Original Article

Effectiveness of Peribulbar (Extracone) Anesthesia in Comparison with Combined Retrobulbar and Facial Nerve Block for Anterior Ocular Surgery

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Pak J Ophthalmol 2007, Vol. 23 No.2

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Received for publication
December' 2005

Purpose: To compare the effectiveness of combined retro bulbar and facial nerve block, alone with that of peribulbar block, for anterior ocular surgery.

Material and Method: One hundred and fifty patients were randomly divided into two groups. Group 1 received retro bulbar block combined with facial never block. Group 2 received peribulbar block. Anesthetic agent used was a mixture of equal volumes of 2% Xylocaine and 0.5% bupivacaine. Twenty minutes after the block the effectiveness was assessed on the basis of eyelid movements, ocular movement and intraocular pressure.

Results: Sixty nine patients (92%) in group I and 67 (92%) patients in-group II had complete blockade of lid movements. One (1.33%) patient in group I and two (2.66%) patients in-group II had almost normal eyelid movements and required a supplementary block.

Three (4%) patients in group I and two (2.66%) in group II had almost normal eyeball movements. One patient (1.3%) in group I developed a hard eye due to retrobulbar hemorrhage. Sixty-two (82.66%) patients in group I and forty-two (56%) in group II had intraocular pressure (IOP) less than15 mm Hg.

Conclusion: No significant difference was found in overall effectiveness of anesthesia between the two groups.

Most of the anterior segment ocular surgery in our country is being performed under local anesthesia. The traditional method has been a retro bulbar block combined with facial nerve block. Facial nerve block is usually quite painful. Retrobulbar block has potential risks of retro bulbar hemorrhage, optic nerve trauma, retinal vascular occlusion, perforation of the globe, convulsions and brain stem anesthesia[1-10]. Peribulbar anesthesia is another choice for anterior segment ocular surgery that has gained popularity among ophthalmologists, as it avoids the painful facial nerve block and has relatively fewer complications.

In this study we compared the effectiveness of combined retrobulbar and facial nerve block with the peribulbar block alone for anterior segment ocular surgery.

MATERIAL AND METHODS

One hundred and fifty (ASA 1 & II) patients aged between 40-70 years included for cataract and glaucoma surgery under local anesthesia were randomly divided into two groups. Group 1 received the traditional retrobulbar with facial nerve block. Group II received peribulbar block alone.

Patients undergoing all forms of anesthesia require adequate counseling and explanation of the procedures and half an hour before surgery usually receive oral dazefoam and phenargan for sedative effect.

Method of anesthesia

For facial nerve block, 5ml of the anesthesia mixture was injected at the neck of the mandible after negative aspiration for blood as an O'Brien method and as for the retrobulbar block, 3 ml of the same anesthetic agent was injected inside the muscle cone entering through the lower lid at the junction of the lateral and the middle third of the inferior orbital margin taking infraorbital notch as guide point.

For the peribulbar block, two injections each, containing 4 ml of the same anesthetic mixture as in group 1 were injected in to the orbit outside the muscle cone in superomedial and inferotemporal compartments through the upper and the lower lids, respectively (3ml from each injection was given approximately at the depth of 15-20 mm, while the remaining 1ml was injected after retracting the needle in the muscular plane of the orbicular is oculi). Alcain (Alcon, USA) drops were instilled in the conjunctival sac after completion of the block and repeated immediately before surgery.

Following the injection, digital ocular massage was carried out for at least 3-5 minutes after the block, assessment was made by the surgeon (unaware of the type of the block, according to the following scoring criteria.

Eyelid Movements	Score
Normal movements	0
Slight movements	1
No movements	2
Ocular Movements	Score
Full movements	0
Slight movements	1
No movements	2
Intaocualr pressure	Score
30 mm Hg or more	0
15-30 mm Hg	1
<15 mm Hg	2

The overall assessment of the quality of the block was made at the completion of the surgery.

