

Silicone oil retention sutures in a patient with open ocular trauma associated with aniridia and complicated retinal detachment: a case report

Nicolás Rivera-Valdivia¹, Pablo Cabal-López¹, Hiroshi Maeda-Yasunaga¹, Carlos Abdala-Caballero²

¹Retina and Vitreous Fellow, Grupo Oftalmológico Abdala-Figuerola AF, Barranquilla, Colombia

²Retina and Vitreous Surgeon, Grupo Oftalmológico Abdala-Figuerola AF, Barranquilla, Colombia

ABSTRACT

We present the clinical case of a 48-year-old male patient with a history of penetrating ocular trauma in the left eye (OS). The patient presented to the clinic with a sclerocorneal wound treated in another center, aniridia, aphakia, and retinal detachment. His best-corrected visual acuity was hand motion in the injured eye. After a complete ophthalmological evaluation, C3 proliferative vitreoretinopathy was evidenced. The elected surgical technique was scleral buckling plus silicone oil retention sutures plus pars plana vitrectomy (PPV) plus 270° retinectomy plus silicone oil (SO) as tamponade. After 10 months, the patient presented a clear cornea, formed anterior chamber (AC) was present, and a red reflex with attached retina was also present.

KEY WORDS: silicone oil retention sutures; ocular trauma; aniridia; retinal detachment; pars plana vitrectomy

Ophthalmol J 2023; Vol. 8, 19–21

INTRODUCTION

Silicone oil (SO) is a widely used tamponade agent in association with pars plana vitrectomy (PPV) for the treatment of complex retinal detachments (RD) [1]. Despite its advantages, it is not free of complications such as emulsification with subsequent anterior chamber (AC) migration and secondary band keratopathy [1, 2]. In certain eyes with iris defects, this problem becomes more evident because of the impossibility of performing an inferior

iridectomy. To manage this, Gentile and Elliot [3] performed a technique where an iris diaphragm is simulated to avoid unwanted corneal sequelae after contact between endothelium and SO.

We present the management of a patient with penetrating ocular trauma associated with aniridia, aphakia, and secondary RD, who underwent a procedure with SO retention sutures to avoid its migration into the anterior chamber. The follow-up after the procedure was 10 months.

CORRESPONDING AUTHOR:

Carlos Abdala-Caballero MD, Grupo Oftalmológico Abdala-Figuerola AF, Carrera 30 # Corredor Universitario 1-850, Torre Médica, Consultorio 812, Code 081007, Barranquilla, Colombia. Phone: +57 (311) 296 8674. e-mail: fellow.retina.abdala@gmail.com

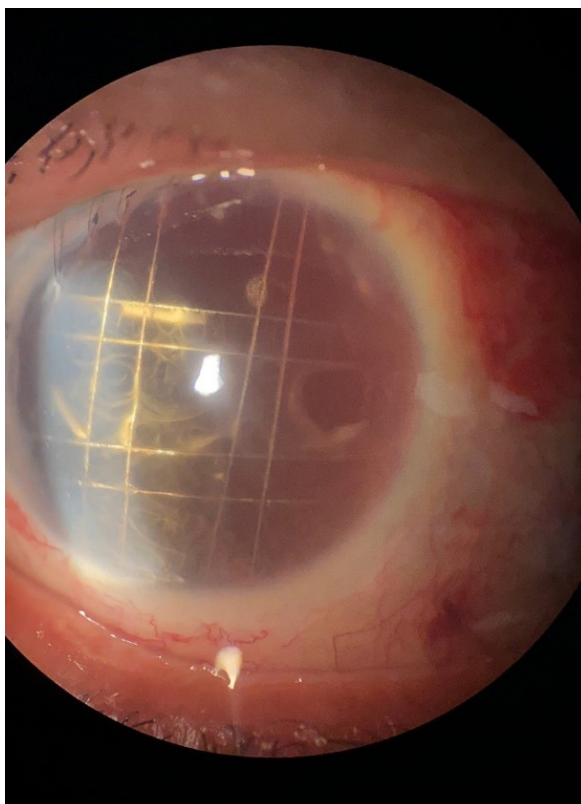


Figure 1. First-week visit. Silicone oil into the vitreous cavity with no presence in the anterior chamber

