

There are 3 problems with performing LASIK on eyes with ROP. The first is that the retina is already compromised by the primary disease and the increased pressure in the eye (often 3 to 5 times normal) can by itself damage a normal retina and this risk would be increased in an already compromised retina where the macula has been stretched or dragged temporally. Although exams by retinal specialists has failed to document obvious retinal damage, one cannot rule out hypoxic or pressure induced damage to the macular area during the cutting of the flap which would account for his decreased vision.

He does now have abnormal electroretinograms as documented on April 8, 2002 and February 20, 2000, which indicate abnormal rod and cone function. This is not surprising in a patient with ROP but of course we do not have pre LASIK studies to determine if these abnormalities were increased after his LASIK. If a preoperative ERG was in fact abnormal, that would be an additional reason combined with the clinical appearance and best-corrected vision of 20/50 to exclude him from the study. If a preoperative ERG was normal, we would then have objective evidence that the LASIK surgery caused it to become abnormal.

The second problem with a patient with ROP is that optic nerve and the nerve fiber layer of the retina are more susceptible to damage from the increased intraocular pressure from the application of the suction ring. . Dominic does have abnormal optic nerves, which appear to be hypoplastic in the photos from 4/6/98 at the Nevyas Eye Center and by my exam. The report by Dr. DeJuan at Hopkins also describes "anomalous" optic discs. These small hypoplastic optic nerves are more prone to damage during LASIK.

Cases of optic nerve damage have been reported following LASIK have been reported even in normal eyes. The LASIK procedure can cause subclinical ischemic damage to the optic nerve or nerve fiber layer of the retina but not enough to result in obvious optic nerve atrophy or pupil defects. The visual field testing (Goldman) performed at Wilmer shows paracentral scotomas in both eyes and the interpretation by Dr. Zack on 12/6/99 describes, "specific loss including a number of common disorders, most commonly glaucoma." Clearly Dominic does not have glaucoma so these field defects point to damage from the increased intraocular pressure during LASIK in an abnormal optic nerve. The GDX study from March 27, 2000 also shows abnormal nerve fiber layers in both eyes which would usually indicate glaucoma but here is simply an indication of his ROP. If feasible I recommend Patterned Visual Evoked Potential testing to evaluate his optic nerve function.

The third problem with an ROP patient involves the controversy of whether to center the excimer ablation over the pupil, as recommended by Guyton Ellis and Hunter, or over the visual axis, as suggested by Wachler and Buzzard. Although this argument is often moot in most normal eyes, the dragged macula in ROP and the significant positive angle Kappa make this a more significant decision in an