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Validation of guidelines for undercorrection of Intra-ocular lens (IOL) power in children

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Validation of guidelines for undercorrection of Intra-ocular lens (IOL) power in children

Abstract:

Introduction: Initial undercorrection of intra-ocular lens (IOL power) is a common practice in children undergoing pediatric cataract surgery. However, long term refractive status of these children is largely unknown. The purpose of this study is to analyze the long-term refractive status of these children.

Design: Retrospective observational study

Methods: We analyzed records of children (< 7 yrs) who underwent cataract surgery where a primary IOL implantation was performed and had completed follow-up upto atleast 7 years of age. Data was collected regarding demographics, etiology of cataract, method of undercorrection, serial follow-up refractions. Prediction error was defined as refractive error minus emmetropia. Main outcome measure was prediction error at age 7.

Results: 84 eyes of 56 children (28unilateral and 28 bilateral cases) met the study criteria. Median age at surgery was 3.3 (Inter-quartile range, IQR: 2.7 -5) years and median follow up period was 3.75 years. At seven years, median absolute prediction was 1.5D (IQR: 0.75-2D). 7/84 (8.3%) children achieved emmetropia while an equal proportion were myopic (45%) or hypermetropic (46%). Prediction error adjusted for using both eyes at seven years was not significantly different in any group ($p>0.05$). Maximum myopic shift was observed in children < 2 years. Age at surgery was the only significant factor that influenced prediction error ($\beta = -0.32$; $p=0.001$).

Conclusion: This study suggests that children undercorrected using guidelines suggested by Enyedi et al may achieve an acceptable refractive error at seven years of age. However, in children < 2 years of age, more hypermetropia may be observed. More studies are needed to validate various methods of undercorrection and compare with other guidelines.