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Imaging Method for Improved Placement of MIGS

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
- » Health
- » **Imaging**
- » Medical
- » **Medical**
- » Devices
- » Diagnostics
- » Disease:
Ophthalmology and
Optometry

RELATED CASES

BACKGROUND

Minimally invasive glaucoma surgeries (MIGS), despite their favorable safety profile, cannot achieve the same intraocular pressure reduction as tube shunts or trabeculectomy. There is growing interest in targeting MIGS devices near functioning, large-caliber aqueous and episcleral veins, but methods to image these vessels in vivo are lacking. The present invention relates to the method for imaging episcleral vessels noninvasively and quantifying episcleral regional flow variation along the limbal circumference.

FULL DESCRIPTION

Researchers in UC Irvine's Ophthalmology department have established an ex-vivo system to image episcleral vessels and quantify the regional blood flow. Successfully identifying the collector channels in the trabecular meshwork (TM) may be crucial to achieve an effective MIGS. The previous studies that have been successfully imaged the TM outflow anatomy required excessive tissue processing which limited the clinical applicability.

The present invention utilized the confocal laser microendoscope to image both surface episcleral vessels and Schlemm's canal through a scleral flap in ex vivo perfused eyes. Combining the microendoscope imaging and image analysis by using an algorithm, the episcleral vessel diameter and density could be acquired in real-time.

Researchers have successfully imaged episcleral vessels using this method in both human cadaver eyes and pig eyes.

FUTURE DEVELOPMENT PLANS

The next development step is to perform the MIGS procedures based on the functional data obtained with this invention and see if targeting MIGS procedures to high flow (or low flow) area can lower intraocular pressure. We are currently looking for a commercial partner to further develop this invention.

ADVANTAGES

- » This invention is more quantitative than the episcleral venous pressure method
- » The procedure can be done prior to the surgery to determine if a patient is a good candidate for MIGS procedure. Patients who do not have outflow pathway amenable to MIGS procedures will be spared the expense, time, and recovery of surgery.
- » Cost-saving due to optimization of existing surgical techniques and screening for the patients most likely to respond to the surgeries.
- » This present invention is also significantly less invasive and more clinically translatable compared to other methods.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,993,611	05/04/2021	2015-325

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Laser Photocoagulation To Stabilize Collector Channels To Enhance Aqueous Flows](#)

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