

Balanced Anaesthesia for paediatric Ophthalmic Procedures



Chandra Sekhara PM* and Iris M C Rajiva

Consultant Vitreoretinal Anaesthesiologist, Retina Institute of Karnataka, India

Submission: March 07, 2017; **Published:** May 08, 2017

***Corresponding author:** Dr. P M Chandrasekhara, Consultant Vitreoretinal Anaesthesiologist, Retina Institute of Karnataka: 122. 5th. Main, Chamaraajpet, Bangalore 560018, Tel: 9845039810, Email: pmc05_cardiac@yahoo.co.in

Abstract

Background: Paediatric ophthalmic surgery on under general anaesthesia poses several challenges and is quite stressful to the child, parents as well as to the anaesthesiologist. Unfortunately there is a paucity of literature on the subject of anaesthetic management of visually challenged hyperactive children posted for Vitreoretinal surgery [1,2].

Objective: Here under, balanced anaesthesia approach where prolonged paediatric Vitreoretinal surgical procedures are conducted under general anaesthesia as well as the eye block is being evaluated to provide a stress free as well as event free anaesthesia course in children.

Methods: Forty children scheduled to undergo a variety of minimally invasive Vitreoretinal surgery [MIVS] under general anaesthesia were recruited under the study and equal number of subjects were randomly distributed under control group and study group. All the children followed a standard protocol for general anaesthesia and the monitoring. The subjects under control group received sub-conjunctival LA block just before extubation. Whereas the subjects under the study group received sub-tenon's block soon after induction. The comparative parameters that were observed during the study included, amount of Local anaesthetic that was used to produce the block, airway device that was selected, changes in the vitals that were monitored like ECG, HR, PR, SPO₂ and NIBP, and need for reversal agent and immediate rescue analgesia depending on the emergence status at the end of anaesthesia.

Observation: 20 subjects under the study group and the control group demographically matched in all the respects. All the children underwent Vitreoretinal surgery lasting around 90 minutes. The observed change in the heart rate was significant in the study group. Where the heart rate fell following the LA block. The peak fall in the heart rate was by 20% from that of basal value. This was reflected as any significant deviation in blood pressure or the SPO₂ or the ETCO₂ values. In case of control group the heart rate remained stable around its basal rate. The other noticeable change that was with respect to the changes in the perfusion Index. In case of control group the perfusion index came down to around 0.40 from the initial reading of 4.3. Whereas in case of study group, the perfusion index remained stable around 3.9 throughout the procedure. On an average 5 ml of LA agent was used to produce sub-tenon's block and 35% of patients were managed with LMA. None of subject under study group required additional increments of sedation, narcotics or the muscle relaxant during the course of anaesthesia and these subjects did not require reversal agent at the conclusion of the surgery. There was a smooth emergence and extubation response in the study group when compared to the control group.

Keywords: Balanced anaesthesia; Vitreoretinal surgery; Paediatric anaesthesia

Review of Literature

The literature search for evidence and experience of eye blocks in paediatric Vitreoretinal surgery under general anaesthesia yielded very few studies to draw any convincing recommendation. Recently Chhabra A [3] has made an enormous attempt to collect the relevant data from the year 1996. The pooled data was further analysed on 1021 children ranging from 1 month to 16 years. Majority of children in these studies underwent strabismus surgery and another two studies consisting of 177 children included Vitreoretinal surgery. The LA blocks that were selected included retro bulbar block (1),

peribulbar block (5) and sub-Tenon's block (8) as adjuvant to general anaesthesia.

Discussion

In the year 1926 Lundy suggested that a balance of agents and the technique to be used to suppress the difference components of anaesthesia i.e. Analgesia, amnesia, muscle relaxation. Most importantly it was later realised that abolition or attenuation of autonomic reflexes would result in better outcome due to attenuation of surgical stress. Administering LA block as an

adjuvant to general anaesthesia under balanced anaesthesia protocol in children undergoing Vitreoretinal surgery would block the afferents from the site of origin of neuro-ophthalmic reflexes. In addition, blocking of the sympathetic component of the autonomic nervous system results in attenuation of the profound metabolic as well as the endocrine response to the surgical stress. Thus, the profound attenuation of surgical response can alter and improve the outcome. These effects have been well established in the presence of continuous thoracic epidural or following infiltration of local anaesthetic at the site of surgery that resulted in a minimal increase in plasma concentration of catecholamine's, cortisol and glucagon. It has also been established that to mimic similar stress free response under general anaesthesia alone, one has to administer large doses of polypharmacological agents. The findings of the present study supports the view that administration of LA Block as an adjuvant to general anaesthesia in children blocks the sympathetic component of the autonomic nervous system as well as the neuro-ophthalmic reflex to provide a stress free anaesthesia even at lighter planes. This has reflected in a stable

perfusion index and heart rate when compared to the control group. The block at the site of origin of neuro-ophthalmic reflexes resulted in [a]. Eye remaining in the centre position. [b] Anaesthetic sparing effect with minimal need for muscle relaxant and the reversal agent or the rescue post operative analgesia [c]. assures a smooth and event free emergence from anaesthesia.

Conclusion

Sub-tenon's block after administering general anaesthesia under balanced anaesthesia technique provides a stress free and stable outcome in children undergoing Vitreoretinal surgery.

References

1. Chhabria A, Sinha R, Subramanyam R, Chandra P, Narang D, et al. (2009) Comparison of sub-tenon's block with IV ferntanyl for paediatric vitreoretinal surgery. *Br J Anaesth* 103(5): 739-743.
2. Tuzcu k, Coskun M, Tuzcu EA, Devarci I, Hakimoglu S, et al. (2015) Effectiveness of sub-Tenon's block in pediatric strabismus surgery. *Rev Bras Anesthesiol* 65(5): 349-352.
3. Chhabria A (2016) Eye blocks in paediatric surgery under general anaesthesia – what is the evidence Lecture presentation: 4th WCOA: Chennai, India.



This work is licensed under Creative Commons Attribution 4.0 License
DOI: [10.19080/JAICM.2017.02.555590](https://doi.org/10.19080/JAICM.2017.02.555590)

Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
(Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission

<https://juniperpublishers.com/online-submission.php>