Commentary: Office-based vitrectomy using topical anesthesia in an Indian setting

One of the earliest reports of office-based vitrectomy date back to the 1980s for selected diseases in rural Guatemala.[1] Office-based topical vitrectomy promises to be cost-effective,[2] avoids block-related complications, and offers better patient comfort while maintaining comparable visual outcomes. We feel that it would be better to analyze this in two separate parts: the topical anesthesia and the office-based setup.

Modern cataract surgery has evolved from the intracapsular cataract extraction to the topical clear corneal phacoemulsification. Patients used to be patched overnight after the cataract surgery, however now they can see and are ambulatory a few hours after the operation. This is possible due to topical anesthesia and the smaller incisions and less surgical trauma. The visual outcomes are excellent and topical phacoemulsification is now the standard of care. Can vitrectomy too evolve to a topical approach?

The answer to this lies in careful case selection. A few cases such as vitrectomy for floaters, epiretinal membrane peeling, macular hole surgeries, and vitrectomies for uncomplicated cases of vitreous hemorrhage are cases amenable to topical vitrectomy. Office-based vitrectomy, however, can offer prompt intervention in sight-threatening conditions such as endophthalmitis. Office-based vitrectomy can also be very useful for vitreous biopsies in conditions such as endophthalmitis and uveitic conditions where laboratory tests yield no clear diagnosis and vitreous biopsies for possible malignancies.[3] Other cases such as clearing of postoperative bleeding in diabetic cases are also good candidates.

Cases involving steps other than three-port vitrectomy such as conjunctival dissection, buckle insertion, cryotherapy, or external subretinal fluid drainage would be better suited with local anesthesia that offers akinesia in addition to deeper anesthesia. More complicated cases involving peeling of tractional membranes in advanced vascular disease or chronic rhegmatogenous retinal detachments and subretinal bands would also be better suited with local anesthesia. Hence, we see that careful case selection is paramount for topical anesthesia.

The patients are likely to face less pain with trocar insertion than during administration of the local anesthesia injections. However, during local anesthesia, maximum pain is felt during the first injection, and the following injections are subsequently less painful. With trocar insertions, however, each insertion would elicit the same degree of pain. Sanchez *et al*.[4] reported a case series of 34 eyes which underwent office-based vitrectomy under topical anesthesia. The patients comfort was evaluated using a questionnaire and > 75% of the patients were extremely comfortable during the surgery; about 18% of the patients experienced severe pain. One clear advantage of office-based vitrectomy would be the avoidance of anesthesia-related complications such as retrobulbar hemorrhage, globe perforation, optic nerve damage, and ptosis.

An interesting point to consider is that patients under topical anesthesia would be more prone to squeezing of the eyelids and the rectus muscles. This could increase the intraocular pressure. Sudden decompression while removing the instruments out of the ports may predispose to choroidal hemorrhage. Hence, adequate care must be taken to never allow more than one port to be left open. In the study by Sanchez *et al*.,[4] the surgeons reported that > 85% of the cases were extremely comfortable.

Endophthalmitis is a dreaded complication and every precaution must be taken to avoid it. Office-based intravitreal injections such as antivascular endothelial growth factor are routinely given in the West; however, it is still not practiced in India. This is because India being more densely populated developing nation, not only is the overall air quality poor and fraught with more particulate matter, the bacterial and viral loads also are more that would predispose to more airborne infections. This implies that sterility of the air would be paramount in the operative environment. It is thus essential to ensure that filtered sterilized air is maintained with adequate positive pressure to ensure that air only flows out of the doors of the room and not inward.

Patient safety is top priority and the team in the office must be capable of providing first aid for adverse cardiovascular events. Supplemental oxygen, a pulse oximeter, and a sphygmomanometer should be available.[2]

The office-based cutters though are far more portable and also cost-effective as compared to the conventional operation theater-based vitrectomies and hence may help reach far and wide where setting up of a full-fledged operation theater would be a challenge. However, it must be kept in mind that a well-informed and cooperative patient is important when such an office-based procedure is undertaken. India being a developing country the population at large is illiterate and thus patient cooperation must be thoroughly assessed before the procedure.

If topical anesthesia is used, the surgery would be more challenging due to the absence of akinesia and possible patient noncooperation and hence a surgeon well experienced in pars plana vitrectomy in an operation theater-based setting would be better suited than a relatively inexperienced surgeon.

In summary, office-based vitrectomy with topical anesthesia can be an excellent tool for prompt cost-effective intervention; however, careful patient selection, air sterility, and basic life support and first aid are a must.

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