



## Excessive highly refractive myopia owing to silicone oil droplet adhering to intraocular lens: A case report

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### Abstract

**Purpose:** To present a case with excessive highly refractive myopia owing to silicone oil droplet adhering to intraocular lens and treatment course.

**Case report:** A 58-year-old man with a history of cataract in right eye had received cataract surgery at a local clinic several years ago without knowing the information of posterior chamber intraocular lens (PCIOL) material. In March 2017, he presented to our hospital with progressively blurred vision of right eye for a period of time. His best corrected visual acuity was 0.6 in the right with spherical equivalent +0.25 diopter (D). His intraocular pressure was normal. Under slit lamp examination, the three-piece PCIOL was in the bag treated by posterior capsulotomy before. Ophthalmoscopy showed partial macula-off rhegmatogenous retinal detachment with grade B proliferative vitreoretinopathy change in the right eye. The subretinal fluid was found from 4 to 7 o'clock with inferior-located small flap tear. Optical coherence tomography discovered submacular fluid with central foveal thickness 350  $\mu\text{m}$ . The patient underwent 23-gauge pars plana vitrectomy, removal of epiretinal tractional band, retinotomy, fluid-air exchange, endolaser application around the retinal break and retinotomy, and silicone oil instillation. The retina successfully reattached postoperatively. Silicone oil removal surgery was performed in September 2017. However, high myopia was noted variably from -10 to -18 D after silicone oil removal. The axial length of the patient was normal without obvious IOL anterior dislocation. After examination, we found a round silicone oil droplet as a convex lens adhering to the posterior surface of PCIOL to cause high refractive myopia. YAG laser was performed but fail to remove adhered silicone oil droplet. We then noticed PCIOL posteriorly dislocated into vitreous cavity one month after YAG laser. Removal of dislocated PCIOL and anterior chamber IOL insertion were done in September 2018, and the patient's visual acuity improved after the surgery with emmetropia.

**Conclusion:** The adhesion of silicone oil droplet used in vitreoretinal surgery to previously implanted silicone IOL is a well confirmed physical reaction which is irreversible in most cases due to the strong non-covalent interactions between themselves. The adhered silicone oil droplet might not only decreases visual acuity by changing the refractive status as a convex lens, but also causes visual distortion, or visual aberrations such as halos and rainbow patterns; therefore, providing us clinical reasons to remove adhered silicone oil. In previous case reports, several different methods were demonstrated to remove the adhered silicone oil droplets. Combination of hydroxypropylmethylcellulose (HPMC) 2% and side-to-side sweeping manoeuvre of a Rycroft cannula, 20-gauge vitrector with a higher aspiration setting, 25-gauge transconjunctival vitrectomy system, inserted lens hook with horizontal movement and perfluorohexyloctane were reported to be useful in removing silicone oil droplets. We suspected silicone PCIOL was inserted in our patient. The silicone oil droplet adhering to PCIOL caused refractive high myopia. Silicone oil droplet failed to be removed by YAG laser. The patient regained the vision and refraction after IOL exchange to remove dislocated PCIOL.

**Keywords:** silicone oil droplet; intraocular lens; highly refractive myopia

### 1. Introduction

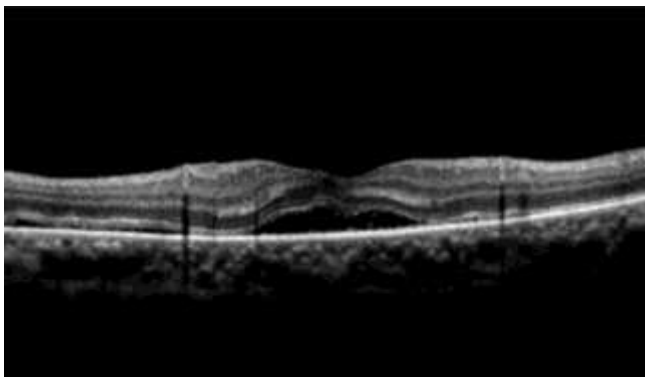
Silicone oil may adhere to the certain type of intraocular lens (IOL). After silicone oil removal, oil droplet remaining on the IOL was rarely reported to cause refractive error. Herein we will present a case with excessive highly refractive myopia owing to silicone oil droplet adhering to IOL and treatment course.

