

Reclaiming Sight and Confidence: Prosthetic Lenses in Iris Atrophy

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Introduction

- Prosthetic contact lenses can be prescribed to mask a disfigured eye, improve visual function and enhance the patient's quality of life.
- Common ocular indications: opacified corneas, corneal scars, disfigured pupils, iris atrophy, and ocular albinism.¹
- This case report examines the utilization of soft printed prosthetic lenses to enhance both the functional and cosmetic aspects of a patient with traumatic iris atrophy and photophobia.

Case Description



A 72-year-old male presented for a contact lens fitting

Chief complaint: longstanding glare and photophobia OD

Primary goal: Exploring alternative contact lens options to improve comfort compared to habitual hand-painted prosthetic lens

Ocular History:

- Accidental pencil injury OD at the age of four
- Iris atrophy OD
- Traumatic cataract OD
- Pseudophakic OU

	OD	OS
Habitual correction	-1.50 DS (balance lens)	-1.37 - 2.25 x 093 +2.50 Add
Best-corrected DVA	Counting fingers at 1 ft	20/20
Fit assessment (Hand painted lens)	Good movement with blink, full limbal coverage, centered	No lens
Anterior segment	Corneal scarring without inflammation, iris atrophy, and anisocoria	Iris is blue and flat without abnormalities
Horizontal visible iris diameter (HVID)	12.25 mm	12.25 mm
Pupil size (average)	7.0 mm; irregular shaped	4.2 mm

Table 1. Anterior segment evaluation

- The patient did not want OD acuities improved; his main issue was glare.
- While cosmesis of the hand-painted lens was excellent and comfort was acceptable, a printed prosthetic soft lens fitting yielded equally acceptable cosmesis and improved lens comfort.
- A printed soft contact lens design also offered better cost and reproducibility.²

Lens Selection



Figure 1. Printed prosthetic lens fitting set (left). The diagnostic print and underprint lenses chosen that best matched the patient's natural iris color (right).

- A full iris occlusion design was chosen to maintain the desired cosmetic appearance and alleviate the patient's symptoms of photophobia.
- Uniqueness of blue-grey eyes poses challenges in color matching; layering lenses provided a broader range of color options.
- The patient's left iris and pupil diameters were measured in bright, dim, and normal room illumination.
- A clear, open pupil design was suitable, considering the patient retained functional vision in the affected eye.
- A custom lens was ordered with a power of +1.00 DS incorporated to improve handling and resolve radial tearing from frequent lens handling.
- The patient reported good comfort, cosmesis and no issues with photophobia with the finalized printed prosthetic lens.



Figure 2. Iris atrophy and pupillary abnormality visible of the patient's right eye



Figure 3. The patient's habitual hand-painted prosthetic lens on his right eye



Figure 4. Finalized printed prosthetic lens in the patient's right eye demonstrating a comparable cosmetic outcome to a hand-painted prosthetic lens

Discussion

- Prosthetic lenses conceal ocular disfigurement and improve visual function through custom iris and pupil designs.
- Multiple combinations of prints and underprints allow for precise color matching to achieve the desired iris color.
- Printed prosthetic lenses are thinner and more easily reproducible.²
- HVID and pupil size diameter of the unaffected eye are measured to ensure a proper fit and effective concealment of disfigured areas.³
- Complications include conjunctival hyperemia, giant papillary conjunctivitis (GPC), and bacterial infections but can be managed with topical medications.⁴
- Patients with significant dry eye should be evaluated for dry eye treatment prior to lens fitting.
- Hydrogen peroxide lens care systems are recommended, but lens care solution compatibility should be verified with the manufacturer.⁵
- Soft prosthetic lenses are only available in hydrogel material (in the United States) and are annual replacement lenses.⁵



Figure 5. The patient's finalized printed prosthetic lens

Conclusion

Prosthetic contact lenses can be fit to help patients conceal ocular irregularities and enhance visual function, thus improving their overall quality of life. Clinicians should be familiar with prosthetic contact lens fittings to effectively handle and attend to patients who could greatly benefit from them.

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