**Visual loss: A review of the literature**

To the editor:


I am presently conducting a prospective comparative study on intraocular pressure of patients in the prone position. Imagine my delight to find a review of literature on this subject by Rupp-Montpetit and Moody. I wish to address several questions to the authors and make a few comments.

Blood flow is important to postoperative vision outcomes. In this article, the loss of vision is attributed to venous stasis or outflow obstruction, accentuated by a dependent position or increased intracranial pressure. Anesthesia techniques often lead to a decrease in intracranial pressure via medications administered and lowered end-tidal carbon dioxide levels. Two surgical groups at higher risk for ischemic optic neuropathy—prone spinal instrumentation and cardiopulmonary bypass—have a dependent position that resembles normal sleep. Patients in true Trendelenberg position are not in the highest risk group for postoperative ocular damage. The question is: Could ocular perfusion and oxygenation by the arterial circulation be a greater factor in vision loss than venous outflow?

This article references coexisting diseases and an elderly population as increased risks for ischemic optic neuropathy. Case studies of vision loss document patients that are young and have no coexisting diseases who have suffered permanent vision loss from nonocular surgery. If coexisting disease and/or age put one at higher risk, then which one of the many groups mentioned in this article is the most “at risk”? If the disease/age puts you at higher risk, why is vision loss not seen in gallbladder removal or colon resections with the same at risk population? There are many questions to this puzzle that are yet to be answered.

In posterior ischemic optic neuropathy (a rarer form of vision loss but the most common following prone spinal instrumentation surgery), the examination of the optic disc shows “pallid edema,” but only after several weeks. In the immediate postoperative period, field of vision testing is a better indicator of posterior intraocular pressure. It would seem wise for all “at risk” patients to have a simple field of vision testing in the postanesthesia care unit.

Nurse anesthetists are guardians of their patients’ eyes. We have much to learn concerning optimization of ocular perfusion. If anyone can play a pivotal role in understanding and treating this devastating loss of vision, it should be nurse anesthetists. In my present study, I hope to answer a few of the questions. As Rupp-Montpetit and Moody suggest, additional studies are needed to determine the true risk factors, and to guide anesthesia providers in the best measure to protect and preserve a patient’s eyes.

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**Response:**  
We thank E. Ruth Longway, RN, BSN, for her letter regarding our article on ischemic optic neuropathy (*AANA J.* 2004;72:285-292) and her interest in the topic of vision loss as it pertains to our field of anesthesia. In response, we would like to address the following items.

Our discussion on blood flow and the perfusion pressure of the eye (mean arterial pressure and intraocular pressure), as stated in the first paragraph on page 286, does relate to the arterial blood supply. Increased intraocular pressure that results from venous stasis, which can happen in the dependent positions, can decrease the arterial blood supply to the eye. The subsequent decrease flow and axonal swelling can exacerbate the problem. Oxygenation also ties in with my discussion on anemia and large intraoperative blood loss.

As stated in the section titled “Preexisting and predisposing factors,” many cases have been reported in patients who exhibited no predisposing risk factors. Ms Longway is correct in that not all of the cases are in the elderly population. However, consideration needs to be given to the fact that many surgical patients are elderly. I refer the reader to the portion of the article that sites the most common risk factors, surgical procedures, and preexisting conditions that have been reported.

Ms Longway asks for the group most at risk. The literature is varied in its outcomes, and I cannot provide an absolute indicator for ischemic optic neuropathy. Studies vary on which surgical procedures or patient positions have higher incidences. Furthermore, some studies exclude cardiopulmonary bypass surgeries altogether, which is another reason to perform prospective controlled studies. Ms Longway also proposes the question regarding risks with gallbladder surgery. In our article (page 288, left column, last paragraph) listed are multiple risk factors for the development of vision problems. Surgeries that come to mind that lend themselves to large blood loss or deliberate hypotension are cardiopulmonary bypass or prone spinal fusions, etc., generally not gallbladder removal.

I agree with Ms Longway regarding vision testing in the postanesthesia care unit; however, I wonder about the accuracy, as patients are often affected by narcotics and other medications during the postoperative period.

Again, we thank Ms Longway for her response and interest in this devastating outcome. I look forward to hearing about the outcomes of her study.

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