Case Report

The Use of Tinted Spectacle Lenses to Treat Positive Dysphotopsia after IOL Implantation: A Case Report

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Abstract

Purpose: To report a case of positive dysphotopsia (PD) following intraocular lens (IOL) implantation.
Case Report: A 57-year-old male presented with significant PD symptoms, including photophobia and glare, after monofocal IOL implantation. Despite treatment with artificial tears and corticosteroids, the patient continued to experience visual discomfort, requiring sunglasses even indoors. He was prescribed brown-tinted lenses with 40 % tint. After one month of use, the patient reported substantial improvement in PD symptoms, increased contrast sensitivity, and cosmetic satisfaction.
Conclusion: Tinted spectacle lenses provide a non-invasive option for managing persistent PD. In our case, brown-tinted lenses effectively reduced glare and enhanced visual comfort. Further studies are needed to investigate the broader role of tinted lenses in managing visual disturbances associated with IOL implantation.

Keywords: Positive Dysphotopsia; Cataract Surgery; Tinted Lenses; Visual Disturbance.

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Introduction

Positive dysphotopsia (PD) is a type of photopsia characterized by the perception of bright visual artifacts in the visual field, especially when exposed to light sources or objects reflecting light [1-3]. These artifacts commonly present as halos, arcs of light, or glare occurring centrally or mid-peripherally [1-3]. Despite advancements in intraocular lens (IOL) technology and surgical techniques, a substantial number of patients continue to experience PD after cataract surgery. PD among these patients often causes visual disturbances near the visual axis, particularly in low-light environments, such as mesopic or scotopic settings when the pupils dilate [4-6]. Up to 67 % of patients report symptoms in the early postoperative period, with approximately 2.2 % experiencing persistent PD [7,8]. Although monofocal IOLs were introduced to reduce visual distortions, studies have shown that symptoms such as light sensitivity, halos, and starbursts remain, highlighting the limitations of monofocal IOLs in fully resolving PD [9]. Factors influencing postoperative PD include the sharp-edged design of IOLs, pupil size, and the optical properties of the IOL itself [9,10].

Case report

This study adhered to the tenets of the Declaration of Helsinki and was approved by the institutional Ethics Committee. Informed consent was obtained from the patient prior to reporting the case.

A 57-year-old man presented with complains of photophobia and glare following monofocal intraocular lens (IOL) implantation. He reported needing to wear sunglasses indoors to reduce the discomfort caused by these symptoms. The visual disturbances significantly impacted his daily life, affecting his appearance, causing fatigue, reducing visual contrast, and preventing him from driving.

The patient consulted his ophthalmologist, who initially prescribed artificial tears and corticosteroids. However, these treatments provided no relief, and sunglasses were recommended to manage the glare and other symptoms.

Post-surgical refraction was plano -1.00 × 90° OU, with a best-corrected visual acuity of 7/10. There were no signs of corneal irritation, inflammation, meibomian gland dysfunction, dry eye, conjunctivitis, or keratitis. A slit-lamp examination was unremarkable, the optic nerve head appeared healthy, and intraocular pressure was normal at 14 mmHg, as measured by an air-puff tonometer. There were no signs or symptoms of glaucoma. The patient's pupil size measured 8 mm under mesopic conditions. The patient was prescribed 40 % brown-tinted lenses to reduce glare. After one month, the patient reported a reduction in PD symptoms, improved comfort, and cosmetic satisfaction.

Discussion

Glare is one of the most troubling symptoms of PD, as it reduces visual sharpness in bright light conditions. Several factors contribute to this symptom, including high-order aberrations, IOL opacification, and the material and size of the IOL[11,12]. Another common PD symptom, starburst, arises from diffraction caused by the IOL edge [13]. Studies on monofocal IOLs have found that high positive spherical aberration of the eye (> 0.5 micrometers) is the primary factor responsible for halos, another bothersome PD symptom [14,15].

Monofocal IOLs aim to minimize visual distortions and multifocal IOLs have been associated with a higher prevalence of PD [4,16].

Neuroadaptation plays a role in alleviating PD symptoms, with studies showing that patients report fewer complaints about PD over time [17]. To address these issues, newer IOL designs employ a pinhole principle with a diaphragm that allows only paraxial rays to pass through, reducing aberrations [18,19].

Reducing pupil size has also been shown to decrease visual blur and high-order aberrations, which is beneficial because highly aberrated eyes can lead to significant subjective complaints, such as glare and photophobia [18]. The diaphragm size can be adjusted through various methods, including pharmacological treatments (e.g., pilocarpine, brimonidine), extraocular approaches (e.g., contact lenses), corneal procedures (e.g., tattooing, intrastromal implants), and intraocular interventions (e.g., iris suturing, diaphragm IOLs, artificial iris) [20]. Studies have found that reducing the optic diameter of the IOL increases PD complaints, as demonstrated by Bournas et al., [21]. Research on IOL materials, including acrylic and silicone, indicates that PD can occur regardless of the material used [22].

Recent studies on patients undergoing cataract surgery suggest that PD may decrease over time after IOL implantation as part of the healing process [23]. However, PD may persist in some cases as noted earlier.

Tinted spectacle lenses offer a non-invasive option for reducing glare and sensitivity to bright light. These lenses have demonstrated long-term effectiveness, particularly in patients with visual stimuli-induced migraines. Clinical trials have shown significant reductions in glare-like symptoms among migraine patients, and tinted lenses are often preferred cosmetically over sunglasses. The use of tinted lenses to enhance contrast sensitivity in cataract patients with postoperative glare is well-established [24-28]. Many patients prefer tinted lenses to surgical interventions, and recent studies highlight their good performance in managing PD symptoms [29].

Conclusion

Tinted spectacle lenses provide a non-invasive option for managing persistent PD. In our case, brown-tinted lenses effectively reduced glare and enhanced visual comfort. Further studies are needed to investigate the broader role of tinted lenses in managing visual disturbances associated with IOL implantation.

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Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.