

# Soft Prosthetic Fit Considerations in Traumatic Aniridia

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## INTRODUCTION

Aniridia is a condition in which the iris is partially or completely missing. This can lead to symptoms of glare, decreased contrast sensitivity, and decreased depth of focus.<sup>[1]</sup> Symptoms that have a more detrimental effect on vision are photophobia and increased spherical aberrations as light is not absorbed in the periphery.<sup>[1]</sup> Besides affecting the vision, patients are also often concerned about cosmesis. Surgical procedures to improve these symptoms include an artificial iris implant or intraocular lens (IOL) with a tint or colored peripheral region.<sup>[2]</sup> However, these options may lead to an increased risk of limbal stem cell deficiency or the development of glaucoma.<sup>[2]</sup> Corneal tattooing and intracorneal stromal implants are possibilities, but neither are FDA-approved.<sup>[3]</sup> A less invasive solution is the use of a soft prosthetic contact lens (CL), which include tinted, computer-generated, or hand-painted CL.

## CASE DESCRIPTION

63-year-old female presents with history of aniridia and irregular astigmatism secondary to trauma and ruptured globe OD. She is status post scleral buckle, cataract extraction, and iridectomy OD. The patient complained of significant glare and distorted vision. She was initially fit in corneal rigid lenses but reported inadequate fit and inability to perform insertion and removal. She was then re-fit into a tinted soft lens, but comfort/vision/fit were unacceptable (VA 20/150). Upon examination, it was determined that the clear pupil of the tinted soft lens was not aligned with the optics of the IOL (Figure 1a). Parameters of the tinted soft lens are outlined in Figure 1b.

