



Intraocular Pressure after Triamcinolone Acetonide Assisted Anterior Vitrectomy in Patients who Underwent Complicated Cataract Surgery

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Abstract

Objective: To determine the effect of triamcinolone acetonide (TA) which used for anterior vitrectomy during complicated cataract surgery on intraocular pressure (IOP).

Materials and Methods: We evaluated retrospectively the BCVA and IOP of 29 eyes in 27 patients (15 female, 12 men) who underwent triamcinolone-assisted anterior vitrectomy during cataract surgery. All surgeries performed via clear corneal incisions and under local anesthesia (retrobulbar anesthesia). Preoperative and postoperative values of BCVA and IOP were compared between baseline and at 12 months. Paired t-test was used for statistical analysis. A p value of less than 0.05 was considered statistically significant.

Results: The mean preoperative IOP was 18.0 ± 2.5 mm Hg, and mean postoperative IOP was 17 ± 3.0 at 12 months ($p < 0.05$). The mean preoperative BCVA was 0.6 logMAR, and mean postoperative BCVA was 0.20 ± 0.1 logMAR at 12 months ($p < 0.001$). Retinal detachment, endophthalmitis, and pseudoendophthalmitis were not observed.

Conclusion: In this retrospective case series triamcinolone acetonide which used for anterior vitrectomy during complicated cataract surgery had no effect on IOP at 12 months.

Keywords

Anterior vitrectomy; Cataract surgery; Triamcinolone acetonide

Introduction

Triamcinolone acetonide (TA) is a corticosteroid that has been used for a variety of intraocular treatments, since a long time [1,2] to treat many ophthalmic diseases. Also TA can be used in anterior segment surgery to help manage vitreous loss during complicated cataract surgery and also it has been widely used for staining the vitreous in pars plana vitrectomy [3-5]. A lot of studies have reported an increased rate of ocular hypertension or glaucoma after the use of TA for intraocular treatments [6-8].

Furthermore, vitreous loss rate is 1.92% during cataract surgery

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Received: June 07, 2012 Accepted: July 20, 2013 Published: July 25, 2013

[9] and it is important event for surgeons and patients. Herein, we report the 12-month follow-up results of IOP and BCVA in 27 patients who underwent TA-assisted anterior vitrectomy secondary to posterior capsule rupture.

Materials and Methods

This study included 29 eyes of 27 (15 female, 12 men) patients who underwent phacoemulsification, TA assisted anterior vitrectomy plus intraocular lens implantation surgery. The mean age of the patients was 68 ± 8.4 years (range, 38–79 years). Follow-up time was 12 ± 3.2 months. The BCVA and IOP were recorded at baseline and postoperative at 12 months. Patients who had preoperative ocular hypertension, glaucoma, maculopathy, retinopathy, and history of amblyopia were excluded from the study.

For the anterior vitrectomy, we used 40 mg/mL of commercially available TA (Kenalog; Bristol Myers Squibb, Uxbridge, UK) diluted with 1 mL of balanced salt solution to a final concentration of 20 mg/mL (working solution), and 1 mL without filtration; to stain the vitreous, this solution was injected into the anterior chamber and the excess washed out. After staining of vitreous by TA vitrectomy was performed using by 23 G vitrectomy systems. All patients had intraocular lens implanted within the capsular bag or ciliary sulcus after the anterior chamber and capsular bag were filled with 1% sodium hyaluronate. Then, the viscoelastic agents were removed from the eye, as much as possible, using irrigation-aspiration cannula, and any residual TA was also washed out. In the postoperative period, topical dexamethasone 5 times/day and gentamicin 5 times/day were used for 1 month in all patients. All procedures were performed in accordance the Declaration of Helsinki. Approval of the Ethics Committee was obtained.

Paired t-test was used for statistical analysis. A p value of less than 0.05 was considered statistically significant.

