Prosthetic Use of a Gas Permeable Contact Lens for Acquired Aniridia

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Abstract

This case report describes the fitting of a prosthetic gas permeable contact lens as an alternative treatment to alleviate severe photophobia and poor cosmesis caused by surgical removal of an iris melanoma.

Case Report

A 60-year-old Caucasian female with acquired aniridia presents for a contact lens fitting on January 11, 2011. Her chief concerns were photophobia, decreased vision, and cosmesis. Her aniridia was secondary to removal of iris melanoma in her right eye one year prior to this visit, resulting in loss of iris and secondary cataract. Past ocular history included cataract removal and vitrectomy and post sector iridectomy of the iris. Her past medical history is significant for depression, which is treated with Lexapro 10 mg. Patient has allergy to Vicodin but has no known environmental allergies. An eye examination with contact lens fitting was completed.

The patient’s habitual spectacle prescription was measured as plano OD and hyperopia with mild astigmatism OS. She designed a dark colored patch to cover the right lens and functions monocularly using her left eye only. Her entering acuity with spectacles was measured as counting fingers at 10 feet OD and 20/20 OS. Binocular alignment revealed constant esotropia OD with a hypertropic component, likely acquired due to constant patching of the right eye. Biomicroscopy of the left eye was unremarkable, whereas extensive corneal scarring, nasal bullae, aniridia, and aphakia with wrinkles of the posterior lens capsule were noted OD. Topography findings revealed 2.5D of against-the-rule corneal astigmatism OD and 1.0D of against-the-rule corneal astigmatism OS.

The patient was concerned about both function and cosmesis in the right eye. The diagnostic lens tried in clinic provided best corrected visual acuity of 20/25 with over refraction, but was a poor fit due to excessive movement. The first lens was ordered in the Boston XO (Bausch & Lomb) material and correct power with a larger diameter and flatter base curve to improve stability.

Follow-up #1

Patient returned on February 22, 2011 to pick up lens and follow up. Patient denied any visual or medical changes since last appointment. Patient’s distance visual acuity with lens #1 was 20/400 OD and best corrected to 20/30 with over-refraction. Upon evaluation, it was a poor fit due to
position and steep alignment in the center. Lens was not dispensed and a second lens was ordered in the same material and diameter but with increased power and flatter base curve.

Follow-up #2

Patient returned on March 22, 2011 to pick up lens and follow up. Again, patient denied any visual or medical changes since the last visit. Patient’s distance visual acuity with lens #2 was 20/80 and best corrected to 20/30 with over-refraction. She reported discomfort with this lens due to excessive movement. It was a poor fit upon evaluation due to apical touch and inferior nasal position. Contact lens fitting was continued with several diagnostic lenses to attain an optimum fit. Best fit was achieved with X-cel Apex Keratoconus lens (Walman Optical, Minneapolis, MN) with central alignment, adequate edge lift, lid attachment, and good initial comfort. Photographs were taken at this visit to match the iris color of the left eye to the right eye to improve cosmesis. Lens order was then placed in similar parameters as the diagnostic lens with the correct power and painted front surface to mimic the left iris.

Follow up#3

Patient returned on July 30, 2011 to pick up prosthetic lens and follow-up. Upon insertion, patient immediately noticed an improvement in vision and photophobia in room light conditions. Patient’s distance visual acuity with contact lens was 20/30 OD with no improvement upon over refraction. The prosthetic lens fit well, with good coverage, centration and movement and was an acceptable match to the left iris color. Patient was symptomatic to constant binocular diplopia with both eyes open now. Prism correction over the right eye with spectacles eliminated symptoms of diplopia for the patient. Lens was dispensed and patient was instructed on proper insertion and removal and cleaning techniques. A two-week trial with the GP lens was agreed upon to assess the adaptation to the new lenses, increase wearing time, and evaluate the possibility of adjustment in perceiving diplopia.

Follow up#4

Patient returned on August 23, 2011 to follow-up. Patient reported wear time of 8-12 hours with lens and overall good comfort. Her distance visual acuity with lens was 20/25 OD, with continued symptoms of diplopia. Upon refraction with loose prisms, diplopia was eliminated with 10 prism diopters (PD) base-down and 10 PD base-in over the right eye. Patient was allowed time to adapt with prism lenses in trial frame. She noticed a dramatic improvement in depth perception with objects in the exam room. Biomicroscopy revealed no changes in ocular health from previous exam. Fresnel prisms were ordered for spectacle to reduce symptoms of diplopia. She will return for follow up in three weeks for Fresnel prism fit. In the meantime, she will continue follow up care with her referring ophthalmologist.
Discussion

Contact lens fitting with the X-Cel Apex Keratoconus gas permeable contact lens was successful for the patient’s right eye which is highly hyperopic secondary to aphakia. A gas permeable contact lens was considered over soft lenses in this case. Soft lenses do not mask significant corneal astigmatism and, due to the excessive lens thickness associated with the aphakic prescription, it is not feasible to fit her with anything other than spherical lenses. Also, she had extensive conjunctival scarring that resulted in significant elevations and depressions of the conjunctival surface, making it impossible for a soft lens to drape evenly. Soft lens fitting was tried unsuccessfully by her previous practitioner prior to this fitting. The X-Cel Apex Keratoconus lens minimized the interaction of the lens to the corneal apex, which was previously caused by other lenses due poor corneal alignment of the lens. This lens design also helped maintain centration of the optical zone over the visual axis to maximize vision and reduce flare.

This patient developed sensory exotropia as a result of constant patching of the right eye post iris resection for almost two years. For acquired exotropia, base-in prisms may relieve asthenopic symptoms in small comitant deviations of up to approximately 20 PD. As a result, Fresnel prisms were prescribed to interrupt the process of suppression and reduce the progression of exotropia. If she is unable to adapt to Fresnel prisms, vision therapy will be considered. Wrinkling of the posterior lens capsule may be contributing to the hypertropic component, but will be re-assessed after prism adaptation.

Conclusion

Maximizing functional vision and minimizing social pressures due to an unusual appearance make prosthetic contact lens fittings important for the improvement of quality of life. Cosmetic or prosthetic lenses increase the quality of life by masking ocular deformities and improving impaired vision. Although a painted gas permeable lens is not the only option for these patients, it is an excellent option providing optimum vision and ocular surface health in aphakic patients when other options have been unsuccessful.
References

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