean postoperative IOP without medications was 15.2mmHg. The mean duration of successful filtration (IOP < 20mmHg without medications) was 33.6 months. 66 eyes out 138 eyes (48%) needed a revision of the filtration site during the 8 years follow up in order to keep IOP below 20mmHg without medications. 12 eyes (8.7%) developed cataracts and needed surgery during the 8 years follow up.
Second group: NPGS combined with cataract extraction. 267 eyes of 158 patients were operated for Open Angle Glaucoma and cataract between February 1992 and February 2000. The mean age was 73.8 years. The mean preoperative IOP without medications was 27.1mmHg. The mean postoperative IOP without medications was 13.2mmHg. The mean duration of successful filtration (IOP<20mmHg without medications) was 52.1 months. During the 8 years follow up 43 eyes out of 267 eyes (16%) needed revision of the filtration site in order to keep IOP below 20mmHg without medications.

## Discussion

The reduced complication rate of combined procedures versus glaucoma surgery alone has already been demonstrated in an earlier report [1]. The main advantages of combined procedures are the deepening of the anterior chamber and the opening of the angle when the crystalline lens is removed. The trabecular meshwork is probably stretched and the filtration improves after cataract surgery. [2]
In this study, the two groups are not fully comparable in terms of age of patients and severity of glaucoma. Nevertheless, the outcomes in the combined group are by far, more rewarding. It is obvious that the first group included younger patients with more severe glaucoma. The second group included older patients with slightly milder glaucoma.
In spite of these differences, the duration of successful filtration in the combined group was more than 4 years whereas it was below 3 years in the NPGS alone group. The need for reoperations in the combined group was only 16% versus 48% in the NPGS alone group.
Cataract surgery in an eye, which had a filtering operation, can compromise the function of the filtering site. It is therefore advisable to remove an incipient cataract in an elderly patient when he needs glaucoma surgery.
The benefit of correcting refractive errors by cataract extraction with lens implant must not be ignored. The elderly glaucoma patient will benefit further from a combined procedures when his refractive error is corrected at the same time.
Often, cataract patients are diagnosed with mild glaucoma when they present for cataract surgery. Many surgeons hope that the IOP will improve following cataract surgery alone. Some authors claim that the lowering effect of cataract surgery is short-lived and eventually the patient will need a filtering procedure. In this group of patients, the clinical judgement of each surgeon is probably the best advice to follow.
In conclusion, an elderly glaucoma patient who needs glaucoma surgery will benefit from a combined procedure on the short term and on the long term. He will have less immediate postoperative complications. He will benefit from refractive error correction. He will benefit from a longer successful filtration procedure and he will not need a second operation for cataract. The cataract patient who suffers from mild glaucoma might benefit from the cataract surgery alone unless his life expectancy is long and his glaucoma develops further with time.

## REFERENCES:


1. Dahan E, Rivett K, Michiels X. Comparison of early postoperative complication in trabeculectomies alone versus trabeculectomies with cataract extraction. Eur J Implant Refract Surg, 1994; 6:19-21
2. Dahan E, Drusedau M.U.H. Nonpenetrating filtration surgery for glaucoma: Control by surgery only. J Cataract Refract Surg 2000; 26:695-701

# COMBINED NON-PENETRATING TRABECULAR SURGERY (NPTS) AND CATARACT OPERATIONS

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78 consecutive combined operations were retrospectively analyzed in terms of indications, operative protocol, post-operative evaluation, and functional results.

Indication were open angle glaucomas, not previously operated, with various stages of cataract; they included cases of pseudo-exfoliation, iris atrophy, and uveitis.

Operative protocol was identical in all cases: limbal conjunctival incision, dissection of superficial scleral flap superiorly, dissection of deeper flap stopping before the scleral spur, clear cornea temporal incision and phacoemulsification, implantation of foldable IOL. NPTS was then finished, with removal of Schlemm's canal and juxta-canalicular meshwork. Implantation of a crosslinked hyaluronate implant was carried out in all cases. Suturing of superficial flap with 10/0 nylon and repositioning of conjunctiva with 10/0 vicryl ended the operation.

VA measurements, IOP control, flare analysis for the initial cases, optic disc checking, and OCT in latest cases were the main outcomes.

As expected a significant gain of VA was achieved in all cases, and no serious complication occured. Hyphema was noted in 6% of eyes, all spontaneously resolutive in a few days. Visual field improved in most cases, as a cumulative effect of cataract removal and of IOP lowering. In 7 cases the field continued to deteriorate, despite satisfactory IOP lowering in 5 cases. IOP control ($\leqslant$ 19 mm Hg) without medication was achieved in 76% of eyes, and in 96% with at least one medical treatment. 28% of eyes demonstrated some external filtration.

# COMBINED VISCOCANALOSTOMY WITH PHACO-CATARACT EXTRACTION AND LENS IMPLANT: 2 YEARS FOLLOW-UP

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*Purpose:* To evaluate the safety and efficacy of combined viscocanalostomy with cataract extraction and intra-ocular lens implantation in lowering intra-ocular pressure (IOP).

*Setting/Venue:* Department of Ophthalmology, Warrington Hospital NHS Trust, Warrington, UK.

*Methods:* Forty-seven consecutive eyes with medically uncontrolled glaucoma and cataract undergoing phaco-viscocanalostomy between July 97 and October 99 were studied prospectively. These eyes had combined viscocanalostomy, phacoemulsification and intra-ocular lens implant. The mean follow-up was 11.3 months.

*Results:* IOP was reduced from a mean of 23.8 mmHg (range 15-40) pre-op, on an average of 2.13 medications, to a mean of 16.1 mmHg (range 7-21) on no medications post-operatively. No eyes required topical medication to keep the IOP below 21 mmHg. Rapid visual recovery, lack of hypotony or exudative uveitis and good IOP control characterised the post operative period. There were no cases of shallow/flat anterior chambers, wound leak or large choroidal detachment. There was no visible drainage bleb in 55 % of eyes and a diffuse low bleb was visible in 27 % of eyes. High but thick walled blebs were visible in 18 % and there were no cases of cystic blebs. There was no significant surgically induced astigmatism in these patients.

*Conclusions:* Phaco-viscocanalostomy provided effective medium term control of raised IOP and rapid visual recovery in patients suffering from glaucoma and cataract, avoiding complications commonly seen in combined cataract extraction and trabeculectomy.

# SEPARATED INTERVENTION IN COEXISTING CATARACT AND GLAUCOMA

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There are indications for combined cataract and glaucoma surgery. Still, in many cases, I prefer to separate the procedures.

Currently, we can perform glaucoma surgery, as well as cataract surgery, under topical anesthesia, although for both procedures some patients may receive injection of lidocaine into the orbit or even be placed under general anesthesia.

With topical anesthesia, surgery has to be short and that is already a reason for separating the interventions. Choosing to do cataract first or to do glaucoma first depends upon the severity of the glaucoma. Phacoemulsification and foldable implant through an unenlarged incision result in large intact limbal sites for placing a deep sclerectomy. I believe that trabeculectomy is becoming an obsolete procedure. However, deep sclerectomy and its variants have to be simplified. My approach is to do punctures in front of the scleral spur after excision of the deep sclero-corneal flap. Moreover, I remove a small wedge in the superficial scleral flap. This protocol is a compromise between ancient (perforating) and modern (non perforating) procedures. The principle is to allow the aqueous humor of reaching the subconjunctival space, because I do not trust the intrascleral resorption in the long term.