Rhegmatogenous Retinal Detachment after Pediatric Cataract Surgery
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Rhegmatogenous retinal detachment is a well-known late complication of pediatric cataract surgery, historically reported to occur 20 years or more after the primary surgery, with only a third of cases occurring in the first 10 years. Previous studies have not fully elucidated the risk factors for postoperative retinal detachment in the modern era of pediatric cataract surgery; thus, it is not known which patients require close long-term follow-up. Similarly, there have been limited data on the surgical outcomes of rhegmatogenous retinal detachment related to pediatric cataract surgery. In this issue of Ophthalmology, Agarkar et al (available at http://www.aaojournal.org/article/S0161-6420(17)30809-6/fulltext) examined 481 consecutive cases of cataract surgery with primary intraocular lens implantation in 295 children with no other predisposing ophthalmic or systemic anomalies to determine the incidence and risk factors associated with postoperative retinal detachment and to study the outcomes of retinal detachment repair.

Using records of surgeries performed between 1996 and 2007 at a tertiary eye hospital, the authors identified 295 patients 16 years of age and younger with no history of ocular trauma or other prior ocular or systemic risk factors for retinal detachment who underwent lensectomy, posterior capsulotomy, and anterior vitrectomy without primary intraocular lens implantation. The mean follow-up time after cataract surgery was 66 months. Overall, the incidence of postoperative retinal detachment was 2.5% at 5 years, and the cumulative risk of retinal detachment at 10 years was estimated to be 5.5%. The median time between cataract surgery and retinal detachment development was 70 months.

Increased risk of retinal detachment in this study was associated with intellectual disability and with high myopia. Retinal tears were the most common cause of retinal detachment (50%) in the current study. Lattice with holes was causative in 20%, whereas 30% had both retinal tears and lattice with holes. Scleral buckle was performed for 4 of 12 eyes with detachment, whereas 6 eyes underwent combined vitrectomy with scleral buckle. Two eyes had total retinal detachments with proliferative vitreoretinopathy at presentation and were deemed inoperable. Of the 6 eyes that underwent combined vitrectomy with scleral buckle, 2 redetached and required a second vitrectomy. The visual outcomes after retinal detachment surgery are difficult to assess because Agarkar et al do not provide the predetachment vision for the study patients. However, in 7 of the 12 eyes with retinal detachments, the visual outcomes were poor, with final visual acuity of 20/200 or worse.

The overall incidence of retinal detachment after pediatric cataract surgery of 2.5% at 5 years in the current study falls within the range of previous reports, suggesting that primary intraocular lens implantation does not confer a protective effect. The earliest studies on retinal detachment after surgery for congenital cataracts showed an incidence rate of up to 5% at 5 years. However, these reports included eyes with other ocular conditions known to predispose patients to retinal detachment. More recently, 2 large studies examined the incidence of retinal detachment after cataract surgery in children with no other ocular anomalies. The first identified 1017 eyes of 579 pediatric patients with cataracts, but no additional ophthalmic abnormalities or history of trauma, who underwent lensectomy, posterior capsulotomy, and anterior vitrectomy without primary intraocular lens implantation. The authors reported a 3.2% incidence of postoperative retinal detachment in these aphakic eyes after a mean follow-up of 6.8 years. In the second study, analysis of a population-based cohort of 656 children with no ocular or systemic anomalies who underwent surgery for cataract yielded a 0.8% incidence of retinal detachment at 5 years. The technique used for cataract extraction varied, and therefore the cohort included both aphakic and pseudophakic eyes. The report concluded that there was no association between cataract surgery techniques with or without posterior capsulotomy and anterior vitrectomy, or intraocular lens placement, and the risk of retinal detachment.

The median interval between pediatric cataract surgery and retinal detachment of 70 months (5.8 years) is substantially shorter than the 20-year interval reported in some early studies, but is closer to the mean of 6.8 to 9.1 years reported by others using modern techniques of pediatric cataract surgery.
surgery.\textsuperscript{13,14} Estimates of the cumulative risk of pseudophakic retinal detachment predict that the incidence will continue to increase with longer follow-up after cataract extraction in both children and adults.\textsuperscript{14–16} However, the difference in the mean interval from cataract surgery to retinal detachment between pediatric and adult eyes is of particular interest. Recent studies in adults have shown that the mean time to retinal detachment after cataract surgery is 8 to 40 months in the phacoemulsification era.\textsuperscript{15–17} The reasons for the comparatively delayed onset of retinal detachment in children are not entirely clear, but may be related to differences in vitreous consistency, in the rate of vitreous liquefaction, and in the time to posterior vitreous detachment development.

Agarkar et al\textsuperscript{5} report that axial myopia is a significant risk factor for retinal detachment after pediatric cataract surgery. Prior studies of myopia as a risk factor for retinal detachment after cataract extraction in children have used refractive error as a proxy for axial length,\textsuperscript{13} but this is of limited value in eyes with abnormally steep or flat keratometry readings. The current study also shows that intellectual disability greatly increases the risk of retinal detachment after pediatric cataract extraction, confirming prior reports,\textsuperscript{14} and suggests that patients with intellectual disability require close postoperative follow-up, including examinations under anesthesia if needed. Patients with rhegmatogenous retinal detachment after pediatric cataract surgery in the first eye may have a higher risk of retinal detachment in the second eye, with 3 of 9 patients in this study demonstrating bilateral retinal detachments and 2 others found to have lattice degeneration with retinal holes in the fellow eye.\textsuperscript{5} Lattice with holes is the second most common causative lesion for retinal detachment in children and adults.\textsuperscript{14} Retinal detachment occurring many years after cataract extraction in children demonstrates a need for long-term serial examinations, particularly for those with intellectual disability, axial myopia, and a history of retinal detachment in the fellow eye. Prophylactic treatment of lesions shown to be causative for detachment in this study, including lattice degeneration with holes, may reduce the risk of retinal detachment and should be considered.

In summary, the study provides important data that should be considered in establishing guidelines for follow-up of patients who undergo pediatric cataract surgery. Retinal detachment occurring many years after cataract extraction in children demonstrates a need for long-term serial examinations, particularly for those with intellectual disability, axial myopia, and a history of retinal detachment in the fellow eye. Prophylactic treatment of lesions shown to be causative for detachment in this study, including lattice degeneration with holes, may reduce the risk of retinal detachment and should be considered.

\section*{Footnotes and Financial Disclosures}

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