

# A RESIDENT'S PERSPECTIVE ON RESEARCH



Waxing nostalgic while welcoming new tech to glaucoma.

BY VINCENT P. MOSCATO, MD

**M**any busy ophthalmologists-in-training face difficulty in trying to keep up with the fast pace of clinic while preparing for surgical cases and studying for the Ophthalmic Knowledge Assessment Program test. Given these competing and time-consuming obligations, it becomes easy to relegate other opportunities, such as getting involved in academic research, to lower-level priorities.

We residents tend to overlook the benefits that research provides, not only to our education in the basic clinical science of ophthalmology but also to our understanding of the current state of the field and the advances inherited from our forbearers. Perhaps, within ophthalmology, these benefits are most evident in the subspecialty of glaucoma. My own experience with research has helped me to appreciate the tools we have on hand as well as the previous generations of ophthalmologists who worked to develop them over time.

## CPC À LA MICROPULSE

I recently became involved in a research project at the suggestion of my residency program director, Albert Khouri, MD. The focus of this effort is to compare the safety and efficacy of standard continuous-wave diode laser cyclophotocoagulation (CPC) with a newer CPC technique using a MicroPulse diode laser (Iridex) in children with refractory glaucoma. With a slight variation

in the way energy is delivered, the MicroPulse technique can potentially limit collateral damage within the ciliary body and surrounding uveal tissue while reducing aqueous production and lowering IOP.

Theoretically, this approach could yield less postoperative inflammation, less pain, and a reduction in the complications of CPC that cause some to shy away from its use. If the MicroPulse delivery method demonstrates similar efficacy to the standard continuous-wave approach in children with refractory glaucoma, then it will provide an exciting tool for glaucoma specialists to use to combat some of their toughest cases.

## A STORIED PAST

This research project allowed me to gain a much deeper understanding of the clinical and technological aspects of CPC. However, what left the greatest impression on me was learning about the historical series of developments that led to our modern use of the technology.

The idea of ciliary body destruction to suppress aqueous production and treat glaucoma was first conceived in the early 1900s. By the 1930s, the technique of cyclodiathermy—using electrodes to heat and destroy the ciliary body—was adopted by notable ophthalmologists in Manhattan and Boston. Although fraught with complications, this approach paved the way for the development of cyclotherapy by Bietti in Italy in the

1950s. This technique was used for decades, albeit also with many complications. Eventually, by the 1970s, the foundation for the modern technique of CPC was developed.

Many types of light sources have been used for CPC, including xenon arc lamps, the ruby laser, and the Nd:YAG laser (which I thought was solely used for iridotomies and capsulotomies). The diode laser has dominated CPC since the 1990s, with the continuous-wave energy delivery method being the standard technique. Now, we look toward MicroPulse CPC as a potentially evolutionary step to further distance us from past techniques.

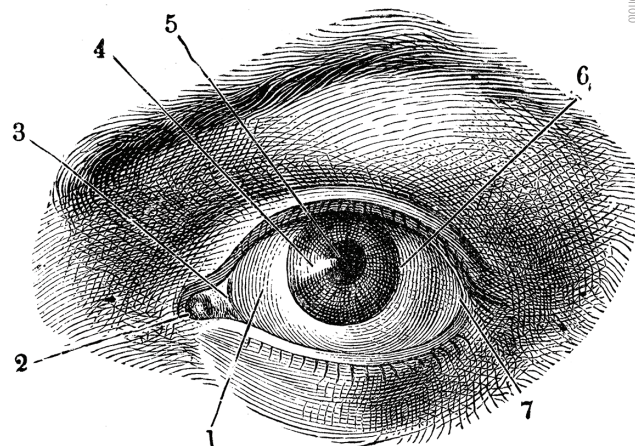
## CONCLUSION

We often take for granted the technologies that are at our disposal every day in clinic and in the OR. Although these tools improve our lives and the lives of our patients, it is not always obvious to us how much blood, sweat, and tears went into crafting them over decades and even centuries. The field of glaucoma has been a beneficiary of myriad advances in technology, not only with lasers, such as those used for CPC, but also with the recent boom in filtering surgery and microinvasive glaucoma surgery, as well as diagnostic advances in perimetry and OCT technology.

Building on current technologies, the coming decades are poised to usher in newer and better tools for treating our patients, all thanks to the

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many small steps taken by those who paved the way for us. This research project gave me an appreciation for their efforts, and I hope to also contribute to the advancement of the field in some small way during my career. ■

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