

## Commentary: Vexatious photopsias after cataract surgery

The most annoying fact for a proficient anterior segment surgeon and the patient after an uneventful cataract surgery with intraocular lens (IOL) in the bag is the problem of dysphotopsia. These are unwanted photic phenomenon's experienced by the patient immediately or late after an uncomplicated cataract surgery. Positive dysphotopsiae being a crescent or arc-like light observed by the patient and negative being a dark shadow or reflex mostly in the temporal visual field. The symptoms are believed to be a manifestation of scattering of light off the IOL onto the retina.

Positive dysphotopsiae are more common; incidence up to 50%.<sup>[1]</sup> Also, these are more transient (from immediate postop till 6 weeks after surgery) and less discomforting to the patient. On the other hand, negative dysphotopsiae (ND) according to one study affects only 15% of the patients postoperatively with persistent symptoms affecting only 2%–3% of patients.<sup>[2]</sup> The fading away of the transient symptoms may be possibly due to neuro-adaptation.

Although there is no direct casual relationship of a single phenomenon leading to the occurrence of dysphotopsiae, multiple risk factors can be considered to contribute to the phenomenon of dysphotopsia. The common ones that are difficult to establish are the anterior capsulorhexis, orbital anatomy, small pupil size, acrylic IOL due to its high refractive index, and the more obvious causes such as a large angle kappa and patients implanted with a multifocal IOL.

Specifically mentioning the etiologies of ND, the most well-understood cause is the interaction of the capsulorhexis with the anterior surface of the IOL, placed in the bag. This hypothesis can be supported by the fact Masket *et al.* in their study of 10 eyes of 10 patients reported success in reducing the symptoms of negative dysphotopsia after implantation of a secondary piggyback IOL or secondary "reverse optic capture" (i.e., moving the optic into the sulcus while leaving the loops in the bag).<sup>[3]</sup> Moreover, it is well known to perform reverse optic capture as a primary strategy for the second eye of patients who are extremely unhappy after surgery of the first eye.

Another hypothesized theory causing ND is the reflection of the anterior capsulotomy edge on the nasal retina.<sup>[4,5]</sup> This is the reason why using an easily accessible Nd: YAG laser to

remove the nasal portion of the anterior capsule alleviates the symptoms of dysphotopsia. Also during this procedure, there is anterior movement of the IOL decreasing the iris IOL distance, which, when less than 0.06 mm, lowers the risk of ND itself.<sup>[6]</sup>

Another important cause is the clear corneal incision and or the corneal edema due to a temporal incision created during cataract surgery contributing to negative dysphotopsia. The most remarkable study in this regard has been by Osher in 2008 in which cataract surgery was performed in 250 patients and the incidence of dysphotopsia was studied through objective and subjective tests. The results of their evaluations revealed an incidence of ND to be 15.2% on the first postoperative day, decreasing to 3.2% after 1 year, further to 2.4% after 3 years.<sup>[7]</sup> None of the patients demanded any intervention for the same. Based on this pioneer study, in this issue of IJO Sharma *et al.*<sup>[8]</sup> have designed this randomized control trial, to aptly highlight the effect of stromal hydration after cataract surgery on the incidence of ND. However, the major shortcoming of this randomized trial may be that there is asymmetry in the allocation of the patients with anterior capsulorhexis covering the optic edge (approx. 5.5 mm) in both groups. This may indirectly affect the primary outcome measure that is the incidence of ND between the eyes receiving stromal hydration versus no hydration. Another fact is that patients with a superior corneal incision also experience ND refuting the possibility of the fact that only temporal incision is the cause of negative dysphotopsia. Thus, this raises the need to design another study comparing superior and temporal corneal incision to establish the fact that temporal corneal incision alone leads to a significant increase in the incidence of negative dysphotopsiae.

In conclusion, essentially there is no single clear-cut causative factor for the development of ND; however, there is also no doubt that corneal wound hydration leads to a significantly higher likelihood of experiencing ND in individuals undergoing cataract surgery in the early postoperative period.

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<b>Quick Response Code:</b>	<b>Website:</b> www.ijo.in
	<b>DOI:</b> 10.4103/ijo.IJO_545_21

**Cite this article as:** Thakur A, Gupta A. Commentary: Vexatious photopsias after cataract surgery. *Indian J Ophthalmol* 2021;69:1791-2.