Refractive Outcomes of Patients Treated for Retinopathy of Prematurity

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Background:
Retinopathy of prematurity (ROP) is a disease where the blood vessels in the eye fail to develop appropriately in infants born prematurely. Two effective treatments for ROP include laser photocoagulation therapy and intravitreal bevacizumab (IVB). Laser therapy has been linked to causing high myopia in children post-treatment. We hypothesize that patients treated with IVB alone or in combination with laser will have less myopia development than patients treated with laser therapy alone.

Methods:
Patient demographics, treatment details, refractive data at 6-9 months and 3-4 years, the occurrence of strabismus at 3 years, and the most recent vision data were collected from 133 ROP patients. Patients not treated at IU health and those lost to follow-up, or deceased before both eye exams, were excluded from the study. Quantitative analysis was used to compare the refractive error, strabismus, and vision outcomes between the three treatment groups. A linear regression model was used to analyze the relationship between the number of laser spots applied and refractive error.

Results:
Refractive outcomes at 6-9 months and 3-4 years, occurrence of strabismus, and vision outcomes were statistically similar between the three treatment groups. However, the laser group had the most occurrences of high myopia. We also observed a 0.002 unit decrease in refractive error, reported at 6–9-months, with each laser spot applied ($p<0.001$). This may be due to the influence of outliers because no significant relationship was seen at the 3–4 year exam.

Conclusion and Potential Impact:
There was no difference in outcomes among patients treated with IVB, laser, or a combination of both, with the exception of more myopic outliers in the laser-only group. We can therefore assume that ROP patients who have received one of these three treatments had developed differences in myopia independent of treatment modality.