Beyond Visual Improvement:
Prosthetic Black Pupil Contact Lens for Hypermature Cataract in a Patient with Glaucoma, Visually Significant Band Keratopathy and Glaucoma in the Fellow Eye

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Purpose

Prosthetic contact lenses serve both functional and aesthetic purposes by enhancing or altering eye appearance. They may offer refractive correction or glare reduction, but primarily aim to enhance eye aesthetics, catering to various needs—from changing eye color to masking or mimicking natural eyes for those with injuries or congenital conditions. These lenses significantly empower individuals with ocular issues, aiding medical rehabilitation by improving vision and reducing light sensitivity in conditions like aniridia or albinism[1]. Beyond medical use, they contribute to facial symmetry, boosting self-confidence for those with eye disfigurements[2]. By masking such conditions, they alleviate social anxiety and stigma, fostering a more positive self-image and easing social interactions[2]. This presentation tells the story of a patient fit with a prosthetic soft contact lens (SCL) to conceal a lenticular opacity he had acquired due to trauma.

Case Report

A 49-year-old male presented to The NSU Health Eye Care Institute for a contact lens examination. His ocular history was positive for glaucoma, retinal detachment, band keratopathy and hypermature cataract. He instilled multiple IOP lowering topical medications in OD, with dosing throughout the day making it difficult to wear a SCL in that eye. His goal was to be fit with a prosthetic contact lens, OS, to conceal a lenticular opacity he had acquired due to trauma. His best corrected visual acuity was counting fingers at 2 feet OD and 8M OS. His pupils were 6 mm fixed OD, and 5.5 mm fixed OS. The anterior segment evaluation with biomicroscopy revealed moderate diffuse bulbar conjunctival injection, a superior conjunctival bleb with an anterior chamber tube shunt, and band keratopathy, OD. In comparison, OS was relatively white and quiet, though a hypermature cataract was observed on gross observation as well as biomicroscopy.

The patient was fit with a prosthetic black pupil SCL OS which masked his disfigurement, providing a more cosmetically balanced appearance until surgical intervention is planned. The lens parameters were:

8.6mm base curve, Plano power, 14.3mm diameter, 7mm diameter black pupil, and methafilcon A 55% material.

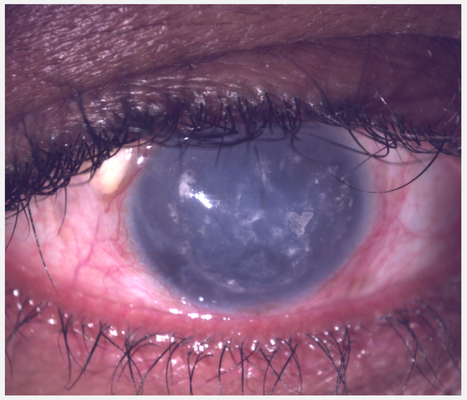

Figure 1:
Anterior segment photo OD shows diffuse conjunctival injection, a superior conjunctival bleb, and band keratopathy.

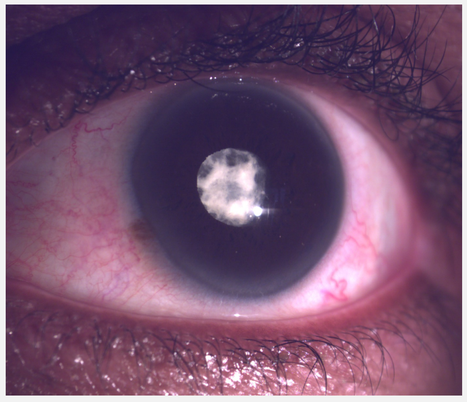

Figure 2:
Anterior segment photo OS highlights the hypermature cataract.

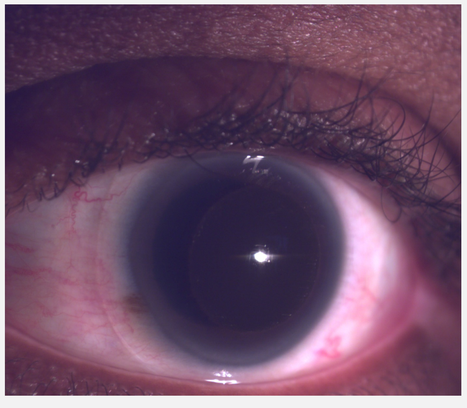

Figure 3:
Anterior segment photo OS while wearing the prosthetic SCL with a 7mm diameter black pupil.

Discussion

Despite their many benefits, it is important to recognize that prosthetic contact lenses come with many risks[1,3]. The potential hazards associated with their use include corneal irritation, infection, and complications occurring from inadequate fit or maintenance of the lenses[3]. As such, it is imperative for eye care physicians to be knowledgeable of these risks, and to properly and thoroughly educate patients. In addition, prescribing appropriate lens care and scheduling patient follow-up visits are critical for minimizing potential adverse effects[3].

Clinicians' awareness of prosthetic SCL brands, customizable parameters, and general fitting techniques are vital for achieving optimal outcomes. While considering patients' desires and goals is fundamental, the basic rules for safely fitting SCLs still apply.

There are three main zones of a prosthetic contact lens: 1) central pupillary zone which can be clear or black, 2) iris zone which can be clear or tinted and 3) clear peripheral zone[1]. They are available in hydrogel materials such as Methafilcon 55%[1]. In addition to specifying the power, base curve and overall diameter, the pupil size, iris size and iris color should be specified[1]. Other types of prosthetic soft contact lenses include translucent tinted, computer generated and hand painted lenses[1].

Conclusion

Prosthetic contact lenses play a vital role in helping to manage a wide range of vision-related conditions and cosmetic concerns patients may present with. They can be used to manage ocular deformity, correct pupil/iris irregularities and, possibly most importantly, improve self-confidence[2]. Our patient was thrilled with his contact lens and reported feeling better about his appearance. Fitting considerations as basic as selecting the most appropriate base curve and diameter are just as important as choosing the best pupil size and color option for insuring a comfortable, natural-looking lens resulting in a high degree of patient satisfaction.

References

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3. Dohlman CH, Dudenhoefer EJ, Khan BF, Morneault S. Protection of the ocular surface after keratoprosthesis surgery: the role of soft contact lenses. CLAO J. 2002;28(2):72-74.