The ExPRESS shunt is proving to be a safe and effective way to treat selected glaucoma patients, according to several studies presented at the annual meeting of the Association for Research in Vision and Ophthalmology (ARVO). The newer approach of placing the device under a sclera flap appears to offer advantages over a subconjunctival flap location, including fewer complications later on and ease of placement for the surgeon.

A study presented by Trevor Carmichael MD, from the University of Witwatersrand in South Africa confirms that placing the mini-shunt under a scleral flap affords good IOP control, along with a reduced need for anti-glaucoma medication and smaller bleb formation.

Dr Carmichael presented findings from a non-randomised prospective study of 58 eyes of 50 patients with open-angle glaucoma who underwent implantation of the device under sclera flaps. Outcome measures included IOP, number of anti-glaucoma medications, bleb size and complications. Two-year follow-up was available in 70 per cent of patients.

Intracocular pressure fell from a mean of 29.4 mmHg at baseline to 13.5 mmHg at one year, and 14.2 mmHg at two years. A total of 49 eyes (85 per cent) had either minimal blebs (less than 1.00m in height) or none at one year. The number of medications fell from a mean of 2.5 prior to surgery (58 eyes) to 0.02 at one year. Complete success, defined as IOP less than 18 mmHg and zero medications, occurred in 53 patients (91 per cent). Partial success (IOP of 18 mmHg or less plus use of anti-glaucoma medications) occurred in 35 patients (85 per cent).

Complications included persistent hypotony in three eyes, postoperative hyphaema in four eyes, device-iris touch in two eyes and one cystic bleb.

“The device can be used safely under a trabeculectomy flap. We think it is safer and easier to do than a standard trabeculectomy, and there is some evidence in the literature now showing less hypotony from using an ExPRESS implant rather than a standard trabeculectomy”

Trevor Carmichael MD

A total of 319 eyes of 274 glaucoma patients who had inadequate response to maximal medical treatment were treated with the ExPRESS shunt. Of the patients, 229 had primary open angle glaucoma. The remaining patients had glaucoma due to trauma, uveitis or other causes. At baseline, mean IOP was 25.8 mmHg. The study population had a mean follow-up time of 21 months, ranging from three to 36 months. At follow-up it was found that IOP had fallen significantly and was a mean of 14.4 mmHg at both six months and one year.

The researchers reported a 91.2 per cent success rate at six months and 90.2 per cent at one year. More than half the patients treated with the ExPRESS had stable vision after surgery, with the rest evenly divided between decreased and improved vision.

One ExPRESS implant became exposed and was replaced with an Ahmed Glaucoma Valve. Three other patients required a glaucoma drainage implant.

“The most common device-related complication was blocked tube, which occurred in seven of the devices. Blebs leaks most commonly occurred within the first month post surgery, but resolved with a need to go back to the O.R. O exal, 67.7 per cent of the eyes required at least one suture lysis to control IOP, mostly within the first month after surgery. Only 30 per cent required more than one suture lysis, with only 21.3 per cent needing lysis of all three sutures.

Prior to surgery, mean IOP was 25.86 mmHg and at five years it was 17.19 mmHg. A total of 13 eyes were defined as successful (IOP less than 18 mmHg) with or without medications, with nine requiring no medications at all.

Postoperative hypotony occurred in eight (31.1 per cent) eyes, the device was repositioned in one eye and had to be repositioned, and two devices had conjunctival erosion due to malpositioning.

There were posterior capsule opacification in one case, and four cases had a visual acuity decrease of more than two lines.

“It is important that the device be placed flush with the sclera, we have since modified the technique, and now the standard use is to implant under scleral flap,” Dr Papadia said.

Another short-term study found that implanting the ExPRESS 200 device with deep sclerectomy significantly reduces IOP and leads to few complications. The prospective study was presented by Sylvain Roy MD, Lausanne University, Switzerland. It included 28 eyes of 28 patients (mean age 72 years). All underwent deep sclerectomy with device implantation. Mean follow-up was 13.8 months.

The mean number of anti-glaucoma medications dropped from 2.9 to 0.4 at 12 months. Subtle hyphaema occurred in six patients (21.4 per cent) and transient hypotony in another six. Anterior chamber inflammation occurred in four patients, subtle choroidal detachment in six, encysted blebs in 14 patients, and bleb fibrosis in three patients. Five patients needed MMC, while 11 required MMC plus needling.

Three surgeries failed. These occurred in one patient where the glaucoma was trauma related, one in a congenital glaucoma case, and the third was a pseudophakia glaucoma case.

The prospective, non-randomised study was done to evaluate the safety and efficacy of the new ExPRESS 200 drainage device in refractory glaucoma patients. The device is different from previous devices because there is an end plate on the tube that offers more protection under the scleral flap to prevent conjunctival erosion, Dr Roy explained.

“With this shunt there is no need to stent the inner bore of the tube, such as for the Baerveldt, and to release this stent a week after surgery. The filtering bleb is smaller and flatter compared to the one after classic shunt surgery,” he said.

The control of the IOP during the early postoperative follow-up is much better, more precise, more predictable, easier than with other shunts such as the Ahmed valve, Molteno or Baerveldt tube, he emphasised.

The tube aperture has a groove across the main entrance port, plus a groove on the end plate to prevent, for instance, the superficial flap from blocking the external aperture of the tube, he added.

“ExPRESS shunt delivers good longer term results

Trevor.carmichael@wits.ac.za
pnetland@mail.eye.utmem.edu
marina.papadia@yahoo.com
sylvain.roy@etf.ch

Courtesy of Sylvain Roy MD

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Pippa Wysong

in Fort Lauderdale

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