Abstract 35

IN-OFFICE BLOOD-AIR EXCHANGE FOR PERSISTENT VITREOUS HEMORRHAGE AFTER VITRECTOMY IN PROLIFERATIVE DIABETIC RETINOPATHY

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Proliferative diabetic retinopathy (PDR) is one of the leading causes of vision loss in developing countries, in advanced stages with severe proliferation and traction or in long-standing vitreous hemorrhages it is mandatory to perform a surgical procedure (pars plana vitrectomy) to stop the progression of the disease by removing the fibrovascular proliferation, clearing the hemorrhage and applying panretinal photocoagulation (PRP). A common postoperative complication is persistent or recurrent vitreous hemorrhage due to remaining fibrovascular tissue, decompensated comorbidities or poor patient care after surgery. When a hemorrhage is dense and does not clear up after several weeks, a fluid/blood-air exchange can be done, this procedure is performed in a consultation or minor procedure room under topical anesthesia with a good safety profile. The aim of this study was to evaluate the efficacy of in-office blood-air exchange for rebleeding after vitrectomy in PDR.

Retrospective study, we included eyes that underwent blood-air exchange for vitreous hemorrhage after vitrectomy, demographic data, best corrected visual acuity (BCVA) before and after the procedure, number of blood-air exchanges and complications were recorded.

The patient was placed in fowler´s position, after aseptic technique (5% povidone-iodine drops) and a lid speculum placement, a 10mL syringe containing 5mL of air was inserted in the infero-temporal quadrant using a 26-gauge needle, by visualizing the needle tip through the iris the blood is pulled out replacing the space with 0.5mL of air when hypotonia is evident, this is repeated multiple times, the procedure stops when 3-5mL of blood are collected.

14 eyes of 14 patients were included, mean age was 55 years old, 50 % were female, 92% had vitreous hemorrhage and 35.7% had tractional retinal detachment before surgery. Cataract surgery, IOL placement, PPV and PRP were performed in all cases. 8 eyes had iris neovascularization. Time of rebleeding was 8.1 weeks after surgery in average (range 1-48w), all had a persistent and dense vitreous hemorrhage before the blood-air exchange, the time for the exchange was 12.4 weeks in average (range 4-51w) after surgery. The mean number of exchanges was 1.2. Four eyes received an anti-VEGF injection more than 2 weeks before the exchange. No complications were found during and after the procedure. Baseline mean BCVA was 2.85 +/- 0.36 logMar. When compared to baseline, mean BCVA improved after 1 week, 1, 3 and 6 months to 1.54 +/- 0.85 logMar ($p<0.001$) , 0.91 +/- 0.88 logMar ($p<0.001$), 0.60 +/- 0.53 logMar ($p<0.001$) and 0.46 +/- 0.35 logMar ($p<0.001$), respectively. Thirteen eyes (92.8%) remained stable without rebleeding after 6 months, 1 eye presented a new hemorrhage after 5 months with neovascular glaucoma which was treated with Ahmed’s valve implantation and PPV.

Recurrent or persistent vitreous hemorrhages are common after PPV for PDR, an office-based blood-air exchange is an effective, low-cost and safe alternative for rebleeding. This avoids the need of a second PPV in more than 90% of eyes. It is important to assess each eye carefully to low the risk of complications specially when residual traction or peripheral proliferation were left after the PPV.

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