Foreign body giant cell reaction to silicone oil presenting as a salmon-patch conjunctival lesion

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ABSTRACT

Purpose: To describe a case of foreign body giant cell reaction to silicone oil that presented as a salmon-patch conjunctival lesion.

Observations: An elderly female with prior retinal surgery and oil tamponade was referred for a salmon-patch lesion in the conjunctiva. Biopsy revealed multiple vacuolations and foreign body giant cells in the substantia propria, consistent with a foreign body reaction to silicone oil.

Conclusion and importance: Silicone oil can elicit an inflammatory reaction in the conjunctiva that could mimic a neoplasm. Excessive leakage of oil into the subconjunctival space should be avoided to prevent this complication.

1. Introduction

Silicone oil is an inert polymer that is widely used as a tamponade agent in vitreoretinal surgery.1,2 It improves the rate of retinal reattachment in complicated retinal detachments caused by proliferative vitreoretinopathy, proliferative diabetic retinopathy, giant retinal tears, and trauma.3 Although it is considered an ideal intraocular implant, silicone oil has been observed to emulsify within ocular tissue, causing complications such as cataract, corneal decompensation, and glaucoma, among others.4 Migration of silicone oil to extraocular structures has caused conjunctival inflammation,3 ptosis,4,5 and orbital signs6 in previous reports. We describe a unique case of foreign body reaction to silicone oil presenting as a salmon-patch lesion on the conjunctiva.

2. Case report

A 79-year-old female was referred to our institution for evaluation of conjunctival lymphoma given the salmon-patch appearance of the lesion. Three years prior, the same eye underwent pars plana vitrectomy with silicone oil placement (1,000 cSt) and removal three months later for a retinal detachment. A year later, a pinkish-orange mass was noted on the temporal aspect of the left eye which gradually enlarged, prompting referral.

On ocular examination, best-corrected visual acuity was 20/25 in the right eye and 20/30 in the left eye. Pupils, extraocular movements, and intraocular pressures were within normal limits. Slit lamp examination of the left eye demonstrated an ill-defined salmon-patch at the temporal bulbar conjunctiva (Fig. 1A). Multiple small cysts were noted within the lesion, more prominent at the superior aspect (Fig. 1B). Fundus examination of the left eye showed an attached retina with multiple peripheral laser scars. Findings of the right eye were unremarkable.

The clinical findings favored a granulomatous response of the conjunctiva to silicone oil. However, the salmon-pink appearance, recent history of enlargement, patient age, and patient concern led to a decision to biopsy the lesion rather than to observe, in order to completely rule out a lymphoproliferative disease. A partial mass excision was performed to remove the grossly visible part of the lesion involving the conjunctiva and Tenon’s capsule. Histopathologic examination revealed a lesion composed of non-keratinized, stratified squamous epithelium with multiple vacuolations within the substantia propria, along with several foreign body giant cells and scattered lymphocytes in previous reports. We describe a unique case of foreign body reaction to silicone oil presenting as a salmon-patch lesion on the conjunctiva.

3. Discussion

The development of a unilateral, painless conjunctival lesion in an elderly female raised the suspicion for a neoplastic process, hence the referral to ocular oncology. The differential diagnoses included an...
amelanotic conjunctival nevus and a lymphoproliferative process. The presence of multiple cysts was consistent with a conjunctival nevus; however, the temporal relation of the retina surgery and the growth of the lesion at a possible trocar site made it plausible the cysts contained silicone oil.

The term emulsification has been used to describe the formation of tiny droplets of silicone oil inside an eye that underwent silicone oil injection.\(^2\) Federman and Schubert documented emulsification in 1% and 11% of eyes at 1 and 3 months, respectively, after silicone oil tamponade. By the 6th month, the proportion of patients with emulsified oil increased to 85%, and reached 100% by one year of follow-up.\(^7\) This complication has led to recommendations to remove the oil at 3–6 months, although a definite consensus has not been achieved.\(^7\) Toklu et al. investigated the natural course of silicone oil emulsification among patients who underwent retinal detachment surgery and silicone oil tamponade (1,000 cSt). The study found that emulsification occurred at a range of 5–24 months and a mean of 13.2 \(\pm\) 4.8 months after silicone oil injection. The authors further recommended delaying silicone oil removal for up to a year after oil injection to decrease the risk of re-detachment in complicated cases.\(^7\) In our report, the patient developed the conjunctival lesion after the oil removal procedure. Migration of the silicone oil into the subconjunctival space may have taken place during or after the initial surgery. It is also possible that some of the silicone oil leaked into the conjunctiva during oil removal. This emphasizes the need for adequate closure of scleral wounds after removal of pars plana trocars.

Subconjunctival silicone oil has been reported to be clinically visible in 2.7% of eyes that underwent vitrectomy and silicone oil tamponade.\(^2\) However, histopathologic studies revealed that it is actually present in a third of cases.\(^3\) Similar to our patient, previous case reports described silicone oil migration and emulsification after retinal tamponade using silicone oil with viscosity of 1,000 cSt.\(^4,9\) Silicone oils with lower viscosity have greater tendency for emulsification, in comparison to heavy oils with high purity.\(^3\) Inadvertent migration of silicone oil from the vitreous into the subconjunctival space may lead to a reduction of its tamponade effect.\(^10\) Majority of patients with minimal leakage are asymptomatic, although extensive migration can be associated with subconjunctival nodule formation, episcleral scarring, and patient discomfort.\(^3\) Extensive conjunctival involvement can present as a mass that obscures the cornea as seen in a previous report.\(^3\) Orbital migration has been associated with chemosis, extraocular muscle limitation, and globe dystopia.\(^5,11\) Ptosis has been reported in cases of eyelid involvement.\(^4,5\) A significant granulomatous response has been documented in eyes with glaucoma shunt devices, as the tube appears to serve as a conduit of the oil from the vitreous into the subconjunctival space.\(^5,11\) Furthermore, extraocular silicone oil migration may interfere with subsequent glaucoma and strabismus procedures.\(^9,10\)

Our case uniquely presented as a mimicker of a conjunctival neoplasm. The histopathologic appearance (Fig. 2) demonstrates that it is not possible to aspirate the oil once emulsification has occurred within the substantia propria; thus, excision of the affected conjunctiva may be warranted in symptomatic and progressive cases. This lesion, inflammatory in nature, may exhibit response to topical or periocular steroids, although complete resolution may be difficult if the inciting agent remains within the tissue.

As conjunctival, eyelid, and orbital migration of oil can manifest with a variety of undesirable signs and symptoms,\(^4,6,8–11\) there may be benefit in early removal of the source (intraocular silicone oil), closure of the potential shunt (leaky scleral wounds or glaucoma drainage devices), and excision of areas with oil collection or emulsification once a granuloma develops. Tight, self-sealing incisions, surgical maneuvers that minimize scleral stretching, and normalization of intraocular pressure before removal of ports can also decrease the risk.\(^10\) Likewise, smaller trocars and suturing of scleral wounds can also minimize extraocular oil leakage.

4. Conclusion
Silicone oil can elicit an inflammatory response in the conjunctiva that could present as a salmon-patch lesion, mimicking a neoplasm. Biopsy may be considered in cases that pose a diagnostic dilemma. Surgical excision may be offered for patients who present with a progressive and bothersome conjunctival granuloma.

4. Consent
Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.
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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

CRediT authorship contribution statement

Corrina P. Azarcon: Conceptualization, Investigation, Visualization, Writing – original draft. Hans E. Grossniklaus: Investigation, Resources, Writing – review & editing. Jill R. Wells: Conceptualization, Visualization, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare no conflict of interest.

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