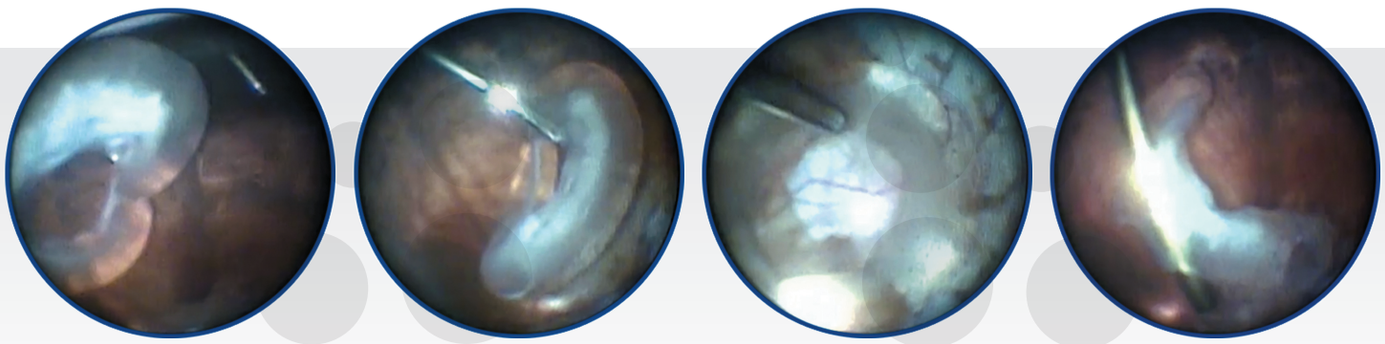

A Endoscopic view of Soemmerring's ring overlying pars plana.

B Endoscopic view of lifesaver-shaped Soemmerring's ring with retinal periphery in the background.

C Endoscopic view of Soemmerring's ring on surface of highly myopic retina.

D Endoscopic view of partially removed Soemmerring's ring.

(Images courtesy of Martin Uram, MD, MPH)

ENDOSCOPE OFFERS VERSATILITY OVER MICROSCOPE FOR RETINAL SURGERIES

Case study utilizes tool for removal of Soemmerring's ring

By Martin Uram, MD, MPH; *Special to* Ophthalmology Times

take-home

- **Martin Uram, MD, MPH, explains how an endoscope provides versatility, especially with retinal diseases. He shares a case study in which the tool was used to remove Soemmerring's ring.**

While use of the endoscope is widespread, there are still surgeons who feel the microscope is sufficient. However, the increased visualization that the endoscope provides is an invaluable tool that can significantly improve outcomes in a variety of cases, particularly retinal surgeries.

While the microscope has limited range, the endoscope allows for enhanced visualization of anterior structures that are not usually visible.

Laser endoscopes perform three main functions—they provide light, image, and laser. Rather than the 30° cone of light possible with a microscope, the endoscope provides a 120° to 140° lighted field that enables the surgeon to see anything within the eye. The endoscope also comes as 23-gauge, so can be used with 23-gauge cannula systems.

Conversely, the microscope only allows for top-to-bottom imaging. In the periphery it is difficult, or impossible, to see. As a great deal of pathology may lie within that peripheral zone, there is a much greater risk of missing outlying pathology.

There are also a variety of issues that may block imaging when performing a vitrectomy, such as a cloudy cornea, small pupil, cataracts, blood or opacities, or condensation on a lens implant. With an endoscope, none of this is a problem.

The microscope is indispensable, but the endoscope provides a great deal of versatility, especially with retinal diseases. When performing procedures, there will come a point when the retinal periphery is no longer visible through the binocular indirect ophthalmomicroscope.

The endoscope can then be placed so that every hole and degenerative spot in the retinal periphery is visible, allowing the surgeon to monitor the surgery and deliver laser to parts of the eye that are not usually visible. Using the endoscope can improve surgical skills and allow the performance of maneuvers in a wide variety of "everyday" cases that would take more time or would be difficult or impossible to complete.

