Martin Spencer

Older surgical techniques useful in developing world

Pippa Wysong
in Toronto

WHEN it comes to doing volunteer cataract removal in developing countries, surgeons should fall back on what is state of the art in the region they are working in, according to Canadian ophthalmologist Martin Spencer MD.

"The most important point in thinking about appropriate technology from the point of view of the volunteer cataract surgeon is to know the local state of the art, not to come with preconceived ideas of what is best. If the local state of the art is intracapsular cataract surgery with loupes – phaco or even manual sutureless surgery would be wildly inappropriate," he said at a session on international ophthalmology at the annual meeting of the Canadian Ophthalmological Society.

Indeed, he'd heard about Western doctors who visited the Lhasa Eye Centre in Tibet who arrived with phaco machines and 300 patients were screened for treatment.

"After 100 surgeries had been carried out, the foreign ophthalmologists left, leaving a trail of oedematous corneas, secondary glaucoma and dropped nuclei. They weren't used to the dense cataracts (that this population had). The local Tibetan ophthalmologists completed the remaining 200 surgeries using their familiar manual extracapsular technique," he said.

Dr Spencer has been performing volunteer work in Nepal, India, Tibet and Africa for close to 20 years, both performing surgery and teaching different surgical techniques.

"When I started, the local state-of-the-art cataract procedure was ICCE which I hadn't done for seven years," he said of his early trips to Nepal.

With most cataracts being mature or hypermature he feared that at some point a capsule would break, and switched to extracapsular surgery – a procedure that wasn't familiar to the Nepalese. The approach was appropriate for the Nepalese surgeons, and doable with local resources.

He reminded conference attendees that going to places with few resources and demonstrating techniques that require a higher level of technology "creates a sense of inadequacy, a feeling that only a foreigner can do this kind of work. Instead, empowerment should be the goal and to teach a technique that is sustainable in the community," Dr Spencer said.

Dr Spencer brought numerous donated IOLs for implantation in the early years, but over time needed another source. Grant money was obtained from CIDA (Canadian International Development Agency), and Seva (the agency Dr Spencer was working through) helped set up an IOL manufacturing facility, Aurolab, which began production in 1992 in Aravind Eye Hospital in Madurai, India.

"With production costs of less than five dollars, the IOLs were affordable for high-volume surgery programmes," he said.

Then, to increase the use of IOLs, Dr Spencer helped launch a series of training programmes for ophthalmologists in other parts of India and Nepal.

Manual sutureless surgery

About 12 years ago Dr Spencer introduced a technique for manual sutureless cataract surgery at Aravind Eye Hospital, Madurai, India. The sutureless technique has numerous advantages, and is safer, cheaper than sutures, faster, and more efficient, he said.

"They adapted it and it was a huge hit. The structure and integrity of the eye is maintained with the sutureless incision. It also turns out it's much easier to control astigmatism," he told *EuroTimes*.

He advised cataract surgeons that when they are asked to demonstrate or teach phaco in areas where the technology is too costly or not easily available, it's more useful "to point out that results virtually identical to those we get with phaco and foldable lenses can be achieved with manual, sutureless surgery. With the complete conversion of cataract surgeons to phaco in the West, it's easy to lose sight of the alternatives," he said.

Part of the success of the sutureless approach and the decreased rates of astigmatism associated with it, compared to standard manual technique is due to the temporal placement of the incision with the ends of the incision curved posteriorly. Pre-existing astigmatism can even be reduced "by appropriate placement of a long, sutureless incision", Dr Spencer said.

Manual sutureless surgery is feasible in high volume, settings which are well equipped and where the surgeons have experience in ECCE-IOL. At the Aravind Eye Hospital in India, 200,000 cataract surgeries are performed annually with most being done with the sutureless method. The procedure takes less than four minutes per eye in the hands of an experienced high-volume surgeon.

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Dr Spencer described details of how he performs manual sutureless surgery, starting with the incision that is a modified version of the scleral tunnel incision used for phaco when a polymethyl methacrylate (PMMA) lens is used. It is temporally placed.

He uses a crescent blade for making the peritomy, and the incision is as long as 7.0mm, depending on the size of the nucleus. The internal opening is longer so that the incision is funnel shaped.

The next step, especially challenging to physicians accustomed to performing phaco, is the prolapse of the nucleus into the anterior chamber.

"My preferred technique is hydrodissection," he said. Once the nucleus is removed using an irrigating vectis – another instrument not commonly known by younger, Western-trained cataract surgeons – the remainder of the surgery is similar to standard ECCE.

Dr Spencer added that the principles of aspiration and irrigation are similar for manual and automated systems, though more challenging with the manual technique. Other challenges with cataract removal in developing countries include problems such as power outages during surgery, older equipment, and lower quality microscopes.

For cataract surgeons not accustomed to the manual sutureless technique, there is a learning curve, he cautioned.

"The most important consideration is to use only the techniques which can be justified by the experience of the surgeon and the available equipment, supplies and infrastructure," he said.

While visiting volunteer surgeons need to be culturally sensitive, they also need to be aware of the constraints on local technology and technique, and not to introduce methods that will end up doing more harm than good, he said. Dr Spencer has seen the Seva initiated Nepal programme grow from doing 200 cataracts a year in 1985 to more than 30,000 last year.

Suturing, a lost art

In a discussion at the COS conference, another point was brought up that because of the reliance on phacoemulsification in industrialised countries, many young cataract surgeons have limited exposure to suturing. Indeed, some of the more senior ophthalmologists at the session noted that the lack of experience in doing sutures may be a disservice.

While infrequently used in routine phacoemulsification, sutures may be needed on rare occasions when cataract surgery doesn't turn out right, and for closing ocular lacerations.

"Ophthalmology residents here do a high volume of surgical cases, but we've had to augment this with wet-lab experience to get adequate exposure to suturing larger corneoscleral incisions under the microscope," said Ralf Buhrmann MD, from the University of Ottawa Eye Institute.

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