

Challenges in Ophthalmic anesthesia

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Introduction

In general, anesthesiologists have an apprehension about the field of ophthalmic anesthesia. But for an anesthetist this is a very challenging and interesting field. There are some general issues that have to be understood before understanding the topic of ophthalmic anesthesia. Some of the major confronting issues generally could be from the patient, or from the anesthesia, since the surgical causes are unlikely, as it rarely induce haemodynamic changes.

The ophthalmic surgery is generally perceived by the patient as a simple, less time consuming procedure, and often times the patients focus is on his visual complaints and the problems with systemic illness is often overlooked and the patient fails to mention this to the doctor. But the current scenario in all parts of the world and more so in India is the early incidence of diabetes, hypertension, and cardiac problems. Nowadays majority of ophthalmic surgeries are performed as day care procedures with no hospital admissions. This does not allow the anesthetist enough time to evaluate the patient thoroughly before the eye surgery and modify any treatment modalities as the case may warrant and to carry out the recommendation and suggestions given by the specialists taking care of the patients. All these makes practicing ophthalmic anesthesia a challenge

Preoperative assessment

The preoperative assessment of the patients before undergoing the surgical procedure is very crucial. The aim of this is to elicit the systemic diseases and perform the relevant investigations, to assess the functional reserve and identification of organs at risk and modifications in drugs if needed. The over all aim is to reduce the risk of anesthesia. In case of systemically compromised patients, it is wise to perform the surgery after

discussing the risk/benefit to the surgeon and the various anesthetic techniques which may be safe for the patient. In general, all the cardiac and antihypertensive drugs to be continued on the day of surgery and adrenaline mixed local anaesthetics can be avoided in cardiac patients. These are some of the issues that can be addressed and planned on the previous day.

In situations where regional anesthesia is used some of the non ocular problems that may be encountered are syncope due to fear or pain. Convulsion which may occur due to vascular spread of the anesthetic agents and respiratory depression due to neural spread are not usually very severe as volume of drug injecting is less. In situations where retro bulbar or peri bulbar is difficult to perform like advanced glaucoma and high myopia sub-tenon's block is a better choice.

Some of the recent developments in the field of ophthalmic anesthesia is the administration of propofol just before the regional block, TIVA (Total Intra Venous Anesthesia) with infusion of propofol at 6 to 8 mg /kg/hr along with fentanyl at 1mcg/kg are quite useful for adjustable squint surgeries. With the recent shift to topical anesthesia which is relatively safe, the pain perception is less but the patient may feel pressure over the eye for a short spell which is normally not associated with any symptoms. Nowadays more and more ocular surgeries are being performed under topical anesthesia. And this is preferred over the regional anesthesia.

Intra-operative concern in regional anesthesia

During ocular surgery, there is a facial drape that is applied to cover the adjacent sites and expose only the surgical site. Patients may feel apprehensive and anxious about this and this may induce a feeling of suffocation. Patients need to be explained about the drape. Oxygen enriched air can be provided under the drape. The other concerns faced by the patient may be discomfort in supine position and positioning the head immobile as the microscopic procedure underway is to save or improve the vision.

Importance of Sedation

The benefits of sedation are that it relieves anxiety, produces amnesia, decreases the discomfort of the block and is useful in mentally challenged and patients who are not

co-operative. It must be remembered that sedation is only supplement and not a replacement for anesthesia.

In sedation the neck has to be little extended (to prevent tongue fallback), stabilized with the head rest, at the same time it should give comfort to the surgery. Oxygen can be supplemented through nasal flanges without disturbing the sterile zone..

Some of the pitfalls of sedation are to either over sedate and cause respiratory depression or under sedate which may lead on to sudden movement which is really dangerous during the ocular surgery. Both these need constant monitoring for successful outcome. Among the various combinations that are used as sedations are intra venous midazolam and inj.propofol just before regional block in anxious patients.

Specialty challenges

Ophthalmology has now developed into lot of sub specialty like Retina, Glaucoma, Cornea, Pediatric Ophthalmology and Orbit and Oculoplasty .In the pediatric age group there are mental trauma because of separation from the parents, respiratory infection, associated anomalies are issues.

The glaucoma patients may be associated with undiagnosed metabolic problems or syndromes and seek early surgery, most of the anesthetic drugs in general decreases the intraocular pressure. Among the available technique for EUA- IOP measurement, IM ketamine and just before intubation gives better value

In dealing with patients with corneal injury who may be on a full stomach - in case of simple injuries, wait till the gastric emptying occurs but in rare severe injuries Rapid Sequence with higher dose Rocuronium, Vecuronium may be used.

In case of corneal transplants, IOP has to be maintained at a lower and stable level through out the surgery, the patient should not strain at any point of time, inhalational agents like Sevoflurane are quite useful, the PONV is also reduced by using Ondansetron, Dexamethasone combinations

Orbit oculoplastic procedures are little deviated from regular ophthalmologic procedures. Some of the difficulties usually encountered are in holding the mask because of the lesion with the big bandage. Other important factor is oropharynx has to be protected with the throat pack even for the trivial procedures like probing and syringing;

lid tear injury with canalicular involvement. Hypotensive anesthesia may be preferred in some orbital tumors. There may be some procedures that are considered minor in nature but with some risky anomalies and unless these are looked for in the preoperative anesthetic assessment and plan, the anesthesia may become pathology.

In some rare situation like small babies with big teratoma it is a difficult situation for both the surgeon and the anesthetist in pediatric patient some of the problems are getting a good intravenous line, difficulty in holding the mask, hypothermia and finally blood loss.

The next major challenging in ophthalmic anesthesia is in retinal surgeries. As the operation theater has to be in dim light when the retinal surgery is going on, it is important for the anesthetist to be watchful with monitors. In case where intravitreal injection of C3F8 gas is planned the surgeon will insist to stop N2O for at least 20 minutes before the gas injection to prevent retinal detachment, in that occasion air, O2 mixture can be used. The other situation where anesthesia has to be administered and monitored in a dark room are in recording electro retinogram(ERG), screening for retinopathy of prematurity (ROP) and treatment.

Conclusion

In ophthalmology, anesthesia does not mean dealing with only cataract surgeries. There are so many varied surgeries involving all aspects of the eye each with its own interesting problems. Ophthalmology is rapidly evolving with newer technology and diagnostic modalities. Ophthalmologists are taking up challenging situations and team work is the need of the hour to enhance eye care services.