Surgical Technique

Illuminated Ando Plombe for Optimal Positioning in Highly Myopic Eyes With Vitreoretinal Diseases Secondary to Posterior Staphyloma

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Retinal detachment secondary to a macular hole and retinoschisis are complications that can occur in highly myopic eyes. The posterior staphyloma plays an important role in the pathogenesis of these complications in conjunction with other factors such as anteroposterior traction caused by the vitreous cortex, tangential forces due to epiretinal membranes or the internal limiting membrane, and stretched retinal arteries.

Various surgical procedures have been described for the treatment of retinal detachment in myopic macular hole and foveoschisis, including pars plana vitrectomy with intraocular tamponade and with or without internal limiting membrane removal, scleral shortening, and macular buckling. Several recently published reports describe the success rate of episcleral macular buckling in highly myopic eyes.

Different types of macular buckles have been proposed, but proper alignment of the buckle under the fovea is still a major concern in this technique. Siam et al reported the use of external posterior landmarks to allow better positioning of the indenting head, but this technique required superior oblique tendon rupture. Stirpe et al reported an adjustable macular buckle but indicated that the lateral rectus should be disinserted to ensure correct positioning of the indenting platform.

To avoid any damage to extraocular muscle and to enhance visualization, we propose the insertion of an optical fiber coupled to

Figure 1. Illuminated Ando Plombe

A, Partially bent Ando plombe. B, The 29-gauge optic fiber is inserted through the needle shaft. C, With the optic fiber partially retracted, the distal silicone plate of the Ando plombe is perforated with the needle to the center of the indenting heel. D, The optic fiber is pushed into the silicone terminal platform. E, The needle is then removed from the Ando plombe. F, The optic fiber is sutured and secured to the Ando plombe with 2 nylon sutures to avoid accidental removal.
an Ando plombe, which allows better visualization of the center and the edges of the indenting heel as well as placing it correctly under the fovea.

Methods
The surgical technique was used in 4 patients with high myopia and with different underlying pathologies who were referred to the vitreoretinal department at Instituto de Microcirugía Ocular, Barcelona, Spain (C.M.). All operations were performed by the same surgeon (C.M.). Informed consent was obtained from all patients undergoing the surgical procedure.

The Ando plombe (Ondeko Corp) consists of a T-shaped semi-rigid silicone rubber rod internally reinforced with titanium wires and an indenting head at one end. The rigid wires permit shaping the exoplant manually to achieve the desired curvature and optimal positioning of the indenting head under the fovea. The other end has ridges to facilitate its fixation with sutures to the temporal sclera. Two sizes may be selected, 25 or 27 mm, according to the axial length of the eye.3,5

Before starting the operation, one of two 29/30-gauge Oshima dual-chandelier optic fibers (Synergetics USA, Inc) was inserted toward the center of the heel, after being guided through a 23-gauge needle. The needle was carefully removed and the inserted chandelier optic fiber was fixed to the plombe with two 5-0 nylon sutures (Ethicon Inc) (Figure 1).

Results
The Table summarizes the demographic and ophthalmologic characteristics of the patients. Four patients with different vitreoretinal pathologies owing to high myopia were treated with combined pars plana vitrectomy and macular buckling with the Ando plombe. Moreover, all patients had an improvement in their functional outcomes, including reading ability. In all cases, the Ando plombe was easily positioned without the need for additional procedures such as removal or replacement of the buckle or any extracocular muscle cutting. There were no intraoperative or postoperative complications. Depending on the case, foveal reattachment, macular hole closure, and resolution of the foveoschisis were achieved in all patients as confirmed by fundus examination and optical coherence tomography (Cirrus HD-OCT 4000, version 5.0; Carl Zeiss Meditec) (Figure 3 and Figure 4).

Discussion
Macular buckling is a technique that has been used for years but with changing indications over time. The main indication is currently the correction of posterior staphyloma in highly myopic patients and their complications. Macular buckling corrects the increased posterior concavity of the eye wall into a flatter convex shape, which alleviates the stretched macular area. Macular buckling.

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<th>Table. Clinical and Demographic Characteristics of the Patients</th>
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Abbreviations: AL, axial length; D, diopters; BCVA, best-corrected visual acuity; FD, foveal detachment; HSO, heavy silicone oil; MMH, myopic macular hole; MMHRD, myopic macular hole with retinal detachment; PPL, pars plana lensectomy; RS, retinoschisis; SE, spherical equivalent; SF6, sulfur hexafluoride.

* Refractive error before cataract extraction.

⁹ A BCVA of 20/2000 is equivalent to counting fingers at 2 ft.
Macular indentation has mainly been used in cases of retinal detachment due to retinal hole, but several authors have also reported good results in myopic tractional retinoschisis. Several techniques and devices, but correct and safe positioning of the exo-

plant is still an issue. To enhance visualization and to avoid excessive manipulation, we suggest a new amendment to the use of the Ando plombe during its surgical placement. As reported, knowing the anatomical topography of the posterior aspect of the globe is crucial to making a proper indentation.
in the macular area. The technical procedure described in their study involved cutting the superior oblique as well as placing 2 posterior sutures as close as possible to the optic nerve without damaging posterior ciliary vessels. Despite this approach, a case showed malpositioning of the buckle postoperatively. Moreover, in a series by Ando et al., 2 in 30 eyes failed to respond to primary episcleral macular buckling owing to incorrect positioning of the macular exoplant, which required additional surgery.

Thus, we recommend the use of an illuminated Ando plombe with an internal 30-gauge chandelier optical fiber to enhance visualization of the macular area and to achieve correct positioning of the indenting heel exactly under the fovea while monitoring the edges without any additional maneuvers.

In conclusion, the posterior buckling technique using an illuminated Ando plombe has proven to be safe and allows better visualization and positioning of the exoplant.