Letter to Editor

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To the Editor,

I read with interest the recent article by Prakasm et al. [1] mentioning a case report on temporary pupillary dilatation and ptosis as complications of Posterior Superior Alveolar (PSA) nerve block with a review of literature. The authors have put forward many theories and anatomic variations to explain the ocular complications occurring after PSA nerve block, those being: (1) Intra arterial injection under pressure with retrograde flow leading to the occlusion of retinal and choroidal vasculature (2) diffusion of the anesthetic solution from the pterygomaxillary fossa through the sphenomaxillary cavity to the orbit thus stimulating the autonomic nervous system causing parasympathetic and sympathetic involvement, thus producing the different manifestations. (3) The intra arterial injection of the local anesthetic (LA) can reach the cavernous sinus through the arteries and cause paralysis of cranial nerves III, IV and VI. Explaining their case the authors state that the dilatation of the pupils and ptosis of the eyelids may be due to the diffusion of the local anesthetic solution into the orbital cavity through the pterygomaxillary fossa. They also say that it could be due to the direct deposition of LA in the PSA artery which reaches the lacrimal artery and causes the particular symptoms.

Ocular complications after intra-oral maxillary anaesthesia are infrequently reported in the literature and these complications include strabismus, ptosis, diplopia, ophthalmoplegia and amaurosis (monocular blindness), Mydriasis, Horner's syndrome, medial rectus palsy and lacrimation have also been reported. Posterior superior alveolar nerve lies on the infratemporal surface of the

maxilla and enters the foramina at various levels (range 10–43 mm) above the most inferior point of the maxillary tuberosity [5]. The PSA nerve block technique commonly followed is the one given by Roberts and Sowray (1979) who suggest that a 27 gauge long needle be inserted into the mucogingival fold adjacent to the mesio-buccal root of the maxillary third permanent molar and then passed inwards, upwards and backwards at an angle of approximately 45° for a distance of 20–25 mm. The PSA nerve block is commonly used in dentistry for treatment of the maxillary molars. Although this procedure is associated with many complications, ocular complications are very rare, but once it happens, both the dentist and patient can be perplexed by this unexpected circumstance adversely affecting the doctor-patient trust. Horowitz et al. [2] in 2005 have done a literature review and state that, since 1960, 39 cases of ophthalmic complications have been reported. A majority have followed anesthesia of the upper alveolar teeth and in only three cases the deficits were permanent in nature thus highlighting the transient nature of the complications.

With regards to the present case, it can also been postulated that the ocular changes observed after dental local anesthetic procedures are related to sympathetic and parasympathetic effects which are elicited as a result of trauma by the anesthetic needle inadvertently scraping the vessel walls thus stimulating the sympathetic plexus present on the common carotid arteries and all its branches rather than to anesthetic solution circulating in the vascular tree [3]. Dogan and Dora [4] have reported a case of Horner's syndrome which according to them may be due to the paralysis of the sympathetic plexus around the internal carotid artery.

Also, another point of note is that most of the cases reported in literature are with the use of either 2 or 4% articaine hydrochloride with epinephrine. The improved

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anesthetic diffusion of articaine into bone and soft tissues may have caused these ophthalmic complications [5, 6].

The authors have rightly proposed various steps to follow when administering LA. A couple of additions I would like to suggest the use of short needle (1 inch) for PSA nerve block and the double aspiration technique. The management guidelines outlined in the conclusion by the authors are elaborate and adequate.

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