

## Visual Axis Opacification after Pediatric Cataract Surgery

**Veenu Maan\***

*Faculty of Pediatric Ophthalmology, Strabismus and Neuro-Ophthalmology, C. L. Gupta Eye Institute, Moradabad, Uttar Pradesh, India*

**\*Corresponding Author:** Veenu Maan, Faculty of Pediatric Ophthalmology, Strabismus and Neuro-Ophthalmology, C. L. Gupta Eye Institute, Moradabad, Uttar Pradesh, India.

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Visual axis opacification (VAO)/capsular opacification is a common post-operative complication of pediatric cataract surgery. Anterior capsule opacification (ACO) is seen in first six months postoperatively. The incidence is higher in eyes with retinitis pigmentosa and in diabetic patients. Whereas, posterior capsule opacification (PCO) has high incidence (up to 100%) in infants after cataract surgery. Age at surgery, accompanying ocular pathologies like anterior segment dysgenesis, surgical management of posterior capsule and anterior vitreous and IOL parameters are important factors involved in PCO development.

Various softwares are now available for estimation of visual axis opacification. ECO software is based on digital coaxial retroillumination photography (DCRP) and has been reported being specifically applicable for quantitatively measuring ACO, PCO and posterior capsule opening opacification (PCOO) area in pediatric eyes. Any opacification of more than 3mm in the visual axis is considered significant.

VAO can be prevented by various surgical techniques and modifications of pediatric cataract surgery. Continuous curvilinear capsulorhexis (CCC) restricts the migration of lens epithelial cells (LEC'S) towards posterior capsule. In the bag IOL fixation prevents VAO by several mechanisms like "shrink wrap effect", barrier effect of IOL optic edge, creation of discontinuous capsular bend by IOL optic edge, and bioactivity based sandwich theory. Most importantly, anterior vitrectomy (AV) with posterior continuous curvilinear capsulorhexis (PCCC) had been reported to reduce the incidence of optic axis opacification to up to less than 20%. It is recommended to perform AV + PCCC in all pediatric cataract surgery patients upto the age of atleast 8 years. Rate of ND:YAG laser capsulotomy had been reported to be very low in eyes with AV + PCCC. Anterior vitrectomy (AV) removes the scaffold for the migration and proliferation of LEC'S and therefore, reduces the incidence of VAO.

AV + PCCC should be strongly considered for every patient in whom slit lamp ND:YAG capsulotomy is not possible, if ND:YAG laser is not available or loss to follow up may be an issue. Bag in the lens, posterior optic buttonholing (POBH) are modifications of the surgical technique to prevent VAO but, require more surgical skill and expertise.

IOL Parameters (design, material) should be considered before planning pediatric cataract surgery as VAO has been reported to be least with hydrophobic acrylic IOL, they have excellent capsular biocompatibility as compared to hydrophilic acrylic IOL'S. Modern IOL'S with 360 degree round edge are very much effective in preventing PCO formation.

Selection of an appropriate IOL, performing a proper surgical technique, following adequate measures to prevent capsule opacification reduces the incidence of VAO after and definitely help in providing a better postoperative rehabilitation and quality of life after pediatric cataract surgery.

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