



New glaucoma technique uses CO2 laser ablation for deep sclerectomy

CLASS is less technically demanding than manual technique for deep dissection, researcher says.

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A new primary filtration surgical technique uses CO₂ laser ablation to create scleral space and ablate Schlemm's canal to lower IOP in patients with medically uncontrolled glaucoma.

IOP-lowering effects of CO₂ laser-assisted sclerectomy surgery (CLASS) were comparable to conventional deep sclerectomy in a retrospective review of 58 patients who underwent one of the two procedures at the Montchoisi Clinique in Lausanne, Switzerland.

"The Montchoisi Clinique is well experienced in performing classical manual deep sclerectomy," principal investigator **Gabriel Greifner, MD**, head of the Glaucoma Service at Hebrew University Medical Center in Jerusalem, Israel, told *Ocular Surgery News*. "We thought it would be interesting to evaluate other techniques of deep sclerectomy that might be easier to perform and to find out if we could achieve similar, better or worse results."

The first several steps in performing CLASS are similar to classic non-penetrating deep sclerectomy with implant: making a superior conjunctival peritomy to expose the bare sclera, applying mitomycin C in the subconjunctival space and dissecting a large half-thickness scleral flap anteriorly to the clear cornea.

"However, at this point, instead of performing a delicate deep manual dissection to expose Schlemm's canal, trabecular meshwork and Descemet's membrane, you apply a few laser burns, first to the sclera, then focused to the area above Schlemm's canal," Greifner said. This is followed by continuing deeply with the laser burns until a significant percolation of aqueous humor is noticed. The flap is then sutured loosely, and the conjunctiva is closed.

IOP reduction

The study, which appeared in the *Journal of Glaucoma*, evaluated 27 patients who underwent CLASS and 31 patients who underwent non-penetrating deep sclerectomy. In the CLASS group, the mean follow-up was 20.7 months, during which time the mean IOP improved from a baseline of 23.3 mm Hg to 11.7 mm Hg. The mean number of glaucoma medications was reduced from three to one.

In the non-penetrating deep sclerectomy control group, the mean follow-up was 17.6 months, with an IOP

improvement from 23.1 mm Hg at baseline to 13.3 mm Hg and a reduction in medications from three to 0.7.

“We did not expect to have such lower IOP results for CLASS at 2 years of follow-up,” Greifner said. “This is probably due to good technique and a tight follow-up schedule (1 day, 1 week and 3, 6, 12, 18 and 24 months).” In cases of IOP elevation, Greifner said he insists on doing laser goniopuncture to increase the flow rate and bleb needling as necessary.

Greifner said CLASS is much less technically demanding for deep dissection compared with the manual technique.

“It is astonishing how quiet the eye looks the first day after surgery,” Greifner said. “Generally, after non-penetrating deep sclerectomy, there is very mild inflammation, but it is remarkable how quiet the eye looks after CLASS.”

Complications

The study found that CLASS has the same complication spectrum as non-penetrating deep sclerectomy but with lower incidence rates than conventional trabeculectomy.

“Of course, with CLASS, perforation can occur during surgery that necessitates an iridectomy and practically converts it to a trabeculectomy,” Greifner said.

“To prevent incarceration, the filtration during the first period should not be too high; thus, the patient should be instructed to avoid the Valsalva maneuver, and the treating physician should be very careful to avoid performing goniopuncture too early,” Greifner said. “It is better not to perform goniopuncture in the first 3 to 4 weeks. After this period, the risk of incarceration is low, as there is already resistance to outflow by the neighboring tissue.”

To increase the efficacy of CLASS, Greifner recommended more repeated ablation with less energy during deep ablation until percolation occurs.

“This appears to be safer than less ablation with higher energy,” he said.

In the future, Greifner said it would be interesting to evaluate the efficacy of CLASS with or without an intrascleral implant such as collagen or an injectable filtering spacer. – *by Bob Kronemyer*

Reference:

Greifner G, et al. *J Glaucoma*. 2014;doi:10.1097/IJG.000000000000187.

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