

## It is Just an Eye Case! Delayed Awakening After Retro-Bulbar Block

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### Case Report

We report a case of delayed awakening in a woman scheduled to have Pars Plana Vitrectomy in our outpatient surgi-center. She was sedated with 100 mg IV Propofol followed by a retrobulbar block with 6 ml of local anesthetic (mixture of 3 ml of 4% Lidocaine and 2.5 ml of 0.75% Bupivacaine, 0.5 ml of Hyaluronidase) and became apneic 5 min later. She stayed unconscious for half an hour in the or with a HR of 44-50/min. She was transferred to PACU where she was restless and confused for few hours. She was stable hemodynamically after brief bradycardia that responded to atropine 1 mg, but she remained unconscious and did not respond to deep stimulus for about 25 min after the block. We suspect that she had intrathecal injection of local anesthetic.

### Details of the Case

This 49 years old, (height 168cms, weight 70 Kg) woman was scheduled for elective right eye pars plana vitrectomy in our outpatient surgi-center. Her past medical history include: hypertension, insulin dependent diabetes mellitus and end stage renal disease. She was dialyzed a day before the surgery through right upper arm AV fistula. Her Labs results: Hb11.5, Na142 meq/L, K 4.3 meq/L, Bun/cr-22/6.1, Glucose 153 mg%, EKG: normal sinus rhythm with left ventricular hypertrophy. Her medications include: Lantus insulin, metoclopropamide, losartan, metoprolol, esomeprazole magnesium. She was allergic to Diphenhydramine (nausea). Past surgical history includes: AV fistula, Kidney biopsy and no anesthesia problem was reported. Her preoperative vital signs: BP-196/93 mm Hg, HR-71/min, respiration-18/min and temp-98.4F. Her physical exam was unremarkable.

Patient was brought to the operating room. Following the application of standard ASA monitors and Oxygen at 2 lit/min via nasal cannula, her vital signs were BP 180/90 mm Hg, HR 85/min, and pulse ox 99%. She was sedated with 100 mg IV Propofol (1% manf. APP pharmaceutical, LLC). Retrobulbar block was performed by the surgeon using 27 G needle with 38 mm length. 6 ml of 4% lidocaine and bupivacaine 0.75% along with hyaluronidase was injected in retrobulbar area after negative aspirate for blood or CSF by the surgeon. Vital sign at this time were: BP 160/90 mm Hg, HR 85/min, pulse ox 99%. About five minutes later she was noticed to be apneic and was immediately ventilated with 100% oxygen via ambu bag, while assistance was called. She was noticed to have HR 48/min which was immediately treated with 1 mg atropine (American Reagent Inc). Patient returned to spontaneous breathing after few assisted ventilation. Her vital signs were-BP170/100 mm Hg, HR105/min, O<sub>2</sub> pulse oximeter 99% and respirations 22/min, while she was still unconscious and did not respond to verbal or deep painful stimulus. Twenty five-thirty minutes later she started to respond to painful stimulus and eventually woke up an hour and a half later, but was still confused. Her surgery was cancelled and she was brought to PACU. In the PACU she appeared more awake but still lethargic with vital signs of BP 190/97mm Hg, HR 90/min. Surgeon insisted for the transfer to ER, where she was assessed and finally sent home after few hours later.

### Discussion

It is common practice to perform eye surgery with a nerve block [1] and injecting IV Propofol as a sedative [2] prior to injection of local anesthetic. In our patient we initially attributed her apnea and bradycardia to hypoxia from over sedation with 100 mg of Propofol. However, she was never hypotensive at any time after the administration of Propofol. Propofol [3,4] has been reported to cause central anti-cholinergic syndrome after intravenous administration. However, apnea was not reported with this syndrome as initially occurred to our patient. Furthermore, her blood pressure did not drop from intravenous administration of propofol [2]. Hypoglycemia in diabetic patient can cause delayed awakening but her blood glucose was 217 mg/dL. In hypertensive patient one should always think of hypertensive encephalopathy as cause of stuporous state, especially with bradycardia but the timing of onset and regression of neurological symptoms coincided more with the pharmacokinetics of the local anesthetic. Nicoll et al. [5] in the largest case study of 6000 patients reported one patient who presented with hypertension and bradycardia after Retrobulbar block.

After ruling out these common causes of delayed awakening we suspect intracerebral spread of local anesthetic. Different CNS events have been reported in literature after Retrobulbar block like seizure, hemiparesis and coma [6-8] possible mechanism of CNS symptoms is unintentional intra-arterial injection. Retrograde flow of local anesthetic into the carotid circulation is another mechanism of spread that has been postulated by Aldrete et al. [7] rarely the local anesthetic can be injected into CSF unintentionally and cause brainstem anesthesia [9-12]. The exact mechanism is not known in each case because of short duration of the symptoms. One of the most logical explanations is that the local anesthetic mixed with tissue expander enters under the sheath of optic nerve.

It is suggested that the local anesthetic agent unintentionally enters the optic nerve sheath and then tracks back into the subdural or subarachnoid space. The additive used in local anesthetic mixture Viterase (hyaluronidase manf ISTA pharmaceuticals) increases tissue permeability hence increase the dispersion and delivery of local anesthetics. The dura mater surrounds the optic nerve to the posterior aspect of the sclera. Drysdale [11] showed in a cadaver that, when a needle is placed inside the optic nerve sheath and 3 mL contrast material is injected; the radiopaque dye is seen tracking along the nerve, chiasma, pons, and midbrain. The tracking can also be seen in reverse direction. This was proved in another study in which the contrast

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material was injected into the subarachnoid space, and it was noted to appear in the optic nerve sheath. We suspect that in our patient local anesthetic followed the same mechanism and caused this complication.

Our patient improved gradually to full neurological recovery so additional test like MRI or EEG were not performed. She had an uneventful surgery a month later.

Very often the eye operations are considered low risk procedure. However, a rare complication like brain stem anesthesia [8] can add to significant unanticipated morbidities with potentially devastating consequences. Early detection of these complications and their timely management are crucial. This case emphasizes the importance of presence of an anesthesiologist [13] with adequate monitoring to diagnose and immediately manage any complication. His or her presence adds to safety of patient even in a relatively low risk surgical procedure.

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