

# Use of a Piggyback System to Correct Symptomatic Pseudopolyopia

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## Background:

Patients with complaints of photophobia and pseudopolyopia secondary to surgical complications can benefit functionally from a soft prosthetic lens. Commercially available soft colored contact lenses may be used as a soft prosthetic lens underneath a gas permeable (GP) lens to alleviate symptoms of glare, photophobia, diplopia, and reduced vision secondary to irregular astigmatism at a reduced cost while simultaneously allowing higher oxygen transmissibility to the cornea.

## Case Presentation:

A 66 year old Caucasian male was referred for a contact lens consult to improve vision with a GP lens. The patient reported double vision with extreme glare and light sensitivity OS after a motor-vehicle accident, which resulted in a retinal detachment that required surgical repair. While the patient wore spectacles, he reported no relief of his monocular diplopia, glare and light sensitivity from pseudopolyopia OS. The patient also had remarkable ocular surgical history of radial keratotomy (RK) OU, past corneal GP lens wear, and complicated cataract extraction with posterior intraocular lens implantation OS.

At initial visit:

| OD  |             | OS   |
|---|-------------|--|
| 20/20-2   | VA c gls    | 20/60 (c GP)   |
| Trc diffuse injection of bulbar conj; Trc inferior papillae | Conjunctiva | Trc diffuse injection of bulbar conj; Trc inferior papillae                              |
| White and quiet   | Sclera      | White and quiet  |
| RK scars  | Cornea      | RK scars greater than OD   |
| Blue-green, flat and intact                                 | Iris        | Blue-green, flat, mis-shapen oval pupil nonreactive to light, two TID's at 1:00 and 6:00 |
| 1+ NS   | Lens        | PCIOL – well centered, clear   |

Presenting GP lens parameters:

| Brand           | Base Curve (mm)  | Power (D) | OAD (mm) |
|-----------------|--|-----------|----------|
| Unknown GP Lens | 8.32   | -2.25     | 11.0     |
| Fit             | Moderate central pooling, mid-peripheral bearing 360, excessive peripheral pooling with excessive movement |           |          |

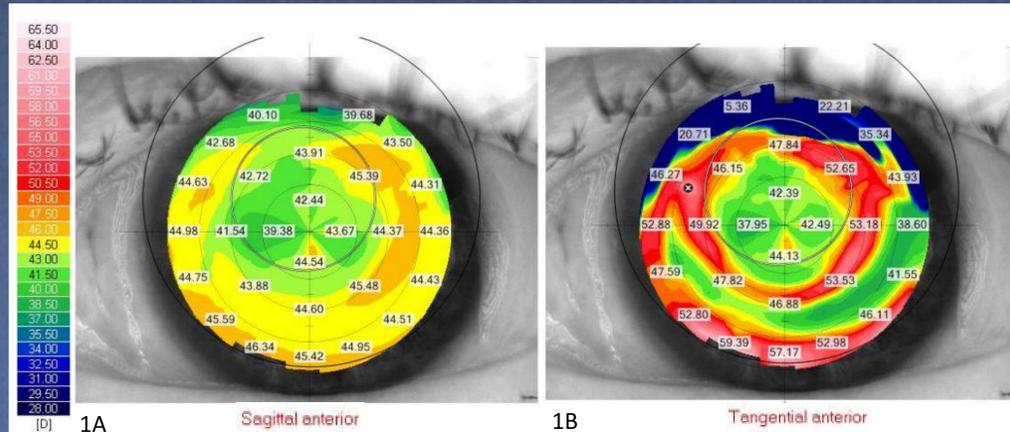


Figure 1: Topography of patient's left cornea, imaged with a Pulsar tomographer. Note the oblate shape of the cornea with irregular astigmatism (sagittal map left 1A, tangential map right 1B)

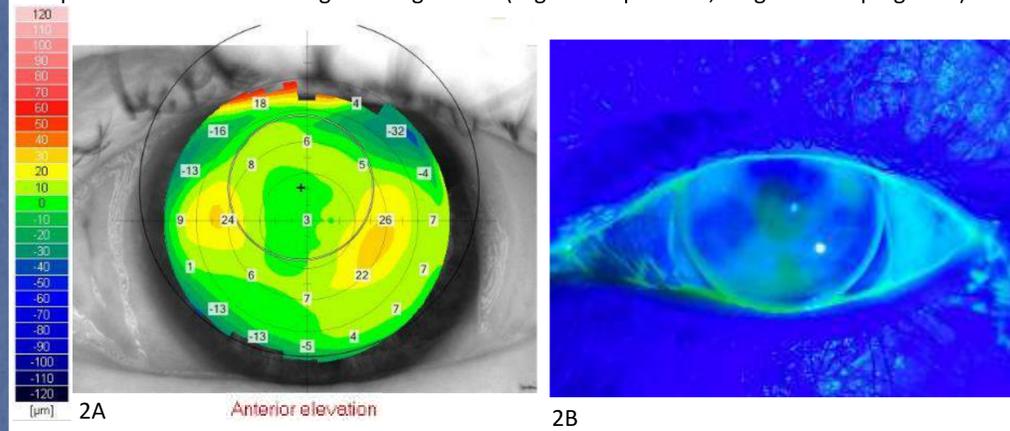


Figure 2: Elevation map (left 2A), and fluorescein pattern of final GP OS without piggyback (right 2B)

