

# Comment on visual impact of sub-Tenon anesthesia during combined phacoemulsification and vitrectomy surgery

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Dear Editor,

We read with interest the article by Chen *et al*<sup>[1]</sup> on the visual impact of sub-Tenon anesthesia during combined phacoemulsification and vitrectomy surgery. The authors reported that 93.3% of patients in the study experienced loss of perception of light at least during one of the surgical steps after the contralateral eye was covered intraoperatively<sup>[1]</sup>. Most of the patients (81%) reported losing light perception between 6min and 30min from the commencement of the surgery.

While it is not unusual for patients to experience loss of light perception during vitrectomy, Chen *et al*<sup>[1]</sup> have reported a higher incidence of loss of light perception compared to other similar papers. An earlier study of patients undergoing vitreous surgery performed under regional (peribulbar or retrobulbar) anesthesia reported that 29.2% of patients experience transient loss of light perception, while 24.6% of patients experienced no light perception throughout the entire duration of the surgery<sup>[2]</sup>.

Among studies of patients undergoing phacoemulsification, the rate of loss of light perception varied from 0 to 20%<sup>[3]</sup>.

The loss of light perception in ophthalmic surgery is not only limited to phacoemulsification and vitrectomy surgery. Among patients who underwent laser *in situ* keratomileusis (LASIK) surgery, 75.6% also experienced loss of light perception during corneal flap fashioning<sup>[4]</sup>. This was higher in the eyes where the Zyoptix XP microkeratome was used,

compared to those who underwent intralase during corneal flap fashioning (90.2% vs 61.0%,  $P=0.004$ ). In that study, 62% of patients also reported lost of light perception during vacuum suctioning.

The higher incidence of loss of light perception reported by Chen *et al*<sup>[1]</sup> may be due to various factors such as differences in demographics, or disease severity in this cohort. Regardless of the reason, an important consideration is that many patients may not expect to experience no light perception during an ophthalmic surgery. In a study by Ang *et al*<sup>[5]</sup> on patient's expectation and experience of visual sensations during phacoemulsification, 36.7% of patients expected to experience at least light perception during the surgery, while 24.5% of them were unsure what to expect. Among patients expecting to see light, the loss of light perception may be frightening<sup>[6]</sup>, as these patients may assume that complications have occurred during the surgery. Fear experienced by patients is undesirable as it may cause patients to be uncooperative intraoperatively, and may also trigger a sympathetic stress response<sup>[7]</sup>. This highlights the importance of counseling the patients pre-operatively on what to expect.

In addition to no light perception, many patients also experienced various other visual sensations such as color, movement, flashes and instruments<sup>[3]</sup>. As many as 19.4% of the patients found their visual experience frightening<sup>[5]</sup>. It will be equally important to highlight these to patients during their pre-operative counseling.

In summary, we congratulate the authors on their paper, and suggest that patients undergoing ocular surgery should be counseled pre-operatively on the possibility of intra-operative visual sensations, including loss of light perception.

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## Visual Impact of sub-Tenon Anesthesia

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### Author Reply to the Letter

#### Dear Editor,

We thank the authors for their interest in our study on patients' visual experiences during combined phacoemulsification and vitrectomy. We agree with the authors' viewpoint that a high incidence of loss of light perception in our cohort may have been due to various factors such as differences in demographics, or disease severity. It has been pointed out that the other possible mechanism of loss of light perception under local anesthesia may be due to several mechanisms, including low perfusion of the optic nerve caused by high intraorbital pressure,

vascular spasm caused by epinephrine, direct trauma by the needle during anesthetic injection, or retinal ischemia caused by elevated intraocular pressure. The main reason of amaurosis during phacoemulsification and laser *in situ* keratomileusis (LASIK) may be the low perfusion of optic nerve and retina from a temporary rise in the intraocular pressure.

Unlike previous studies, in our study, we covered the contralateral eye with the surgeon's palm during the questionnaire. The patients were asked whether they could see the light from the microscope without covering the contralateral eye first at every inquiry. Subsequently, the contralateral eye was covered with the surgeon's palm and the same question was asked again. Although only 4.9% of the patients reported that they could not see light before covering the contralateral eye, 93.3% could not see the light at least in some steps of operation after the contralateral eye was covered. All the patients in our study who reported amaurosis intraoperatively were reassured. These patients recovered on the first day after surgery, in this study.

Best regards

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