CO2 laser-assisted surgery yields better sclerectomy for open-angle glaucoma

Non-penetrating procedure associated with good IOP control during short follow-up

October 01, 2015
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Take-home message: CO_2 laser-assisted sclerectomy surgery performed with a proprietary platform is a simple and safer alternative to manual non-penetrating deep sclerectomy for eyes with open-angle glaucoma.

By Cheryl Guttman Krader; Reviewed by Edward Wylegala, MD, PhD

Katowice, Poland—CO_2 laser-assisted sclerectomy surgery (CLASS) shows promise as a safe and effective procedure for reducing elevated IOP and medication burden in various types of glaucoma, said Edward Wylegala, MD, PhD.

CLASS is a non-penetrating procedure in which the outer wall of Schlemm's canal is removed using a proprietary CO_2 laser (IOPtimate System, IOPtima) and the anterior chamber remains intact.

Dr. Wylegala performed CLASS in a series of 10 eyes, of which 8 had primary open-angle glaucoma and 2 had secondary capsulary glaucoma associated with pseudoexfoliation syndrome.

After 6 months of follow-up, mean IOP was reduced 38.4% from baseline (25.4 to 15.1 mm Hg) and mean number of medications used decreased from 3.8 to 0.3.

At the 6-month visit, 8 eyes met the criteria for complete success (IOP between

5 and 18 mm Hg and 20% IOP reduction from baseline with no medication), and qualified success (same IOP criteria with or without medication) was achieved by all 10 eyes.

"CLASS is a simple and safe procedure, and so it has a minimal learning curve for the surgeon," said Dr. Wylegala, professor and chairman, Department of Ophthalmology, Clinic School of Medicine with Division of Dentistry in Zabrze, Medical University of Silesia, Katowice, Poland. "Current results are promising, but further observation with a larger cohort is needed."

CLASS had a favorable safety profile in the small series of patients. Intraoperative complications included microperforation and trace blood in the anterior chamber, but they were all mild and none resulted in any permanent sequelae.

There were no significant postoperative complications, although Dr. Wylegala acknowledged that the observation period is short and there are reports in the literature in which some patients needed additional procedures during longer follow-up.

Patient selection, surgical technique

CLASS should be considered for patients with open-angle glaucoma when stable IOP is needed during surgery and in the postoperative period, Dr. Wylegala said.

"In my opinion, it is a very good choice for patients with open-angle glaucoma subsequent to keratoplasty," he added.

CLASS is performed under direct microscopic visualization and with intraoperative optical coherence tomography (OCT) to determine the depth of photoablation. After creating a 5- × 5-mm scleral flap to expose the limbus, the laser is used to gradually ablate deep scleral layers within the scleral bed, continuing until percolating aqueous humor is visible.

"It is like searching for water on a desert," Dr. Wylegala said. "Using intraoperative OCT, we look carefully for the first signs of fluid at the site of laser ablation. When the tissue becomes wet, we are done."

He explained that the percolating fluid from the exposed Schlemm's canal absorbs the laser energy and acts to mitigate the effect of further ablation,

thereby acting as a self-controlled safety mechanism to avoid inadvertent trabeculo-Descemet's membrane perforation.

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Dr. Wylegala has no relevant financial interests to disclose.