CASE STUDY

A 53-year-old female presented with intermittent blurred vision. Upon examination, it was discovered this was due to a Soemmerring's ring from cataract surgery that she had undergone decades prior.

As the eye would move, the ring would float in and out of her pupillary axis, blocking her vision. The only solution was to remove this lens material.

To do this, a three-port vitrectomy was per-

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ENDOSCOPE

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formed using the laser endoscope for illumination and visualization. Once the vitreous was removed, the free-floating Soemmerring's ring was addressed.

As the ring was large and extremely hard, it was not possible to remove it in one piece through the sclerotomy site. It was necessary to break the ring into smaller pieces. This can sometimes be accomplished by pressing forceps against it or cutting it with a vitrector.

As this patient's ring had been in her eye for several decades, it was hard to break manually. The only way to remove it was to perform phaco-fragmentation, capturing the ring with suction through the frag tip and then apply phacoemulsification.

REDUCES THE RISKS

With free-floating lens material, the risk of retinal damage is increased as the surgeon "chases" the pieces around the vitreous cavity. Using an endoscope greatly reduces this risk as it enables visualization of most of the ocular interior allowing the surgeon to easily visualize and repeatedly capture the ring.

A certain system (Endo Optiks E2 Ophthalmic Laser Endoscopy System, Beaver Visitec Inc.) was used for this task. By holding the endoscope closer to the sclerotomy site, a panoramic view of the inside of the eye was created. Once the ring was located, the frag tip was directed toward the lens fragments lying on the surface of the retina and aspirated into the port of the frag tip.

Then, while holding lens fragments in the mid-vitreous cavity, phaco-fragmentation was initiated. This process was repeated multiple times. Because the ring was easily visible through the endoscope, it was accomplished quickly.

If attempted using only a microscope, this process can become frustrating as the fragments may fall into an area of the eye that is not visible through the microscope. Once the ring was completely removed, the incisions were closed.

Recovery was similar to traditional cataract surgery. Because the patient had high myopia, visual acuity of her aphakic eye was 20/25 at postoperative week 1. ■

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Dr. Uram is an ophthalmologist with Monmouth Retinal Consultants and the founder and chairman of Endo Optiks Corp. He is also the inventor of the Ophthalmic Laser Microendoscope, for which he received the Thomas Alva Edison Patent Award.

TYPE 3 NV

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features, and evaluation of the sub-RPE and the basal lamina (BL) space.

Dr. Freund reported that "the clinical imaging showed a deep neovascular lesion in close relationship with a mixed serous and drusenoid pigment epithelium detachment (PED) characteristic of type 3 NV. Antiangiogenic therapy achieved complete resolution of the exudation. The PED progressively flattened with each treatment, leaving a persistent triangular hyperreflectivity in the outer retina, which was correlated histologically with a vascular complex implanted into sub-RPE basal laminar deposit (BLamD). No connection between the choriocapillaris and the sub-RPE plus BLamD space was observed. Both the RPE-derived and lipid-filled cells were correlated with clinical intraretinal hyperreflective foci. The sub-RPE plus BLamD space contained macrophages, lymphocytes, Müller cell processes, and subducted RPE."

The authors published their findings (*Ophthalmology*. 2018;125:276-287. doi: 10.1016/j.ophtha.2017.08.019. Epub 2017 Sep 28).

This case study showed the clinicopathologic correlation of type 3 NV with vascular elements of retinal origin accompanied by collagenous material and Müller cell processes implanted into the thick sub-RPE basal laminar deposit, which may simulate the appearance of chorioretinal anastomosis. Surrounding RPE-derived and lipid-filled cells, possibly microglia, were correlated with clinical intraretinal hyperreflective foci.

"In this patient with type 3 NV, there was no evidence of a choroidal origin of the lesion," Dr. Freund concluded. ■

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