CASE REPORT

A 48-year-old male patient presented to the clinic with a history of penetrating ocular trauma in the left eye (OS, *oculus sinister*) 1 month earlier, operated on with a sclerocorneal suture in another center. The patient brought an ultrasound report showing the absence of a lens, an image suggestive of vitreous hemorrhage, and an attached retina.

The best-corrected visual acuity was as follows: right eye (OD, *oculus dexter*) — 20/25, and OS — hand motion. At the slit-lamp examination, OD anterior segment was unremarkable, and OS evidenced AC with aniridia, aphakia without a capsular bag, and vitreous bands. In the fundus exam, OD was unremarkable, and OS presented a grade IV vitreous hemorrhage with no posterior segment details visualization.

Surgical management was indicated with scleral buckling plus pars plana vitrectomy (PPV) in the OS. The procedure was planned by an expert surgeon. Intraoperatively RD with C3 proliferative vitreoretinopathy was found, so it was decided to perform a 270 degrees retinectomy with SO tamponade. Because of this decision, retention su-

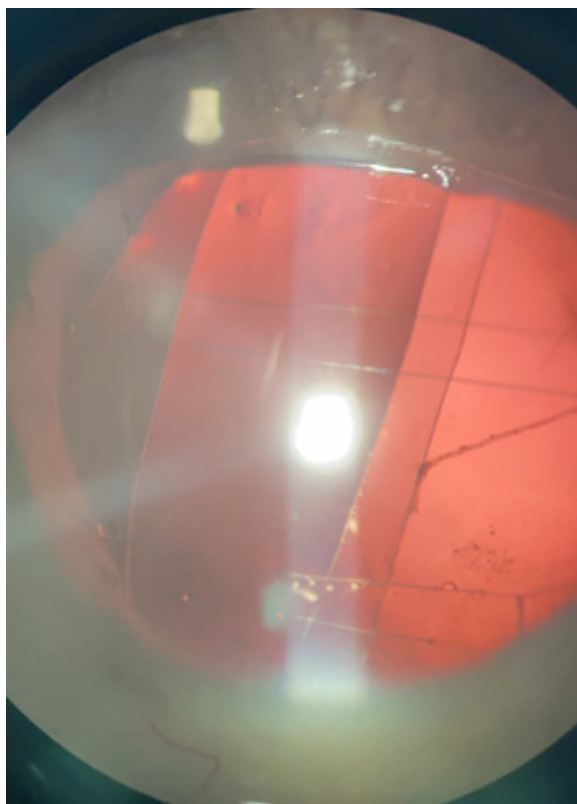


Figure 2. Last visit at 10-month follow-up. Transparent cornea formed anterior chamber with no emulsified silicone oil and red reflex present

tures were applied with 10-0 straight needle prolene sutures, inserted 1 mm posterior to the limbus and passing through the AC from one side to the other, creating a mesh with 2 pairs of sutures in the horizontal plane and 2 pairs in the vertical plane.

On the next day, the patient presented adequate postoperative results. In the first week, we could see well-positioned retention sutures with SO in the vitreous cavity (Fig. 1). We continued strict follow-up and decided to keep the tamponade for 10 months due to the complexity of the case. In the last visit, the cornea remained clear, formed AC, and a red reflex with non-emulsified SO was present (Fig. 2).

