

# Surgical management of silicone oil migrated into suprachoroidal space after vitrectomy

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## Abstract

- **AIM:** To report a successful surgical management of silicone oil migrated into suprachoroidal space after the repair of the retinal detachment with hemorrhagic choroidal detachment.
- **METHODS:** Retrospective observational case report. A 30-year-old man with retinal detachment and hemorrhagic choroidal detachment due to severe corneal penetrating injury, underwent a pars plana lensectomy and vitrectomy, endolaser, and silicone oil tamponade followed by transscleral suprachoroidal hemorrhage drainage in the right eye. One week later, a localised temporal choroid elevation was noted. This persistent elevation was confirmed by operation research to be silicone oil migration into suprachoroidal space.
- **RESULTS:** The migrated silicone oil was drained via trans-scleral cut down, and the intravitreal silicone oil was removed and replaced by 16% C2F6. Over the next 2 weeks, the elevation vanished and the choroid became completely flat.
- **CONCLUSION:** The migration of silicone oil into suprachoroidal space is a rare complication of vitrectomy. The pathway of the migration is most likely through internal orifice of sclerotomy sites. Trans-scleral drainage surgery is an effective method to remove the migrated silicone oil from suprachoroidal space.
- **KEYWORDS:** silicone oil; migration; suprachoroidal space; surgical management

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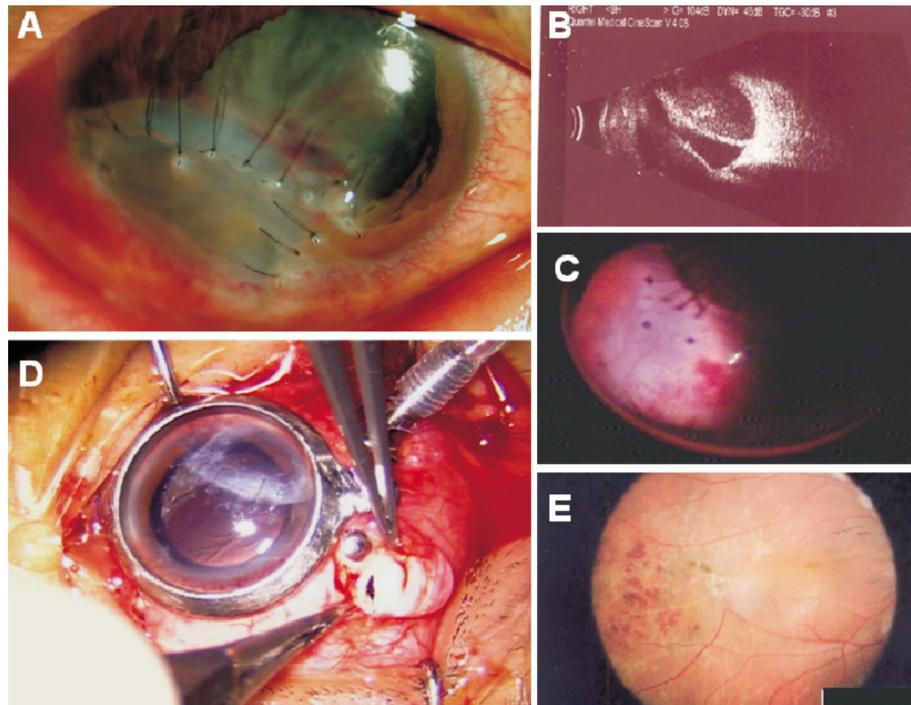
## INTRODUCTION

Silicone oil has been commonly used to prolong tamponade for retinal detachment surgery since the 1960s. Rare complications of silicone oil migration, such as migration into lateral ventricles of the brain, subconjunctival space and orbit, eyelid, subretinal space, and subarachnoid space have been sporadically reported in the literature<sup>[1-7]</sup>. We describe a successful surgical management of an unusual complication of intravitreal silicone oil migrated into suprachoroidal space after the repair of a retinal detachment with hemorrhagic choroidal detachment.

## CASE REPORT

A 30-year-old man had undergone an emergency primary corneal repair and removal of the intraocular foreign body at a local hospital because of an iron foreign body penetrating his right eye. Eleven days after surgery, the patient complained of constant pain, poor vision and a gritty sensation in the right eye, and then was referred to our hospital on Dec. 14<sup>th</sup>, 2008. Upon initial examination, his right eye visual acuity was light perception. Slitlamp examination revealed conjunctival congestion, a sutured swollen corneal wound with the knots exposed and a defected iris at inferotemporal quadrant, and a ruptured lens with a formation cataract of the right eye (Figure 1A). The fundus could not be clearly viewed, the intraocular pressure (IOP) was 3.8mmHg, and retinal detachment and hemorrhagic choroidal detachment was detected by B-scan ultrasonic tomography (Figure 1B).