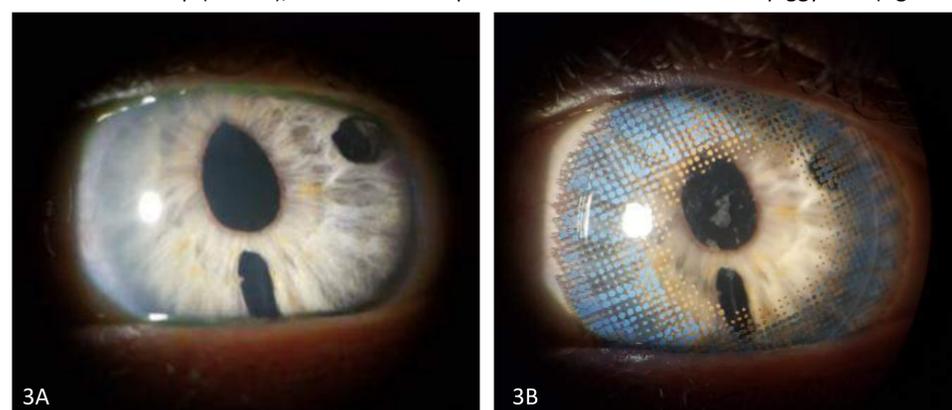


Figure 3: Patient's left iris with two transillumination iris defects causing pseudopolyopia without the piggyback system of a soft colored contact lens and GP (left 3A), and with the piggyback system (right 3B)



Figure 4: Photograph of patient with piggyback system worn in the left eye from afar.

## Case Management:

Due to irregular astigmatism in the left eye from radial keratotomy surgery, the patient was re-fit into a reverse geometry corneal GP lens with the goal of incorporating iris-occluding artistry on the front surface upon finalization. Due to the severity of corneal irregularity, an acceptable lens fit was unachievable without disruption of the corneal epithelium. Areas of harsh bearing with a corneal GP lens can be observed in figure 2B. After discussion about and trial of a scleral lens, the patient opted to proceed with a corneal GP lens as he expressed concerns about ease and convenience of application and removal, and the lack of oxygen permeability with a hand-painted scleral contact lens.

To reduce pressure on localized areas of bearing with the corneal GP and to alleviate the patient's symptoms of glare, photophobia, and diplopia, an Air Optix Colors soft contact lens was trialed as a piggyback lens underneath the GP. The patient reported marked improvement in visual comfort with the use of the piggyback lens. Simultaneously, the piggyback lens softened the areas of bearing thus alleviated signs of corneal epithelial disruption and the patient was happy to resume work with improved vision and comfort. This lens combination was finalized.

At final visit:

| OD     |          | OS             |
|--------|----------|----------------|
| 20/20- | VA c gls | 20/25-2 (c GP) |

Final lens parameters:

| Brand                            | Base Curve (mm)   | Power (D) | OAD (mm) |
|----------------------------------|---|-----------|----------|
| Essilor Reverse Geometry GP Lens | 8.04  | -3.87     | 10.2     |
| Air Optix Colors (Blue)          | 8.60  | +3.00     | 14.2     |
| Fit                              | Well-centered GP lens over soft contact lens (SCL); good independent movement of GP and SCL |           |          |

## Discussion and Conclusions:

Patients who are symptomatic for glare, photophobia and diplopia from transillumination iris defects (TIDs) causing pseudopolyopia and corneal irregularities may be managed with soft prosthetic contact lenses piggybacked with a GP or prosthetic GP contact lenses. Due to the limited availability of prosthetic GP lens options, often soft contact lenses are fit to cover iris or pupil irregularities. A variety of iris-occluding soft lens options are available to alleviate symptoms of photosensitivity and diplopia by effectively covering TIDs, but typically cost significantly more than commercial stock lenses and usually have much lower oxygen transmissibility. For patients who may have financial or hypoxia concerns, commercially available soft colored contact lenses can be a viable option to improve patient symptoms.

## References:

- Ford, W. Prosthetic Soft Lenses. *EyeWitness*, Summer 2015.
- Cassel, M., OD. Changing Lives with Prosthetic Soft Lenses. *Contact Lens Spectrum*, April 2010.



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