DISCUSSION

SO is an artificial tamponade, first introduced in 1962 [2]. It is widely used to treat complex RD associated with proliferative vitreoretinopathy, giant retinal tears, severe proliferative diabetic retinopathy with tractional detachments, ocular trauma, and infections, among others [1, 2]. Its primary mechanism of action is to displace the sub-

retinal fluid and the retina towards the eyeball wall, thanks to its surface tension [2]. Complications that this tamponade can manifest are emulsification and migration to the AC, endothelial cell loss, band keratopathy, glaucoma, secondary cataract, retinal re-detachment, movement of bubbles to the subretinal space and even to the optic nerve and later to the chiasm and brain, as well as severe optic neuropathy in its passage to the retrolaminar space [1, 2, 4]. To avoid these complications, in phakic patients with intact iris, an inferior peripheral iridectomy is performed [3]. However, in aphakic patients with partial or complete iris defects, the passage of SO to the AC is frequent, so resorting to other techniques to prevent corneal sequelae is necessary. Hermann et al. [5] published a series of 94 cases where an artificial iris diaphragm associated with SO was used in patients with RD of different etiologies, reporting a success rate of 61.7%, better in traumatic or congenital cases. They suspected implant failure could be explained because SO could pass to the AC for little gaps between the diaphragm and the internal structures.

On the other hand, Yüksel et al. [4] presented 16 cases, of which 5 (31%) had SO in the AC despite sutures at the end of the follow-up. This high rate of complications may be due to complex cases of RD. In 2010, Gentile and Elliot [3] presented 3 cases where they used a technique that simulates

an iris diaphragm with prolene sutures at the sulcus level, keeping the SO in the vitreous cavity and thus avoiding migration to the AC in 100% of their patients. As in our case, the cornea remained clear at the end of the follow-up, with no evidence of SO in the AC. Most importantly, the desired anatomical success was achieved at the posterior segment with an attached retina.

This is an easy-to-reproduce technique, useful for the adequate management of complex cases, as it was in our patient, where he presented significant sequelae due to an open ocular trauma.

REFERENCES

1. Grzybowski A, Pieczynski J, Ascaso FJ. Neuronal complications of intravitreal silicone oil: an updated review. *Acta Ophthalmol.* 2014; 92(3): 201–204, doi: [10.1111/aos.12212](https://doi.org/10.1111/aos.12212), indexed in Pubmed: [23800347](https://pubmed.ncbi.nlm.nih.gov/23800347/).
2. Semeraro F, Russo A, Morescalchi F, et al. Heavy and standard silicone oil: intraocular inflammation. *Int Ophthalmol.* 2018; 38(2): 855–867, doi: [10.1007/s10792-017-0489-3](https://doi.org/10.1007/s10792-017-0489-3), indexed in Pubmed: [28289950](https://pubmed.ncbi.nlm.nih.gov/28289950/).
3. Gentile RC, Elliott D, Gentile RC, et al. Silicone oil retention sutures in aphakic eyes with iris loss. *Arch Ophthalmol.* 2010; 128(12): 1596–1599, doi: [10.1001/archophthalmol.2010.300](https://doi.org/10.1001/archophthalmol.2010.300), indexed in Pubmed: [21149785](https://pubmed.ncbi.nlm.nih.gov/21149785/).
4. Yüksel K, Pekel G, Alagöz N, et al. Silicone oil barrier sutures in aphakic eyes with iris defects. *Retina.* 2016; 36(6): 1222–1226, doi: [10.1097/IAE.0000000000000856](https://doi.org/10.1097/IAE.0000000000000856), indexed in Pubmed: [26562566](https://pubmed.ncbi.nlm.nih.gov/26562566/).
5. Hermann MM, Muether PS, Kuhn L, et al. Clinical outcome of the artificial iris diaphragm in silicone oil surgery. *Br J Ophthalmol.* 2012; 96(7): 1008–1011, doi: [10.1136/bjophthalmol-2011-300983](https://doi.org/10.1136/bjophthalmol-2011-300983), indexed in Pubmed: [22408235](https://pubmed.ncbi.nlm.nih.gov/22408235/).