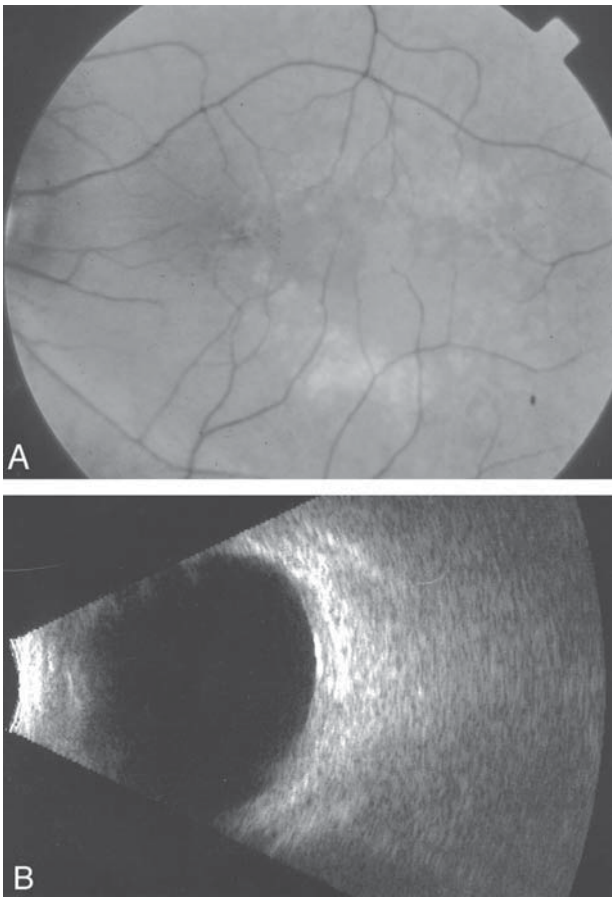

Fig. 2. **A**, Photograph of the left eye demonstrates a flat, hypopigmented, atrophic choroidal lesion temporal to the fovea. **B**, B-scan ultrasonography demonstrates a regressed choroidal lesion with no associated subretinal fluid.

duced anemia, thrombocytopenia, and leukopenia.[3] These symptoms can include weakness, fatigue, spontaneous bleeding, and increased infection.[3] As the disease progresses, hypercalcemia due to increased bone resorption is often seen.[3] Commonly, patients can develop kidney involvement, resulting in renal failure.[3] In this case, the patient had none of these signs and symptoms when she initially presented with visual complaints. In the literature, there is a report of known systemic multiple myeloma with choroidal involvement,[1] and there is a case of an extramedullary plasmacytoma in the choroid without development of multiple myeloma.[2] This case demonstrates that systemic multiple myeloma can present initially as an amelanotic choroidal mass that simulates a choroidal melanoma.

The diagnosis of choroidal plasmacytoma in this case is strongly supported by the rapid and complete response of the lesion to radiotherapy. In addition, the finding of multiple systemic plasmacytomas further supports the diagnosis.

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RECOVERY OF VISUAL FUNCTION AFTER REMOVAL OF CHRONIC SUBFOVEAL PERFLUOROCARBON LIQUID

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Persistent perfluorocarbon liquid (PFC) in the subretinal space is an infrequent but well-recognized sequela of vitreoretinal surgery for complicated retinal detachment.[1,2] The effects of long-standing subfoveal PFC on overlying photoreceptor function are unclear. We report a case of visual recovery following surgical removal of long-standing subfoveal PFC.

Case Report

A 78-year-old man was referred to the Duke University Eye Center (Durham, NC) with a 4-day history of decreased vision in his right eye. Pertinent ocular history included vitreous loss during cataract extraction and implantation of a sulcus-fixated intraocular lens 1 year previously. Examination revealed a best-corrected visual acuity of 20/100 in the right eye. Intraocular pressure was 12 mmHg, and slit-lamp examination revealed a sulcus-fixated acrylic lens with an open posterior capsule. Funduscopic examination revealed an inferior macula-off retinal detachment extending clockwise from 3 to 8 o'clock with an equatorial starfold at the 7-o'clock meridian. No visible retinal breaks were found. Scleral buckling and pars plana vitrectomy were performed the next day to repair the detachment. Perfluoro-*n*-octane liquid (Perfluoron, Alcon Laboratories, Inc., Fort Worth, TX) was used to flatten the retina, and 20% C3F8 gas was utilized for extended intraocular tamponade. No subretinal PFC was noted intraoperatively. The retina was

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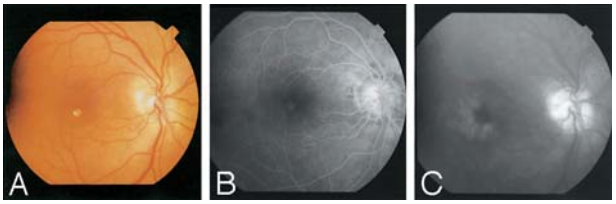