The patient received surgical repair of the right retinal detachment, which included corneal suture adjustment, a pars plana lensectomy and vitrectomy after suprachoroidal hemorrhage drainage through the same three-port pars plana incisions, flattening the retina by perfluorocarbon liquid, argon laser endophotocoagulation, gas-fluid exchange and 5.5mL silicone oil (5000 centistokes, Chiron Adatomed, Heidelberg, Germany) tamponade. The oil was slowly injected manually through the superotemporal sclerotomy by a long infusion cannula under visualization, and the IOP was maintained at 15mmHg with the air pump. Intraoperative findings included a mass drained suprachoroidal hemorrhage, vitreous hemorrhage, a total retinal detachment,



**Figure 1** A: Slitlamp photograph of the right eye to demonstrate the sutured swollen corneal wound and a ruptured lens with cataract formation; B: B-scan ultrasonic tomography of the retinal detachment and hemorrhagic choroidal detachment; C: Surgery video showing the remaining local choroidal elevation; D: The silicone oil drained from the temporal suprachoroidal space through the scleral incision 2.0mm from the superotemporal sclerotomy; E: Fundus photograph: the choroidal elevation had vanished, and the choroid became completely flat

a non-hole choroidea and ciliary body, and two 1/4 papilla diameter size retinal breaks at 9 o'clock equator. At the time of postoperative examination, the retina and the choroid were attached, the IOP ranged from 11 to 22mmHg. One week after the operation, a localised choroidal elevation at the temporal mid-periphery was found. Because the retina attached, the breaks sealed and the oil level retained, the possibility of recurrent suprachoroidal hemorrhage was considered initially. However, the localised elevation slightly progressed over the next 2 weeks, and developed a persistent and nonassimilable elevation with normal range of IOP and visual acuity of 20/1000 during this postoperative period. Six months after the second surgery, the operation of the oil remove and the fundus explore was performed. After the intravitreal oil was removed, the intraoperative exploration of the fundus revealed an attached retina with the normal optic disc, slight retinal pucker from the macula to the sealed retinal breaks, and the remaining local choroidal elevation (Figure 1C). A scleral incision 2.0mm from the superotemporal sclerotomy was created, and the approximate 0.5mL silicone oil was drained from the temporal suprachoroidal space (Figure 1D). The silicone oil migrated into the suprachoroidal space was finally diagnosed. A gas-fluid exchange and scleral incisions suturing followed, 16% hexafluoroethane (C<sub>2</sub>F<sub>6</sub>) was

injected for short-term tamponade. Two weeks later the right eye choroidal elevation vanished, the choroid became completely flat (Figure 1E), the IOP was normal, and the bare visual acuity was 20/400. During the two-year follow-up examination, the right eye was quiet and vision remained stable, and no complications were found.

#### DISCUSSION

With the extensively use of silicone oil for repair of complex retinal detachment in recent years, as rare complications of silicone oil migration may be more reported in the literature. Firstly, silicone oil may migrate out of the eye globe, such as through a glaucoma valve and into the subconjunctival space, the orbit and the eyelid [2,3], and along the intracranial portion of the optic nerve and into the lateral ventricles of the brain[1,4,6]. Secondly, silicone oil may also migrate into the other intraocular tissue space out of the vitreous cavity, such as leakage into the anterior chamber of the pseudophakic eye, the optic nerve retrolaminar space, [8] the subretinal space and the subarachnoid space[7].

Silicone oil migration into the suprachoroidal space is an unusual complication of vitrectomy. To our knowledge, there have been two papers that each report two cases of suprachoroidal silicone oil in the literature. Patel *et al* [9] reported two cases of suprachoroidal silicone oil without further surgery to remove the migrated oil. Gopal *et al* [10]

described two cases with suprachoroidal migration of silicone oil and perfluorocarbon liquid (PFCL) through significantly large choroidal holes following ocular trauma or progressive fibrosis exerting traction. One case, Silicone oil and PFCL trapped in the suprachoroidal space were drained externally using a relatively posteriorly placed sclerotomy. The vitreous cavity was reinjected with silicone oil, which silicone oil has not been removed because the eye is still soft. Another case, although was exchanged with PFCL, silicone oil also entered this space. Four months later, the silicone oil was seen extending into the pocket of choroidal detachment.

Our case is the first case of silicone oil migrated into the suprachoroidal space without retinal defect and was successful surgical removal. In our case, the mass suprachoroidal hemorrhage was drained through pars plana incisions. The same sclerotomies that possibly widened the internal opening due to performing the vitrectomy, were only sutured the sclera layer. Thus, the unsealed internal orifice of the sclerotomy sites, the pars plana ciliary incisions, was most likely a pathway for migration silicone oil from the vitreous cavity to the opening suprachoroidal space. Although the oil was slowly injected superotemporally by a long infusion cannula under visualization in our case, the oil seems also possibly entered the suprachoroidal during the injection process. Regardless of how it happened, the

successful management result shows that the external approach of trans-scleral drainage surgery is an effective method to remove the migrated silicone oil from the suprachoroidal space.

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