The Key to an Iris Coloboma: Prosthetic Soft Contact Lens

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INTRODUCTION

Iris coloboma manifests as a keyhole-shaped pupil in the inferonasal quadrant. Patients with iris colobomas suffer from an array of symptoms such as glare, aberrations, photophobia, double vision, and poor cosmesis. When managing these patients, consider fitting prosthetic soft contact lenses, given their ability to address visual and cosmetic preferences.

CASE DESCRIPTION

A 22-year-old female presented to our clinic for a first-time contact lens evaluation with symptoms of light sensitivity. She had a history of iris and retinal coloboma OD and unremarkable OS. Best corrected vision was measured to be 20/25-2 OD and topography revealed mild irregular corneal astigmatism OD. The patient was fit in a prosthetic soft contact lens to cover the iris coloboma. The patient trialed the following prosthetic soft contact lens in office: Orion Biocolors Toric (+4.00-4.00x158) and Xcel Flexlens Toric (+6.50-4.00x158), both with 8.4 BC/SAG and 14.60 diameter. After assessing the fit, over refraction, and iris color matching for OD, the Orion Biocolors Toric in blue/gray was finalized with a pupil size of 5.0 mm. The final prosthetic soft contact lens received positive feedback from the patient in terms of comfort, fit, and color satisfaction. The patient recently returned to our clinic for a re-evaluation, however, we learned that the Orion discontinued production of her lens. Due to the discontinued production of her habitual Orion lens, the patient returned to try a different empirically-ordered AVT Cantor Prosthetic Custom soft contact lens instead. Per company recommendation, a clear, plano/sph AVT Cantor Prosthetic Custom soft contact lens OD was trialed to assess the fit of the lens before finalizing the parameters. With an over refraction of +5.50-3.75x165, BCVA was 20/20 OD. The lens had adequate coverage, centration, and 0.5 mm of movement. Overall, there was good fit, comfort, and vision with the AVT Cantor Prosthetic Custom OD and therefore a final lens order was processed with the following parameters: +5.75-4.00x165, 8.4 BC/SAG, 14.50 diameter, 38% water material, color #27, and 5 mm pupil size. Our patient will return for a final soft contact lens dispense OD in the coming weeks.

DISCUSSION

Ocular coloboma is a rare congenital abnormality that arises when the embryonic fissure fails to close during fetal development, specifically around 5-8 weeks of gestation. Ocular coloboma can be associated with hereditary gene defects (e.g., PAX6, SHH, MAF, CHX10), chromosomal abnormalities linked to systemic conditions, or it can occur sporadically. Ocular coloboma can occur in conjunction with other multisystemic conditions such as CHARGE syndrome or in isolation. This condition can present unilaterally or bilaterally and can impair various structures of the eye, commonly affecting the retina, choroid, and iris. An iris coloboma can be described as either typical or atypical, depending on the location of the defect. While typical iris coloboma presents as a keyhole-shaped pupil in the inferonasal quadrant, atypical iris coloboma occurs in any quadrant other than the inferonasal location. Additionally, iris coloboma can be classified as partial or complete, contingent upon the extent to which the iris is affected. Symptoms of iris coloboma can vary, with the greatest impact being light sensitivity, while changes in vision remain minimal.

Prosthetic contact lenses are customized to serve both cosmetic and functional purposes for a disfigured eye. Some indications for fitting prosthetic contact lenses include opacified cornea, leukocoria, iris atrophy, ocular albinism, and iris coloboma. Three general types of prosthetic contact lenses include tinted, translucent lenses with a homogenous color; computer-generated printed lenses with a pre-determined color; and hand-painted lenses with fully customized iris color and diameter. Depending on visual potential, these lenses can either have an open pupil or a black opaque pupil. When selecting a customized prosthetic contact lens for a patient, some critical factors to consider are defect type, color matching, and contact lens parameters. Depending on the type of disfigurement, the clinician can make the decision to only occlude the iris, pupil, or both. Color matching entails selecting a palette that aligns with the patient's natural iris color. It is best to make this color assessment in both indoor and outdoor illuminations and to have consistent lighting from one follow-up visit to the next. Asking the patient to wear neutral colors like white or black clothing can enhance the process. When assessing the contact lens fit, other key elements to note during the clinical visit are iris diameter, pupil diameter (in both dim and bright illuminations), coverage, and centration.

EXAMINATION FINDINGS AND RESULTS

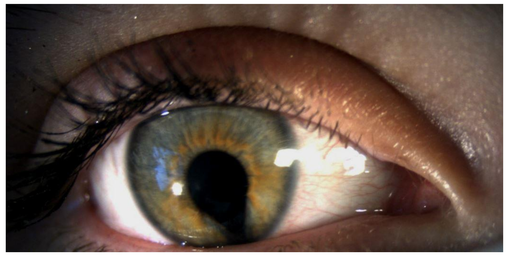

Figure 1. Slit lamp photography of iris coloboma OD

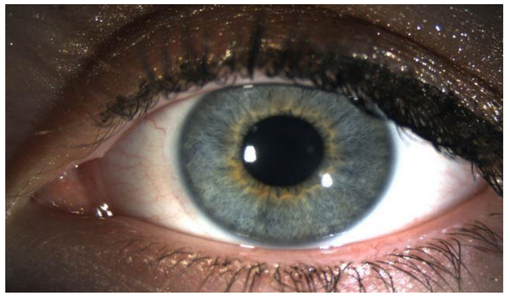

Figure 2. Slit lamp photography of unremarkable iris OS, noting the color to which the OD was matched

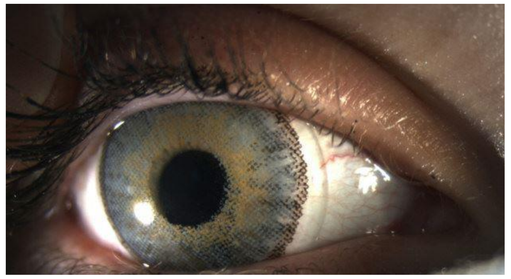

Figure 3. Slit lamp photography of initially fit Orion Biocolors Toric prosthetic soft contact lens OD with selected color

CONCLUSION

Prosthetic soft contact lenses have many benefits, especially for patients with ocular irregularities such as iris colobomas. These lenses should be highly considered for iris colobomas given that they serve a dual function: mitigate visual symptoms through pupil occlusion and minimize the appearance of a deformed pupil by adding pigment and color. Fitting prosthetic soft contact lenses on patients with iris colobomas can significantly improve quality of life and patient satisfaction.

REFERENCES

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