

A New Way to Treat Pediatric Cataracts

The Sulcoflex may be explanted or exchanged when the child's refraction changes.

BY MICHAEL AMON, MD

Infants and young children presenting with cataract require specialized care. Whether the cataract was present at birth or developed during the first few years of life, timely surgical intervention is needed to maximize proper visual development. Complete preoperative evaluation and visual rehabilitation, including patching therapy to prevent amblyopia and promote visual development, are essential components of intervention.¹

The pediatric cataract is challenging because of the associated evolving refraction of the child—I like to refer to it as *dynamic refraction*. Although many surgeons rely on one of three standard treatments—glasses, contact lenses, or IOL implantation in the capsular bag—a new alternative is implanting a supplementary IOL designed for sulcus placement.

Recently, I performed the first pediatric Sulcoflex (Rayner Intraocular Lenses Ltd., East Sussex, United Kingdom) implantation in a 2-year-old boy with a unilateral cataract. Implanting this lens is part of what I have termed *duet implantation*, which means that the procedure combines

primary capsular bag lens implantation with sulcus supplementary lens implantation in one operation. The advantage of this corrective strategy is that the supplementary IOL can be exchanged or explanted to compensate for the child's dynamic refraction. Additionally, it allows the surgeon to aim for emmetropia or myopia instead of under-correcting the eye.

It is important for children to reach an appropriate refraction, which many times is emmetropia, for maximal visual development. This is especially true in unilateral cataract cases because sharp uncorrected vision allows easier occlusion of the healthy eye, which facilitates strengthening the weak eye. Depending on the child's age, myopia may be the preferred target.

CASE DESCRIPTION

After intraoperative biometry, I performed cataract surgery in this 2-year-old patient's left eye with a primary posterior capsulorrhexis and anterior vitrectomy—a standard practice in pediatric cases. A 26.00 D blue-light-filtering IOL



Figure 1. After implanting a standard IOL into the capsular bag, the Sulcoflex is implanted into the sulcus.



Figure 2. A 25-gauge iridectomy is performed after Sulcoflex implantation.



Figure 3. The procedure concludes with wound closure using 10-0 nylon sutures.

was implanted into the capsular bag, which alone should provide emmetropia once the child reaches adulthood. A 2.50 D Sulcoflex supplementary IOL was then implanted into the sulcus to provide a total correction of approximately 28.50 D (Figure 1). An iridectomy was then performed with a 25-gauge vitrectome (Figure 2). At the end of surgery, the wound was closed with 10-0 nylon sutures (Figure 3).

In the early postoperative days, the eye was calm, the lenses were well accepted, and slight myopia was achieved. The parents were able to occlude the good eye so that better vision hopefully results in the child's left eye.

FOLLOW-UP

The patient will be monitored routinely throughout childhood. There is no way to tell how long the Sulcoflex lens with the 2.50 D add will be needed in this patient. If the eye continues to be stable, there is no need to change it. The best-case scenario is that the original Sulcoflex will have to be explanted only when the patient is older and the eye has stopped growing. In that case, the 26.00 D lens should provide emmetropia. However, if his refraction changes, we have the option to explant the lens or exchange it for another Sulcoflex with a different power. For instance, if the dynamic refraction changes and the child needs only 25.00 D to reach emmetropia, we could explant the 2.50 D Sulcoflex and implant a -1.00 D lens; if the eye needs 24.00 D, we could exchange the lens for a -2.00 D Sulcoflex.

REVERSIBILITY AN ADVANTAGE

In Vienna, I do a lot of pediatric cataract surgery. In certain cases, I now recommend the Sulcoflex to parents, and many prefer this option due to its reversibility. With a supplementary IOL, we can repeatedly correct the child's dynamic refraction (if necessary) so that the eye will develop as it is supposed to.

Prior to the availability of the Sulcoflex, I usually tried to undercorrect the eye or aim for emmetropia in unilateral cases. But as the eye grew, it would become myopic and I would then have to prescribe contact lenses or glasses to correct for the desired refraction. For this reason, some surgeons choose to prescribe contact lenses or glasses until the child's eye is stable enough to implant an IOL. Alternatively, others opt to implant a standard IOL alone, which should provide emmetropia in adulthood. In this situation, immediately after surgery the child will be hyperopic and require corrective contact lenses or glasses. Another option is to implant an IOL that corrects the child's current refractive error—in the case of the 2-year-old patient I treated, it would be 28.50 D. However, as the eye grows it will become more myopic. The surgeon then can correct the child with contact lenses or glasses or may implant a Sulcoflex instead of performing IOL exchange.

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By Michael Amon, MD

The world's first implantation of the Sulcoflex in a pediatric patient involving implantation of an in-the-bag lens and a supplementary IOL, the Sulcoflex, into the ciliary sulcus.



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I believe the Sulcoflex may transform the treatment of pediatric cataracts because it not only optimizes refraction in the child but allows exchange of the supplementary IOL later so that the child continues to achieve emmetropia or myopia as his refraction changes.

I should mention that there are some risks of this lens surgery in children vs adults. First, the eye is smaller and may be more likely to develop pupillary block syndrome. Therefore, a primary iridectomy should always be performed. Second, a child's eye reacts with a higher degree of inflammation, and proper administration of antiinflammatory treatment is mandatory. These risks do not outweigh the benefits of optimized refraction with the Sulcoflex in the prevention of amblyopia.

CONCLUSION

Now that I have implanted the Sulcoflex in a 2-year-old's eye, I have been recommending the lens to my colleagues for pediatric cataract cases. It is important that we inform surgeons who perform pediatric cataract surgery about the availability of this supplementary IOL. It allows the child to achieve optimized refractive results after cataract surgery and may prevent amblyopia, which is especially important in unilateral cases in which the chance for the development of severe amblyopia is higher.

Performing cataract surgery in children is difficult because their eyes are not only smaller but also have different tissue reactions; however, I think use of a supplementary IOL in these cases is a promising concept. ■

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1. Cataracts in Children. University of Minnesota Web site. Available at: <http://www.tc.umn.edu/~chris196/cataracts.htm>. Accessed December 4, 2009.