

DEPOSITS OF PERFLUOROCTANE AFTER PROLONGED USE AS A POST-OPERATIVE VITREOUS SUBSTITUTE

DEPÓSITOS DE PERFLUOROCTANO EN USO PROLONGADO COMO SUSTITUTIVO VÍTREO POSTQUIRÚRGICO

ASENSIO-SÁNCHEZ VM¹, TORREBLANCA-AGÜERA B², MARTÍNEZ-CALVO S², CALVO MJ², RODRÍGUEZ R¹

ABSTRACT

Case report: We describe a 72-year-old woman with a retinal detachment who underwent pars plana vitrectomy (PPV) and intraocular tamponade with a combination of silicone oil and perfluoro-n-octane as a postoperative vitreous tamponade. Three months later, plaque-like deposits of emulsified perfluoro-n-octane were visible on the inferior retina.

Discussion: Deposits of emulsified perfluoro-n-octane, as epiretinal plaques, have not been previously described as adverse reactions following the use of perfluorocarbons in the eye (*Arch Soc Esp Ophthalmol 2007; 82: 241-244*).

Key words: Retinal detachment, pars plana vitrectomy, perfluorocarbon liquid, vitreous substitute, epiretinal deposits.

RESUMEN

Caso clínico: En este trabajo se describe una paciente de 72 años con un desprendimiento de retina tratado con vitrectomía por pars plana (VPP) y como tamponador intraocular postquirúrgico una mezcla de aceite de silicona y perfluoro-n-octano. Tres meses después de la cirugía desarrolló sobre la retina inferior unos depósitos que correspondían a perfluoro-n-octano emulsificado.

Discusión: Depósitos de perfluoro-n-octano emulsificado con el aspecto de placas epiretínicas no se han descrito en la bibliografía como reacción adversa de los perfluorocarbonos.

Palabras clave: Desprendimiento de retina, vitrectomía pars plana, perfluorocarbono líquido, sustitutivo vítreo, depósitos epirretinianos.

Received: 26/1/06. Accepted: 23/3/07.

General Hospital. Medina del Campo. Valladolid. Spain.

¹ Ph.D in Medicine.

² Graduate in Medicine.

Correspondence:

V.M. Asensio Sánchez

Hospital General Servicio Castellano-Leonés de Salud

Servicio de Oftalmología

47010 Medina del Campo (Valladolid)

Spain

E-mail: vasensio@hmdc.sacyl.es

INTRODUCTION

In ophthalmology, the utilization of liquid perfluorocarbons (LPFC) has improved retinal-vitreous surgery, facilitating surgical maneuvers in complicated retina detachments (1,2). Even though LPFCs are considered to be biologically inert, they are not recommended as vitreous substitutes due to their toxic effects. This communication describes a patient in whom perfluorooctane was used for three months, during which a deposit appeared in the retina in contact with the LPFC.

CASE REPORT

A 72-year-old woman without relevant ophthalmological or familial history, attended the outpatient practice with a diagnosis of cataract in the right eye (RE). Visual acuity in said eye of light perception, evidence in a total retina detachment associated to proliferative vitreoretinopathy with multiple holes in the superior and inferior peripheral retina. In May 2005 scleral surgery was performed with VPP utilizing silicone oil 1000 cs (SIL-1000®. DORC, Zuidland, Holland) with a relapse of the retina detachment. A new intervention was performed in June 2005, utilizing as provisional tamponade a mixture of silicone oil 1000 cs and perfluoro-n-octane (Perfluoron® Alcon, Fort Worth, TX), achieving retinal reapplication.

In June 2005, the maximum visual acuity in the right eye was of 0.05. The retina was reattached, with perfect separation between both substances (fig. 1). In September 2005, a nuclear cataract impeded a clear vision of the retina, for which reason a combined pars plana vitrectomy was performed to extract the cataract and the tamponade. The inferior retinal head, whitish deposits in the form of grid-shaped plates which, under high resolution liquid chromatography and mass spectrometry, were found to be emulsified LPFC (fig. 2). In December 2005. Visual acuity was of 0.05 with intra-ocular pressure of 12 mmHg, with the retina remaining reattached.