Fig. 1. **A,** A bleb of perfluorocarbon liquid (PFC) measuring 300 μm is present beneath the fovea. **B,** Early fluorescein angiogram reveals a well-circumscribed area of foveal hyperfluorescence corresponding with the PFC. **C,** Late angiogram reveals petaloid hyperfluorescence surrounding the PFC.

fully reattached on postoperative day 1. Seven weeks postoperatively, a 300-μm bleb of subfoveal PFC was noted, and the best-corrected visual acuity was 20/400 (Figure 1A). An attempt to displace the subfoveal PFC with an intravitreal injection of 0.3 mL of 100% C3F8 gas was unsuccessful. Fluorescein angiography revealed cystoid macular edema (Figures 1B and 1C). Optical coherence tomography revealed significant macular thickening consistent with cystoid macular edema (Figure 2, bottom) and possible retinal thinning directly above the subfoveal PFC (Figure 2, top)

Three months after the original retinal detachment surgery, the patient underwent surgical removal of the subfoveal PFC. Using a 36-gauge angled translocation needle (Grieshaber/Alcon, Fort Worth, TX) a small retinotomy was created at the superotemporal edge of the bleb, and the PFC was removed with very gentle aspiration. The retinotomy was self-sealing, and no intraocular tamponade was used. Intraoperatively, foveal pigmentary changes were noted in the region beneath the PFC after its removal. One week postoperatively, best-corrected visual acuity had improved to 20/50. Optical coherence tomography revealed decreased macular edema and restoration of a normal foveal contour. Fluorescein angiography revealed decreased cystoid macular edema. Therapy was started with prednisolone acetate, 1%, and ketorolac, 0.5%, four times daily for cystoid macular edema. Three months postoperatively, the patient's metamorphopsia had decreased, and best-corrected visual acuity measured 20/40. Examination of the macula revealed trace pigmentary changes (Figure 3A). Results of fluorescein angiography were normal (Figures 3B and 3C), and optical coherence tomography revealed near complete resolution of cystoid macular edema (Figure 4).

Discussion

Migration of PFC into the subretinal space has been estimated to occur at a frequency of 0.9%.[2] Although the inflammatory response to chronically retained intravitreal PFC has been well documented,[3] the effect of subretinal PFC is less well understood. Subretinal PFC causes a focal retinal detachment; however, its potential direct toxic effects on overlying retina are unclear. In animal studies, short-term exposures to subretinal PFC have resulted in damage to overlying photoreceptor cells in some models[4] but not in others.[5]

It is unclear how the PFC migrated into the subretinal space in this patient. When recognized intraoperatively, subretinal PFC can be easily removed. However, the management of subretinal PFC that is discovered postoperatively poses a greater challenge. Pollack and Packo[6] previously described the successful hydraulic displacement of submacular PFC in two patients; however, one patient subsequently developed a recurrent retinal detachment. According to these investigators, the complexity of the original pathologic lesion limited the visual improvement in these cases. We describe a patient whose visual function improved following removal of chronic subfoveal PFC using a minimally traumatic surgical technique. A 36-gauge translocation needle was used to carefully aspirate the subfoveal PFC through a self-sealing retinotomy site. Postoperatively, the patient's best-corrected visual acuity improved from 20/400 to 20/40,

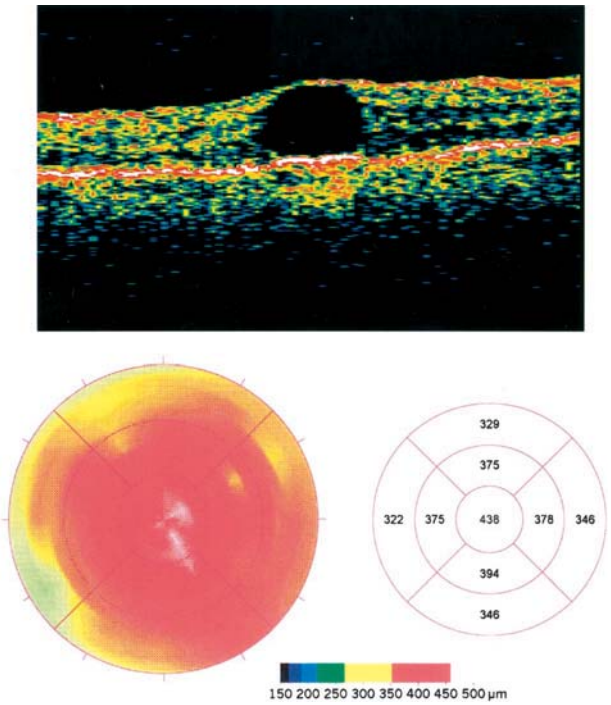

Fig. 2. **Top,** Preoperative optical coherence tomogram reveals subfoveal perfluorocarbon liquid with possible overlying retinal thinning. **Bottom,** Severe macular thickening (μm) is present. Brighter colors (red to white) correspond to areas of increased retinal thickness; darker colors (blue to black) correspond to areas of decreased retinal thickness.

