

Abstract 202

POSSIBLE COMBINED DYE TOXICITY AND PHOTOTOXICITY IN TWO CASES FOLLOWING EPIRETINAL MEMBRANE REMOVAL SURGERY

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Introduction:

Although the use of vital dyes has greatly increased the success rate of macular surgeries, various complications with the usage of these dyes have also been reported. Dye assisted membrane peeling can cause retinal tears and detachments, visual field defects and cause retinal and RPE alterations. Possible etiologies for retinal and RPE alterations include direct mechanical trauma at the site of first contact or dye related toxicity or phototoxicity. The risk of endoilluminator associated phototoxicity increases with increased surgical time and increased exposure of macula to focal high beam illumination, prior fundus pigmentation and decreased distance between endoilluminator and retina. BBG dye has peak absorption between and emission in the range of 260 to 900nm. The presence of xenon light used in most Constellation vitrectomy machines alter the emission spectra of BBG dye producing toxic free radicals which subsequently cause damage to outer retina and RPE.

Materials and methods:

METHODS:

Retrospective review of consecutive two cases of macular toxicity.

Results:

RESULTS AND FINDINGS:

Two patients presented with similar history of metamorphopsia and had best-corrected visual acuity of 20/200 in the affected eye. OCT scans showed an epiretinal membrane at the macula with increased central macular thickness. The fellow eye examination was within normal limits. BBG-assisted ERM removal and internal limiting membrane peeling surgery was performed for both the patients. Over the subsequent visits, a well-defined area of outer retinal and RPE alteration was identified on OCT and fundus autofluorescence without any improvement in visual acuity. At 3month follow-up visit, the visual acuity improved in both the cases with decrease in the area of RPE alteration on both OCT and FAF.

Conclusions:

CONCLUSION:

This case series highlights the unusual occurrence of macular toxicity following brilliant blue G-assisted ERM removal surgery. Macular toxicity due to repeated usage of BBG dye and high intensity focal endo-illumination may lead to poor visual outcome following ERM removal or similar macular surgeries. Adequate precautions need to be taken to prevent vision loss such as reducing the surgical time, avoiding using BBG under air and avoiding restraining wherever possible and keeping endoilluminator at a distance from the fovea.

