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Clinical Images

# Retained Perfluoron Bubble after Pars Plana Vitrectomy for Retinal Detachment Secondary to Penetrating Open Globe Injury

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## Abstract

We describe the visual and anatomic outcomes of retained perfluoron bubble after pars plana vitrectomy (PPV) for repair of open globe and retinal detachment. Retained perfluorocarbon bubble was removed with a subsequent PPV. The patient developed a small subfoveal scar within weeks of perfluoron removal; a full thickness macular hole was seen in 3 years later.

**Keywords:** Bubble; Retinal; Perfluorocarbon

## Report

Perfluorocarbon liquid is used in complex retinal detachment during vitreoretinal surgery to stabilize the retina and spare a drainage posterior retinotomy [1]. Its high specific gravity and surface tension properties makes it an excellent transient tamponade agent for retinal detachment associated with giant retinal tears, proliferative vitreoretinopathy, and trauma-related retinal detachments [1]. However, this fluid must be removed entirely at the conclusion of the surgery.

We report the findings of a patient with retained subfoveal perfluorocarbon bubble. A 22- years old male underwent an open globe repair for a zone 1 traumatic penetrating globe injury with an 8mm T shaped corneal-scleral laceration at 6 o'clock. At one-week follow-up, the patient was found to have vitreous hemorrhage and total retinal detachment for which he underwent a successful repair with PPV and silicone oil tamponade. Perfluorocarbon was used intraoperatively for flattening the retinal detachment. Three months post operatively, silicone oil was removed with air-gas exchange and intraoperatively a small ¼ disc diameter subretinal perfluorocarbon bubble was noted in the supertemporal aspect of posterior pole and was removed. Surprisingly, a tiny subfoveal perfluorocarbon bubble with epiretinal membrane was identified post silicone oil removal at 1 week (Figure 1A-OCT and 1B-Fundus photo). He immediately underwent membrane peel and perfluorocarbon bubble removal; a good foveal contour with a small subretinal scar was noted post-operatively with stable visual acuity of counting fingers. (Figure 1C-OCT and 1D-Fundus photo). Three years subsequently, patient developed a full thickness macular hole with a visual acuity of count fingers (Figure 2).

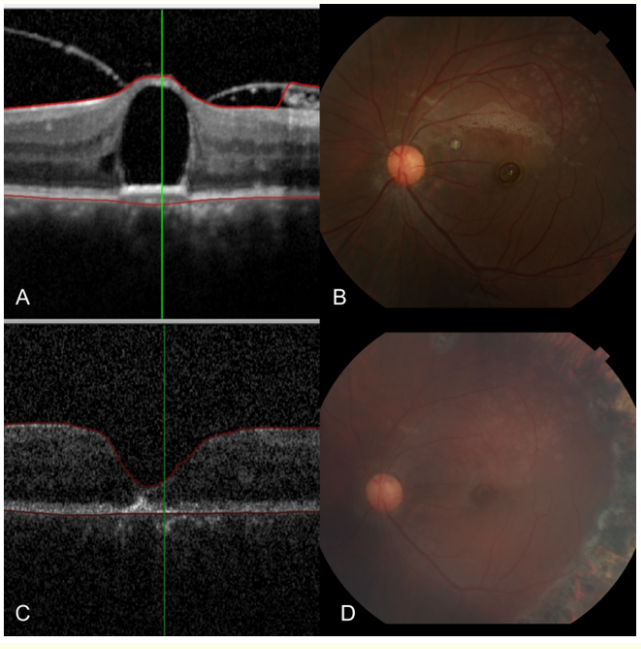


**Figure 1:** Perfluorocarbon bubble in the foveal center with epiretinal membrane. (Figure 1A-OCT and 1B-Fundus photo) Small subfoveal scar with disrupted ellipsoid layer. (Figure 1C-OCT and 1D-Fundus photo).

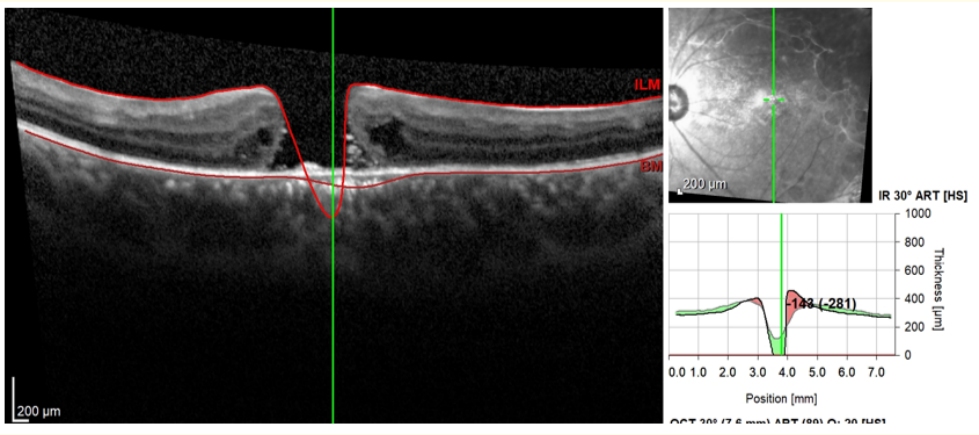


**Figure 2:** Full thickness macular hole with cystoid macular edema.

Retained perflurocarbon, if left in contact with retina for an extended period of time, is toxic to the retina. Studies have shown discontinued ellipsoid zone and disorganized retinal pigment epithelium [2]; disrupted ellipsoid zone in the fovea was seen in our patient, figures A and C. Reports have demonstrated retained perflurocarbon associated with formation of macular hole; one report even demonstrates spontaneous closure of the retained perfluorocarbon-caused macular hole after spontaneous escape of the fluid [3,4]. This case report demonstrates complications associated with retained perfluorocarbon liquid with fundus photos and OCT findings after a very short contact duration of PFO bubble with the fovea, a late-onset development of full thickness macular hole was seen despite removal of perfluorocarbon.

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