RESULTS

The physical characteristic of the patients and the type of surgery are shown in Table 1. There was no significant difference in the physical characteristics between the two groups.

Table 2 compares scores of the patients according to the assessment criteria in the two groups. Sixty nine patients (92%) in group I and 67 (92%) patients in-group II had complete blockade of lid movements. One (1.33%) patient in group I and two (2.66%) patients in-group II had almost normal eyelid movements and required a supplementary block.

Table 1: Physical characteristics and type of surgery

Characteristics	Group-1	Group-2
Mean age in years (range)	64 (45-68)	64 (46-70)
Sex		
Male	43	29
Female	32	46
ASA Status		
1	15	10
II	60	65
Type of surgery		
Cataract	68	69
Glaucoma	07	06

Table 2. Score according to assessment criteria

Criteria	Score	Group I	Group II
Eyelid movement	0	1	2
	1	5	6
	2	69	67
Ocular movement	0	3	2

	1	11	10
	2	61	63
Intraocular pressure	0	1	0
	1	12	33
	2	62	42

Three (4%) patients in group I and two (2.66%) in group II had almost normal eyeball movements. One patient (1.3%) in group I developed a hard eye due to retrobulbar hemorrhage. Sixty-two (82.66%) patients in group I and forty-two (56%) in group II had intraocular pressure (IOP) less than15 mm Hg. Twelve (16%) patients in group I and thirty-three patients (44%) in group II had IOP between 15-30 mm Hg.

Table 3 shows the overall assessment of the quality of block made by the surgeon at the completion of the surgical procedure.

Sixty seven (89.33%) patients in group I and sixty one patients (81.33%) in group II had excellent operating conditions. Three (4%) patients in each group had inadequate anesthesia and required a supplementary block.

Table 3. Overall assessment of the quality of block

Quality of block	**Group I n (%)**	**Group II n (%)**
Excellent	67 (89.33%)	61 (81.33%)
Adequate	5 (6.66%)	11 (14.66%)
Inadequate	3 (4%)	3 (4%)

(N.B: One patients in group I developed retro bulbar hemorrhage and surgery was postponed)

DISCUSSON

In this study, we compared the effectiveness of the traditional combined facial and retro bulbar block with the relativity recent method of peribulbar block, for anterior segment ocular surgery. We conclude that both methods are almost equally effective, as far as the eyelid and eyeball movements are concerned.

Although the patient's in group II, on an average had higher IOP levels as compared to group I but this did not produce any difficulty during operation. The higher level of IOP in peribulbar blocks is most probably due to the larger volume of the anesthetic agent injected in the orbit.

One patient in group I developed a hard eye following retro bulbar injection due to retro bulbar hematoma as there was leaking of blood from blood vessels, and the surgery was postponed. Retro bulbar hemorrhage is well known complication of retro bulbar injection but peribulbar block has comparatively less incidence of such a complication. Complications of both procedures can be reduced by using a short (25-30 mm) needle.

Facial nerve block is the most painful part of the local anesthesia for eye surgery. From this study we conclude that the peribulbar anesthesia is an excellent alternative to the traditional retro bulbar and facial nerve anesthesia as it avoids the painful facial nerve block and at the same time has less incidence of vision and the life threatening complications. The use of peribulbar block is not limited to the anterior segment ocular surgery, in slightly larger volumes it is being used for vitreoretinal and other surgical procedures[6-12]. Efficacy of peribulbar can be enhanced by the addition of hyaluronidase for the better tissue penetration[13-15].

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As there are various mechanisms of angle closure, only laser iridotomy or surgical iridectomy may not work in all cases of angle closure glaucomas. Further medication or surgery may be required especially in chronic angle closure glaucoma.

While laser iridotomy or surgical peripheral iridectomy is effective in most situations of angle closure only iridoplasty works better for plateau iris cases.

Prof. M Lateef Chaudhry