



CONTACT LENS FITTING INDICATIONS FOR THE PEDIATRIC POPULATION



Keep these tips and tricks in mind for the best chance of success.

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Although contact lenses are considered medically necessary in many pediatric cases, they provide several benefits for children in general, including improved quality of vision, hand-eye coordination, and self-image.^{1,2} Some parents and practitioners set strict age limitations on when contact lenses are appropriate for children; however, each individual child's maturity level, interest in contact lenses, and specific needs should guide this decision. This article explores the various indications for fitting contact lenses in children and tips for success in clinical practice.

INDICATIONS

Aphakia

Pediatric aphakia typically occurs when a child is born with a congenital cataract that is subsequently removed shortly after birth, or when a child experiences a penetrating eye injury that causes a traumatic cataract and warrants removal of the natural lens. For children who undergo cataract surgery before 2 years of age, contact lenses can oftentimes provide both a safe and effective treatment option. Due to the wide array of available powers, contact lenses can accommodate the rapid change in refractive power from both

axial length and corneal curvature changes during the first 2 years of life.³ Additionally, contact lenses can eliminate aniseikonia, a perceived difference in the size and/or shape of ocular images, thereby promoting proper visual development and preventing amblyopia.

Contact lens options for aphakia include rigid gas permeable (RGP) lenses, silicone hydrogel (SiHy) lenses, and silicone elastomer lenses. Because of the high hyperopic prescription that increases the center thickness and the need for continuous wear, it is imperative that the chosen lens has adequate oxygen permeability.

AT A GLANCE

- ▶ Contact lenses provide many benefits for children, including improved quality of vision, hand-eye coordination, and self-image.
- ▶ For aphakic children who undergo cataract surgery before 2 years of age, contact lenses can oftentimes provide both a safe and effective treatment option.
- ▶ Pediatric patients with irregular corneas can be fit with rigid gas permeable lenses, scleral lenses, or hybrid lenses.
- ▶ Contact lenses, specifically disposable silicone hydrogels, are the preferred treatment for patients with anisometropia, as they can reduce aniseikonia, decrease prismatic effects, increase field of view, and reduce visual distortions.

RGP lenses have several advantages: the ability to customize power, diameter, and base curve, the low risk of hypoxia and infection, and easier handling. In addition, RGPs provide the best visual option for patients with a penetrating injury resulting in an irregular cornea. Disadvantages of RGPs include difficult adaptation due to the rigid material, the need to

remove the lenses each night, and the possibility of the lenses popping out of the eye.

SiHy lenses have high oxygen permeability and are available in a variety of powers, especially those that are custom made. However, their thick center can significantly limit oxygen transmission. Thus, these lenses should be limited to daily use.

Silicone elastomer lenses are the preferred option for aphakic pediatric patients. Because these lenses are primarily made of silicone, they have very high oxygen permeability, allowing them to be worn on an extended basis. Other advantages of these lenses include ease of handling, resistance to bacterial colonization, and appropriate parameters for aphakic pediatric patients.

Irregular Cornea

Pediatric patients can have irregular corneas for a variety of reasons, including trauma at birth, injury later in life, and genetic dystrophies or degenerations, such as keratoconus.

RGPs provide a smooth optical surface for patients with an irregular cornea. For new contact lens wearers, these lenses may be easier to apply and remove, but the initial discomfort oftentimes prevents success. Pediatric patients tend to have a low tolerance for discomfort and often cannot adapt to this lens type.

Scleral lenses not only provide significantly improved visual acuity, but also have the added advantage of superior comfort, as they land on the sclera, not the cornea. Their larger

CLINICAL PEARLS

Here are five simple suggestions to make the pediatric contact lens fitting process smoother and more successful.

1. Before the contact lens training visit, instruct older patients to practice putting lubricating drops into their eyes. This will help decrease their sensitivity and reinforce eyelid control. *Note: Anticipate needing more than one training session.*
2. Have your most patient technician work with your pediatric patients. Identify a technician who has a calm and compassionate nature; this will allow the child to feel relaxed and composed for the best results.
3. Fit younger patients while they are seated on a parent's lap or restrained in a car seat. Having the child hold onto a parent's finger or a toy will prevent them from grabbing onto the applicator's hands. Incentivizing the child with a reward will create a positive experience.
4. Send educational resources home with the patient.
5. Encourage parental help during the initial stages, then taper off with time.

diameter may pose a challenge with insertion and removal, but there are tools available that can be helpful during the learning process.

Hybrid lenses, with their soft skirt and rigid center, provide the comfort of soft lenses and the visual benefits of rigid lenses. They are a great option for patients who have previously worn soft lenses or are having trouble adapting to RGPs or scleral lenses.

