DOES SILICONE OIL STILL HAVE A ROLE IN COMPLICATED RD WITH PVR?
SILICONE OIL IS THE KEY TO SUCCESS IN THESE DIFFICULT CASES
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The debate regarding the use of tamponade agents in the setting of a retinal detachment (RD) with proliferative vitreoretinopathy (PVR) has been ongoing for the past 25 years. The choice of tamponade agent ranges primarily between long-acting intraocular gases (SF6 and/or C3F8) versus silicone oil, though more recently heavy silicone oil and the use of postoperative perfluorocarbon (PFC) liquids have entered into the discussion as well.

In the mid-1980s, in an attempt to address this issue, the Silicone Oil Study provided a number of comparative studies, assessing the use of SF6 or C3F8 versus silicone oil. The study clearly showed that silicone oil and/or C3F8 provided superior outcomes in comparison to SF6. Regarding the comparison between C3F8 and silicone oil however, the final visual acuities were comparable, along with reoperation rates, and the rate of corneal keratopathy. The study did show a lessened rate of hypotony with silicone oil, in comparison to the use of C3F8.

While the principle outcomes reported by the Silicone Oil study generally hold true today, subsequent studies (Quiram 2006) have suggested that silicone oil may actually provide better long-term visual and anatomic outcomes. Additionally, in the setting of open-globe injuries with RD and PVR, there is a marked tendency to utilize silicone oil, as there is oftentimes a much greater need for retinotomies and retinectomies. Silicone oil provides a more extended tamponade for these types of problems, especially when there is trauma involving the inferior aspect of the retina.

Silicone oil does provide a number of advantages in comparison to long-acting intraocular gases. It provides a prolonged period of tamponade (until the silicone oil is removed), patients can see through it, there are no restrictions on air travel, it allows a better chance of achieving at least a partial retinal attachment, and as indicated above, there is a lessened rate of postoperative hypotony. Disadvantages include the fact that it does not prevent reproliferation (nor does any other agent), emulsification may occur, it alters the refractive state, there is concern regarding cataract formation and corneal toxicity, there is a significant chance of transient elevated IOP, and of course there is the need for a second surgery to remove the silicone.

As was noted at the start of this abstract, heavy silicone oils (Sandner 2007, Regler 2009, Er 2010, Li 2010, Rizzo 2010) and the use of postoperative liquid PFCs (Drury 2010) may also play a role in the management of complex RDs with PVR, though there is not enough data at the present time, to fully define their respective roles.

Overall, anatomic stability can be achieved in approximately 85 to 90% of cases, with functional success (VA > 5/200) in about 75% of cases.

I believe that the current literature supports the use of silicone oil in many of these complex RDs with PVR, and this holds especially true in the setting of open-globe injuries. While at the present time, successful repair of complex RDs involves primarily a meticulous surgical approach (Aaberg 2011), the choice and use of the long-term tamponade agent may make a difference. Of course, we all will welcome the time when pharmacologic adjuncts (inhibitors of cellular proliferation, migration, cell attachment, and inflammation), play a more definitive role as well.