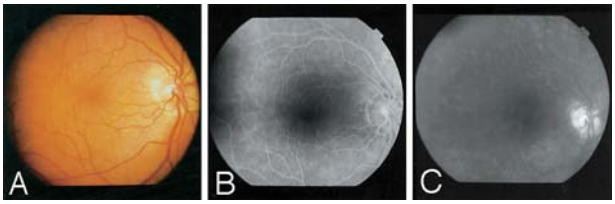

Fig. 3. **A,** Three months postoperatively, only trace pigmentary changes are present in the macula. **B and C,** Early and late fluorescein angiograms reveal resolution of cystoid macular edema.

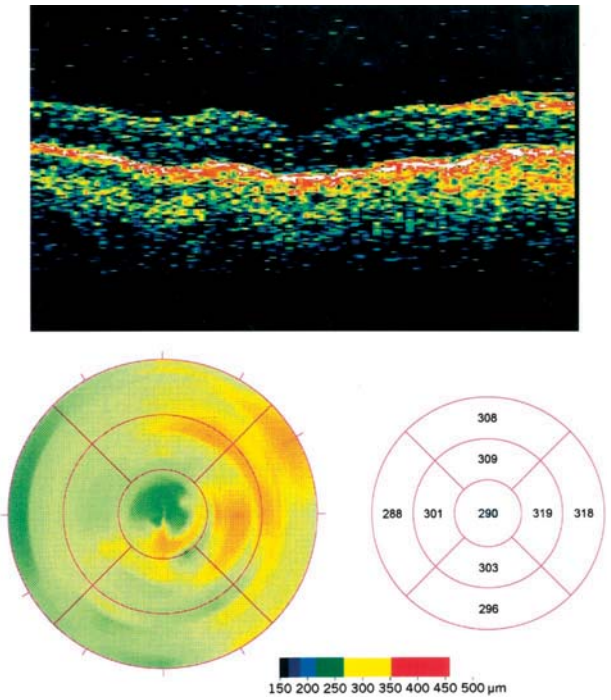

Fig. 4. Top, Three months postoperatively, normal foveal contour has returned. **Bottom,** Macular thickening has almost completely resolved.

and his metamorphopsia dramatically improved. The apparent retinal thinning demonstrated by preoperative optical coherence tomography was improved by the 1-month postoperative visit, and there was near normal foveal contour and retinal thickness by the 3-month postoperative visit.

The dramatic improvement in visual function in this case suggests that mechanical and barrier effects, in addition to possible toxic effects, of subfoveal PFC may contribute to limitations of visual acuity. The ultimate visual acuity was also likely limited by the original macula-off retinal detachment. The clinical course in this patient suggests that there may be significant recovery of visual acuity following removal of chronic subfoveal PFC present for as long as 3 months.

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FOVEAL SHAPE AFTER IDIOPATHIC MACULAR HOLE SURGERY WITH AND WITHOUT INTERNAL LIMITING MEMBRANE REMOVAL

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The removal of the internal limiting membrane (ILM) for tractional maculopathy has been endorsed because no proliferative response and no adverse effects on visual function except delayed recovery of focal macular electroretinograms have been reported.[1–3] ILM peeling or removal may increase the rate of idiopathic macular hole (IMH) closure and shorten the time of tamponade and the face-down position.[4] However, there have been no reports on the effect of ILM removal on the foveal shape after a long follow-up period.

We have evaluated the effect of macular hole surgery with and without ILM peeling on foveal shape as determined by optical coherence tomography (OCT).

Patients and Methods

Optical coherence tomography (Humphrey 2000, San Leandro, CA) was performed before, 1 month after, and 6 to 12 months after (mean, 7.5 ± 0.3 months) surgery for stage 2 and 3 IMHs in 47 eyes of 46 patients (age range, 50–78 years; median, 65 years) (Table 1). All patients underwent a three-port vitrectomy, and the ILM was removed in 27 eyes (ILM-off) and not removed in 20 eyes (ILM-on). The patients were randomly assigned to the ILM-on group or the ILM-off group. Cataract surgery was performed simultaneously in 38 eyes and secondarily in nine eyes. The ILM was removed from an area of approximately 15° around the macular hole. In the ILM-on group, the retinal surface around the macular hole was brushed with a diamond-dusted eraser.

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