



Soft Prosthetic Contact Lenses: A Case Series

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Introduction

A variety of soft prosthetic contact lenses (CL) are available to manage a patient’s visual and cosmetic desires. Options range from basic tints to printed to hand-painted CLs. Tinted CLs may offer relief for patients with visual discomfort due to retinal or neurological conditions. CLs with printed or hand-painted irises may improve cosmesis for patients with anterior segment opacities and can enhance the quality of vision in patients with iris or corneal defects that may cause glare or higher order aberrations.

Case # 1: Tinted Lenses for Visual Comfort

Background: 47-yo Caucasian female with a history of Rod-Cone Dystrophy (Bardet-Biedl Syndrome) causing severe photophobia and decreased visual acuity through habitual corneal GP lenses

Entering VA (cc): 20/150 OD, OS through habitual GPs

Goals: Improve visual comfort, especially while using the computer

Lenses:

#1 – In-office red NoIR #98 tinted soft lenses (Coopervision Proclear Toric)

#2 – Orion bioMed red-tinted soft lenses (BCVA: 20/100 OD, OS)

Outcome: This patient experienced significant improvement in visual comfort at the computer and in bright light with the red tinted soft contact lenses.

Discussion: This tint color was chosen based on a filter evaluation in the low vision clinic. The patient preferred a NoIR #98 tint that subjectively improved contrast and light sensitivity. We initially used the SoftChrome In-Office Tint system to tint her Coopervision Proclear Toric lenses. Due to the discontinuation and expiration of the SoftChrome dyes, an alternative needed to be found. The Orion bioMed lens was trialed on the patient and comparable visual comfort was reported. The patient has been doing well with the bioMed lens for the past few years; however, if alternatives were to be considered, a custom tinted Kontur lens would be an option.

