Our experience with strabismus surgery under topical anesthesia performed at a tertiary eye care center

Sir,

We report our experience of 214 patients (112 males and 102 females), aged 14–70 years [Table 1], who underwent strabismus surgeries under topical anesthesia for exotropias, esotropias, hypertropias, and monocular elevation deficit and dissociated vertical deviations. The patients/patients' parents were briefed about all the pros and cons of topical and peribulbar anesthesia. None of the patients were administered analgesics before the surgery. Children younger than 14 years and those requiring superior oblique procedures or muscle resections were not included in the study.

All procedures were performed by one surgeon. A three-step protocol was used first: three drops of 0.5% proparacaine (Sunways (India) Pvt. Ltd.) administered at 5-min intervals, beginning 30-min before surgery, second: lignocaine hydrochloride gel (Neon Laboratories Ltd., India) was placed in the conjunctival sac 30-min before surgery, and third: cotton swab soaked in lignocaine gel was placed on the muscle insertion for 1 min. Additional 0.5% proparacaine eye drops were instilled during the incision of conjunctiva and Tenon's capsule or as needed if the patient complained of discomfort during surgery. The patients were continuously monitored using electrocardiography and pulse oximetry. With a fornix-based limbal incision, muscle was recessions with scleral bites, or hang-back technique for larger recessions or patients with high myopia were done. Conjunctiva was glued back with TISSEEL Fibrin glue (Baxter, India Pvt. Ltd.). Muscle plication techniques were performed using 6-0 vicryl.

Pain severity, pre- and post-operatively, was evaluated by a questionnaire on an 11-point numeric scale where patient-rated pain from 0 to 10 subjectively (0 being no pain and 10 being intolerable pain).

About 99.53% of all cases successfully underwent the surgery under topical anesthesia. One out of 214 cases was unable to tolerate the procedure [Table 2]. Intraoperative bradycardia was observed in 1 patient, and tachycardia in another [Table 3]. There were no incidences of intraoperative pain or excessive

bleeding [Table 4]. No patient experienced complications such as unsatisfactory eye alignment, changed refraction, diplopia, scleral perforations, or postoperative infection [Table 5].

Table 1: Age and sex distribution

Age group	Total number of patients	Male	Female
14-20	28	15	13
21-30	62	20	42
31-40	60	29	31
41-50	50	34	16
51-60	10	10	0
61-70	4	4	0

Table 2: Percentage of patients who had to have the surgery converted from topical to an alternative form of anesthesia due to pain or fear

Type of anesthesia	Percentage
Percentage of patients where surgery was converted to some other form of anesthesia	0.46
Percentage of patients where surgery was performed under topical anesthesia	99.53

Table 3: Percentage of patients showing intra operative bradycardia/tachycardia

Intraoperative Heart Rate	Percentage
Percentage of patients reported to have intra operative bradycardia	0.46
Percentage of patients reported to have intra operative tachycardia	0.46

Table 4: Grading of intra- and post-operative pain based on verbal pain scale

Pain scale (0-5)	Intraoperative (%)	Postoperative (%)
0-3	99.53	99.06
≥4	0.46	0.94

Table 5: Percentage of patients showing intra operative difficulty due to factors like squeezing of the eye, excessive bleeding

Pt having intaoperative difficulty	Percentage
Intraoperative pain and bleeding	0

Table 6: Advantages of topical anesthesia for strabismus surgery

Advantages of topical anesthesia
No fear of injection
No pain, discomfort
Extra ocular muscles are not paralyzed
Cover tests can be performed on table and surgical plan can be altered accordingly, if required
No risk of retrobulbar haemorrhage or globe perforation

Topical anesthesia for strabismus surgery seems to be an excellent option as evidenced in our series. They are convenient, safe, and provide rapid onset of corneal and conjunctival anesthesia and are not associated with fear of injection or pain on application. The major advantage of the topical anesthesia surgery is that it allows cover test to be performed on the table thus assessing the accuracy of correction on the table and allowing adjustment of the surgical plan if required [Table 6]. In comparison to retro/peribulbar block, the inadvertent paralysis of the muscles which will not be operated on is prevented and also other inherent risks such as ocular penetration and perforation (approximately 1 in 1000), retrobulbar hemorrhage (1%–3%), central nervous depression (1/350–500 cases),[1,2] and pain with injection necessitating premedication by the anesthetist[1,2] are prevented.

Lidocaine gel appears to be a safe and highly efficacious tool for ocular anesthesia, with high patient and surgeon satisfaction.

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Conflicts of interest

There are no conflicts of interest.

K S Santhan Gopal, Jai Aditya Kelkar[1], Ekta Rakesh Arora[1]

Kamala Nethralaya, Bengaluru, Karnataka, [1]Department of Paediatric Ophthalmolgy, National Institute of Ophthalmology, Pune, Maharashtra, India

Correspondence to: Dr. Jai Aditya Kelkar, National Institute of Ophthalmology, 1187/30, Off Ghole Road, Near Phule Museum, Shivaji Nagar, Pune - 411 005, Maharashtra, India. E-mail: drjkelkar@gmail.com

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