

Hyperbaric Oxygen Therapy Reduces Field Defect After Macular Hole Surgery

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BACKGROUND AND OBJECTIVE: One of the serious complications that may arise after macular hole (MH) surgery is a temporal visual fields (TVF) defect. We hypothesized that hyperbaric oxygen (HBO) therapy improves the visual field (VF) in these patients.

MATERIALS AND METHODS: Vitrectomy for MH was performed on 73 eyes from 1994 to 1997. TVF defect was detected in 19 eyes and, of that 19, 12 patients were followed. Seven patients were treated with HBO therapy and 5 were controls. HBO was performed for approximately 110 minutes a day with 100% oxygen inhalation and a maximum of 2.8 atmospheric pressure. This continued for 20 days. The preoperative VF determined by kinetic perimetry was considered to be 100%, and the VF following HBO therapy was compared with that standard.

RESULTS: We detected VF defect (postoperative VF area average $71.9 \pm 12.8\%$ of the preoperative VF). In all 5 patients who had no HBO therapy, TVF defects remained, while the TVF recovered remarkably in all patients treated with HBO therapy. The VF recovered to $81.7 \pm 16.7\%$ of the preoperative VF after 3 days of HBO, and to $91.6 \pm 15.8\%$ months after HBO therapy.

CONCLUSION: We speculated that the cause of TVF defect is likely to be chorioretinal circulation disturbance during surgery, and that HBO activates the retinal cells and improves VF. We conclude that HBO is useful in the treatment of TVF defect after macular hole surgery.