

# Silicone Oil Removal from Aphakic Eyes Using a Side Irrigating Cannula

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In an interventional case series, 11 aphakic eyes of 11 patients with previous vitrectomy and silicone oil tamponade underwent passive silicone oil removal under topical anesthesia through a single clear cornea incision with use of a side irrigating phacoemulsification irrigation cannula without performing a sclerotomy. All procedures were simple, short and uncomplicated. The only observed complication was minimal localized corneal edema the day after the procedure, which resolved within 1-2 days. Use of a side irrigating cannula permits safe and simple removal of silicone oil under topical anesthesia through a single clear cornea incision without need for sclerotomy.

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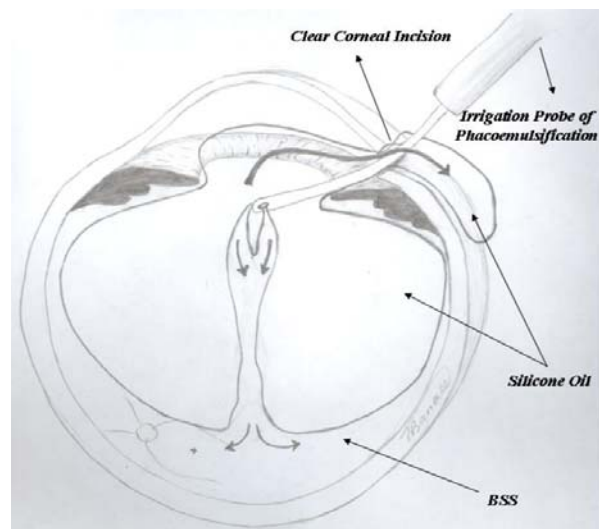
## INTRODUCTION

Silicone oil has been used for intraocular tamponade since 1962.<sup>1</sup> Due to its long term complications particularly cataract, glaucoma, and keratopathy,<sup>2,3</sup> it seems reasonable to remove the oil as soon as stable retinal reattachment is achieved.<sup>4,5</sup> Most techniques described for passive silicone oil removal need at least one sclerotomy. These sclerotomies may lead to fibrovascular ingrowth and retinal traction.<sup>6</sup> Currently, silicone oil is usually removed actively by use of pumps. We herein present a technique simplifying passive silicone oil removal in aphakic eyes.

## SURGICAL TECHNIQUE

A 2mm clear cornea incision is made and the side irrigating cannula used for phacoemulsification is used both for irrigation and holding the wound open by exerting pressure on the

posterior lip (Fig. 1). In this setting, silicone oil is removed passively by the pressure of the irrigating fluid.



BSS: balanced salt solution

**Figure 1** Smooth exit of silicone oil through the corneal incision held open by the side irrigating cannula.

Use of the phacoemulsification irrigating probe prevents the silicone oil bubble being pushed away due to fluid flow into the eye, simplifies the procedure and reduces operative time. If a small silicone oil bubble escapes under the superior iris at the end of the procedure, it can be expressed to the pupillary area by removing the irrigating cannula from the eye and applying mild pressure on the superior sclera. Thereafter, the bubble may be easily removed by re-introducing the irrigation cannula through the corneal incision.

## RESULTS

We used the above described technique in 11 aphakic eyes of 11 patients. Indications for previous vitrectomy and silicone oil tamponade had been pseudophakic retinal detachment (2 eyes), traumatic retinal detachment (4 eyes), and retinal detachment with proliferative vitreoretinopathy (5 eyes). Mean time interval between silicone oil injection and removal was 4.4 (range: 2.5-9) months.

All procedures were performed under topical anesthesia except in 2 uncooperative cases who underwent general anesthesia. No particular difficulty was noted during the procedure. No attempt was made to perform a self sealing clear corneal incision in the first cases and the incisions required suturing. But in the last 3 eyes self-sealed clear cornea incisions were made with a keratome. None of the eyes required sclerotomy. Average operative time was 10 minutes. Silicone oil removal was complete in all cases without any bubbles remaining after the operation. No corneal tunnel-related complication was observed. The only noted complication was mild corneal edema at the site of the clear cornea incision which resolved in 2 days.

## DISCUSSION

Several procedures have been described for passive removal of silicone oil from aphakic eyes; in most a temporal limbal incision is made along with an inferotemporal pars plana

sclerotomy used for introducing the inflow cannula.<sup>1</sup> Sclerotomies may cause fibrovascular ingrowth and postoperative vitreous hemorrhage (especially in diabetic patients). Vitreous incarceration is another sclerotomy-related complication which may cause tractional retinal breaks and subsequent retinal detachment. In the technique we described, no sclerotomy is needed and silicone oil is passively removed via a single clear cornea incision.

The specific gravity of silicone oil is less than water and when the infusion fluid flows into the vitreous cavity, silicone oil floats into the anterior chamber. It can be easily removed from the eye via a single corneal incision with the use of a regular needle through the incision as the infusion port. One problem observed during the procedure is that the silicone oil bubble will be pushed away by the infusion flow. This is especially troublesome at the end of the procedure when the remaining bubbles are of medium to small size. Use of a side irrigating cannula allows smooth washout of silicone oil through the same incision from which the irrigating cannula is introduced without being pushed away by the flow of the irrigating fluid. Another advantage of this procedure compared to techniques using pumps for active silicone oil removal, is the lower cost.

In conclusion, silicone oil can be successfully removed from aphakic eyes under topical anesthesia, through a single clear cornea incision using a side irrigating cannula. This simple technique offers the following advantages: no need for sclerotomy, shorter operative time, and low cost. It is a safe procedure and may be especially advantageous in diabetic patients.

## REFERENCES

- 1- Zhao BOT, Huang L. Removal of silicone oil from aphakia: Use of a self-sealing corneal incision. *Am J Ophthalmol* 2004;138:1055-1057.
- 2- Venkatesh P, Chawla R, Tewari HK. Spontaneous Perforation of the Cornea Following Silicone Oil Keratopathy. *Cornea* 2005;24:347-348.
- 3- Heij ECL, Hendrikse F, Kessels AGH. Results and complications of temporary silicone oil tamponade

- in patients with complicated retinal detachments. *Retina* 2001;21:107-114.
- 4- Frau E, Lautier-Frau M, Labetoualle M, Hutchinson S, Offcet H. Phacoemulsification combined with silicone oil removal through posterior capsulorrhexis. *Br J Ophthalmol* 1999;83:1406-1407.
- 5- Assi A, Woodruff S, Gotzaridis E, Bunce C, Sullivan P. Combined phacoemulsification and transpupillary drainage of silicone oil: results and complications. *Br J Ophthalmol* 2001;85:942-945.
- 6- Hershberger VS, Augsburg JJ, Hutchins RK, Raymond LA, Krug S. Fibrovascular ingrowth at sclerotomy sites in vitrectomized diabetic eyes with recurrent vitreous hemorrhage: ultrasound biomicroscopy findings. *Ophthalmology* 2004;111:1215-1221.