

Short Communication

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## Medial Canthus Single Injection Peribulbar Anesthesia using 13x0,45mm Needle: Technique Presentation.

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### Abstract

The evolution of ophthalmologic surgery brings back the popularity of regional anesthesia techniques. The search for the ideal anesthetic approach have been based in safety and efficacy basis. Peribulbar medial canthus single was successfully attempted but not with a less traumatic needle. A technique presentation of the peribulbar medial canthus single approach using a 13x0x45mm needle is detailed and advocated as an alternative to perform ophthalmic surgeries.

**Key Words:** Peribulbar Anesthesia, Ophthalmology, Medial Canthus, Caruncle

### Introduction

The main objectives to achieve during anesthesia are safe and efficacy. The ophthalmologic surgical setting considers sight and life-threatening complications relating to safe, although the efficacy represents optimal conditions to the patient and surgeon during surgery. Ocular penetration and/or perforation, retrobulbar or peribulbar hemorrhage and intrathecal anesthetic injection (brainstem anesthesia, seizures) are one of the worst sight and life-threatening complications possible 1,2. Optimal conditions to patient could be in fact a pleasant experience, without pain or any adverse event 3,4. The surgeon requires akinesia, without pain and reflexes (specially oculocardiac reflex), and without any local complication that could interfere with technical excellence (chemosis, hyphema, subconjunctival hemorrhage, etc) 5.

The rationale for the technique presented could be explained an-

swering two questions (table 1):

a) Why use medial canthus? Because after extensive anatomical review we concluded that both in sagittal and coronal axis this approach could represent the safest site, with few main structures (nerves, vascular, muscles) adjacent 6,7 and additionally the preferred location of staphylomas be temporal and not nasal 8.

b) Why use needle 13x0,45mm? Minimize Risk: Because minimizing the local trauma we have less chance to vascular complications (subconjunctival hematoma or retrobulbar hematoma) and, in case of perforation, less ocular trauma. This could be more relevant in patients with use of antiplatelet medications 9,10. Efficacy: The length of 13mm seems to be appropriate to reach the peribulbar area, considering that a usual Ocular axial length is 24mm with one third external (8mm) and two thirds internal (16mm) 4,7.

**Table 1:** Rationale of technique.

Choice	Reason
"Up" Caruncle	a) Stay away the medial retinaculum (improve efficacy) <sup>24</sup> ; b) Less presence of staphylomas - 82% infero-lateral (less risk of perforation) <sup>8</sup> ; c) Almost avascular (less risk of bleeding complications) <sup>5</sup> .
Needle 13x0,45	a) Reach almost periconal site, in normal eyes (improve efficacy); b) Less tissue trauma (less risk of serious bleeding complications); c) Far away from neural sheath (less risk of brainstem anesthesia/seizures).

**Technique:**

There was no premedication prior to surgery. Tetracaine 1% ophthalmic solution (2 drops), Tropicamide 1.0% (2 drops), Phenylephrine Hydrochloride Ophthalmic Solution 10% (1 drop) was instilled before performing anesthesia. Usual monitoring was used.

It was injected Propofol intravenously to obtain light sedation during the puncture 11. A 13x0,45 mm needle was fully inserted in the semilunaris fold, just above the caruncle lacrimali (up-caruncle approach) (Photo 1) at an angle of 90° both in longitudinal and in transversal axis (photo 2).



**Photo 1:** "Up" Caruncle site of puncture.



**PHOTO 2:** The 90 degree's angles of entrance in longitudinal and transversal axis.

The needle was fully advanced in an anteroposterior direction, at a parallel situation among the Globe and the medial wall of Orbit. The local anesthetic mixture was then slowly injected (lidocaine 2% + hyaluronidase 10 IU/mL) in an initial fixed volume of 5mL. Compression was then applied for 2 min using a Chandler's maneuver to lower intraocular pressure and improve the orbital spread of the anesthetic solution 12. Akinesia (globe and eyelids) and analgesia was assessed before surgery and if necessary a supplemental injection was performed by the anesthetist using the same technique but with a volume of 3-5mL of anesthetic. The

time elapsed from block to surgery must be at least 10min, but ideally, we respect more than 15min, to reach better efficacy as advocated by former studies 13, 14. There is a special comment about anesthesiologist position when performing the technique: The authors realizes that while one hand keeps the eyelids open the other hand proceed the block. In this scenario, to do not cross hands, a right-handed anesthesiologist must be positioned right-caudal to the patient for right eye block and cranial for left eye block (photo 3 and 4).



**PHOTO 3:** Right-handed anesthesiologist approach to the right eye of the patient





**PHOTO 4:** Right-handed anesthesiologist approach to the left eye of the patient.

### Discussion

Ophthalmologic surgeries can be performed under topical, regional and general anesthesia. General anesthesia usually is reserved for special situations and have a decreased utility as the minimal invasive techniques evolve 15. Topical anesthesia is increasing in preference because eliminate the risks related to injection, but it presents limitations about peri and postoperative pain and frightening experience to patient, and must be reserved for short surgeries and cooperative patients 16. Peribulbar, retrobulbar and sub-tenon's block are the ideal regional anesthesia techniques and have been extensively investigated in the literature 17,18 assume that peribulbar anesthesia is a safe and effective regional anesthesia option to perform Ophthalmologic surgeries, with minimal advantages and disadvantages compared with another needle based techniques. The alleged safe superiority of sub-Tenon's block is falling with more evidences about serious complications with this approach too 19,20,21. The ultrasound guided block could improve safety and efficacy to regional anesthesia of the eye, but its application to ophthalmic regional anesthesia remains restricted because the risks related to the equipment 1. There are evidences supporting single puncture peribulbar anesthesia using caruncle site 13,14. The difference of the previous techniques described remains in the needle used to perform the eye block (25G) and the mean depth introduced (15-20mm). The authors found only one reference to caruncle approach with a similar needle, but it was used associated with traditional inferior-lateral peribulbar block<sup>22</sup>. Those authors postulated the efficacy of the caruncle technique based on the ex-

istence of "hernial orifices" above and below the connective tissue septa and check ligament in nasal side of medial rectus muscle. The authors postulate that this technique could be ideal for Glaucoma surgery because the low volume used and medial approach cause less influence in IOP (Intraocular pressure) 23.

The authors believe that this approach could be incorporated into the practice of the ophthalmic anesthesiologists to increase the data about its efficacy and safety. We are now conducting a comparative study to improve the quality of the evidences about the technique.

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### Conflict of Interest

The authors declare no Conflict of Interest.