A NEW study now suggests that endoscopic cyclophotocoagulation (ECP) should be more widely used with cataract surgery. The long-term study of 707 eyes with cataracts and medically controlled glaucoma found that adding ECP to phaco significantly improved long-term IOP control with minimal risk of complications. It is well known that phacoemulsification cataract surgery can significantly reduce intraocular pressure in glaucomatous eyes. How long the effect lasts has been less certain.

This uncertainty has made it difficult to assess whether taking additional surgical steps to reduce IOP is worthwhile for cataract patients with moderate glaucoma symptoms, such as moderate cupping and visual field loss, notes Stanley J Berke MD.

Endoscopic cyclophotocoagulation, which involves selective ablation of aqueous-producing ciliary processes, can easily be done during cataract surgery, often without additional incisions. It lowers IOP by reducing fluid inflow rather than improving outflow. But lacking data on its safety or benefit over phaco alone, many surgeons have reserved ECP and other ciliary ablation procedures for more severe or refractory glaucoma cases.

Dr Berke reported study results over a mean follow-up period of 3.2 years, during which 626 eyes treated with ECP in addition to phacoemulsification surgery on average maintained significant IOP reductions for longer than 81 eyes that received phaco alone. The phaco-ECP treated eyes also were able to reduce the number of medications needed to control IOP postoperatively. On average, the phaco-ECP eyes ended up needing about half as many drugs to control IOP as the phaco-only eyes, reducing long-term treatment costs for the phaco-ECP group.

No serious complications were reported in either group, though increased rates of postoperative inflammation were observed in the phaco-ECP group. This inflammation was minor and controllable with topical steroids in every case, Dr Berke, of Albert Einstein College of Medicine, New York, US, told a symposium at the annual meeting of the AAO in November 2006. Postoperative visual outcomes were similar for the two groups.

“The high safety margin of ECP in this large cohort with extended follow-up clearly indicates that this method of regulating aqueous inflow is benign,” said Dr Berke, who conducted the study with four colleagues at Ophthalmic Consultants of Long Island, Lynbrook, New York, US.

“Phaco alone does not contribute to long-term IOP control while adding ECP to phaco does. Combining ECP with phaco should be considered in patients with cataracts and medically controlled glaucoma.” Several observers agreed.

“Adding ECP to phaco lowers long-term intraocular pressure for glaucoma patients”

By Howard Larkin
in Las Vegas

The study confirmed that phaco alone can achieve temporary IOP reductions. One year after surgery average IOP in the phaco-ECP and phaco-only eyes were nearly identical at just over 16 mmHg. However, that figure represented a larger drop for the phaco-ECP group, which had a pre-op average pressure of 19.14 mmHg compared with 18.16 mmHg for the phaco-only group.

Over the longer term, though, IOP reduction steadily disappeared in the phaco-only eyes. At two years average IOP had climbed to nearly 17 mmHg in the phaco-only eyes, while remaining steady at about 16mm in the phaco-ECP eyes. By year three, phaco-only pressures climbed to nearly 19 mmHg, exceeding their pre-operative average, while the phaco-ECP eyes average fell below 16mm. At the end of the follow-up period, 79 per cent of the phaco-ECP eyes had reduced pressure, compared with 38 per cent of the phaco-only eyes. IOP increased in only 12 per cent of phaco-ECP eyes, compared with 60 per cent of the phaco-only eyes.

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“This study is long overdue. There was no compelling data on ECP before this study, in my view”

Brian E Flowers MD

“The study was designed to examine both the natural history of glaucoma after cataract surgery, and to test the impact on outcomes of adding ECP to at risk patients with medically controlled glaucoma were randomly assigned to receive both phaco and ECP or phaco alone between January 2000 and December 2004. Five surgeons performed the procedures using both clear corneal and scleral tunnel incisions. Follow-up times ranged from 0.5 years to 5.8 years, with a mean of 3.2 years.

The disproportionate number of patients assigned to the phaco-ECP arm was to ensure a robust sample for assessing complications and other risks while leaving enough patients in the phaco-only arm to ensure statistical significance.

“This is the largest prospective cohort ever studied for long-term progression of glaucoma after cataract surgery”

Stanley J Berke MD
to visualise and perform the procedure. Since viscoelastic is not typically used in this part of the eye during cataract surgery, extra care must be taken to ensure it is evacuated at the end of the procedure to avoid pressure spikes, Dr Berke noted.

The tip of the ECP probe contains a Xenon light source, fiberoptic video, aiming beam and 810nm wavelength diode laser controlled by a foot pedal. This allows the surgeon to see the ciliary processes on a monitor, and carefully target them for photocoagulation with laser energy. This makes the endoscopic procedure much more precise and less likely to damage surrounding tissues than earlier procedures that blindly delivered energy to the ciliary processes through the sclera using an external probe.

The object is to shrink and whiten the process without delivering so much energy that it explodes, or pops, which disrupts the blood-aqueous barrier. Such disruptions appear to be the major cause of postoperative inflammation, Dr Berke said.

The chances of popping a process increase towards the end of the reach of the probe, where it is more difficult to control its distance from the target. Experience helps, but the problem is difficult to eliminate completely, he added.

“With the endoscopic procedure much more precise and less likely to damage the surrounding tissues, the surgeon can carefully target the ciliary processes for photocoagulation with laser energy. This makes the procedure much more precise and less likely to damage surrounding tissues than earlier procedures that blindly delivered energy to the ciliary processes through the sclera using an external probe.”

Stanley J Berke MD

Using a straight probe, the processes can be treated through about 200 degrees of arc through a single incision, Dr Berke said. Using an angled probe, about 270 degrees can be reached by first inserting the probe in one direction, and then removing it, turning it over and inserting it facing the other direction.

Dr Berke recommends treating at least 180 degrees, and typically tries for 270. In cases requiring lower pressures he will sometimes make a second corneal incision to perform a complete 360 degree treatment. In the cases studied, all patients received between 180 degrees and 360 degrees of treatment with the mean at about 270 degrees.

Dr Berke believes the procedure is appropriate for patients with moderate glaucoma symptoms. Patients with intraocular hypertension but no symptoms may not need it. Those with more severe symptoms, such as severe cupping and visual field loss may also benefit from trabeculectomy, he said.

However, for those who can benefit from ECP it is much less difficult and less prone to complications than trabeculectomy, Dr Berke said.

“With ECP you need a healthy conjunctiva, and you have a higher risk of all kinds of complications. You don’t have any of that with ECP. It is a much safer procedure.”

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