Results

Data for 29 eyes of 27 patients were recorded. The mean age was 68 ± 8.4 years and follow up time was 12 ± 3.2 months (Table 1). The mean preoperative BCVA was 0.6 logMAR and mean postoperative BCVA was 0.20 logMAR at 12 months ($p < 0.001$). The mean preoperative IOP was 18.0 ± 2.5 mm Hg, mean postoperative IOP was 17.0 ± 3.0 mm Hg at 12 months. There was no significant increase in the IOP when compared with baseline at 12 months ($p = 0.32$), (Table 2). Five patients who had IOP of more than 24.0 mm Hg on the postoperative first day. These patients used topical dorzolamide/timolol, 2 times/day until one month. None of the patients required

Table 1: Demographic features of patients.

Parameters (n=27 patients)	
Age(mean \pm SD) years	68 ± 8.4 (38-79)
Gender(Female/Men)	15/12
Follow-up (months)	12 ± 3.2

S.D: standard deviation

Table 2: Preoperative and postoperative values of BCVA and IOP.

Parameters	Preop. (n=29 eyes)	Postop. (n=29 eyes)	p
BCVA (logMAR)	0.63 ± 0.14	0.20 ± 0.10	<0.001
IOP mm Hg	18 ± 2.5	17 ± 3.0	0.32
R.D	0	0	
Endophthalmitis	0	0	
Pseudoendophthalmitis	0	0	

BCVA: Best Corrected Visual Acuity

IOP: Intraocular Pressure

logMAR: Logarithm of the Minimum Angle of Resolution;

RD: Retinal Detachment

p: The level of statistical significance.

antiglaucoma drugs after the first postoperative month during follow up period.

Retinal detachment and endophthalmitis were not recorded; however, cystoid macular edema was recorded in one patient it persisted up to five months and resolved spontaneously during follow up period.

Discussion

Vitreous loss during cataract surgery can cause glaucoma, cystoid macular edema, endophthalmitis, rhegmatogenous retinal detachment, intraocular lens displacement, uveitis, corneal decompensation and fibrous ingrowth [10-12]. Meticulous removal of all vitreous tissue within the anterior chamber is important to prevent subsequent complications both adults and pediatric patients [13-15]. Triamcinolone acetonide obtain good visualization of the vitreous.

A study reported favorable visual acuity outcome the most of patients underwent cataract surgery complicated by posterior capsule rupture [11]. In the present clinical study, the mean BCVA was 0.20 ± 0.1 logMAR and mean IOP was 17.0 ± 3.0 mm Hg at the end of follow up time. Visual acuity was increased in all patients. In a study, ocular hypertension was recorded in some patients after TA assisted anterior vitrectomy for 3 months [16]. In the present study only 5 patients had to use antiglaucoma drug for one month. None of the patients had receive an antiglaucoma drug at 12 months. Triamcinolone acetonide when used via intravitreally elevation of IOP was recorded in up to 30% of the patients [17,18]. The IOP elevation effect of intravitreal (when injected intravitreal) TA is delayed and dose dependent [19]. Further, the IOP was more than 24.0 mm Hg in five patients during in the first postoperative month which patients received antiglaucoma drug/s for first day after surgery. This patients were used antiglaucoma drug/s upto 1 month. No patients need to surgical intervention for glaucoma after the cataract and anterior vitrectomy. The elevation of IOP in the first postoperative days was likely due to the pharmacokinetic effect of viscoelastic substance on the IOP.

The results of one study showed that intracameral TA is safe for use anterior vitrectomy in complicated cataract surgery [20] and similar results were obtained in our study. The main limitations of this study are small sample size, was not included eyes that had glaucoma or ocular hypertension before surgery, and was not measured amount of TA that can not be able to removed in the from anterior chamber after washout.

In conclusion, use of TA for anterior vitrectomy in patients who had complicated cataract surgery did not cause elevation of IOP in this study, however the need for larger, prospective, controlled studies to determine the real impact of triamcinolone on intraocular pressure.

Conflict of Interest

The authors have no proprietary or commercial interest in any materials discussed in this article. The authors have no conflict of interest.

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