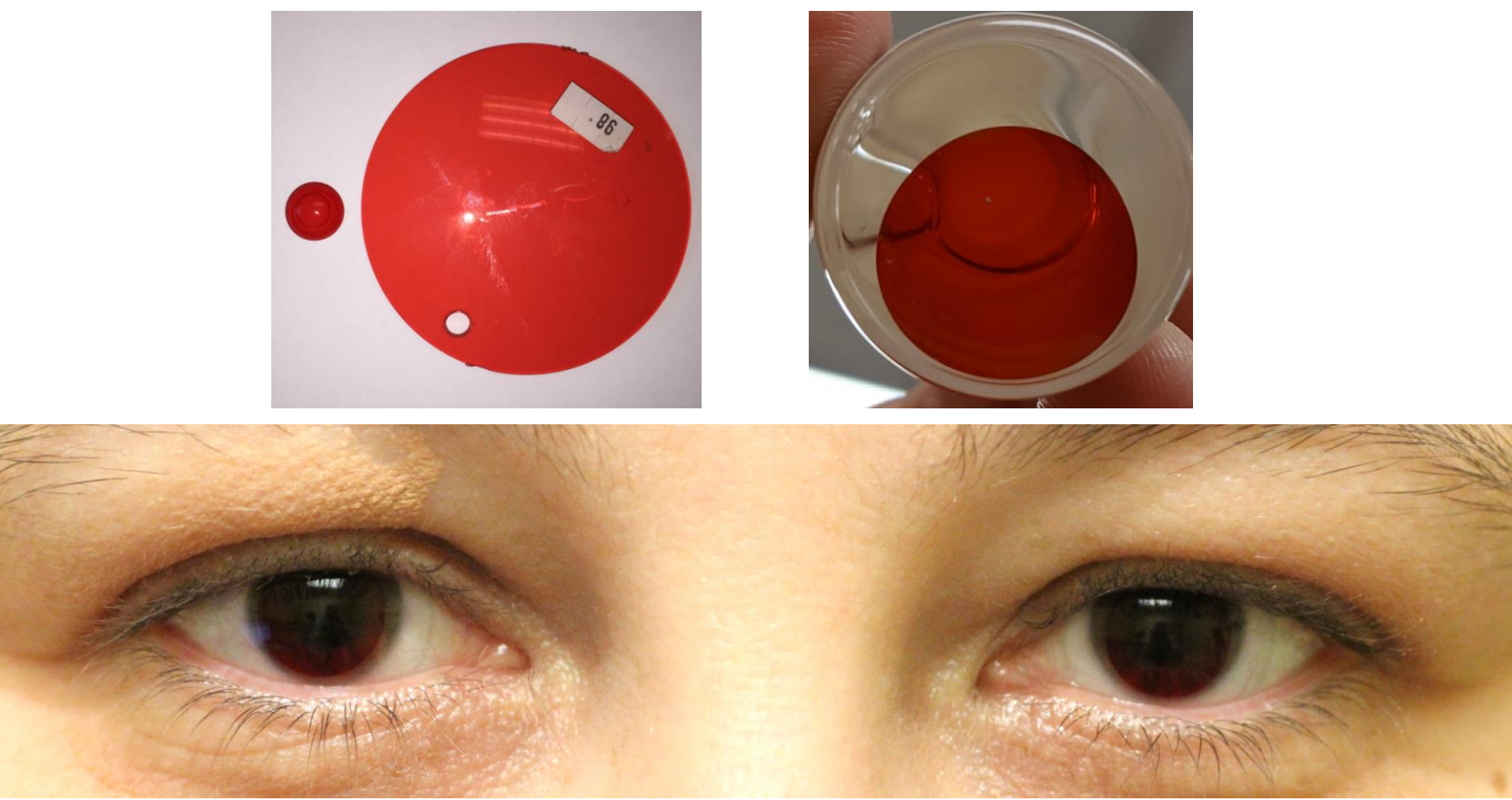


Fig 1. (a) *Top Left:* Red tint NoIR #98 filter with adjacent SoftChrome tinted soft lens. (b) *Top Right:* red-tinted bioMed soft lens. (c) *Bottom:* Patient with red-tinted bioMed lenses OU.

Lens Type	Advantages	Disadvantages	Examples
Tinted/ Monochromatic Iris with occluder or clear pupil	Alleviate symptoms related to ocular disease or secondary to TBI Cost, may change external appearance of eye color	May change external appearance of eye color Poor detail, difficult to match light irises	bioSports, bioMed, Kontur
Printed iris detail	Customizable, can add occluder backing	Cost>basic printed lenses	bioColors, Air Optix Colors, Medcorp
Hand-painted	Highly customizable, can add occluder backing	*Cost*	Adventures in Colors, Crystal Reflections

Case # 2: Lens with Tinted Iris and Black Pupil for Cosmesis

Background: 56-yo Hispanic male with a history of ocular trauma and surgeries that led to complete iris opacification and NLP OS.

Goal: Lens for the left eye to cosmetically match his right

Lens: Kontur soft CL with monochromatic brown-tinted and black pupil

Discussion: During the fitting, both an Orion bioColors color match and trial with a monochromatic brown-tinted lens were performed. The patient was equally pleased with the cosmesis of both, so the basic tinted lens was ordered due to the financial advantage of the simpler lens design.

Outcome: The patient was very satisfied with comfort and cosmesis of new brown-tinted lens.



Fig 2. (a) *Top Left:* Corneal scarring/neovascularization and iris opacification OS. (b) *Top Right:* Patient with Kontur brown-tinted lens OS. (c) *Bottom:* Final Kontur brown-tinted lens.

Case # 3: Printed Iris Detail Lens for Iris Coloboma

Background: 17-yo Caucasian female with history of an iris and chorioretinal coloboma OD

Goals: Improve quality of vision and for her right eye to cosmetically match her left

Lens: ABB Concise Colors (honey colored) lens with a 4.2 mm clear pupil

Discussion: This lens was chosen as colors are be layered to provide a moderately detailed iris to match her left eye. An occluder backing was incorporated to the iris color with a goal for the patient to experience a pinhole effect that would reduce aberrations and improve her quality of vision.

Outcome: While the patient very satisfied with cosmesis, she reported no improvement in quality of vision through the lens. VA (sc) and VA (cc) (with Concise Colors lens): 20/50- OD



Fig 3. (a) *Top Left:* iris coloboma OD (b) *Top Right:* Picture of OU showing iris coloboma OD (c) *Bottom:* Picture of OU showing final Concise Colors lens OD

Case # 4: Hand-Painted Lens for Ocular Trauma

Background: 40-yo Caucasian male with history of penetrating eye injury and multiple resultant surgeries that caused corneal scarring, aphakia, and partial loss of the iris OS

Goal: Lens for left eye to cosmetically match the right; currently unhappy with Cantor Nissel printed soft lens ordered over the internet

Lens: Custom, hand-painted soft CL with the intent to wear a piggyback corneal GP to improve visual acuity

Discussion: Given the patient’s specific cosmetic demands, a hand-painted soft lens was ordered and trialed in addition to extensive consultation regarding expectations.

Outcome: After 5 trial lenses (See Fig 4 (c)), the patient was not satisfied with cosmesis and returned to the Cantor internet-purchased color-printed soft lens.

