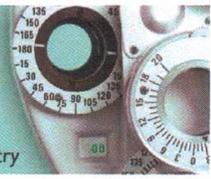




The Art of Tinting Contact Lenses to Relieve Migraines Secondary to Fluorescent Lighting

Christina Esposito OD, Vision Therapy/Rehabilitation Resident; Paul Harris O.D., FCOVD, FACBO, FFAO | Southern College of Optometry



Introduction

Optometric practices offer tinted and colored contact lenses to aid in cosmetic enhancement, however, many eye care practices are unaware of the therapeutic effects that tinting a lens (contact or spectacle) can offer. It is in our best interest to use our knowledge and skill set to design therapeutic lenses and fit them as appropriate. The reward of a successful fit and life-altering experience for the patient alone is priceless. This case report presents how a patient's life was positively impacted by therapeutically tinted contact lenses.

Case History

D.B., a 57 year old male presented to The Eye Center at Southern College of Optometry with severe migraines including auras that triggered when exposed to fluorescent lighting. The patient wears dark sunglasses and a baseball cap at work to help prevent the onset of the migraines. To help with the light levels at work, he had to remove every other lighting tube in the fixture for relief or just shut off all the auxiliary lighting. D.B. is seen by a neurologist for his headaches. The patients' medical and ocular histories are otherwise unremarkable. He takes 100 mg of Imitrex for his migraines. He is allergic to aspartame, caffeine, cheese, monosodium glutamate, and tryptophan. Upon examination, patients' uncorrected distance visual acuities are 20/20 OD, OS, OU and all other preliminary testing was normal. Refraction revealed OD: +0.50-0.75x110; OS: -0.25-0.50x110 with an add of +2.00 OU. Anterior and Posterior segment health is unremarkable.

Color sensitivity was performed using the Intuitive Colorimeter. This logically and sequentially explored color space to find the optimal precision tint for the relief of perceptual distortions, or in this case, migraines.

The Intuitive Colorimeter changes three parameters of color: hue, saturation, and brightness. The patient views colors through the instrument, while the examiner changes the parameters and records the responses related to how they make the patient feel. Subjective responses from little to no change to major changes are noted and recorded. Based on the responses, a computer program produces a color combination unique to the patient's visual needs. The color is chosen from over 100,000 different combinations. The corresponding color filter is then selected and shown to the patient for evaluation.

With D.B., testing indicated a preference with the spectrum narrowed to 180 at 30 saturation. This equated to a blue saturation on the color wheel. The tint chosen was applied. The first step was to have a pair of glasses made to this specification. D.B. used the tinted lenses a brief time but he reported no significant relief in symptoms. The decision was made to try placing the tint closer to the surface of the eye to more effectively block light.



Figure 1: Intuitive Colorimeter



Figure 2: Filtered Lenses

Using the SoftChrome In-Office Tint System the lenses were tinted "in house". The tinting system kit includes a choice of patterned templates to create pupil and iris combinations, the dyes, tinting equipment and instructions.

The lens used was Omafilcon-A BioMedic XC. A blue tint was applied to the contact lens using the system instructions. To relieve the symptoms of the migraine a dark tint was required. Activator solution (2mL) was poured into a container and blue dye (15 drops) was added. The solution was mixed with a syringe and transferred to a vial. The entire lens was left to tint for 45 minutes. After the time had passed,

the lenses were put into a heated neutralizing solution to prevent the dye from leeching out. Upon cooling, they were transferred to a multipurpose solution for storage.

The first lenses had only the pupil tinted. The reason for this was to improve cosmesis. Though these were promising, it turned out that they still let in too much light. The most successful tint pattern was a full lens diameter tint. The result was a profound change in the patient's life.

The benefits to tinting contact lenses "in house" include faster delivery time, color modification options, and the ability to apply a tint for therapeutic use to lenses of any available power combination.

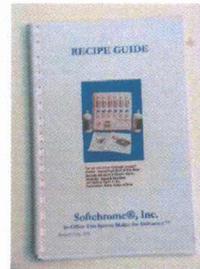


Figure 3A: SoftChrome Tinting Set



Figure 3B: SoftChrome Recipe Guide

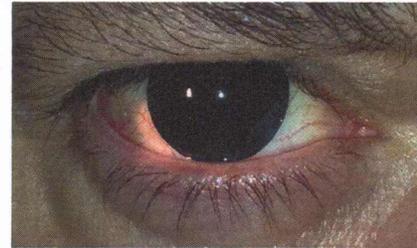


Figure 4: D.B. wearing CL (whole lens diameter tint)



Figure 5: Contact Lenses in Case (pupil only)



Figure 6: The original pair of sunglasses

Conclusion

The patient was able to wear the tinted contact lenses, full time during the day, and be in any lighting without experiencing headaches. His acuity through the lenses is 20/20 OD, 20/25 OS, 20/20 OU. The patient stated "I am not tired at the end of my work day due to the exposure to the fluorescent lighting, nor do I get migraines as easily. I can tolerate being at work and I do not have to consider quitting my job. It is amazing and I thank you again for what you have done for me (giving me a normal life back)." Tinting contact lenses and/or glasses for therapeutic reasons can be time consuming but can be a rewarding experience for both the clinician and patient.

Disclosures

Dr. Esposito and Dr. Harris both have no relevant financial or nonfinancial relationships to disclose.