Transscleral Drainage of Subretinal/Suprachoroidal Silicone Oil

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ABSTRACT
Silicone oil migration into the subretinal space following vitreoretinal surgery may occur in complex cases of retinal detachment with proliferative vitreoretinopathy. This complication prevents achievement of the primary goal (ie, to attach the retina) and fails to provide the internal tamponade, leading to a permanent decrease in visual acuity. Successful and complete removal of the subretinal oil is a challenge. Internal drainage as described earlier in the literature advocates a large relaxing retinotomy. The authors describe two similar cases, one with retinal detachment secondary to type II iridochoroidal coloboma wherein the oil had passed into the subretinal space and the other with diabetes mellitus and retinal detachment with oil in the suprachoroidal space. In both cases, silicone oil was removed successfully through a transscleral approach. The transscleral approach for removal of subretinal/suprachoroidal silicone oil appears to be relatively safe, less time-consuming, and effective. [Ophthamlic Surg Lasers Imaging 2012;43:69-71.]

INTRODUCTION
Silicone oil tamponade is often used to treat complex retinal detachments with proliferative vitreoretinopathy (PVR). Subretinal migration of silicone oil may occur in recurrent retinal detachment with PVR or as an intraoperative complication due to an accidental injection into the subretinal/suprachoroidal space. Removal of the subretinal or suprachoroidal silicone oil in such situations is essential to achieve retinal reattachment. Silicone oil in the subretinal space is usually accessed through a large relaxing retinotomy, making the surgery more complex and also increasing the risk of PVR. 1 We describe a simple technique to remove subretinal/suprachoroidal silicone oil without the need for a large retinotomy.

TECHNIQUE
Case 1
A 24-year-old woman presented with microphthalmia, total recurrent retinal detachment with PVR, coloboma choroid, and a large bubble of subretinal silicone oil (1,000 centistokes) (Fig. 1). The subretinal migration had occurred through the intercalary membrane break within the coloboma choroid. A three-port pars plana revision vitrectomy with non-vented infusion system (bottle height of 30 cm from the eye level) was performed, the minimal peripheral PVR was relieved with peeling of the membranes, and a relaxing retinotomy was not necessary. The two superior sclerotomies were then temporarily closed. To facilitate removal of the subretinal silicone oil, a posterior sclerotomy (stab incision with 20-gauge microvitreoretinectomy blade) was made 6 mm from the limbus in the superior-nasal quadrant where the subretinal oil was found to be maximum. A choroidotomy through the sclerotomy allowed egress of the subretinal oil, the intravitreal infusion pressure facilitating the process. The sclerotomy was secured with the pre-placed suture once subretinal fluid start-
ed flowing out of the sclerotomy. The retina was then reattached with air–fluid exchange and re-infusion of silicone oil. Postoperatively, the retina was flat with improvement in visual acuity.

**Case 2**

A 42-year-old man underwent vitreoretinal surgery for combined retinal detachment in his right eye (Fig. 2). Silicone oil infusion at the end of the pro-

**Figure 1.** (A) Retinal detachment with subretinal oil in a colobomatous eye. (B) Sclerotomy port being created in superotemporal quadrant at 6 mm from limbus. (C) Created sclerotomy port. (D) Egression of the silicone oil from the sclerotomy. (E) Closure of the sclerotomy. (F) Attached retina after air–fluid exchange.

**Figure 2.** (A) Scleral cut down in inferonasal quadrant at 6 mm from limbus. (B) Approaching the suprachoroidal space. (C) Egression of the silicone oil from the sclerotomy. (D) Continuation of the egression of the oil. (E) Closure of the sclerotomy.
procedure was complicated by sudden hypotony resulting in inadvertent suprachoroidal infusion of silicone oil (1,000 centistokes), causing a large choroidal detachment involving the nasal quadrant.

Two days later, a second surgery was planned in which a non-vented infusion cannula (bottle height of 30 cm from the eye level) was placed in the inferotemporal quadrant and the intravitreal silicone oil was removed through the superonasal sclerotomy. After temporary closure of the superior pars plana sclerotomies, a posterior sclerotomy (2 mm scleral cut down) was placed 6 mm from the limbus in the superonasal quadrant just above the insertion of the medial rectus muscle, allowing the suprachoroidal silicone oil to drain out. After closure of this additional posterior sclerotomy, the retina reattached with fluid–air exchange followed by silicone oil tamponade. The choroidal detachment resolved completely and the retina remained reattached postoperatively.

**DISCUSSION**

Removal of subretinal silicone oil presents a challenge. Silicone oil does not flow easily through a small retinotomy and employing active suction for removal of subretinal silicone oil through a small retinotomy is potentially dangerous, especially in cases of emulsified oil. Therefore, a large peripheral retinotomy is often required to float the subretinal oil into the vitreous cavity and aid its removal.\(^1\)\(^2\) Eyes that present with subretinal silicone oil often have complex PVR necessitating a retinotomy for reattachment of the retina that also may be used for removal of the oil. However, creating a large peripheral retinotomy in the initial stages of the surgery to remove subretinal oil is likely to make the retina mobile, complicating subsequent removal of the pre-retinal membranes; attempting to remove the membranes prior to the retinotomy for oil removal is made difficult by the buoyant subretinal oil that makes the retina bullous. Incomplete removal in such circumstances usually leads to recurrent retinal detachment with recurrent subretinal oil.\(^3\) Initial transscleral removal of the oil in such situations may allow more complete removal of the pre-retinal membranes, allowing the surgeon to limit the extent of the retinotomy. In cases wherein the PVR is limited and a retinotomy may be necessary only for removal of the silicone oil, transscleral drainage of the oil helps avoid creating a retinotomy, thereby limiting the complexity of the surgery and also subsequent risk of PVR.

As in a serous choroidal detachment, suprachoroidal fluid can be drained through regular sclerotomies because the fluid can cleave through the suprachoroidal space due to its low surface tension and viscosity. However, suprachoroidal oil may not flow as easily due to its high surface tension and viscosity. Therefore, we performed an additional sclerotomy overlying the oil to drain it. Rarely, the pocket of suprachoroidal oil may be located far from the regular sclerotomies wherein a separate sclerotomy overlying the oil will be necessary.

The technique described is similar to that of subretinal fluid drainage during scleral buckling surgery. Insertion of an infusion cannula prior to the removal aids an increase in the intravitreal pressure that helps egress of the oil. Because these eyes most often have complicated PVR with taut retina, incarceration of the retina at the sclerotomy site is unlikely; we did not encounter this complication in either of our patients. The sclerotomy is placed just posterior to the ora serrata because the subretinal silicone oil floats beneath the anterior retina. The silicone oil usually egresses in toto with this technique due to the high surface tension of the oil and the lack of fluid currents in the subretinal space to break the flow of oil. Emulsified subretinal oil may not flow out completely with this technique. Rotating the eye so that the sclerotomy remains superior and retaining this position until all oil flows out as indicated by flow of fluid will also aid complete removal.

Transscleral drainage of subretinal/suprachoroidal silicone oil is a safe and simple technique that limits the need for an extensive retinotomy, thereby limiting surgical morbidity.

**REFERENCES**