

Researchers discover predictor of laser treatment success in patients with glaucoma

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Jella An, MD, an assistant professor of ophthalmology and a fellowship trained glaucoma specialist at MU Health Care examines a patient. Credit: MU Health Care

More than 70 million people worldwide suffer from glaucoma, a

condition that causes a build-up of fluid and pressure inside the eye and can eventually lead to blindness. Treatment options have traditionally included eye drops to reduce the fluid the eye produces or surgery to unclog the eye's drainage. But a new study from the University of Missouri School of Medicine and MU Health Care provides insight into which patients might benefit most from a noninvasive treatment called selective laser trabeculoplasty (SLT), which relieves pressure by using a laser to alter the eye tissue, resulting in better fluid drainage.

"There's been a lack of evidence about how well SLT works, how safe it is and the ideal candidate," said senior author Jella An, MD, an assistant professor of ophthalmology and a fellowship-trained [glaucoma](#) specialist at MU Health Care's Mason Eye Institute. "Because so little is known about SLT, there is a lot of apprehension among specialists about using it as a first-line treatment for glaucoma. Our research findings have helped me redefine the ideal patient for this procedure."

An's research team reviewed 252 SLT procedures on 198 [adult patients](#) with open-angle glaucoma to determine what percentage of these surgeries achieved a 20% or greater reduction in intraocular pressure (IOP). Two months after surgery, 33.6% of patients met success criteria. At the six-month mark, 38.5% achieved the threshold. The researchers discovered patients with a higher baseline IOP had larger reductions in pressure.

"We discovered significant improvement in patients with more severe cases, which convinced me that patients with the highest [pressure](#) will benefit the most from this laser therapy," An said.

Age, type and severity of glaucoma did not significantly predict a successful outcome. In addition, less than 5% of patients studied experienced the most common adverse event of an IOP spike after the procedure.

"This study really increased my comfort level to offer SLT as a primary therapy," An said. "Prior to this research, I would prescribe these [patients](#) multiple medications, creating the possibility of side effects and poor adherence, which could lead to disease progression. Now I offer this laser first if they are a good candidate because of its safety profile. If it doesn't work, we can always move forward with other options."

In addition to An, the study's lead author was MU School of Medicine ophthalmology resident Matthew Hirabayashi, MD. Vikram Ponnusamy, MD, a recent graduate of MU School of Medicine, also contributed to the findings.

More information: Matthew Hirabayashi et al, Predictive Factors for Outcomes of Selective Laser Trabeculoplasty, *Scientific Reports* (2020). [DOI: 10.1038/s41598-020-66473-0](https://doi.org/10.1038/s41598-020-66473-0)

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