
SHORT COMMUNICATION

Case report

Perfluorohexyloctane endotamponade for treatment of persisting macular hole

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PURPOSE. *To report the use of perfluorohexyloctane to endotamponade a persisting macular hole.*

METHODS. *A 62-year-old patient presented with persisting stage IV macular hole, after uncomplicated, but unsuccessful, pars plana vitrectomy with peeling of the inner limiting membrane of the retina for treatment of the disorder. A second pars plana vitrectomy was performed in combination with cataract surgery, using perfluorohexyloctane as a new heavy-weight ocular endotamponading agent. No additional membrane peeling was done.*

RESULTS. *Four weeks later, marked emulsification of the perfluorohexyloctane and pronounced opacification of the posterior lens capsule were observed. After removal of the perfluorohexyloctane ten weeks after instillation, the macular hole was closed, and visual acuity increased from 0.1 to 0.3. The whole retinal surface was covered with a whitish amorphous membranous layer, that could partially be sucked off. After another four weeks, the membrane had mostly disappeared, and visual acuity increased to 0.5.*

CONCLUSIONS. *Perfluorohexyloctane merits further evaluation for ocular endotamponade in patients with persisting macular holes. Formation of epiretinal membranes needs to be thoroughly investigated. (Eur J Ophthalmol 2003; 13: 103-4)*

KEY WORDS. *Macular hole, Ocular endotamponade, Pars plana vitrectomy, Perfluorohexyloctane*

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Macular holes have usually been treated by pars plana vitrectomy, removal of the posterior vitreous surface and inner limiting membrane of the retina, gas endotamponade, and prone positioning of the patient in the postoperative period (1). Problems can arise, however, if despite these procedures the macular holes persist, as in the patient described in this report. A 62-year-old woman presented with progressive loss of central vision in her right eye. Ophthalmologic examination was unremarkable except for a stage III macular hole. Visual acuity was 0.30. The patient underwent pars plana vitrectomy with indocyanine green staining and peeling of the inner limiting membrane of the retina in the foveal region with a diameter of about 5 mm, and pneumatic retinopexy using

15% C₂F₆ gas. Postoperatively, she was instructed to keep a prone position. Despite these procedures, the macular hole persisted. Visual acuity decreased to 0.1, six months later, a second pars plana vitrectomy was carried out using perfluorohexyloctane as a new heavy-weight transparent fluid to tamponade the fovea and press the edges of the macular hole against the retinal pigment epithelium (2,3). About 4/5 of the vitreous cavity was filled with perfluorohexyloctane. Additionally, phacoemulsification with implantation of a foldable acrylic posterior chamber lens was carried out. No epiretinal membranes were detected during the second pars plana vitrectomy. Four weeks after surgery, the patient showed marked emulsification of the perfluorohexyloctane with small

bubbles in the inferior part of the anterior chamber. She also had marked opacification of the posterior lens capsule. Ten weeks after surgery, a third pars plana intervention was carried out to remove the perfluorohexyloctane and to perform a posterior lens capsulotomy. The whole retinal surface was covered with a whitish amorphous membranous layer, which could be partially removed. The macular hole was closed. After a follow-up period of 3.5 months, the macular hole remained closed, and visual acuity increased from 0.1 to 0.3. After polishing the posterior lens surface using a Nd-YAG-laser, visual acuity increased to 0.5 with the macular hole remaining closed. In the periphery of the fundus, remnants of the whitish epiretinal membrane were still detectable. During the whole period after instillation and removal of perfluorohexyloctane, intraocular pressure was in the normal range.

Perfluorohexyloctane belongs to the group of semi-fluorinated alkanes. These are novel substances which have the potential to act as internal tamponade agents for the inferior fundus (2). They are immiscible with aqueous and as regards their interfacial tensions

they are comparable with perfluorocarbon liquids and with silicone oil. Having a higher specific gravity than vitreous or water, perfluorohexyloctane has been used to endotamponade the inferior region of the retina in eyes undergoing pars plana vitrectomy for proliferative vitreoretinopathy. The present study suggests that perfluorohexyloctane merits further evaluation as an additional tool for tamponading and closing persisting macular holes. As described in previous studies, epiretinal fibrocellular and avascular membranes that may form during perfluorohexyloctane endotamponade need further observation (4). One of the reasons why the patient described here developed whitish amorphous epiretinal membranes may be incomplete filling of the vitreous cavity with perfluorohexyloctane, as has recently been discussed (5).

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