Anisometropia

Anisometropia, especially hyperopic anisometropia, is one of the leading causes of amblyopia.⁴ When the anisometropia is significant (> 3.00 D), contact lenses are the preferred treatment option over spectacles. Unlike spectacles, contact lenses can reduce aniseikonia, decrease prismatic effects, increase field of view, and reduce visual distortions. This is especially imperative when trying to promote binocularity and prevent or reverse amblyopia.

Most prescriptions can be accommodated with a disposable SiHy lens. Special attention should be given to ensure the patient is wearing an accurate, vertexed contact lens prescription at all times in order to provide the best visual experience and prevent amblyopia.

Myopia Control

It is estimated that by 2050, 50% of the world's population will be myopic.⁵ Because children make up a significant proportion of this statistic, managing myopia is more important now than ever. Only one contact lens, the MiSight 1 day soft contact lens (CooperVision), has been FDA approved to slow the progression of myopia in children 8 to 12 years of age.⁶ This lens has been shown to slow myopia progression by an average of 59% and axial lengthening by an average of 52%.⁷

Orthokeratology, which entails wearing a custom reverse-geometry RGP lens overnight, has been reported



to slow axial elongation by an average of slightly less than 50%.^{8,9} Children who desire freedom from daytime vision correction often prefer this option. Its major disadvantage is adapting to the rigid material. The adaptation period may be longer than it is for soft lenses, but most children adapt eventually.

Soft, center-distance multifocal lenses have been successfully used off-label for myopia control for many years. According to the BLINK study, the higher add power (2.50 D) is the best fit for myopia control.¹⁰

Spectacles

Oftentimes, children want to wear contact lenses simply as an alternative to spectacles. Contact lenses offer many benefits, including improved peripheral vision, flexibility with sports, and improved self-confidence. Research indicates children as young as 8 years old can be successfully fit with contact lenses with no significant increase in practitioner chair time when compared with older patients.¹¹

CONSIDER CONTACT LENSES

Contact lenses can significantly change the trajectory of a child's visual outcome and improve their

quality of life. Be sure to consider this modality during pediatric visits. ■

1. Fogt N, Yaquinto F. Peer reviewed: the correct modality for sports vision. *Contact Lens Spectrum*. 2020;35:32,34-36,38.
2. Rah MJ, Walline JJ, Jones-Jordan LA, et al; ACHIEVE Study Group. Vision specific quality of life of pediatric contact lens wearers. *Optom Vis Sci*. 2010;87(8):560-566.
3. Lambert SR, Kraker RT, Pineles SL, et al. Contact lens correction of aphakia in children: a report by the American Academy of Ophthalmology. *Ophthalmology*. 2018;125(9):1452-1458.
4. Xu Z, Wu Z, Wen Y, et al. Prevalence of anisometropia and associated factors in Shandong school-aged children. *Front Public Health*. 2022;10:1072574.
5. Holden BA, Fricke TR, Wilson DA, et al. Global prevalence of myopia and high myopia and temporal trends from 2000 through 2050. *Ophthalmology*. 2016;123(5):1036-1042.
6. Cooper Companies announced CooperVision has received FDA approval of MiSight for the treatment of myopia in children [press release]. Cooper Companies. November 18, 2019. Accessed December 3, 2024. investor.coopercompanies.com/news-releases/news-release-details/coopercompanies-announces-cooper-vision-has-received-fda-approval
7. Chamberlain P, Peixoto-de-Matos SC, Logan NS, Ngo C, Jones D, Young G. A 3-year randomized clinical trial of MiSight lenses for myopia control. *Optom Vis Sci*. 2019;96(8):556-567.
8. Hiraoka T, Kakita T, Okamoto F, Takahashi H, Oshika T. Long-term effect of overnight orthokeratology on axial length elongation in childhood myopia: a 5-year follow-up study. *Invest Ophthalmol Vis Sci*. 2012;53(7):3913-3919.
9. Swarbrick HA, Alharbi A, Watt K, Lum E, Kang P. Myopia control during orthokeratology lens wear in children using a novel study design. *Ophthalmology*. 2015;122(3):620-630.
10. Walline JJ, Walker MK, Mutti DO, et al; BLINK Study Group. Effect of high add power, medium add power, or single-vision contact lenses on myopia progression in children: the BLINK randomized clinical trial. *JAMA*. 2020;324(6):571-580.
11. Walline JJ, Jones LA, Rah MJ, et al; CLIP Study Group. Contact Lenses in Pediatrics (CLIP) study: chair time and ocular health. *Optom Vis Sci*. 2007;84(9):896-902.

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