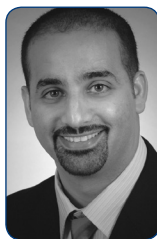


THE LITERATURE



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SIX-MONTH INTRAOCULAR PRESSURE REDUCTION WITH A TOPICAL BIMATOPROST OCULAR INSERT

Brandt JD, Sall K, DuBiner H,
*et al*¹



ABSTRACT SUMMARY

This prospective, multicenter, double-masked, randomized, controlled trial evaluated the efficacy of a topical bimatoprost ocular insert for lowering IOP. Patients with open-angle glaucoma (OAG) or ocular hypertension (OHT) were randomized

to receive either the bimatoprost insert plus artificial tears twice daily or a placebo insert plus timolol 0.5% twice daily after an initial medication washout. Eligible patients had a washout IOP of at least 23 mm Hg but less than 34 mm Hg, had not undergone prior incisional surgery for OAG or OHT, and had no history of unresponsiveness to a prostaglandin medication.

Investigators obtained diurnal IOP measurements at baseline; weeks 2, 6, and 12; and months 4, 5, and 6. The mean reduction from baseline IOP across all time points was -3.2 to -6.4 mm Hg for the bimatoprost group compared with -4.2 to -6.4 mm Hg for the timolol group. Although the bimatoprost group did not meet the definition of noninferiority to timolol at all time points, this study provides proof of concept for a clinically significant reduction in IOP using a topically applied sustained-release drug delivery system.

DISCUSSION

Why was IOP lowering in the bimatoprost group inferior to timolol?

In this study, the IOP-lowering profile of the bimatoprost insert was slightly less efficacious than a once-daily topical drop of either 0.01% or 0.03% bimatoprost. For reasons that remain unclear, prostaglandin analogues have a U-shaped dosing frequency response curve: more frequent dosing leads to less effective IOP lowering. In addition, because the confidence interval used to demonstrate noninferiority depends on sample size, the investigators postulated that achieving this benchmark at most time points might require a larger phase 3 study for sufficient power. It is also possible that the placebo insert in some way enhanced the IOP-lowering effect of timolol.

Were there issues with safety or retention of the topical bimatoprost insert?

The retention rate was 93.1% at 12 weeks and 88.5% at 6 months for all studied patients (both placebo and bimatoprost groups) and did not vary significantly between the two groups. In all cases in which the insert became dislodged, it was accounted for and replaced with a new insert; no insert was lost or missing. There were no unanticipated ocular adverse events, and the rates of conjunctival hyperemia with the bimatoprost insert were lower than those observed with topical bimatoprost.

What are the implications of this study for future research and clinical care?

Other studies have shown that patients' adherence to topical glaucoma drop regimens is less than ideal. Significant resources are therefore being directed toward the development of sustained-release glaucoma therapeutics that can achieve 100% patient-independent adherence. Treatments that enhance adherence and are shown to be safe, efficacious, and comfortable to administer could overtake topically applied drops as the preferred medical treatment for the disease. In particular, this type of treatment would likely be of significant benefit to patients with mild OAG or OHT, because these individuals' level of adherence to topical drop regimens has been shown to be poor. Larger-scale studies are needed to better elucidate the pros and cons of sustained-release treatments and to assess patients' willingness to adopt these novel therapies.

A COMPARISON OF SEQUENTIAL GLAUCOMA DRAINAGE DEVICE IMPLANTATION VERSUS CYCLOPHOTOCOAGULATION FOLLOWING FAILURE OF A PRIMARY DRAINAGE DEVICE

Levinson JD, Giangiacomo AL, Beck AD, *et al*²

ABSTRACT SUMMARY

In this retrospective study, the researchers compared the safety and efficacy of transscleral diode cyclophotocoagulation (TSCPC) and sequential glaucoma drainage device (GDD) implantation. The study included 21 patients in the TSCPC group and 32 patients in the sequential GDD group, all taken from a single institution over 10 years. Surgical planning was at the discretion of the surgeon. As might be expected, eyes in the TSCPC group had worse visual acuity and higher IOP preoperatively. Both procedures achieved similar surgical

“Treatments that enhance adherence and are ... safe, efficacious, and comfortable to administer could overtake topically applied drops.”

success (an IOP < 21 but > 6 mm Hg for two consecutive visits and no loss of light perception or reoperation for glaucoma) at 5 years of follow-up. TSCPC reduced IOP more than GDD implantation (56.3% vs 40.7%), however, with fewer serious adverse events such as corneal decompensation.

DISCUSSION

Why does TSCPC or GDD fail in these cases?

In this study, the reasons for failure were similar with the two procedures. In most cases, treatment failed because of inadequately controlled IOP or a need for subsequent surgical intervention. Hypotony occurred in three eyes after TSCPC and two eyes after GDD implantation. Two eyes in the TSCPC group and one eye in the GDD group lost light perception. The only significant risk factor for failure identified was a high preoperative IOP ($P = .0199$). Because the TSCPC group had a higher mean preoperative IOP (33.2 vs 27.8 mm Hg, $P = .0275$) but a similar rate of failure, it is possible that this procedure achieved a higher success rate compared to GDD implantation, given that other preoperative characteristics were similar. It should be noted that the cases included in this study were complex, as evidenced by an average of approximately three prior incisional surgeries in both groups.

What are the complications associated with each procedure in this scenario?

Due to the risk of hypotony and phthisis, TSCPC has traditionally been reserved for glaucomatous eyes refractory to other treatments. Although a few patients experienced hypotony and vision loss after TSCPC (three and two, respectively), no eye developed phthisis. A similar number of patients in the GDD group developed hypotony and vision loss, but other complications were more frequent in this group. Two patients developed endophthalmitis, three developed tube occlusion, and three developed tube exposure. Additionally, the probability of suffering corneal failure at 3 years was 31.6% in the GDD group and 6.7% in the TSCPC group.

How might the study's results influence surgical decisions?

Despite the limitations of sample size and the retrospective nature of this study, these findings should be factored into surgical planning for similar eyes with uncontrolled IOP after primary GDD implantation. Both TSCPC and sequential GDD can be considered effective options for reducing IOP in this clinical scenario. TSCPC may achieve a greater IOP reduction with slightly fewer complications, however, and may be an appropriate choice for patients who are poor candidates for incisional surgery or those whose eyes are at increased risk of corneal decompensation postoperatively. Surgeons should assess each patient individually, and the prognosis may be guarded regardless of the intervention in many of these complex cases. It may also be reasonable to consider a previously failed GDD indicative of future outcomes when repeating the same procedure in the same eye, making TSCPC an alternative approach with relatively acceptable safety and efficacy. ■

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