

## CHARACTERIZING SILICONE OIL EMULSIFICATION USING BOTH ANTERIOR AND POSTERIOR SEGMENT SWEEP SOURCE OPTICAL COHERENCE TOMOGRAPHY

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Silicone oil (SO) is a long-term vitreous substitute for complex vitreoretinal cases that can emulsify potentially leading to severe and irreversible visual impairment. OCT is a non-invasive imaging technique that can be used to detect and monitor SO emulsification. To determine the prevalence of SO emulsification and its complications in patients with retinal detachment (RD) who underwent pars plana vitrectomy (PPV) and received SO as vitreous substitute. In addition, the possible differences of emulsified SO with different viscosity were assessed using OCT.

Observational, retrospective study including patients who underwent PPV surgery for RD using SO as tamponade and who had anterior and posterior segment OCT imaging between January 2020 and June 2023. All patients underwent a complete ophthalmological examination before and after PPV including: visual acuity, slit lamp biomicroscopy, gonioscopy and SS-OCT scans.

A total of 43 patients who underwent RD surgery were included in the study. 40 eyes (93%) experienced complications related to PPV and/or SO. These complications included emulsification detected in 30 of the 43 patients (69.77%) through biomicroscopy, and in all patients using AS-OCT. Furthermore, a correlation was found between the size of emulsified particles assessed on AS-OCT and the type of SO used ( $p=0.001$ ).

This study concludes that while SO is commonly used as an endotamponade agent, it can lead to severe and irreversible complications, primarily due to its emulsification properties. The use of both anterior and posterior segment SS-OCT can aid in the early detection of emulsification droplets, thereby helping to avoid potential long-term consequences.