

THE BENEFITS OF VITRECTOMY FOR UVEAL MELANOMA



The use of vitrectomy techniques is the only way to maximize the best possible vision for patients with uveal melanoma.

BY TARA A. McCANNEL, MD, PHD

The treatment of uveal melanoma—with brachytherapy, radiotherapy, local resection, and enucleation—is focused first and foremost on controlling the tumor and preventing distant metastasis.¹ While these therapeutic approaches do not require vitreoretinal surgical training, they are not intended to preserve the patient's vision. Tumor patients can survive despite treatment complications, such as radiation retinopathy, untreated retinal detachment (RD), or vitreous hemorrhage—all of which can be addressed with pars plana vitrectomy (PPV). In fact, if visual outcome is important, vitreoretinal surgery is required to help patients see better.

At the University of California, Los Angeles (UCLA) Ocular Oncology Center, we combine vitreoretinal surgical techniques and brachytherapy in the treatment of melanoma to help improve patients' visual outcomes. For example, research shows that a silicone oil fill during PPV can:

- shield the healthy retina from iodine-125 radiation by 50% to 60%;²
- reduce retinopathy compared with plaque therapy alone at 2 years³; and
- significantly improve vision in large choroidal melanomas compared with plaque therapy alone at 2 years.⁴

We have switched to using Palladium-103, which our research demonstrates is even better shielded by silicone oil, with a reduced exposure rate of between 75% and 80%⁵ compared with iodine-125 alone.

HOW IT WORKS

During brachytherapy, a plaque is placed over the tumor on the sclera, exposing healthy tissue to radiation. Placing a vitreous-attenuating substance in the vitreous cavity can help to reduce some of the radiation. In a one-to-one matched case-controlled study of 20 cases of uveal melanoma treated with a 23-mm-diameter iodine-125 plaque and PPV with silicone oil 1,000 cSt placement, we found significantly better visual acuity at 2 years than with



Figure 1. This patient has a large melanoma tumor with a serous RD (A). The patient underwent PPV with silicone oil and had good results 1 month after surgery (B).

plaque therapy alone.⁴ Of the 40 eyes included in the study, 39 (98%) achieved local tumor control, and metastasis occurred in 15% of study eyes and 45% of controls ($P = .082$).

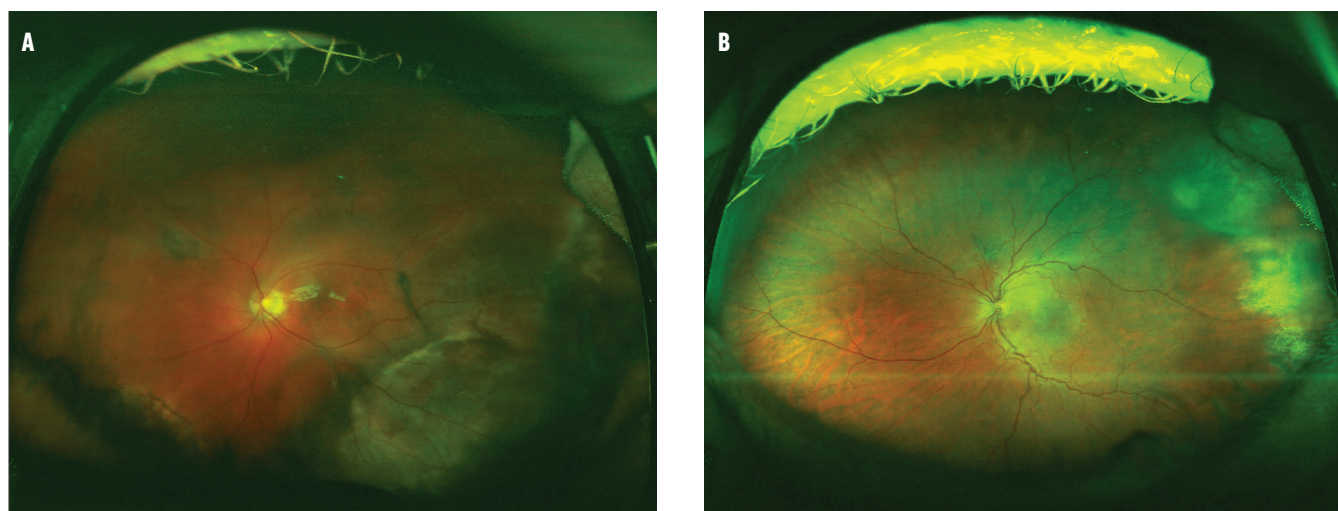


Figure 2. A patient with melanoma presented with an RD (A) that was treated with pneumatic retinopexy (B).

As for the visual outcomes, the final VA was 0.83 logMAR for study patients and 2.06 logMAR for controls ($P = .0064$). Of those with positive visual outcomes, 65% of study eyes and 25% of controls achieved VA $\geq 20/200$ ($P = .025$). As for those with a poor final VA, 35% of study eyes and 80% of controls achieved a VA of $< 20/200$ ($P = .0053$); 5% of study eyes and 35% of controls had a final VA of light perception or no light perception ($P = .044$).⁴

OTHER PPV INDICATIONS

Vitrectomy is also an important treatment consideration beyond silicone oil shielding. Serous and rhegmatogenous RDs and vitreous hemorrhage can persist for months before patients are referred to a retina surgeon, even though we have the technical skills necessary to help these patients see better immediately (Figures 1 and 2). For example, a patient presented to UCLA with a 2.6 mm melanoma and a retinal tear with detachment. After pneumatic retinopexy, the patient underwent plaque therapy with PPV and silicone oil. Eight years later, the tumor remained well-treated, the retina was attached, and VA was 20/40.

THE PATH TO VISION PRESERVATION

Vitrectomy is the only path we have, for now, to achieve superior visual outcomes in patients with uveal melanoma. Research shows that shielding with silicone oil improves vision, and PPV for RDs, vitreous hemorrhage, and other treatment complications can restore vision. The good news is that we already have the tools to allow patients to see their best. We must encourage ocular oncologists of the future to become skilled vitreoretinal surgeons in tumor eyes and make vision for patients a priority. ■

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KEY TAKEAWAYS

- Vitrectomy with silicone oil 1,000 cSt fill can shield the healthy retina from iodine-125 radiation by 50% to 60%, or by at least 75% to 80% when Palladium-103 is used instead.
- When vitrectomy with silicone oil was used for 20 cases of large uveal melanoma treated with a 23-mm-diameter iodine-125 plaque, vision was found to be significantly better in the group treated with vitrectomy and silicone oil ($P = .0064$) compared with plaque alone at 2 years. More specifically, 65% of the silicone oil patients versus 25% of the plaque-alone patients achieved VA of 20/200 or better.
- Vitrectomy is an important technique in tumor eyes to treat serous retinal detachment, rhegmatogenous retinal detachment, persistent vitreous hemorrhage, macular pucker, macular holes, and more.

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