

Commentary: Adjunctive agents in peribulbar anesthesia: Role of dexmedetomidine in vitreo-retinal surgeries

Cataract surgery is increasingly becoming a refractive surgery being done under topical anesthesia. In Indian scenario, where majority of the surgical patients reside in rural area, peribulbar anesthesia (PA) for cataract surgery is a major facilitator. Why so? Topical anesthesia requires cooperation from patient and issues, such as hearing difficulty, old age, poor comprehension, and language difference can aggravate the barrier of doing surgery under topical anesthesia.

PA is being given either with lignocaine alone or lignocaine plus bupivacaine mixture. Surgeons operating the volume would agree that many times the PA does not take adequate effect even after proper technique and multiple injections or the effect is only partial or akinesia reduces or the effect goes off in between surgery. The question “why the effect of the block is weak” or “why the effect has weaned off so soon” remains largely unanswered. Thus, the addition of an agent that can improve the final result of the peribulbar block has always been welcomed.

Various agents, such as midazolam, hyaluronidase, rocuronium, and dexmedetomidine (Dex), have been tried and shown to have a beneficial effect either on the onset time or the duration of the block. In a randomized control trial (RCT) by Ibrahim *et al.*,^[1] midazolam was used as an adjunct to the mixture of bupivacaine 0.5% and lidocaine 2%; it was noted that addition of midazolam improved the onset of anesthesia and prolonged the duration of lid akinesia and sensory anesthesia but did not have any additional effect on the onset of akinesia or the duration of globe akinesia. Ibrahim *et al.*^[1] did not use midazolam in systemic form. Hyaluronidase was also tested by Swati *et al.*^[2] in a randomized double-blind study but did not prove to be beneficial in any sense. Rocuronium, a neuromuscular blocking agent, was also tried by Patil *et al.*^[3] and found to have a beneficial effect on the onset of akinesia but no effect on anesthesia. Dex^[4] has been tried in both infusion and local mixture form and found to have early onset, prolonged duration of the block, and better hemodynamic stability.

All these studies^[1-4] have been done in cataract surgery, which generally gets over in few minutes. Other ocular surgeries that take more time are vitreo-retinal surgery, keratoplasty, oculoplasty, etc., Early onset, prolonged duration of PA, and non-requirement of a supplementary block will be very useful in such surgeries. In addition to adequate block effect, a hemodynamically stable patient during such prolong surgeries will improve the surgeon efficacy many folds. A study done by Abdelhamid *et al.* concluded that addition of IV infusion of Dex resulted in a better sedation profile along with vital stability during the surgery. Dex is a selective alpha-2 adrenoreceptor agonist that provides dose-dependent sedation and analgesia without relevant respiratory depression. Although IV infusion along with the supplementation in the peribulbar block proved to be beneficial; 2 patients suffered bradycardia as a result of a systemic complication of Dex.

In the current issue of Indian Journal of Ophthalmology, Ganganjeet *et al.*^[5] have very efficiently evaluated the role of Dex in PA in vitreo-retinal surgeries under “Evaluation of the effect and safety of Dexmedetomidine as an additive to local anesthesia in peribulbar block for vitreoretinal surgery.” A prospective randomized study comparing the usefulness of Dex in PA in vitreo-retinal surgeries has not been done so far. The authors have avoided the use of IV infusion; thus, eliminating the undue systemic risk. Multiple systemic and ocular parameters were taken into account. Although it was not significantly different, the addition of 20 µg of Dex resulted in the early onset of anesthesia. Supplementation requirement of the block was also clinically lower in Dex group. More importantly, the Dex group showed a better pain and sedation profile with most patients being comfortable till the end of the surgery. Systemic parameters, such as systolic blood pressure and mean arterial pressure, showed a hypotensive pattern in comparison to the control group, which can be of great help to the surgeon during surgeries, such as diabetic vitrectomies, where chances of intraocular bleed are much more.

In comparison to the study conducted by Abdelhamid *et al.* where IV infusion of Dex lowered the heart rate, no such effect was seen in the present study. Also, the surgeon satisfaction level was higher probably due to better sedation and anesthesia profile.

In conclusion, among the many adjunctive agents used till now, Dex has proved its non-inferior role in terms of

regional and systemic efficacy. Vitreo-retinal surgeries are long duration, painful, and complicated and the addition of Dex in the peribulbar block has proved beneficial in multiple aspects, such as hypotensive anesthesia, better sedation, and stable systemic profile. One of the limitations of the study is that the authors did not analyze the duration of anesthesia and the exact mechanism of how Dex works in the peribulbar region still remains unanswered. Hopefully, authors will work on these limitations and come up with the results soon.

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