

## **Retrobulbar or Peribulbar: A Naming Question?**

The study by Soares et al.<sup>1</sup> published in this edition of the Brazilian Journal of Anesthesiology has aroused old questions about anesthetic techniques for eye surgery: retrobulbar, peribulbar, extraconal, periconal and subtenonian

Anesthetic techniques aim at depositing local anesthetics in a given point as from which spread may reach ciliary nerves responsible for eye sensitivity, ciliary ganglion and motor nerves innervating all muscles responsible for eye movements. So, onset, analgesia, autonomic reflexes block and eye immobility may be obtained in a shorter period of time. Depending on the injected volume, anesthetic agent may spread to anterior eye segment and promote eyelid analgesia and ocular orbicular muscle akinesia. Concentration effect and spreading power are also important to determine onset.

Highly spreadable 2% lidocaine determines shorter onset as compared to bupivacaine and ropivacaine. In the study by Soares et al.<sup>1</sup>, with the same concentration (0.5%) of racemic bupivacaine, levobupivacaine and enantiomeric S75/R25 bupivacaine, there have been no significant differences in minimum anesthetic volume (MAV) for retrobulbar block, with similar spreading profiles. Although these drugs and concentrations are not widely used for retrobulbar block, this shows that they had satisfactory success rates when local anesthetic was deposited behind the eye.

Retro means behind and retrobulbar means behind the bulb or eye. This technique deposits local anesthetics behind the eye, beyond its equator. So, shorter analgesic and motor block onset and lower failure rates are to be expected.

Some observed complications (retrobulbar hematoma, eye perforation and optic nerve sheath injection) become extremely uncommon when technical details are observed as patient maintaining the eye in the primary position; not crossing with the needle the sagittal plane crossing the visual axis; not introducing the needle more than 30 mm; respecting blockade counterindications; using adequate material (blunt short beveled needles). A study encompassing 5 thousand retrobulbar cases has shown only 3 retrobulbar hematomas (0.06%) and no other complication whatsoever<sup>2</sup>. In the technique described by Soares et al.<sup>1</sup>, 25 mm needle goes beyond eye equator, being introduced toward cone apex and characterizing a retrobulbar injection.

Double puncture peribulbar block was developed as a safer alternative to retrobulbar block and recommends injection around the eye, close to equator. In this site, there is higher probability of local anesthetic spread to the anterior segment, hence a higher incidence of chemosis, longer motor block onset and frequent need of oculopressure. If the needle is deepened, there is lower incidence of chemosis and failures.

The higher chance of eye perforation with double puncture needles has led to studies recommending single inferior-lateral puncture with higher volumes and 25 mm needles. It is interesting to observe that, at inferior-lateral palpation, very often the injection point corresponds to eye equator. So, needle introduction already reaches the posterior pole and anesthetic agent is deposited in the retrobulbar space. This means that when there is lower failure rates, shorter onset and lower volumes, a retrobulbar block is being performed.

Another important aspect is that retrobulbar injections promote more marked proptosis as compared to peribulbar injections. Proptosis shows that the anesthetic agent is not being injected in the optic foramen and is a useful sign to prevent complications<sup>3</sup>.

Another important fact is that needles introduction beyond eye equator crosses the membrane of the cone. Depending on the needle being used, membrane perforation is noticeable, especially in young patients. In crossing it, the injection will preferably follow the direction of the muscle-membranous cone, bathing the retrobulbar space.

For what has been said, it is necessary to define names and thoroughly detail respective anesthetic techniques to observe results according to the exact needle location, which in the case of Soares et al. was clearly retrobulbar anesthesia, which is common in some studies, being however called peribulbar anesthesia.

**Key Words:** ANESTHETIC TECHNIQUES, Regional: peribulbar, retrobulbar

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