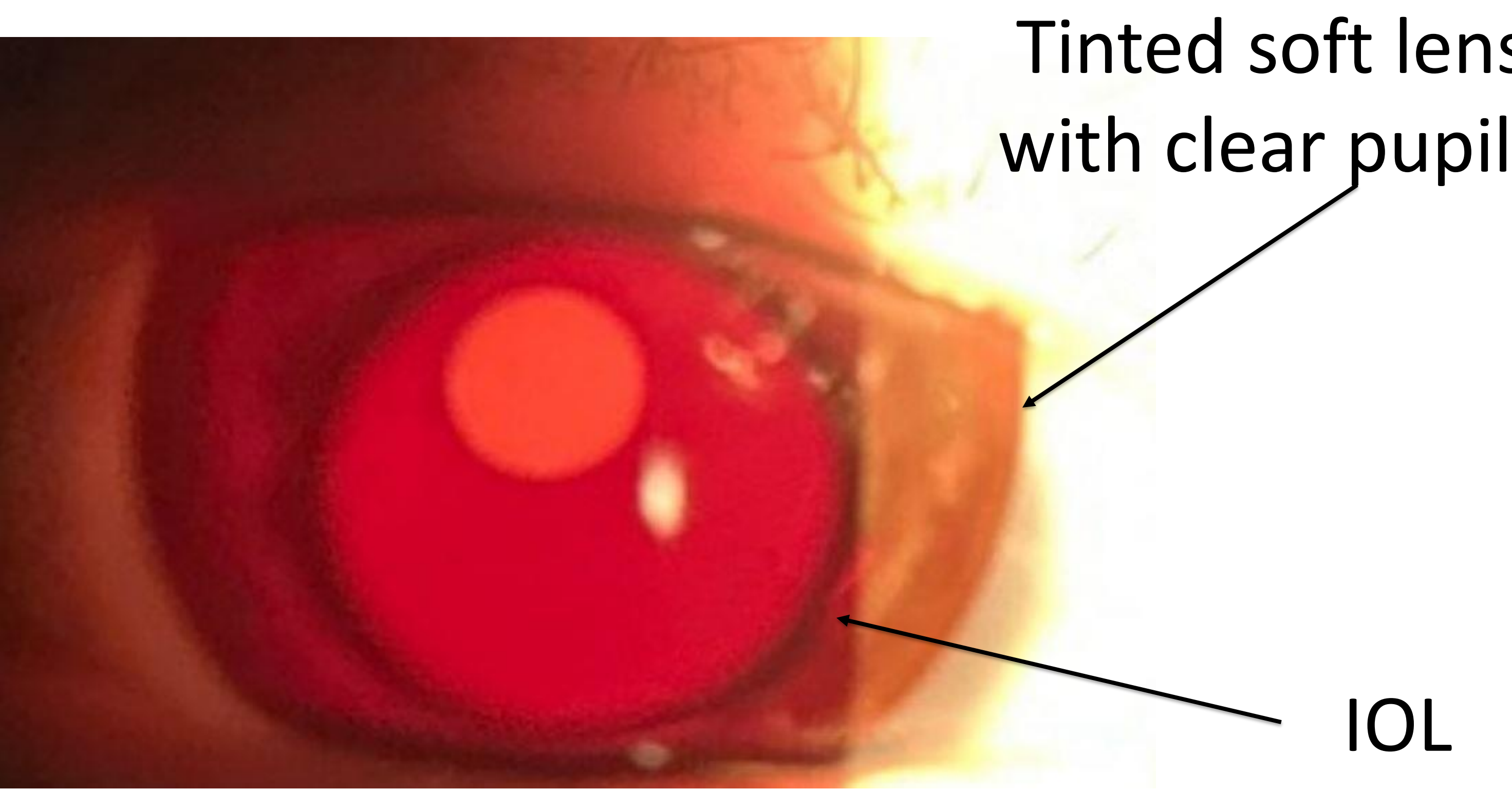


Figure 1a.

Retro illumination image: The optic zone of the IOL and the clear pupil of the tinted soft lens are misaligned.

	Sph	Cyl	Axis	Brand
OD	-0.50	-4.75	125	Alden

Type	BC/S AG	Dia	Color	Design	VA
HP 49 Toric	8.3	14.50	Walnut #5	2.5 mm clear pupil	20/150

Figure 1b.

Parameters of the tinted soft lens OD.

Due to misalignment of the IOL optics and the clear pupil of the soft tinted lens, the patient reported reduced VA. Additionally, photosensitivity persisted due to lack of underprint on the prosthetic lens. To reduce photosensitivity, we trialed a Prosthetic Custom lens with an underprint and patient immediately reported improvement in photosensitivity. Parameters outlined in Figure 2a.

	Sph	Cyl	Axis	Brand
OD	-0.50	-1.75	125	AVT

Type	BC/SAG	Dia	Design	VA
Cantor Prosthetic Custom	8.1	15.0	11.5 mm HVID mm clear pupil 3.0 mm	20/100

Figure 2a.

Parameters of the Prosthetic Soft Custom lens OD.

With an underprint, the light sensitivity was improved, however, the vision remained an issue. The lens was decentered superior temporal, which left the clear pupil still misaligned with the optic zone of the IOL.

