IRIDOPLASTY
Technique opens angle and removes synechiae in eyes with refractory angle-closure
by Roibeard O’hEineachain in Copenhagen

Laser peripheral iridoplasty is a useful option in the treatment of eyes with acute angle closure or angle-closure glaucoma where laser peripheral iridotomy has been unsuccessful, said Philippe Denis MD, CHU Lyons, Lyons, France at the 10th European Glaucoma Society Congress.

“We know that iridotomy is not always effective and we know that it tends to be ineffective in eyes where angle closure is not associated with pupillary block,” Dr Denis said.

Pupillary block is the most common and best-known underlying mechanism for primary angle-closure glaucoma (PACG), he noted. Pupillary block occurs when contact between the iris and the lens creates aqueous flow resistance. That, in turn, causes the iris to bow so that its periphery presses against the cornea and closes the angle, he explained.

Laser peripheral iridotomy can eliminate pupillary block in the majority of cases of angle closure, Dr Denis continued. By equalising the pressure between the anterior and posterior chambers, the procedure allows the peripheral anterior chamber to deepen, he said. In eyes that have angle closure, and where pupillary block is the sole cause, laser iridotomy will generally result in an opening and widening of the angle, he added.

However, laser iridotomy tends to be less successful in eyes where pupillary block is not the sole cause of angle closure, he noted. The conditions that can cause the unresponsive types of angle closure include plateau iris, anterior rotation of the ciliary mechanism, increased iris thickness, peripheral synchiae, and phacomorphic angle closure, where the cataractous lens itself presses against periphery of the iris. Another cause of angle closure is uveal effusion syndrome, such as may result from lymphoma or central retinal vein occlusion.

Dr Denis noted that in some populations of Eastern Asia, iridotomy has a high failure rate in the treatment of angle-closure glaucoma. For example, one study showed that in China nearly 20 per cent of eyes have residual posterior anterior synchiae after undergoing iridotomy. In another study of Chinese patients, the dark prone provocation test remained positive in 60 per cent of eyes that had undergone iridotomy.

The iridoplasty option For those eyes where iridotomy is not successful, iridoplasty is gaining some acceptance as the next option, Dr Denis said. Moreover, in eyes at a high risk of failure to achieve angle patency through iridotomy, there may be some justification for the use of iridoplasty as the first line of therapy, either alone or in combination with iridotomy, he added.

“Considering that a mixed mechanism can be associated with angle closure in the same patient, it makes sense to combine laser iridoplasty and iridotomy to achieve the efficacy of the combined procedures,” Dr Denis said.

There are fairly few published reports showing the efficacy of iridoplasty as a primary treatment for angle-closure glaucoma, Dr Denis noted. However, in one notable study, involving 10 patients with phacomorphic glaucoma, iridoplasty reduced IOP by a mean of about a third within 30 minutes, and by over half within two hours. The treatment also eliminated pain associated with the condition completely in eight patients within two hours (Tham et al Eye (Lond) 2005;19 (7):778-83).

In another study involving 156 patients with PACG, laser iridotomy achieved approximately the same amount of IOP reduction as did a combination of iridotomy and iridoplasty, at one year’s follow-up. However, the combined treatment group resulted in a greater reduction in peripheral synchiae (Sun et al, Am J Ophthalmol 2010;150:68-73).

How and when to perform iridoplasty Dr Denis noted that iridotomy is the first line of treatment in eyes of European patients with primary open-angle angle-closure glaucoma. However, patients who undergo iridotomy require close observation to insure that the treatment has been successful, he said.

“If the angle widens dramatically after iridotomy, then it is the pupillary block form of angle closure and therefore no further treatment is necessary. However, if it is still narrow with at positional closure or the patient has a positive response to darkroom provocative test, it is a multi-mechanism form. Iridoplasty may be the treatment of choice in such cases.

The aim of laser iridoplasty is to create small burns on the periphery of the iris that will cause it to contract and pull away from the angle, Dr Denis said. The procedure requires the use of an Argon laser at a very low energy setting of 200 milliwatts with a large spot size of 150 to 200 microns for a duration of 0.5 seconds. It is best to use between 20 to 24 spots for each session. Some eyes require more than one iridoplasty treatment, he added.

Iridoplasty may also be indicated as a primary treatment in eyes with plateau iris configuration and in eyes where iridotomy is not possible because of ocular inflammation, corneal oedema or flat anterior chamber.

Other potential indications include cases where the angle remains appositionally closed despite a patent iridotomy and in cases medically unbreakable attacks of angle-closure glaucoma. Less common indications include phacomorphic angle-closure glaucoma, and nanophthalmos, he added.