Endotamponades Made Easy

Treating retinal detachment with precise control and efficiency.

BY MICHAEL GEORGOPOULOS, MD, MBA

Retinal detachment is not uncommon, yet it is potentially devastating. As surgeons, we need to respond quickly with the best approach to each individual case. Always refining our techniques for performing an endotamponade, my colleagues and I had been using the same effective surgical platform at our university clinic for 2 decades. Seeing some exciting new capabilities on the market, we compared a new platform and selected the OS 4 (Oertli Instrumente AG, Switzerland) (Figure 1). Our physicians perform all surgeries with this Swiss-made device, including complex cataract cases and glaucoma procedures. I would like to share how this technology has made endotamponade for retinal detachment a faster, more elegant procedure with certain clinical advantages.

ACHIEVING A DRY, AIR-FILLED VITREOUS CAVITY

When we need to perform an endotamponade for retinal detachment, the first step is to do an almost complete vitrectomy up to the periphery using indentation and then to try to achieve a dry, empty chamber. The OS 4's fluidics are excellent with all 23-, 25-, and 27-gauge approaches. I recently changed from 23-gauge to mainly 25-gauge for vitrectomy also for my retinal detachment cases.

The OS 4 machine allows us to work with a very high vacuum with precise, quick-reaction foot pedal control. The sensitivity of the foot pedal allows me to control the vacuum exactly as I need to in different situations, and I can select the type of vacuum I prefer with the OS 4 tri-pump system (peristaltic, venturi, and the new SPEEPMode by Oertli). I have always liked the controllability of the peristaltic pump, but I have now changed to SPEEPMode, a feature of the device that allows me to control the vacuum while the flow stays within preset limits. The optimization of the flow and holding power has improved the efficacy of my work.

After the vitrectomy is completed, the eye is filled with fluid. If needed, I inject perfluorocarbon liquid (PFCL) to drain the subretinal fluid out of the posterior pole towards the retinal break in the periphery. After that step, I exchange the fluid on top of the PFCL with air using an active suction soft-tip needle; thereafter, I remove the subretinal fluid through the retinal break between the air and PFCL pressure, also known as a *sandwich technique*. The change from rinsing the vitreous with fluid to filling with air can now be performed with the foot pedal with an open three-way stopcock. I also exchange the PFCL with air using active suction until the globe is completely filled with air. At that point, there may still be some remnants of PFCL in the eye. This is best managed by rinsing the eye with balanced salt solution (BSS).

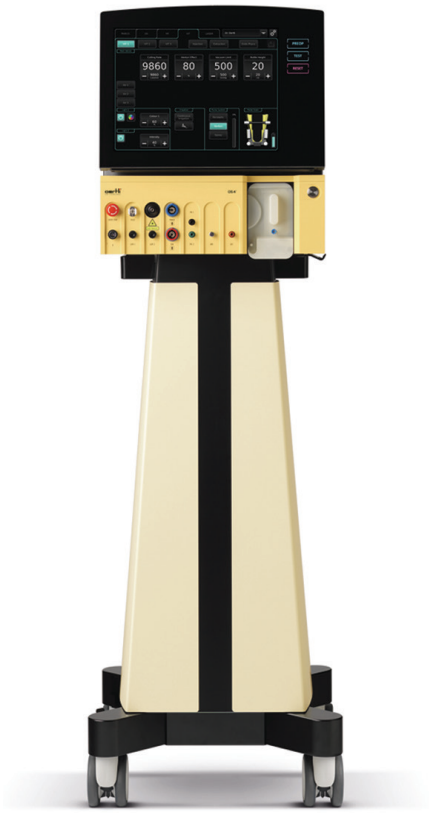

Figure 1. The Oertli OS 4 all-in-one platform.

In the past, I had to tell my assistant or nurse to change the setting of the three-way stopcock from fluid to air. I would check that it was on the correct setting, and then I could do the air filling. If I wanted to add some fluid, I had to give the order and check again. Now I can work on my own with the OS 4's wireless dual-linear foot pedal. Not only can I change it very quickly, but I can also alternate the air and fluid in small amounts. I can now stay with my active fluid needle in the eye. With my foot pedal, I can add a little bit of BSS and then add air again. The foot pedal is like having a third hand.

Using this approach, a small amount of BSS rinses the PFCL from the surface of the retina to the center. I aspirate this fluid and repeat the process three times without changing any instruments. The PFCL remnants are gone, and I have a completely dry, air-filled vitreous cavity.

During surgery, I use the GoodLight LED endolights of the OS 4 platform. With our older system, some surgeons used external endolights, but now we all use the clear, wide-angle bright lighting built into the machine. The OS 4 also gives me acoustic feedback throughout the vitrectomy process, which is important to me. I do vitrectomy not only by seeing, but also by hearing. I want to know what is happening at the tip of my instrument without looking at it, and the OS 4 makes that possible by translating that activity into acoustic signals.

FILLING AND REMOVING A SILICONE OIL ENDOTAMPONADE

Once I have a dry vitreous cavity with no traces of PFCL, I usually perform the endolaser or cryotherapy application in the air-filled eye. With the OS 4 system, I use the built-in endolaser with the flexible laser probe for retinopexy. I can use the same OS 4 foot pedal by managing the laser applications and fine-tuning the settings.

With that stage complete, I usually use different expanding gases for an endotamponade. Only in more complicated cases do I use silicone oil, which I actively fill into the air-filled eye. To fill the eye, I place the Oertli Universal Visco Cannula on a syringe, which is connected to a trocar, in the same stable way that the BSS infusion is connected to the trocar.

Using a 23-gauge approach, the system fills the eye very quickly. It takes only about 5 minutes for me, using 5,000 cs silicone oil. Lower-viscosity oils (1,000 or 2,000 cs, for example) would be faster, but I have the best clinical experience with 5,000 cs.

I wait at least 3 months with the silicone oil in the eye, and then I check to verify that the retina is perfectly attached and there are enough laser scars to protect the retina from redetachment. To remove the silicone oil with our older system, we cut a sclerotomy and filled in the BSS; the oil came out through the sclerotomy on its own. This passive extraction took about 5 minutes, and then we sometimes spent another 10 minutes or so suturing the sclerotomy and the conjunctiva.

Now I actively extract the silicone oil through the 23-gauge trocar and the snap-lock visco cannula with no need for sutures (Figure 2). With a trocar-based system, I remove the trocar and am finished with surgery. The time saved is enough to make a difference in the experience of patients and surgeons, as well as to affect management of the OR.

Figure 2. Silicone application set with snap-lock visco cannula.

A LOOK AT CLINICAL OUTCOMES AND SAFETY

The OS 4 system is very safe. It helps us avoid complications because it very effectively controls IOP by ventilating through the machine itself. I feel safe performing the procedure on patients with glaucoma, where we are closely watching the IOP because the system is designed to ensure that surgery is safe, even for compromised eyes.

Since I began using the OS 4, I believe outcomes also may be improved by the use of smaller-gauge trocars. We have changed from 23- to 25-gauge, and we may use a 27-gauge trocar in the future. With no sutures, recovery is faster, and there is less postoperative ocular irritation, resulting in happier patients. ■

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