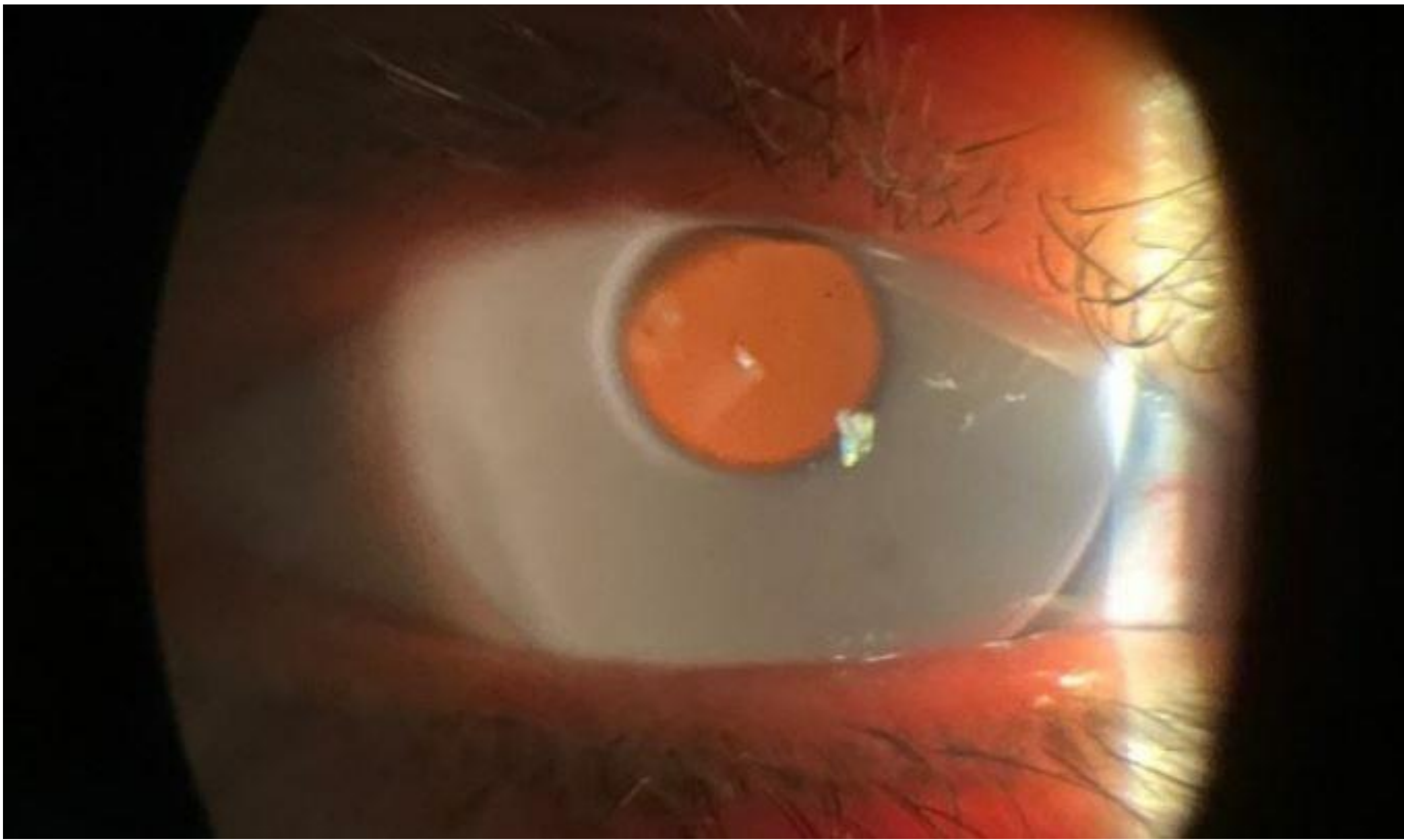


Figure 2b.

Retro illumination image: The optic zone of the IOL and the clear pupil of the underprint trial soft lens are better aligned.

Too keep the line of sight unobstructed (Figure 2b), we increased the diameter of the clear pupil by 1.5 mm and increased the HVID by 1.5 mm. The base curve was also steepened to better center the lens (Figure 3a). Patient achieved better vision with spherical component.

	Sph	Cyl	Axis	Brand
OD	-1.00	SPH	---	AVT

Type	BC/SAG	Dia	Design	VA
Cantor Prosthetic Custom	7.9	15.0	13mm HVID mm clear pupil 4.5 mm	20/50

Figure 3a.

New parameters OD.

Patient reported significant improvement in vision and less sensitivity to light with better centered optics and incorporation of the underprint to the prosthetic lens design.

## RESULT



Figure 3b.

Final color match

Final color was matched to the patient's left iris. Color chosen was N89 – dark brown. Patient was satisfied with cosmesis, vision, and lack of photosensitivity. However, due to shipping delays from international manufacturer we are still awaiting the final lens incorporating the chosen color.

## CONCLUSION

Transparent tinted CLs may be a good starting point for a prosthetic fit as they allow the practitioner to play with a range of tints, from lighter to darker.<sup>[4]</sup> This can help in the determination of the amount of light transmittance that the patient is willing to accept. One downside is that the iris might not be fully occluded,<sup>[4]</sup> which may interfere with cosmesis or permit the symptoms of glare/photophobia to persist. This issue can be solved with custom prosthetic contact lenses, which allow the practitioner to add an underprint,<sup>[4]</sup> maximizing iris occlusion and minimizing glare/photosensitivity. Cosmesis can also be improved with additional iris details. Finally, hand-painted CLs offer greater color customization to match the eyes and, in some cases, can even offset the iris to make the eyes appear aligned in strabismic patients.<sup>[4]</sup> Regardless of the option that the practitioner will opt for, it's important to remember that prosthetic CL may decrease or alter visual perception.<sup>[4]</sup> The opening for the pupil of the contact lens should be aligned with the optic zone of the intraocular lens for best results. The endpoint becomes a game of balance between functionality and cosmesis.

## REFERENCES

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