

## Silicon Oil Droplet After Intravitreal Bevacizumab Injection - Case Report

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Silicon oil droplet after intravitreal injection is a very rare complication. In this article, we report a young man with type I diabetes that developed diabetic macular edema, for which he received intravitreal bevacizumab injection. During the follow up period, the patient was examined and found to have small droplets of silicon oil floating in the upper part of vitreous cavity. The patient was asymptomatic. He was observed for this complication and received further injections to control his diabetic macular edema.

**Keywords:** Silicon Oil; Droplets; Intravitreal Injection; Macular Edema; Bevacizumab**Introduction**

Diabetic macular edema is the leading cause of vision loss in diabetic patients. In the past, the golden standard treatment for these patients was with argon laser. Nowadays, anti-vascular endothelial growth factor (VEGF) has replaced laser as the golden standard and is used mainly to control central involving macular edema [1]. Nevertheless, intravitreal injections are not without complications. In this paper we present a very rare complication of this treatment modality.

**Case Report**

A 30 years old male patient, known case of type I diabetes, presented to the clinic with blurring of vision in his the right eye. On examination, his best corrected visual acuity was 0.1 in the right eye and his intraocular pressure was 14 mmHg. Fundus examination showed central-involving macular edema confirmed with ocular coherence tomography (OCT). He received an intravitreal bevacizumab injection. During the follow up period he was noted to have droplets of silicon oil bubbles floating in the upper part of vitreous cavity in the right eye (Figure 1). It was presumed that these bubbles resulted from the injection. Despite that, the patient was followed up for a year during which he received another 5 injections of bevacizumab without increase in the number or density of these droplets.

**Discussion**

Silicon oil droplets after intravitreal injections have been reported after various anti-VEGF (pegaptanib, ranibizumab, bevacizumab, aflibercept) and triamcinolone acetonide injections [2-4]. The incidence is very low and usually reported as epidemic related to presumed faulty patches of syringes and has been reported to be 0.026-1.7% depending on the period that this complication has been reported [4,5]. In our center, bevacizumab is used as an off-

**Figure 1:** Fundus photography showing the droplets of silicon bubbles floating in the upper part of the vitreous cavity.

label treatment for macular edema resulting from various disease processes. It is usually prepared by withdrawing the drug from a vial with insulin syringes and then injecting to the eye. Sometimes some air leak into the syringe which should be evacuated, so the surgeon usually try to flick the syringe. These syringes are usually silicon coated from the inside during the manufacturing process to lubricate the tube so that the piston will have a low friction and less resistance during the injection process (Figure 2). Unfortunately, these silicon particles have low cohesiveness and flicking can sometimes loosen them up during the piston movement and mixes up with the drug [6]. One possible side effect is formation of a new complex that will be unstable and less effective than the original drug [7]. Another possibility is that the silicon particles will slip

with drug during the injection process leading to administration of these droplets inside the tissue being treated; in this case being the vitreous cavity. Although silicon particles in the vitreous cavity can cause symptomatic floaters and might induce inflammation or even glaucoma [8], this complication is harmless in most cases as can be demonstrated in vitreoretinal surgery where it can be occasionally used for postoperative tamponade after certain surgeries. Based on the same principle, this complication might be encountered also in the anterior chamber after using viscoelastic injections during various intraocular surgeries, but it has not been documented before most probably because surgeon tend to wash out the anterior chamber to get rid of the viscoelastic to avoid raising the intraocular pressure after surgery. This complication is usually higher in incidence in compounding drugs because pre-filled medications are ready for injection, hence no air is usually found in the syringes and the surgeon doesn't have to flick it. That might explain the higher prevalence of this complication with bevacizumab injections. Being tiny, asymptomatic and translucent, these particles can be easily overlooked and might explain why this complication is rarely reported. To avoid this complication, one might use the available silicon free syringes.

**Figure 2:** Demonstration for the silicon coated syringes showing how the silicon particles can be detached and mixes with the drug particles.

## Conclusions

Intravitreal silicon droplets post intravitreal injection of anti-VEGF is a very rare innocuous complication that should be recognized, although does not need any treatment. It should be included in the consent form when patients sign for the injection. In addition, given the innocuous nature of this complication, further injections

might be used should the patient needs further treatment. The surgeon should avoid flicking the syringe before the injection and pre-filled syringes are probably better in this regard.

## Acknowledgements

None

## Statement of Competing Interests

No competing interests.

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## Volume 2 Issue 7 August 2019

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