

THE EFFECT OF PPV WITH 1,000 CST SILICONE OIL ON IOP



A study assessed low-viscosity silicone oil tamponade in retinal detachment repair.

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Retinal detachment (RD) is an ocular emergency for which, generally, pars plana vitrectomy (PPV) is performed, along with intraocular tamponade using gas or silicone oil. The viscosity of silicone oil ranges from 1,000 to 10,000 centistokes (cSt).

We performed a study to examine the effect of low-viscosity silicone oil (1,000 cSt) on IOP elevation and the effectiveness of medical and surgical treatment in controlling IOP. This low-viscosity product is one-fifth as expensive as 5,000 cSt silicone oil—a vital factor in developing countries such as India.

MATERIALS AND METHODS

A total of 60 patients with RD were included in this study. Patients had no history of glaucoma, uveitis, or ocular hypertension. After informed consent, a three-port PPV was performed by a single surgeon, and 1,000 cSt silicone oil was injected at the end of the surgical procedure as a tamponade.

IOP was measured 1 week, 1 month, and 4 months postoperatively by Goldmann applanation tonometry. Any patient with an IOP of greater than 21 mm Hg was considered to have silicone oil–induced ocular hypertension, and antiglaucoma treatment was started.

RESULTS

Sixty patients with RD underwent PPV with 1,000 cSt silicone oil tamponade. The age of the patients ranged from 20 to 81 years (mean age, 60 years), and 35 were men. Mean preoperative IOP was 13.6 ± 4.8 mm Hg.

At 1 week postoperative, mean IOP was 17.8 ± 4.2 mm Hg. Ten patients had IOP greater than 21 mm Hg and were started on antiglaucoma medication.

At 1 month postoperative, the mean IOP was 16.2 ± 3.9 mm Hg. At 1 month, there were three new patients with IOP of greater than 21 mm Hg. These patients were also started on antiglaucoma treatment. At 4 months, mean IOP was 15.8 ± 3.6 mm Hg and there

were six more new patients with IOP greater than 21 mm Hg (Figure). These patients were also started on antiglaucoma drugs.

Thus, during 4 months, 19 of the 60 patients (31.6%) showed an increase in IOP to greater than 21 mm Hg. More than half of these cases (10/19; 53%), were observed during the first postoperative week. After 1 month, there were 13 patients, and after 4 months, there were 19 patients with an IOP of greater than 21 mm Hg, all of whom were started on antiglaucoma therapy.

Seventeen of the total 19 patients (89.5%) who developed elevated postoperative IOP were controlled with antiglaucoma treatment. Timolol with brimonidine twice daily was effective

AT A GLANCE

- In a study, 60 patients with retinal detachment were injected with 1,000 cSt silicone oil after three-port vitrectomy.
- Most patients who developed postoperative IOP of greater than 21 mm Hg were controlled with antiglaucoma treatment.
- In this study, 1,000 cSt silicone oil was equivalent to 5,000 cSt silicone oil in efficacy and safety.

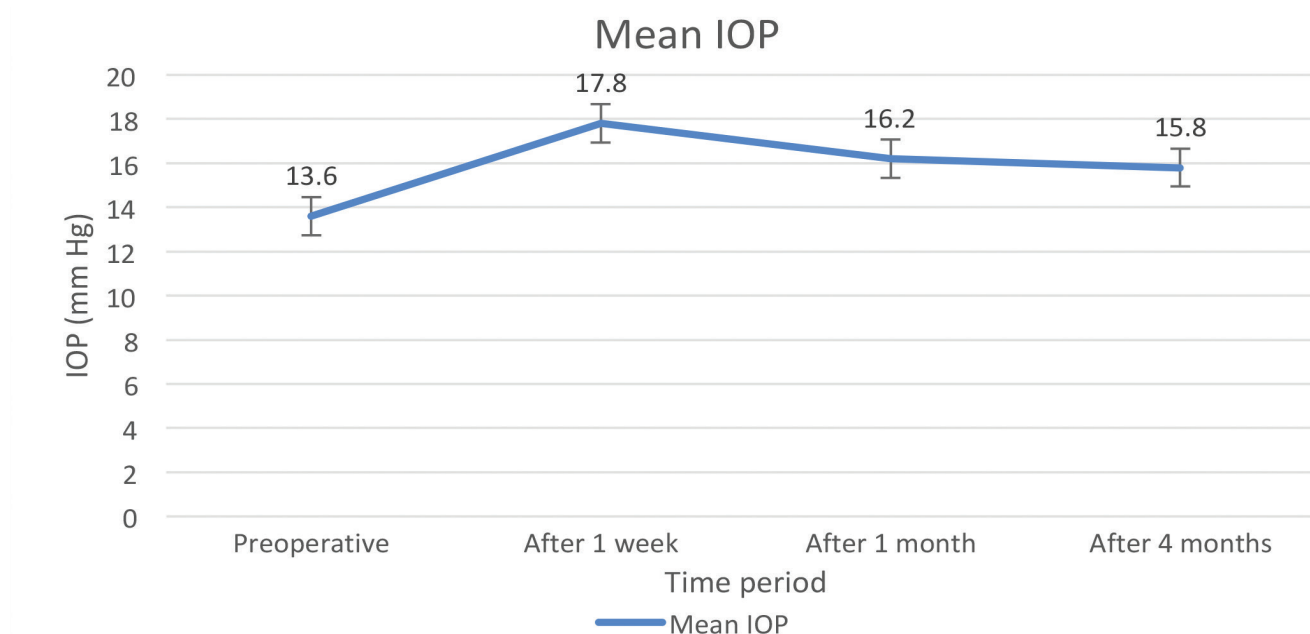


Figure. Postoperative mean IOP in patients who were treated with silicone oil 1,000 cSt tamponade.

in 15 of the 19 (78.9%) patients. A third drug (dorzolamide twice daily) was added in the remaining four patients, of which two responded well in terms of IOP control. Two patients were unresponsive and required surgical intervention in the form of silicone oil removal. One of the two patients who required surgical intervention was aphakic with pupillary block.

WHAT WE LEARNED

Silicone oil is preferred after PPV for surgical tamponade and vitreous substitute. Complications such as IOP elevation in the first few weeks postoperative are not uncommon. Studies have reported an incidence of postoperative rise in IOP after silicone oil in 21% to 48% of eyes.¹⁻⁴

In our study, over a period of 4 months, 89.5% of patients (17/19) with elevated IOP were controlled medically. In 10.5% of patients (2 of 19), silicone oil removal was needed before 4 months postoperative to control IOP. The results of our study are comparable to those of other published studies. The main drawback of our study is its short follow-up period.

Affordability is an important factor in the use of silicone oil. In most published studies, silicone oil with a viscosity of 5,000 cSt has been used, whereas we used 1,000 cSt silicone oil.

India is a developing nation, where the cost of 5,000 cSt silicone oil (approximately \$100 USD) is prohibitively expensive compared to the cost of 1,000 cSt silicone oil (approximately \$20 USD). In our experience, as shown in this study, 1,000 cSt silicone oil is as effective and safe as 5,000 cSt silicone oil for RD repair. ■

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