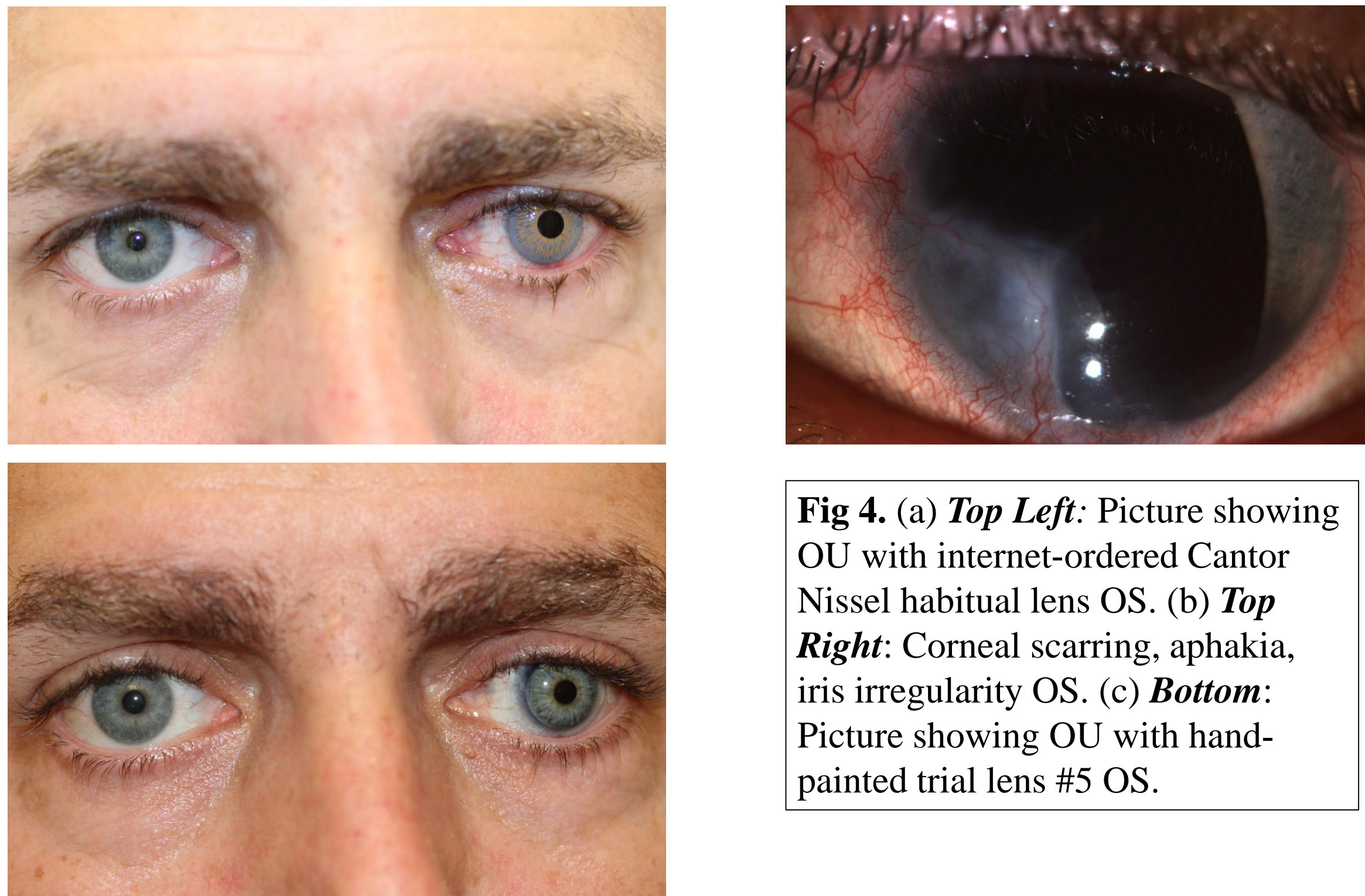


Fig 4. (a) *Top Left:* Picture showing OU with internet-ordered Cantor Nissel habitual lens OS. (b) *Top Right:* Corneal scarring, aphakia, iris irregularity OS. (c) *Bottom:* Picture showing OU with hand-painted trial lens #5 OS.

Clinical Pearls

- Consider soft lenses with specific color tints for patients who experience a benefit from filters. These can be applied to patients with retinal disorders, migraines, and those with many other causes of visual discomfort.
- Various options are available for printed or hand-painted lenses, some with more detail than others. Be sure to assess if the potential benefit of a higher-end lens outweighs the additional cost since not every patient has a need for lenses as detailed as bioColors or hand-painted.
- One benefit to soft lenses with a printed iris, other than cosmetic improvement, is that a pinhole effect may reduce glare or higher order aberrations in patients with iris abnormalities. However, these lenses must have an occluder backing, rather than opaque, behind the iris detail in order to appropriately block incoming light. Simple tinted/color-printed lenses may not provide sufficient occlusion.
- Proper education regarding expectations for hand-painted lenses is important as these lenses entail a much greater expense than many other potentially suitable options.

Conclusion

Various types of soft prosthetic CLs are available for patients with different visual or functional needs. While highly customizable options are available, a patient’s needs and goals must be considered to deduce the best available option on a case-by-case basis as many patients experience a meaningful benefit from simpler CL designs.