

Bilateral Total Cataract after Laser Treatment of Aggressive Posterior Retinopathy of Prematurity

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Background: Laser is the gold standard for treatment of retinopathy of prematurity (ROP). **Case characteristics:** A preterm baby born at 26 weeks gestation age with bilateral aggressive posterior ROP had bilateral total cataract after laser treatment. **Outcome:** Uneventful cataract surgery. **Message:** Aggressive laser treatment in aggressive posterior ROP can rarely lead to anterior segment ischemia and cataract.

Keywords: *Complications, Management, Outcome.*

Laser Photocoagulation is a safe and effective procedure for treatment of retinopathy of prematurity (ROP) without significant side effects [1]. We report a neonate who developed bilateral total cataract after laser treatment for aggressive posterior ROP (APROP). The possible underlying mechanisms are discussed.

CASE REPORT

A male child was delivered at 26 weeks gestation age, 1200 g birthweight by caesarean section. The infant had experienced respiratory distress syndrome, apnea of prematurity, anemia and had received multiple blood transfusions. He presented for ROP screening at our centre at a post-conceptual age of 33 weeks with prominent tunica vasculosa lentis, poorly dilating pupils, and was diagnosed with Zone I Aggressive Posterior ROP disease in both eyes. He underwent prompt uneventful near-confluent indirect diode laser photoablation of the avascular retina in both eyes (150 mW power, 150 ms duration and nearly 3000 spots in both eyes) by a trained person. Post-laser, the baby was instilled topical Fluorometholone, Homatropine, Lubricants and Gatifloxacin eye drops 3 times a day bilaterally for 5 days.

The disease showed good regression on first post-laser follow-up after one week. Then he underwent laser augmentation in both eyes for posterior avascular retinal areas as the vascular-avascular junction became clearer and pupil dilated better. The cornea was clear, anterior chamber was clear with no hyphema, pupil was well

dilated and tunica vasculosa lentis was regressing. No anterior segment complications were noticed, though mild hypotony was evident.

However, at 3 weeks post-laser, the child started developing bilateral cataract. The cataract progressed rapidly and became near total cataract in next 2 weeks (**Fig. 1**). He underwent uneventful phacoaspiration, posterior capsulorhexis, anterior vitrectomy, without intraocular lens in both eyes. Postoperatively there was mild vitreous hemorrhage which resolved spontaneously over next 4 weeks.

DISCUSSION

Laser photocoagulation is a safe and effective treatment for severe ROP. However, anterior segment complications like hyphema, raised intraocular pressure, angle closure glaucoma, transient lenticular opacities, anterior segment ischemia and rarely cataract requiring removal have been reported [1]. Cataract is rarely seen after laser treatment for ROP, but small lenticular vacuolated opacities which resolve spontaneously are



Fig. 1 Advanced cataract development in both eyes after laser treatment of APROP.

often described, as well as dense cataracts requiring surgical cataract removal.

Lambert, *et al.* [2] studied characteristics of these cataracts and suggested possible inflammatory (phacoantigenic uveitis) or ischemic mechanisms (anterior segment ischemia). Fallaha, *et al.* [3] suggested that confluent laser treatment with high number of laser spots, as necessary in cases of APROP, leads to anterior segment ischemia, that can lead to development of cataract. We believe the same happened in the neonate. Anterior segment ischemia is rarely reported after pan-retinal photocoagulation, scleral buckling surgery, strabismus surgery, cyclocryotherapy – and this ischemic injury often presents as corneal edema, shallow anterior chamber, pupillary membranes, iris atrophy, posterior synechiae and cataract.

Kaiser, *et al.* [4] suggest that confluent laser treatment at long posterior ciliary arteries, prolonged forceful depression, laser injury to immature long posterior ciliary arteries and inadvertent treatment of ciliary body structures or reflected laser energy from peripheral treatment can all predispose to this. It has also been reported that premature infants less than 28 weeks gestational age with birth weight <1075 g are predisposed to anterior segment ischemia [5].

Bilateral significant cataract is a rare finding but

requires prompt cataract surgery under high-risk general anesthesia, followed by challenges of visual rehabilitation in small babies. Laser treatment should be done with care to avoid direct laser injury of the tunica, lens or iris. In cases of APROP, dense confluent laser with heavy laser around long ciliary vessels can predispose to anterior segment ischemia, which can rarely lead to bilateral cataract, thus, proper laser technique is important.

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