### 2. Case Reports

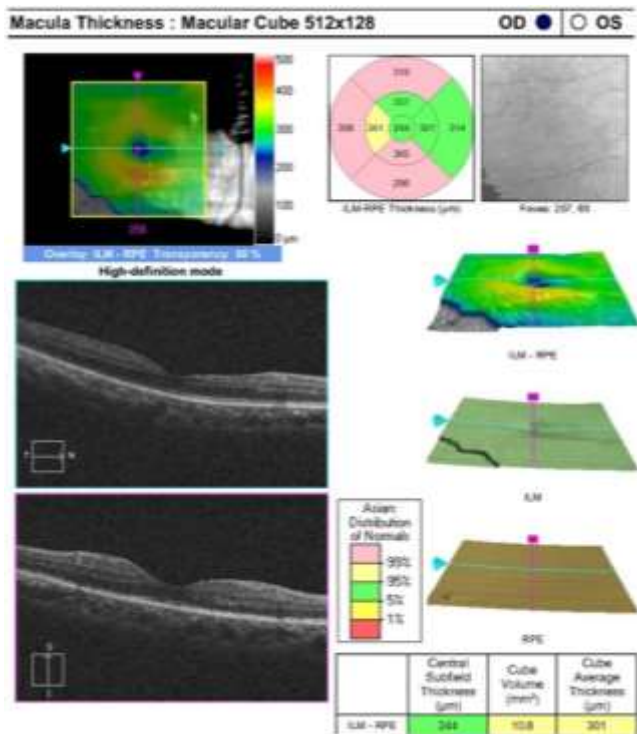
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without knowing the information of posterior chamber intraocular lens (PCIOL) material. In March 2017, he presented to our hospital with progressively blurred vision of right eye for a period of time. His best corrected visual acuity was 0.6 in the right with spherical equivalent +0.25 diopter (D). His intraocular pressure was normal. Under slit lamp examination, the three-piece PCIOL was in the bag treated by posterior capsulotomy before. Ophthalmoscopy showed partial macula-off rhegmatogenous retinal detachment with grade B proliferative vitreoretinopathy change in the right eye. The subretinal fluid was found from

4 to 7 o'clock with inferior-located small flap tear. Optical coherence tomography discovered submacular fluid with central foveal thickness 350  $\mu\text{m}$  (Figure 1). The patient underwent 23-gauge pars plana vitrectomy, removal of epiretinal tractional band, retinotomy, fluid-air exchange, endolaser application around the retinal break and retinotomy, and silicone oil instillation. The retina successfully reattached postoperatively (Figure 2). Silicone oil removal surgery was performed in September 2017. However, high myopia was noted variably from -10 to -18 D after silicone oil removal. The axial length of the patient was normal without obvious IOL anterior dislocation. After examination, we found a round silicone oil droplet as a convex lens adhering to the posterior surface of PCIOL to cause high refractive myopia (Figure 3). YAG laser was performed but fail to remove adhered silicone oil droplet (Figure 4). We then noticed PCIOL posteriorly dislocated into vitreous cavity one month after YAG laser. Removal of dislocated PCIOL and anterior chamber IOL insertion were done in September 2018, and the patient's visual acuity improved after the surgery with emmetropia.



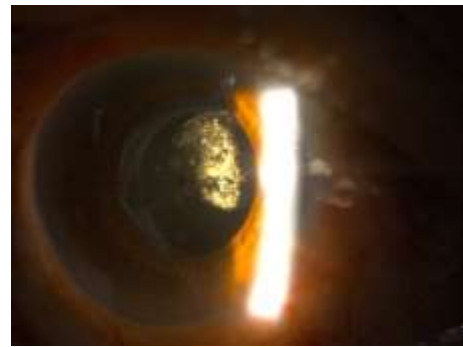
**Fig 1:** Optical coherence tomography discovered submacular fluid with central foveal thickness 350  $\mu\text{m}$  in right eye owing to retinal detachment.



**Fig 2:** Optical coherence tomography revealed the retina in right eye successfully reattached postoperatively.



**Fig 3:** Under slit lamp examination, a round silicone oil droplet adhered to posterior surface of posterior chamber intraocular lens was found.



**Fig 4:** YAG laser was performed but fail to remove adhered silicone oil droplet.

### 3. Discussion

The adhesion of silicone oil droplet used in vitreoretinal surgery to previously implanted silicone IOL is a well confirmed physical reaction which is irreversible in most cases due to the strong non-covalent interactions between themselves [1]. The adhered silicone oil droplet might not only decreases visual acuity by changing the refractive status as a convex lens, but also causes visual distortion, or visual aberrations such as halos and rainbow patterns [1]; therefore, providing us clinical reasons to remove adhered silicone oil. In previous case reports, several different methods were demonstrated to remove the adhered silicone oil droplets. Combination of hydroxypropylmethylcellulose (HPMC) 2% and side-to-side sweeping manoeuvre of a Rycroft cannula [2], 20-gauge vitrector with a higher aspiration setting [3], 25-gauge transconjunctival vitrectomy system [4], inserted lens hook with horizontal movement<sup>5</sup> and perfluorohexyloctane [6] were reported to be useful in removing silicone oil droplets. We suspected silicone PCIOL was inserted in our patient. The silicone oil droplet adhering to PCIOL caused refractive high myopia. Silicone oil droplet failed to be removed by YAG laser. The patient regained the vision and refraction after IOL exchange to remove dislocated PCIOL.

### 4. References

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