DISCUSSION

LPFC fills in the eye in the posterior-anterior direction when injected over the optic nerve, tamponading the retina against the pigmentary epithelium. The highly specific gravity of LPFCs, together with it being not miscible in blood or water, facilitates complicated retinal detachment surgeries. In addition, due to its viscosity between 0.8 and 8.0 cs at 25°C, the injection and extraction maneuvers are facilitated (1,2). This communication describes a patient with complicated retinal detachment in whom a mixture of LPFC and silicone or in was used for three months as a post-surgery tampon. After this period, plate-shaped whitish-

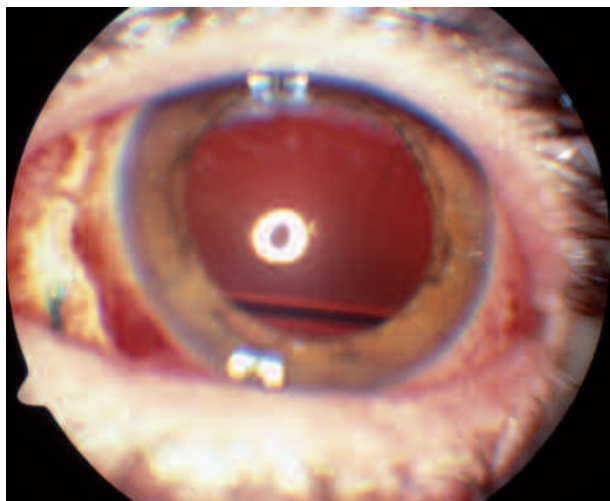


Fig. 1: July 2005. Obvious separation between LPFC and the silicone.

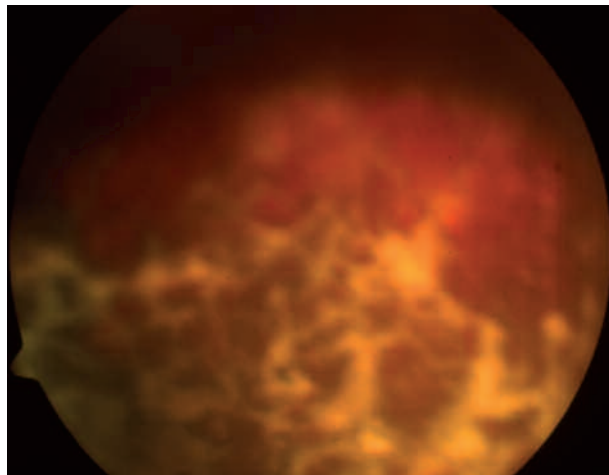


Fig. 2: LPFC deposits covering the inferior retina (area of contact with LPFC). The superior retina in contact with the silicone is free of deposits.

yellowish deposits were observed throughout the inferior retina.

The biochemical analyses determined that the deposits were emulsified perfluoro-n-octane. We have not found any reference of epiretinal deposits in the reference databases. Utilizing perfluorofenanthrene as a vitreous substitute for five months in a pseudofakic retinal detachment, Viebahn et al (3) described whitish deposits over the anterior chamber lens and the corneal endothelium which were emulsified perfluorofenanthrene. In a broad review on LPFC, Peyman et al (2) do not make reference to retinal deposits. In turn, Blinder et al (4), utilized perfluorofenanthrene as a post-surgery vitreous substitute in 16 patients for a maximum period of four weeks, without referring any retinal condition as that described in this paper. Mate et al (5), in an experimental study in aphakic and vitrectomized eyes, demonstrated retinal destructuring mainly in the internal layers.

The side effects of LPFCs, at the experimental level and in the described clinical conditions, render them not advisable as candidates for post surgery tamponade.

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