Contact Lens Management of a Toddler with Asymmetric Microphthalmos
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Abstract
Microphthalmos is a rare disorder resulting in an abnormally small globe. Visual correction is essential to prevent amblyopia in this patient population. We report the contact lens management of a toddler with microphthalmos.

I. Case History
• Patient demographics: 15-month-old Hispanic male
• Chief complaint: Referred for contact lens consultation following failure with silicone elastomer soft contact lenses.
• Ocular, medical history:
  i. Ocular History: Microphthalmia OU (right eye more affected) (2013), Microcornea OU (right eye more affected) (2013), Optic Nerve Coloboma OU (2013)
  ii. Medical History: (-)
• Medications: none
• Other salient information:
  i. Patient is currently wearing silicone elastomer soft contact lenses (Silsoft; Bausch and Lomb) in both eyes. The patient is routinely rubbing lenses out of his eyes. The referring physician expressed a guarded visual potential for the right eye.

II. Pertinent findings
• Clinical:
  i. BCVA: unable to assess due to patient fatigue
• Physical:
  i. Right esotropia
  ii. Horizontal visible iris diameter: approximately 8 mm OD, 9 mm OS
  iii. Relatively small globe OU (right eye more affected) on gross observation
• Imaging studies:
  i. External photograph: ruler used as reference to assist in quantifying horizontal visible iris diameter

III. Differential Diagnosis
• Primary: Microphthalmos
• Others:
  i. Simple Microcornea

IV. Diagnosis and discussion
Microphthalmos is a rare abnormality of the globe characterized by reduced axial length and decreased globe volume\(^1\). Microphthalmos is one
Clinical presentation in what is believed to be a continuum of disorders: anophthalmos, microphthalmos and coloboma. Numerous ocular comorbidities have been documented including cataracts, glaucoma, retinal detachment, retro-orbital cysts, and strabismus. The condition may be unilateral or bilateral, with some research suggesting that a bilateral presentation may be more associated with additional systemic anomalies and characteristic syndromes. Numerous genetic loci and inheritance patterns have been implicated in the transmission of the disease.

Visual potential varies among patients; however, some level of vision impairment has been estimated in approximately 80% of cases. Due to the congenital nature of the disease, refractive amblyopia is a concern, as the condition is associated with high levels of hyperopia. Little is documented in the literature regarding the refractive management of these patients. In this application, similar to their role in pediatric aphakia, contact lenses provide stable correction of refractive error while diminishing the associated magnification and aberrations of high plus powered spectacles. In asymmetric or unilateral presentations, contact lenses reduce the disparity of retinal image size as compared to spectacle wear.

V. Treatment and Management

Microphthalmos should be approached in a multidisciplinary format as the condition is often times associated with additional systemic anomalies affecting the neurological, musculoskeletal or genitourinary systems. Our patient was currently under the care of two additional eye care providers as well as a pediatrician, leaving us to manage the patient’s visual correction.

Due to the previous failure with the silicone elastomer lenses (Silsoft; Bausch and Lomb), a small diameter corneal gas permeable lens designed for aphakia (Pediasite; Advanced Vision Technologies) and a soft contact lens with extended parameter availability (Flexlens; X-Cel Contacts) were trialed on the patient. The parents preferred the soft contact lens based on familiarity in handling and patient tolerance of lens wear. The final soft contact lenses ordered and dispensed to the patient were made with the following parameters:

OD: Power +23.00 D/ Base curve radius 7.2 mm/ Diameter 10.60 mm
OS: Power +16.00 D/ Base curve radius 7.5 mm/ Diameter 11.30 mm

The parents reported improved patient comfort with the new lenses. Visual acuity was measured with Teller acuity cards to be 20/94 in the left eye. When the left eye was covered the patient showed aversion to occlusion and did not display a response to the Teller cards with the right eye.

VI. Conclusion

Microphthalmos is a rare condition that presents with variable levels of reduced eye and cornea size. Although many factors need to be considered when caring for patients with microphthalmos, contact lenses appear to be a viable option in the refractive management of such cases.
Bibliography