REFRACTIVE SURGERY

Some of the children who benefit most from refractive surgery are those least likely to respond to conventional approaches

by Roibeard O’Heineachain in Milan

Long-term follow-up of an increasing number of patients appears to confirm the safety and efficacy of refractive surgery in children, whether in the form of corneal ablation or phakic IOLs, according to two speakers at the JCRS session of the XXX Congress of the ESCR.

The main indications for refractive surgery in children are myopia, anisometropic amblyopia and congenital high myopia where the traditional methods of treatment are not successful. Those traditional methods include glasses, contact lenses, patching and atropine, said William F Astle MD, FRCSC, Alberta Children’s Hospital, University of Calgary, Calgary, Alberta, Canada.

“There tends to be a certain subset of children who won’t wear their glasses and are not progressing appropriately no matter what you do. And there are children with a range of underlying medical and neurobehavioural conditions who are not going to wear their glasses or contact lenses and in many cases they’re functionally blind,” Dr Astle said.

He noted that he and his associates have performed PRK and LASEK on 446 eyes of 275 children with various amounts of hyperopia, myopia and astigmatism and their results to date show that it is very effective both early on and after 14 or more years of follow-up.

Dr Astle noted that he and his associates initially performed standard PRK on their patients but because of a few instances of dense haze they switched to performing LASEK, which they combine with mitomycin C in eyes with greater than five dioptres of myopia or hyperopia. They performed all of the procedures using general anaesthesia.

Among the 55 anisometropic amblyopes who underwent surgery, the preoperative refractive difference between the two eyes was 4.77 D preoperatively and 0.56 D postoperatively. Among the 39 patients in the myopic group, the mean difference between the two eyes went from 9.12 D to 1.18 D. In the 16 hyperopic group it went from 5.84 D to 0.0 D, he reported.

Dr Astle noted that in 80 per cent of the children the treated eye was within 3.0 D of the fellow eye at 5.5 years after their surgery. In addition 63.6 per cent had improvements in their vision and the proportion with fine stereo vision rose from 9.09 per cent before LASEK to 43.64 per cent post-LASEK.

He added that some of the children who benefit most from refractive surgery are those least likely to respond to conventional approaches. For example, in children with autism, parents reported that the surgery seemed to bring about improvements in behaviour, in their walking ability and their overall functional abilities.

“A lot of professionals and even parents of children with neurobehavioural disorders have very low expectations for them and feel that their uncorrected vision can be dismissed as good enough for a child that has multiple handicaps, but these days paediatric refractive surgery can fulfil an important need for this complex minority of children,” Dr Astle added.

Other options

Michael O’Keefe FRCS, Mater Private Hospital, Dublin, Ireland, said that he has been performing paediatric refractive surgery for over 10 years and that he currently prefers to use Artiflex® iris-fitted IOLs (Ophtec), which he said are less expensive than LASIK or PRK and offer very quick rehabilitation.

“An additional advantage of phakic IOLs is that they can be replaced if their refraction changes significantly as the child grows. Furthermore, it leaves the cornea largely untouched, leaving the option open for future corneal ablative procedures,” he said.

However, he noted that he achieved good long-term results with LASIK in a series of seven eyes of six amblyopic patients. The patients ranged from two to 12 years in age and their preoperative spherical equivalent ranged from -5.00 D to -16.0 D, and their mean preoperative visual acuity ranged from hand movements to 6/18.

After a mean follow-up of 9.5 years the mean spherical equivalent was -4.3 D, compared to -9.6 D preoperatively. In addition, their postoperative visual acuity ranged from 6/6 to 6/60 and improved by a mean 2.5 Snellen lines in six eyes.

“Ten years later we’re seeing no ectasia or any long-term flap complications, and of the seven eyes we treated five had a mean regression of about two-and-a-half dioptres. But we saw 3.7 D of regression in the untreated eyes,” Dr O’Keefe said.

He and his associates have also achieved good results with the Artiflex IOLs in 11 eyes of six children. After a mean follow-up of 15 months the mean preoperative spherical equivalent (SE) refraction improved from -14.6 D to -2.40 D and the mean corrected distance visual acuity improved from logMAR 0.84 to 0.67 postoperative SD (p=0.005),(Ryan et al, Acta Ophthalmol 2012;90:658-462).

The indications for refractive surgery in the study included high anisometropia and high myopic astigmatism and high bilateral myopia in children with neurobehavioural disorders.

Dr O’Keefe noted that in their responses to a NEI VFQ-25 questionnaire, parents of the patients in his series reported significant improvements in their children’s vision-related quality of life.

He added that there were no intraoperative or postoperative serious complications. However, he acknowledged that the risk of endothelial cell loss will entail some extra vigilance over the years to come.

“LASIK works well, but these implants have major advantages in paediatric ophthalmology. If I were to pick one single thing it would be the quick visual rehabilitation that they provide, with the lack of all the ongoing treatment that I would otherwise have to carry out,” he added.